FOREWORD

This document provides the second volume of EPA's responses to public comments on EPA's Proposed *National Emission Standards for Hazardous Air Pollutants for Area Source Industrial Commercial Institutional Boilers*. EPA published a Notice of Proposed Rulemaking in the Federal Register on June 4, 2010 at 75 FR 31895. EPA received comments on this proposed rule via mail, e-mail, facsimile, and at three public hearings held in Washington, DC, Houston, Texas, and Los Angeles, California in June 2010. Copies of all comments submitted and transcripts for the public hearings are available at the EPA Docket Center Public Reading Room. Comments letters and transcripts of the public hearings are also available electronically through h*ttp://www.regulations.gov* by searching Docket ID *EPA-HQ-OAR-2006-0790.*

Due to the size and scope of this rulemaking, EPA paraphrased a limited amount of major comment themes in the preamble of the final rule. This document contains the verbatim comments provided by each commenter extracted from the original letter or public hearing transcript. The document has been broken up into three sections to meet the electronic document size constraints of the Docket.

For each comment, the name and affiliation of the commenter, the document control number (DCN) assigned to the comment letter, and the number of the comment excerpt is provided. *Table 1* of this document provides a complete listing of the DCN and affiliations included in this document. In some cases the same comment excerpt was submitted by two or more commenters either by submittal of a form letter prepared by an organization or by the commenter incorporating by reference the comments in another comment letter. Rather than repeat these comment excerpts for each commenter, EPA has listed the comment excerpt only once and provided a list of all the commenters who submitted the same form letter or otherwise incorporated the comments by reference in *Tables 2 and 3* at the end of this document.

Several of EPA's responses to comments are provided immediately following each comment excerpt. However, in instances where several commenters raised similar or related issues, EPA has grouped these comments together and provided a single response after the first comment excerpt in the group and referenced this response in the other comment excerpts. In some cases, EPA provided responses to specific comments or groups of similar comments in the Preamble to the final rulemaking. Rather than repeating those responses in this document, EPA has referenced the Preamble or the appropriate technical support document for a description of the analysis included in the final rule. In other cases EPA has provided a general response at the beginning of a section of this document which responds to the comments within the section.

Parallel with this rulemaking effort are three separate, but related rulemakings that may be of interest to stakeholders. These three rules are: *National Emission Standards for Hazardous Air Pollutants for Major Source Industrial/Commercial/Institutional Boilers and Process Heaters* (Docket ID: EPA-HQ-OAR-2002-0058); *Identification of Non-Hazardous Secondary Materials That Are Solid Waste* (Docket ID: EPA-HQ-RCRA-2008-0329); and *Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units* (Docket ID: EPA–HQ–OAR–2003–0119).

Given the identical proposal dates, and the related nature of these other rules, many commenters submitted comments to this rulemaking docket that were specific to one of these related rulemakings. Some commenters submitted a single DCN with comments on all four rules while others submitted a separate DCN specific to each rule. Many commenters submitted identical comments to all of these dockets. In order to reduce duplicative comments, this document flags comments associated with any of the above three related rulemakings as out-of-scope comments for this response to comment document. To the extent that the commenter submitted these comments to the appropriate rulemaking document, responses have been developed in the response to comment documents for each of these related rulemakings. For this reason, EPA encourages the public to read the other response to comment documents prepared for these three other rulemakings as they may contain topics relevant to these other rulemakings.

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Secondary Materials Analysis

Qualitative Comments on Secondary Materials

Commenter Name: Arlington Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0396
Comment Excerpt Number: 44

Comment: These are the area sources -– area sources that are not subject to any of these requirements. How many sources are we talking about and where are they?

Well, we don't know because EPA never asked. We know that there are 1,700 chemical plants that are area sources, though. Any one of these things could be burning their waste chemicals right next to a community. They would not have to control the pollution. They wouldn't have to monitor it, and they wouldn't have to tell the neighbors what they were emitting.

How many of them are there? This is where it really gets remarkable. EPA states in the area source boilers rule that it believes that not one of the more than 165,000 area source boilers is burning any secondary material, whether it's a waste or not. What's the basis for that belief? There is none. There is absolutely nothing in the record which even suggests that EPA asked what the area source boilers were burning or how much of it or how many.

The one thing that EPA does know is that lots of the major source boilers are burning materials that are unquestionably secondary materials. So that it knows that there is a large proportion in the major source boilers rule, and it has no basis to assume that the proportion in the minor source –- in the area source boilers rule isn't just as large or larger.

Well, let's just assume that only 10 percent of the 165,000 area source boilers are burning secondary materials. That means that with this proposal EPA just exempted 16,000 facilities from any significant control, monitoring, or reporting requirements. That's 16,000 communities who will be subject to a waste incinerator right next to them emitting toxics without controls that they can't find out about or do anything about. Is that really the result that EPA wants?

Response: See the preamble for discussion regarding the combustion of secondary materials.

Commenter Name: Arlington Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0396
Comment Excerpt Number: 70

Comment: By defining industrial wastes as fuel, the proposal will allow facilities operating in communities across the country to burn spent chemicals, spent solvents, scrap plastics, industrial sludges, coal mining waste, used motor oil, and other wastes in boilers and process heaters without no obligation to control or monitor their toxic pollution and no obligation to report the identity and quantity of these toxic emissions to EPA, state permitting authorities, or the public.

Which the facilities that are exempted include boilers and process heaters operated in area source facilities like the one –- like one of our nation's 1,700 area source chemical plants.

About how many facilities are we talking about? There is one of the shocking aspects of this rulemaking. EPA states in its area source boilers rule that it does not believe that any more than 165,000 boilers operating any source burn any source -– secondary material, whether its defined as waste or not, according to 75 Federal Register 38 -– 31896 and 31899 from June 4th, 2010. EPA has not attempted to determine how many area sources are burning wastes or what those wastes will be. It does know, however, that many boilers and process heaters are major sources –- are burning chemicals, spent solvents, and other secondary materials as the Agency prefers to call them. Even if 10 percent of the 165,000 area source boilers are burning these wastes, EPA's proposal will exempt more than 16,000 facilities from any meaningful control, monitoring, reporting requirements.

What toxic emissions will be released by these facilities in these communities? Neither the community, people in the communities, or EPA will ever know. The emissions won't have to be monitored or reported. What EPA does know is that burning wastes in poorly controlled boilers and process heaters produce highly toxic emissions. That's why Congress enacted a special provision to ensure protective emission standards for all waste incinerators.

Response: See the preamble for discussion regarding the combustion of secondary materials.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 2

Comment: EPA'S CLAIM THAT NO AREA SOURCE BOILERS ARE BURNING SECONDARY MATERIALS IS ARBITRARY AND CAPRICIOUS.
EPA acknowledges that it is "important to know" whether area source boilers are burning secondary materials because those materials may be "solid waste," in which case the units burning them would be solid waste incinerators subject to Clean Air Act § 129 rather than boilers subject to Clean Air Act § 112. 75 Fed. Reg. at 31899-31900. Remarkably, however, EPA appears to have made little if any effort to determine what materials are being burned as fuel in area source boilers. EPA conducted an information collection request only "for the major source NESHAP" and, although the agency claims to have gathered information for the proposed area source boilers rule "from States' boiler inspection lists, company web sites, published literature,

State permits, current State and Federal Regulations," it does not point to any part of the record containing any information at all regarding the materials that area source boilers are burning as fuel. Id. at 31900.

Despite its apparent failure to collect any information about what materials are being burned as fuel in area source boilers, EPA states
Based on the information available to the Agency, we believe that the boilers that are subject to this area source rule combust coal, oil, and biomass. EPA does not believe that the boilers subject to this rule combust any non-hazardous secondary materials, whether they are considered a solid waste or not. Id. at 31899 (emphasis added). Notably, although these assertions are made in EPA's name and about EPA's "belie[fs]," they were added to the proposal by the Office of Management and Budget. Docket Item EPA-HQ-OAR-2006-0790-0058.1 ("OMB Redline") at 21.

EPA's absolute failure to provide a record basis for its stated beliefs regarding an issue the agency recognizes as "important," together with the agency's apparent failure to collect and provide any information on this subject, is profoundly irresponsible. It undermines the proposed rule as well as EPA's companion rule for commercial and industrial solid waste incinerators.

Notably, the information that EPA gathered for major source boilers indicates that many of those sources are burning secondary materials. Of the 692 major source facilities for which EPA has fuel information, more than 60% are burning materials that are not fossil fuels and more than 40% are burning materials that are neither fossil fuels nor biomass. [See submittal for Exhibit A showing sources and the fuels they burn.] EPA knows that the boilers and process heaters operating at major and area sources may be identical or closely similar. Thus, the agency has good reason to believe that at least 40% of the approximately 185,000 area source boilers and process heaters – over 70,000 units – are burning secondary materials. EPA does not even consider the extent to which secondary materials are burned as fuel by boilers operated at major sources, far less provide a reason to believe that a similar proportion of boilers in the area source boiler population is not also burning secondary materials.

Response: See the preamble for discussion regarding the combustion of secondary materials.

Commenter Name: Cheryl Johncox
Commenter Affiliation: Minneapolis Neighbors for Clean Air
Document Control Number: EPA-HQ-OAR-2006-0790-1971
Comment Excerpt Number: 6

Comment: The existing biomass power industry consists of industrial boilers that fire from wood waste or wood liquors. According to the USFS about 1-2% of mill wood waste goes unused. [Smith, W.B., et al. 2007. Forest Resources of the United States, 2007. United States Forest Service, Gen.Tech Report WO-78. December, 2008.] Therefore, the biomass power industry is looking to new materials to provide fuel. According to various projections of biomass supply, construction and demolition debris (C&D) is likely to play a major role in meeting this

need. Some federal and state legislation already permit the use of C&D as a renewable fuel. Even after sorting, this fuel stream inevitably contains wood treated with copper-chromium-arsenate (CCA), and can contain other wood preservatives, including PCB's. Unfortunately, it appears from EPA's recent draft waste rule that the agency does not appreciate the potential for contamination of these secondary materials. Visual sorting of secondary fuel materials in C&D waste and disaster debris is expensive and time-consuming. Wood treated with CCA can sometimes be identified by its green tint, however after a number of years this green stain fades. Identifying C&D that is painted with lead paint is also difficult unless a restrictions is set restricting all painted wood, but the industry has consistently resisted such restrictions. EPA appears to not appreciate how difficult it is to control the contamination levels in such fuel streams.

Response: Existing biomass boilers do not have emission limits for the final rule which will minimize the burden. Please see Identification of Non-Hazardous Secondary Materials That Are Solid Waste (EPA-HQ-RCRA-2008-0329) for discussion on the definition of solid waste.

Commenter Name: Cheryl Johncox
Commenter Affiliation: Minneapolis Neighbors for Clean Air
Document Control Number: EPA-HQ-OAR-2006-0790-1971
Comment Excerpt Number: 10

Comment: An additional reason that annual and/or quarterly testing for mercury emissions will not provide accurate data about the actual day-to-day emissions is because emissions can vary by type of fuel used. According to the EPA, the formation of fuel-dependent HAPs, including mercury, is dependent upon the composition of the fuel. [Federal Register /Vol. 75, No. 107 / Friday, June 4, 2010 / Proposed Rules, pg 32017. Retrieved from http://www.epa.gov/ttn/atw/boiler/fr04jn10mp.pdf.] Biomass plants mix fuels day-to-day and over time, particularly those burning C&D and disaster debris and those co-firing different types of biomass fuels or wastes, where the fuel mix may vary depending on market conditions. The fact that biomass facilities do not necessarily burn the same materials on a day-to-day basis is reflected in the EPA's definition of biomass that includes many types of materials. [Federal Register /Vol. 75, No. 107 / Friday, June 4, 2010 / Proposed Rules, pg 32063. Retrieved from http://www.epa.gov/ttn/atw/boiler/fr04jn10mp.pdf.] Each fuel source (i.e. animal litter, trees, etc.) has different constituents. Some biomass plants burn poultry litter, which is included in the EPA's definition of biomass, and which contains mercury. [Gupta, Giman and Kelly, Pete, "Poultry litter toxicity comparison from various bioassays," Journal of Environmental Science and Health, Part A, Volume 27, Issue 4, May 1992.] Mercury is expected to be present in wood in trace amounts attributable to root uptake from soil and deposition of airborne mercury to leaves, buds and bark. [Massachusetts Department of Environmental Protection. Mercury in Massachusetts: Emission Monitoring and Source Release Estimates. Retrieved from http://www.mass.gov/dep/toxics/stypes/hgch3c.htm#table3x14.] Some waste wood may contain mercury or other metals in paints applied to their surfaces. Id. The same fuel can also vary by the treatment it has been given. For example, if pesticides and herbicides are used on the agricultural wastes, the emissions will be different than for agricultural wastes without herbicides and

pesticides. In addition to mercury contamination, contamination from toxic and hazardous air pollutants found in C&D debris such as copper, iron and zinc need to be addressed through increased monitoring. These metals are strongly correlated with dioxin formation and can serve as catalysts for dioxin formation. [Hinton, W.S., Lane, A.M., "Characteristics of municipal solid waste incinerator fly ash promoting the formation of polychlorinated dioxins," Chemosphere, Vol. 22, p. 473-483, 1991.] [Gullett, B., Bruce, K., Beach, L., Drago, A., "Mechanistic steps in the production of PCDD and PCDF during waste combustion," Chemosphere, Vol. 25, p. 1387, 1992.]

Response: EPA requires boiler operators to test each boiler with the fuel that would result in the maximum emission rates of mercury; this maximum emission rate must be below the MACT floor limit thus removing the bias from day-to-day changes which may occur. EPA determined that it is not necessary to regulate mercury from biomass boilers and only coal boilers have applicable mercury limits.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 72

Comment: For all boilers and process heaters, EPA is proposing that facilities should maintain daily records of fuel use that demonstrate that they have burned no materials that are considered solid waste. See §63.7550. EPA is also proposing to require certification of the following statement on the compliance reports: “No secondary materials that are solid waste were combusted in any affected unit.” The requirement to certify that no solid waste was burned may not be feasible, as explained below.

AF&PA’s comments on EPA’s waste identification rule explain that various secondary material streams that clearly constitute legitimate fuels will contain “incidental” materials that cannot practically be screened out, make no discernable difference to the environmental characteristics of the fuel stream, and either have fuel value or do not detract from fuel value. In those comments, AF&PA urges EPA, following long-established RCRA practice, to allow the burning of such incidental materials as part of the fuel stream that will inevitably contain them (See EPA–HQ–RCRA–2008–0329, we incorporate those comments by reference here).

In addition, there is really no humanly possible way to prevent any discarded materials from finding their way into legitimate fuel streams. Someone at some time will throw oily rags, or a bandage, or earplugs, onto a bark pile or similar fuel storage facility, or a storm may blow small amounts of these materials onto a fuel storage pile.

Beyond such unavoidable events, there are also cases where it would make sense in terms of overall social policy to deliberately burn incidental materials in boilers without turning them into CISWI units. For example, the residues from cleaning up spills of non-hazardous materials, such as oil and hydraulic fluid, are often simply burned. So, on occasion, are scrubber residuals.

On quite a different note, law enforcement agencies sometimes ask facilities with boilers to help them dispose of contraband marijuana by burning it. This can be particularly true in rural areas where other disposal options are limited. AF&PA sees no reason to use CISWI to ban such useful practices.

Instead, EPA should amend its CISWI rule and its Boiler rules to provide that facilities could burn incidental amounts of waste without being classified as a CISWI unit. AF&PA believes such exclusion would be entirely proper. There is a presumption in favor of agency power to establish such an exclusion. That presumption tracks back to Judge Leventhal's statement many years ago that unless Congress had been "extraordinarily rigid", agencies had inherent power to exclude from regulation cases where the gain from regulation would be of "trivial or no value". Alabama Power Co. v. Costle, 636 F.2d. 323, 360-61 (D.C. Cir. 1979).

It is true that the CISWI opinion said, 489 F.3d at 1260, that when Congress defined a "solid waste incineration unit" as a unit that burned "any" solid waste, see § CAA §129(g)(1), it meant "any" to mean "any". However, the court did not address the question of whether EPA could establish an exclusion from any such literal reading that would allow incidental amounts of solid waste to be burned with legitimate fuels. The Clean Air Act case on which the court chiefly relied also stated most strongly that "any" meant "any" and then expressly said this did not preclude a de minimis exclusion. See New York v. EPA, 443 F.3d. 880, 888 (D.C. Cir. 2006). Moreover, the environmental petitioners in CISWI also expressly left this point open. See Brief for Environmental Petitioners at 6 (stating that "Environmental Petitioners express no view on whether EPA might be able to demonstrate on remand that [excluding a unit that sometimes burns 1% solid waste from CISWI] meets this Court's standards for establishing de minimis administrative exclusions.")

Indeed, EPA has already in effect established such exclusions in its CISWI rules. For example, the medical incinerator rules do not cover household waste (see 40 CFR §60.51c definition of "medical infectious waste"). Similarly, the proposed CISWI rule itself does not literally follow the statute. While the statute calls for EPA to establish emission limits for "any facility" that combusts solid waste, EPA's proposal would apply only to any "commercial or industrial facility" that burns such material, see proposed §60.2265, 75 Fed. Reg. 31983.

Of course EPA acted entirely properly in thus proposing to exclude home stoves and fireplaces from regulation. Excluding from regulation de minimis amounts of materials burned in larger units would be no less proper.

EPA's approach to RCRA regulation leads to the same result. Since RCRA regulation began EPA has allowed the handling and disposal of small amounts even of hazardous waste outside the RCRA system, since such an exclusion does not pose any environmental danger, while attempting to regulate such small amounts would lead to many regulatory absurdities. See generally 40 CFR 261.5 (authorizing the disposal of small quantities even of hazardous waste outside the hazardous waste regulatory system.)

For all these reasons, AF&PA urges EPA to allow non-CISWI combustion units to burn up to 1% by weight non-hazardous solid waste without becoming CISWI units.

Response: The EPA still requires the certified statement that no solid waste was burned. Please see Identification of Non-Hazardous Secondary Materials That Are Solid Waste (EPA-HQ-RCRA-2008-0329) for discussion on the definition of solid waste.

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 2

Comment: EPA states "We do not believe that the boilers subject to this rule combust any non-hazardous secondary materials, whether they are considered solid waste or not" (75 FR at 31899). This is not a true statement. Nearly all of our sources burn some amount of secondary material. Several facilities fire tire-derived fuel (TDF) as a supplemental fuel and resinated wood material, two are permitted to fire some treated wood products, such as railroad ties (creosote treated wood) and resonated wood. Permit limits exist for TDF and treated wood products in the facility operating permit; the secondary material is added in known quantities so that a consistent and homogenous mixture is fed to the boiler.

We are well aware of the proposed NHSM rule and the potential that some sources could be categorized as heat recovery units under the Commercial-Industrial Solid Waste Incinerator (CISWI) rule, although we believe we may be exempt as qualifying small power producers.

Response: See the preamble for discussion regarding the combustion of secondary materials.

Commenter Name: Shelley Schneider
Commenter Affiliation: Nebraska Department of Environmental Quality
Document Control Number: EPA-HQ-OAR-2006-0790-2021.1
Comment Excerpt Number: 2

Comment: Several facilities in Nebraska operate boilers which combust tallow, white/yellow grease, and vegetable oils. The fuels are typically byproducts from animal processing and rendering plants. NDEQ encourages facilities to burn these fuels to minimize the amount of traditional fossil fuels combusted.
These are considered secondary materials and meet the proposed criteria for legitimate fuels as referenced in the June 4, 2010 Federal Register proposal (75 Federal Register 31844). They do not meet the definition of a non-hazardous solid waste. Because these fuels have similar emission characteristics as biodiesel fuels, and are cleaner than diesel in most respects, they should be included within the liquid fuel definition and regulated similarly to boilers combusting those liquid fuels under the National Emission Standards for Hazardous Air Pollutants.

Response: See the preamble for discussion regarding the combustion of secondary materials and subcategory definitions.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 23

Comment: Ethan Allen believes that an unintended consequence of the Area Source Boiler MACT Rule, in conjunction with EPA's concurrent rule proposal to define certain nonhazardous secondary materials as solid waste, will be a reduction in the combustion of renewable biomass. Rather than face uncertainty in determining whether the materials used in biomass-fired boilers is "solid waste," which would subject them to the far more stringent controls proposed for solid waste incinerators pursuant to Section 129 of the CAA, regulated entities will forego recovering the energy value from certain non-hazardous secondary materials produced by others in the same or related industries. This will result in the waste of a significant amount of what otherwise would be legitimate fuel as these users turn to more traditional suppliers of wood- and other biomass-based fuels. Due to the technical and economic infeasibility of meeting the proposed emissions limits, others may choose to forego self-producing biomass-based energy altogether and convert to another technology.

Response: Existing biomass boilers do not have emission limits for the final rule which will minimize the burden. Please see Identification of Non-Hazardous Secondary Materials That Are Solid Waste (EPA-HQ-RCRA-2008-0329) for discussion on the definition of solid waste.

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 17

Comment: In these rules, EPA acknowledges that facilities may already burn, or may decide later to burn, "Non Hazardous Secondary Materials (NHSM)" as nontraditional fuels (the preamble even discusses some of these fuel types, such as tires and used oil). However, as written there are no Major Source or Area Source standards that would specifically apply to boilers burning a non-traditional NHSM as fuel. This is an oversight that EPA needs to address, bearing in mind that in many cases there may not be enough sources burning a particular NHSM to allow for a standard to be developed that is consistent with Clean Air Act guidance.

Response: See the preamble for discussion regarding the combustion of secondary materials.

Other - Secondary Materials

Commenter Name: Martha E. Rudolph
Commenter Affiliation: Colorado Department of Public Health and Environment
Document Control Number: EPA-HQ-OAR-2006-0790-1979.1
Comment Excerpt Number: 8

Comment: The proposals' inter-relationship with the Definitions Rule should be clarified. Specifically, it is unclear who is to decide whether a material is a non-hazardous secondary material that is a solid waste.

Under the solid waste program the responsibility of making a determination of whether or not a material is a non-hazardous secondary material that is a solid waste lies with the owner or operator. However, this approach conflicts with the historic implementation of the MACT rules under the Clean Air Act, in which the state permitting agency or the EPA has made the ultimate decision as to the applicability of a MACT to industry.

To avoid confusion and unpredictability, and inconsistent compliance determinations and enforcement, the determination of whether a material is a non-hazardous secondary material that is a solid waste must be consistent between the solid waste and air quality programs.

EPA should list those materials that EPA has previously identified as non-hazardous secondary materials that are solid wastes in the CISWI Rule. Similarly, EPA should consider doing the same for those materials that EPA already has identified as non-hazardous secondary materials that are NOT solid wastes in the Boiler/Process Heater MACT and Area Source Boiler Rule Rules. These advance determinations should complement the current procedures used to make the determination of whether a solid waste is now a non-hazardous secondary material,. These revisions would also decrease the number of requests for agency determinations.

Response: EPA has not specifically listed materials not classified as solid waste in this rule, but has left this to the rule Identification of Non-Hazardous Secondary Materials That Are Solid Waste (EPA-HQ-RCRA-2008-0329).

Title V Discussion

Title V Exemptions

Commenter Name: Philip Fielder
Commenter Affiliation: OK DEQ
Document Control Number: EPA-HQ-OAR-2006-0790-0069

Comment Excerpt Number: 1

Comment: 63.11194(e) seems to require a source to obtain a Part 70 permit if that source was a major source and installed a control device on a boiler after Nov. 15, 1990, and, as a result, became an area source.
While it is not completely clear, this requirement appears to be implementing a "once in always in" procedure for major sources after 1990, at least related to the requirement to obtain a Part 70 permit.
The following questions concern 63.11194(e):
1. What is the basis for requiring a Part 70 permit for sources becoming area sources after 1990? Historically, sources could avoid this requirement by installing control equipment or taking limits prior to the applicability date of the rule to the source.
2. What happens if a source just takes emission limits in an enforceable permit after 1990 but does not add a control device? It appears the source can avoid the Part 70 permit requirement and just comply as an area source.
3. This section only requires a source that added a control device after 1990 to become an area source to obtain a Part 70 permit. It does not specify that the source must comply with the major source boiler MACT rule. Historically, if a source is not an area source prior to the compliance date the source must obtain a Part 70 permit and comply with the major source rule based on "once in always in".
4. Can a source add a control device or take emission limits in a permit (regardless of permit type) after 1990 and only comply with the area source rule?

Response: The November 15, 1990, date was chosen as it is the date on which the Clean Air Act Amendments of 1990 were passed and, as a result, the date on which the section 112 program was created. As discussed in the preamble to the proposed rule, the sources addressed in section 63.11194(e) are of greater concern than other area sources. As a result, we believe that these area sources should be permitted.

We agree that under most MACT standards, sources can avoid being subject to title V permitting by becoming area sources prior to the first substantive compliance date of the relevant MACT standard.

In terms of your second point: If a major source becomes an area source by assuming federally-enforceable emissions limits at any time (not just after November 15, 1990) prior to the first substantive compliance date of this MACT, the area source is not required to obtain a title V permit. Moreover, this area source is only required to comply with the area source NESHAP, i.e., Subpart JJJJJJ.

In terms of your third point, you are correct. If a major source becomes an area source by applying federally-enforceable controls to a boiler at any time after November 15, 1990, it is required to comply with the area source NESHAP, i.e., Subpart JJJJJJ. However, these area sources must apply for and obtain title V permits. See 63.11194(e).

In response to your fourth point, your questions about emission limits and control devices are addressed above. In terms of your question about permits: If a source chooses to become an area

source through assuming federally-enforceable emissions limits or applying federally-enforceable controls, these emissions limits or controls can be contained in various types of permits, e.g., federally-enforceable state operating permits.

Commenter Name: Los Angeles Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0397
Comment Excerpt Number: 26

Comment: One of the things that we are very concerned about and many members, my colleagues in the environmental justice movement are worried about, is allowing area sources to burn waste, especially the kinds of waste that have been involved, shuffled into the definition of, I guess, secondary waste that it's now going to be. And the reason for that is because area sources do not have to -- they're not part of major sources so they do not have to have a viable permit. So for an area source to start burning waste with a lack of recordkeeping, public notification, even that such a facility would be burning waste, the increased air toxics emissions which would be very -- emission limits would be very limited even here in California.

These are things that concern us greatly. And I have a number of folks that are going to testify about specific, you know, types of waste-burning and specific types of situations. But, for instance, this hotel has a boiler. This hotel could burn waste. It could burn, you know, demolition waste. It could burn waste from the coal industry. It could burn spent solvents. It could burn plastics -- and without any notification of anybody in downtown L.A.

And the increase in the air toxics emissions and the increased risk from those air toxics emissions, air-based, the majority has huge risks from air toxics, have not been mitigated. So I would say that there's a number of concerns that we have about the rule. But in the short amount of time, I want to underscore that that is a huge problem.

There are areas of the country where increases in air toxics emissions are not at the levels that they would be here in Los Angeles. Any large city where you have concentrated air toxics emissions that are essentially mitigated or there's not a state process to reduce the risk.

And in Los Angeles we have some of that going on here. We have some of the highest air toxic risks in the country. A rule like this that allows that kind of activity to occur is very, very concerning to us.

Response: We appreciate your comments. Your concerns help underscore why we are requiring area sources, which have federally-enforceable controls on boilers, to obtain title V permits. See 63.11194(e).

Commenter Name: Russell A. Wozniak

Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 1

Comment: The Requirement In the Proposed Rule Regarding Sources that Have Reduced Emissions and EPA's Approach to the Title V Operating Permits Program Should be Deleted.

EPA proposes in 40 CFR 63.11194(e) that a source that was a major source and installed a control device on a boiler after November 15, 1990, and as a result, became an area source under 40 CFR Part 63 is required to obtain a permit under 40 CFR 70 or 71. Sources that are area sources as of June 4, 2010 should not have to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a). These existing boilers are already subject to enforceable emission rates which limit HAP emission potential, and this one rule by itself should not require an entire small site to apply for and obtain a Title V Operating Permit. Requiring Title V Operating Permits for these area sources will impose large burdens and have no environmental benefit. Dow estimates, based on past experience, that the cost to prepare and obtain a Title V Permit will be approximately $50,000, and that the on-going deviation report and compliance certification requirements will require the addition of one full time staff member at smaller sites. In addition, a Title V Operating Permit will reduce the ability of these sources to meet the rapidly changing production requirements that are typical of many of these small sites.

Response: As explained in the preamble to the proposed rule, we believe that requiring the permitting of certain area sources will yield significant and important benefits. See page 31913. Moreover, a properly-designed title V permit should allow these area sources to meet rapidly changing production requirements.

Commenter Name: Susan Parker Bodine
Commenter Affiliation: Used Oil Management Association, UOMA
Document Control Number: EPA-HQ-OAR-2006-0790-1972.1
Comment Excerpt Number: 5

Comment: UOMA agrees with EPA that area source boilers should not be subject to Title V permitting requirements.

Response: Thank you for this comment. As you know, area sources with federally-enforceable controls on boilers will be required to be permitted. See 63.11194(e). Other area sources, e.g., those with federally-enforceable emissions limits, are not required to obtain a title V permit.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 31

Comment: EPA proposes to exempt all affected sources in the asphalt processing and asphalt roofing manufacturing area source category from title V permitting requirements. The agency's proposal is unlawful and arbitrary.

The text and legislative history of the Clean Air Act makes plain that Congress intended ordinary citizens to be able to get emissions and compliance information about air toxics sources and to be able to use that information in enforcement actions and in public policy decisions on a State and local level. Plainly Congress did not think that enforcement by States or other government entities was enough; if it had, Congress would not have enacted the citizen suit provisions and the legislative history of the Clean Air Act would not show that Congress viewed citizens' access to information and ability to enforce Clean Air Act requirements as highly important both as an individual right and as a crucial means to ensuring compliance. If a source does not have a title V permit, it is difficult or impossible — depending on the laws, regulations and practices of the State in which the source operates — for a member of the public to obtain relevant information about its emissions and compliance status. Likewise, it is difficult or impossible for citizens to bring enforcement actions. Thus, exempting a source category from title V permitting requirements deprives both the public generally and individual members of the public who would obtain and use permitting information from the benefit of citizen oversight and enforcement that Congress plainly viewed as necessary. EPA does not claim — far less demonstrate with substantial evidence, as would be required — that citizens would have the same ability to obtain compliance and emissions information about sources in the categories it proposes to exempt without title V permits. Likewise, EPA does not claim — far less demonstrate with substantial evidence — that citizens would have the same enforcement ability. Thus, the exemptions EPA proposes plainly eliminate benefits that Congress thought necessary. To justify its exemptions, EPA would have to show that the informational and enforcement benefits that Congress intended title V to confer — benefits plainly eliminated by its exemptions — are for some reason unnecessary with respect to the categories it proposes to exempt. EPA does not even acknowledge these benefits, far less explain why they are unnecessary. For this reason alone, EPA's proposed exemptions are unlawful and arbitrary.

Response: EPA did acknowledge the benefits of title V permitting on page 31913 of the June 4, 2010, proposal. However, as stated on this page, the Agency thought that the additional public participation and compliance benefits provided by title V permitting need only be provided for major sources and major sources that became area sources as a result of installing a federally-enforceable control device on a boiler after November 15, 1990. See 63.11194(e).

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 32

Comment: Title V provides important monitoring benefits. EPA assumes that title V monitoring would not add any monitoring requirements beyond those required by the proposed regulations. 75 Fed. Reg. at 31911. Despite this conclusory assertion, EPA has failed to provide any evidence

whatsoever to demonstrate that the monitoring requirements in the NESHAPs for any of the categories it proposes to exempt "assure" compliance. For this reason as well, its claim that title V requirements are "unnecessarily burdensome" is arbitrary and capricious, and its exemption is unlawful and arbitrary and capricious.

EPA asserts that compliance with Title V would impose a significant burden on area source boilers but, remarkably, admits that it does not know what that burden might be and that it has made no effort to find out. 75 Fed. Reg. at 31912-31913. The agency states that, in another rule unrelated to area source boilers, it concluded that the "average cost" of compliance with Title V was $65,700 over five years or approximately $15,000 per year. Id. But EPA does not say that this would be cost for area source boilers or – assuming it were – why that cost would be significant for any or all of the sources in the category. EPA also discusses the paperwork requirements, although these are apparently subsumed into the cost already mentioned as burdensome. In addition EPA speculates that, based on the number of area sources alone, permitting authorities might not provide assistance with the Title V compliance process. If EPA's consideration of significant burden is to function as something other than an automatic rationalization for granting exemptions from Title V, the agency must be able to explain why compliance with Title V is a significant burden not why holds the belief that such compliance is always a significant burden for all categories. Here, EPA falls far short of doing so.

EPA's conclusory claim could be made equally with respect to any major or area source category. The agency provides no specific reasons to believe that the additional informational, monitoring, reporting, certification, and enforcement requirements that exist in title V but not the agency's NESHAP would not provide additional compliance benefits. The only basis for EPA's claim is, apparently, its beliefs that those additional requirements never confer additional compliance benefits. By advancing such argument, however, EPA merely seeks to elevate its own policy judgment over Congress' decisions reflected in the Clean Air Act's text and legislative history.

Response: Based on our comparison of the monitoring, recordkeeping, and reporting requirements of this NESHAP to the same requirements in the title V program, we believe that the monitoring, recordkeeping, and reporting requirements of this NESHAP are sufficient to assure compliance by small area sources with this rule's requirements. See page 31911 of the proposal.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 33

Comment: EPA also argues that the costs of compliance with Title V are not taking into account possible gains in compliance. 75 Fed. Reg. at 31912. That argument is nothing more than a mix of its arbitrary dismissal of the compliance gains that could be provided and its equally arbitrary

speculation about the burdens that compliance would impose. Accordingly, it adds nothing to EPA's analysis that might support the agency's decision.

Response: We continue to maintain that the economic and non-economic costs of compliance with title V would impose a significant burden on the area sources we are exempting from title V permitting. We have determined that the high relative costs would not be justified given the minimal or nonexistent gain in compliance if title V were required. See page 31912 of the proposal.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 34

Comment: EPA argues that there are already adequate programs to assure compliance with its proposed standards. Id. The agency points to its own authority to enforce MACT standards and the sufficiency of State programs. EPA argues that alternative State implementation and enforcement programs assure compliance with the underlying NESHAP without relying on title V permits74 Fed. Reg. at 32829. Again, however, EPA's claim is entirely conclusory and generic. The agency does not identify any aspect of any of the underlying NESHAP showing that with respect to these specific NESHAP — unlike all the other major and area source NESHAPs it has issued without title V exemptions — title V compliance is unnecessary. Instead, EPA merely points to existing State requirements and the potential for actions by States and EPA that are generally applicable to all categories (along with some small business and voluntary programs). Absent a showing by EPA that distinguishes the sources it proposes to exempt from other sources, however, the agency's argument boils down to the claim that it generally views title V requirements as unnecessary. That was not Congress' view when Congress enacted title V and it does not suffice to show that title V compliance is unnecessarily burdensome. Further, as noted above, such argument dismisses the roles of citizen enforcement despite the fact that Congress plainly viewed citizen enforcement as necessary. In any event, EPA is well aware that enforcement is far from adequate in many States. Studies have shown that non-compliance with air toxics standards is rampant. Exhibit B, attached. By effectively eliminating the potential for citizen enforcement, EPA frustrates Congress' intent and condemns communities across the country to ongoing exposure to unlawful emissions of toxic pollution.

Congress enacted title V for a reason: to assure compliance with all applicable requirements and to empower citizens to get information and enforce the Clean Air Act. Those benefits — of which EPA's proposed rule deprives the public — would improve compliance with the underlying standards and thus have benefits for public health, welfare and the environment. EPA has not demonstrated that these benefits are unnecessary with respect to any specific source category, but again simply rests on its own apparent belief that they are never necessary. For the reasons given above, that attempt to substitute EPA's judgment for Congress' is unlawful and arbitrary.

Response: We continue to maintain that the exemption from title V permitting for most area sources subject to this rule would not adversely affect public health, welfare, or the environment because the level of control on the area sources would remain the same. Further, we believe that the statutory requirements for implementation and enforcement of this NESHAP by the delegated States and EPA and the additional assistance programs described on page 31912 of the proposal are sufficient to assure compliance with this NESHAP.

Commenter Name: Morris Mantey
Commenter Affiliation: Clean Burn, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1912.1
Comment Excerpt Number: 4

Comment: Clean Burn agrees with EPA that area source boilers should not be subject to Title V permitting requirements.

Response: Thank you for this comment. As you know, area sources with federally-enforceable controls on boilers will be required to be permitted. See 63.11194(e). Other area source boilers, e.g., those with federally-enforceable emissions limits, are not required to obtain a title V permit.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 63

Comment: For the reasons enumerated at length in the preamble, EPA is absolutely correct in exempting area sources subject to this regulation from Title V requirements. Imposing Title V permitting does nothing to improve or assure compliance and only adds large burdens and massively diverts resources from addressing significant compliance issues. Furthermore, the diversion of resources from major sources to area sources would greatly slow permitting of projects at the major sources and thus would slow compliance activities on the Major Source Boiler and Process Heater MACT and the multitude of other new air regulations currently flowing form EPA. In fact, such a diversion of resources from major source permitting to area source permitting, would likely make the three year compliance timing typical in EPA air rules untenable for many major sources.

We also believe the logic presented in the preamble for not also exempting synthetic minors is flawed and these sources should also be exempted (i.e. the first sentence of proposed §63.11194(e) should be removed). To be a synthetic minor a source must have a federally enforceable permit to assure emissions remain below the major source threshold. That permit, and its monitoring, recordkeeping and reporting requirements, assure the source's compliance and adding Title V to that provides no additional compliance assurance, it only adds burdens and costs. This situation is parallel to the situation EPA otherwise exempts. In the preamble, EPA justifies exempting most area sources from Title V because making them subject would provide

no additional compliance assurance beyond that provided in the proposal. For synthetic minors, Title V would provide no additional compliance assurance beyond that provided in this proposal and the compliance requirements in their synthetic minor permit. Again, making synthetic minors subject to Title V creates large burdens, but provides no increase in compliance or compliance assurance and no emission reductions. Thus, there is no reason for imposing those burdens on the sources or the permitting authority.

Response: In response to your concern about a source's 3-year compliance time frame under many section 112 standards, please note the following: A source's obligation to comply with a section 112 standard is not dependent on when that source's title V permit is issued. The title V program is separate from the requirements imposed under various section 112 standards and a source's obligation to meet those requirements.

Additionally, although synthetic minor permits include federally-enforceable requirements, such permits do not include all of the compliance requirements of title V. For example, synthetic minor permits do not typically require compliance certifications by the source on an annual basis consistent with 40 CFR 70.6(c)(5)(i), do not contain monitoring requirements sufficient to assure compliance consistent with 70.6(c)(1), and do not have the same level of public participation as outlined in sections 70.7(h) and 70.8. As a result, we continue to believe that title V permitting is needed for the sources which became area sources as a result of applying federally-enforceable controls to boilers consistent with 63.11194(e).

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 6

Comment: As written, any boiler is subject to the provisions of the rule. Aside from pulling insignificant equipment into permitting programs, this standard as written may cause facilities to become subject to federal Title V permitting standards by virtue of the MACT rule rather than air emissions. Theoretically, a plant that emits less than 5 tons per year of any criteria pollutant could be forced to obtain a Title V permit. If area source MACT requirements are created and a minimum exclusion threshold is not established, the requirement for these sources to be brought into an exhaustive permitting process should be relaxed.

Response: Title V permitting can be triggered for a number of reasons. For example, a source can be required to obtain a title V permit because it is a major source and/or because it is subject to a section 112 standard. For additional information, please see 40 CFR 70.3(a) and (b).

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 81

Comment: All Affected Area Sources Should Be Exempted From Title V Requirements. Like all other area sources, EPA should exempt synthetic area sources from the Title V requirements. EPA has proposed to exempt all "natural" area sources, but has singled out synthetic minor area sources for disparate treatment. 75 Fed. Reg. 31910. As discussed below, there are no relevant distinctions to be drawn between synthetic and natural area sources, making EPA's decision to subject synthetic area sources to CAA Title V requirements arbitrary.

EPA correctly concluded the Agency is justified in exempting most affected sources in the industrial boiler and the institutional/commercial boiler area source categories from Title V permitting requirements. In the preamble, EPA details the numerous reasons why compliance with Title V requirements is 'impracticable, infeasible, or unnecessarily burdensome" on an area source category. CAA 502(a). Id. at 31910 - 13.

ACC fully supports EPA's analysis under its four-factor test for assessing whether Title V permitting would be unnecessarily burdensome for an area source category. Id. EPA concludes for each factor that:
1. Factor one: "[T]he monitoring, recordkeeping and reporting requirements of the proposed NESHAP are sufficient to assure compliance with the provisions of the NESHAP. Given the nature of the operations at most area sources and the types of requirements in this rule, title V would not significantly improve those compliance requirements." Id. at 31911.
2. Factor two: "[P]ermitting would impose significant costs on these area sources, and, accordingly, we conclude that title V is a significant burden for the sources in these categories that we propose to exempt" and that "it would likely be difficult for them to obtain sufficient assistance from the permitting authority." Id. at 31912.
3. Factor three: "Because the costs, both economic and non-economic, of compliance with title V are high, and the potential for gains in compliance is low, title V permitting is not justified for the sources we propose to exempt." Id.
4. Factor four: "[T]the statutory requirements for implementation and enforcement of this NESHAP by the delegated States and EPA and the additional assistance programs ... [that are available] are sufficient to assure compliance with these proposed standards without relying on title V permitting." Id.
5.
Additionally, the proposal concludes that exemption from Title V for synthetic minor sources would not adversely affect public health, welfare or the environment. Thus, EPA concludes that excluding most area source from Title V requirements is appropriate. ACC agrees with that conclusion.

However, ACC strongly disagrees with EPA's conclusion that the analysis of the four factor test should come out any differently for those synthetic area sources that voluntarily reduced their emission levels to below major source thresholds through the installation of air pollution controls. These sources are considered and operate as area sources and as such they too should be exempt from Title V. Id. at 31913.

First, EPA fails to support its factual assertions with any concrete information. EPA points to no sources in the record to factually justify the proposed disparate treatment. In fact, it appears that EPA has copied key factual assertions about the boiler synthetic area sources subject to this rule

from its factual claims about a wholly different set of synthetic area sources, i.e., chemical manufacturing, subject to another rule. Compare 75 Fed. Reg. 31912 with 74 Fed. Reg. 56014 (both asserting that "many of these sources are located in cities, and often in close proximity to residential and commercial centers where large numbers of people live and work. The record also indicates that many of these synthetic area sources have significantly higher emissions potential when uncontrolled than the other sources.") ACC therefore challenges the factual basis for EPA's conclusions.

Second, even assuming that EPA's factual assertions are correct, a proper analysis of the four factors justifies exempting all area sources subject to this rule from Title V requirements, as there is no basis to differentiate between natural and synthetic area sources. There is no basis to believe that Title V would significantly improve the compliance requirements at synthetic area sources, as compared to natural area sources. The burden that the Title V requirements would place on a facility is exactly the same, regardless of whether the area source is synthetic or natural. EPA has no reason to believe that the implementation and enforcement programs in place are less likely to be sufficient for synthetic area sources than they are for natural area sources. Finally, while offering it as a distinguishing factor, EPA provides data to support its belief that synthetic sources are any more likely to be located in urban areas than are natural sources.

Finally, the only substantive differentiation that EPA suggests between the area sources is that "synthetic area sources have significantly higher emissions potential when uncontrolled than the other sources in the boiler area source categories." (Emphasis added.) This difference, even if factually correct, does not warrant different treatment under the rule, as it has already been addressed by separate Clean Air Act provisions. Namely, in order for a facility to be treated as a synthetic minor due to the installation of control equipment, the obligation to use that equipment must be federally - enforceable, a fact that the proposed rule utterly fails to acknowledge. See 40 C.F.R. 63.2 (definition of "potential to emit"). Such sources therefore have a legal duty to comply with their emissions limitations, which are enforceable by EPA and citizens. Id. (definition of "federally enforceable"). In order to have been approved by EPA, a state operating permit program that imposes a federally enforceable requirement to use control equipment must provide the public with notice and an opportunity to comment on draft permits, Id. (definition of "federally enforceable," ¶ (6)(v)), and must also provide for emissions reporting and public availability of reported information, id. (definition of "federally enforceable," ¶ (6)(i)); see also 40 C.F.R. 51.211, 51.230(f). The final rule's rationale is also contrary to the teaching of Alabama Power Co. v. EPA, which held that, for determining a source's potential to emit, EPA must take into account not only its design capacity, but also the "anticipated functioning of the air pollution control equipment." 636 F.2d 323, 353 (D.C. Cir. 1979). Thus, for regulatory purposes, it should not matter whether a source is a "natural" area source or whether it attained that status through operational limits or the installation of add-on controls.

Response: For the reasons discussed in the preamble to the proposed rule, EPA continues to believe that requiring the area sources discussed in section 63.11194(e) to obtain title V permits is justified.

Additionally, as explained above, although synthetic minor permits include federally-enforceable requirements, such permits do not include all of the compliance requirements of title V. For example, synthetic minor permits do not typically require compliance certifications by the source on an annual basis consistent with 40 CFR 70.6(c)(5)(i), do not contain monitoring requirements sufficient to assure compliance consistent with 70.6(c)(1), and do not have the same level of public participation as outlined in sections 70.7(h) and 70.8. As a result, we continue to believe that title V permitting is needed for the sources which became area sources as a result of applying federally-enforceable controls to boilers consistent with 63.11194(e).

Title V - Other

Commenter Name: Michael Bradley
Commenter Affiliation: The Clean Energy Group
Document Control Number: EPA-HQ-OAR-2006-0790-1689.1
Comment Excerpt Number: 8

Comment: Some Title V permits currently allow the combustion of waste-derived fuels, even if the source does not actually utilize this option in practice. These permits, depending on their scope, may trigger the Standards of Performance for New Stationary Sources and Emissions Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration (CISWI NSPS) under the concurrently proposed definition of waste. The Clean Energy Group requests that EPA allow sources whose permits allow the combustion of waste, but who do not combust waste as defined in the final definition, be permitted to address this definitional issue during the next permit renewal, rather than requiring the reopening of permits upon promulgation of these rules.

Response: When permits are reopened is determined by 40 CFR 70.7(f). A reopening may not be required in all cases, but that is dependent on the remaining time left on the permit term. See 70.7(f)(1)(i).

Commenter Name: John Lyons
Commenter Affiliation: Kentucky Division for Air Quality
Document Control Number: EPA-HQ-OAR-2006-0790-2218.1
Comment Excerpt Number: 1

Comment: A process heater is not defined or mentioned in Subpart JJJJJJ. Subpart JJJJJJ requires that area sources obtain Title V permits. It appears process heaters at an area source are not subject to Subpart JJJJJJ. These process heaters should have to meet the same requirements as boilers at area sources.

Response: The commenter is correct. Process heaters are not part of the listed area source categories. The listed area source categories covered by subpart JJJJJJ are industrial boilers and institutional/commercial boilers.

Commenter Name: Myra C. Reece
Commenter Affiliation: South Carolina Department of Health and Environmental Control
Document Control Number: EPA-HQ-OAR-2006-0790-1859.1
Comment Excerpt Number: 21

Comment: In 63.11194(e), the EPA proposes that any source that was a major source and installed a control device on a boiler after November 15, 1990, and became an area source as a result of this modification must obtain a Title V permit. The EPA's explanation in the preamble [75 FR 31913], includes: "these sources are much more like the major sources of HAP"; "many of these sources are located in large cities, and often in close proximity to residential and commercial centers"; "have significantly higher emissions potential when uncontrolled"; and "many... are large facilities with comprehensive compliance programs." Because this explanation applies to both existing (prior to November 15, 1990) and new sources, the EPA should clarify why only existing major sources that installed control devices to become area sources have to get Title V permits.

Response: As explained above, the date of November 15, 1990, was chosen as it coincides with the passage of the Clean Air Act amendments and the creation of the section 112 program. Major sources which installed federally-enforceable controls prior to November 15, 1990, are not addressed by section 63.11194(e). As a result, these area sources are subject to the area source requirements of Subpart JJJJJJ, but are not subject to the requirement to obtain a title V permit.

MACT Floor Analysis

MACT Floor: Fuel Switching

Commenter Name: Michael A. Livermore
Commenter Affiliation: Institute for Policy Integrity New York University School of Law
Document Control Number: EPA-HQ-OAR-2006-0790-1899.1
Comment Excerpt Number: 9

Comment: EPA considered requiring fuel switching as a method of controlling HAP but decided against including such a requirement in the proposed rule. [Footnote: While, within the current statutory scheme, this type of analysis is necessary, one major advantage of market-based schemes is that EPA would no longer need to do this. Instead, each source would be able to analyze their options for fuel switching. One of the major successes of the Title IV sulfur dioxide marketable pollution permit program was the increased use of low-sulfur coal. This unforeseen development was one of the chief reasons that compliance costs for this program were

significantly lower than initially projected. See RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 136-37 (2008).] EPA identified three concerns that cut against the imposition of fuel switching requirements: failure to achieve lower HAP emissions, lack of availability of certain sources of fuel, and difficulty in achieving fuel switching given current boilers and process heaters. [Footnote: 75 Fed. Reg. at 32,019.] There are flaws in all three rationales.

First, the agency determined that virtually all types of switching would increase some HAP, even if it would decrease others. [Footnote: 75 Fed. Reg. at 32,019.] This rationale is incomplete because it fails to recognize that not all HAPs are created equal. This rationale suggests that a complete elimination of an extremely dangerous HAP would not be permissible if it caused even a slight increase in a less dangerous HAP. While this goes against common sense, other parts of Section 112 take this into account. Section 112(g) stipulates that a change in operation is not deemed a "modification" if "such increase in the quantity of actual emissions of any hazardous air pollutant from such source will be offset by an equal or greater decrease in the quantity of emissions of another hazardous air pollutant (or pollutants) from such source which is deemed more hazardous. . . ." [Footnote: CAA § 112(g)(1)(A).] EPA should try to take a similar approach in determining whether fuel switching would be beneficial overall.

Second, EPA argues that biomass and natural gas supply may be limited in some areas. In particular, the agency notes that natural gas supplies are constrained in some places and that, in some cities in the winter, natural gas is prioritized for residential usage. These are the sorts of analyses that should be done by regulated entities on a case-by-case basis. Every fuel source has its own risks (both in terms of price and availability), and it is not obvious that the theoretical possibility of supply shortages in some parts of the country should prevent an otherwise sound policy from going forward.

Finally, EPA argues that it would be costly and technically difficult for many sources to switch fuels. In fact, it would not be "technically difficult" to purchase a natural gas boiler to replace boilers which combust other fuels. The agency implicitly acknowledges this because it analyzed requiring all sources to switch to natural gas. This analysis determined that such a requirement would be just as effective as the proposed rule but more costly:

The annualized cost of fuel switching was estimated to be $13.5 billion compared with $3.5 billion under the floor approach. . . .The cost for fuel switching is over double the cost of the floor approach while the emission reductions associated with fuel switching are approximately the same. [Footnote: 75 Fed. Reg. at 32,026.]

This is a mischaracterization of the emissions benefits from fuel switching. Appendix A-7 of the memorandum "Development (2010) of Fuel Switching Costs and Emissions Reductions for Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants" compares the emissions reductions from fuel switching to the emission reductions from the proposed rule. Table 3 shows the emissions reductions from a
hypothetical requirement for all boilers covered by the rule to switch to natural gas, along with the emission reductions from the proposed rule. [Footnote: Development of Fuel Switching Costs and Emissions Reductions for Industrial, Commercial, and Institutional Boilers and

Process Heaters National Emission Standards for Hazardous Air Pollutants at 24-25 (2010). The "Total" emissions reductions for PM from the proposed option shown at the bottom of the table does not equal the sum of each category. As a result, the sum of each category in Appendix A-7 is used in Table 3 instead of the given totals.]

Although the EPA characterizes this as "approximately the same," there are substantial additional emissions reductions for seven of the ten pollutants examined. Reductions are 24% higher for particulate matter and 7% for sulfur dioxide. Reductions in total hydrocarbons, volatile organic compounds, and hydrogen fluoride are all well over 100% higher. There is little or no difference for two pollutants (mercury and HCl). Only reductions in dioxins and furans may be significantly lower.

While these incremental reductions may not be cost-justified, EPA has not yet shown this to be the case. The benefits of emission reductions from fuel switching have not been quantified in either the Regulatory Impact Analysis or the document which develops the costs. EPA has not properly considered the option of fuel switching until these additional benefits have been quantified.
Even if requiring all sources to switch to natural gas is not justified by the incremental costs, such a requirement may still be cost-benefit justified for particular types of boilers. EPA should compare the incremental costs and benefits of fuel switching for each class of boilers.

In conclusion, EPA should improve its explanation for not requiring any fuel switching. In particular, EPA has failed to properly describe and quantify the benefits of this option.

Response: EPA acknowledges that identifying coal as dirty was an inappropriate generalization, but this characterization did not impact the regulatory process. The decision to require work practice standards for certain subcategories was driven by routinely low measured emission levels, often below detection limits of the EPA test methods. See the preamble for the rationale supporting the promulgated work practices for biomass and oil units.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 30

Comment: Also unlawful and arbitrary is EPA's failure to propose GACT standards based on the use of cleaner fuels, or even to consider such standards. As EPA has made plain elsewhere in its proposal standards reflecting the use of cleaner fuels, such as natural gas, would yield enormous reductions in emissions of metallic HAPs and other HAPs alike. Fuel Switching Memo at 3-4. Cleaner fuel is generally available. As EPA itself notes, many facilities in Pennsylvania chose to switch their boilers to natural gas to reduce insurance costs. MACT Floor Memo at 5.1. The agency's rejection of standards for existing area source boilers based on using cleaner fuels is unlawful given that it is feasible to switch to cleaner fuel, that many sources have

done it already, and that cleaner fuel, such as natural gas, is generally available. EPA's failure to set such standards is also arbitrary given EPA's complete failure to explain why using cleaner fuel – a measure already adopted by many area source boilers – is not a generally available technologies for these sources.

Response: See response to comment EPA-HQ-OAR-2006-0790-1899.1, excerpt 9 for supporting or requesting reconsideration of fuel switching option.

Commenter Name: Donald R. Schregardus
Commenter Affiliation: Department of the Navy, Department of Defense
Document Control Number: EPA-HQ-OAR-2006-0790-1947.1
Comment Excerpt Number: 2

Comment: We do not agree with the statement in the preamble (75 FR 3] 909) that a new facility has the option of fuel selection.

Some fuel types are simply not available at all locations and they are not available when new units are intended to burn a specific fuel type and quality. EPA should not establish a standard that eliminates the ability to burn specific fuels. For example, at remote locations there may be no option of fuel selection - coal is the only choice. If EPA does not set achievable emission limits for coal, compliance will be impossible.

Do not establish a standard that eliminates the ability to burn specific fuels. Ensure all limits for all fuels are achievable.

Response: Please see the preamble for information on changes to emission limits.

Commenter Name: William W. Grygar II
Commenter Affiliation: Anadarko Petroleum Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-2098.1
Comment Excerpt Number: 1

Comment: EPA appears to rely on data and information that were developed in support of the Agency's Proposed Major and Area Source MACT Rule rulemaking effort in the 2002-2004 timeframe in reaching the conclusion that fuel switching is not an appropriate control technology for purposes of evaluating the MACT floor and beyond-the-floor standards. Anadarko would respectfully suggest that the Agency reconsider this conclusion, taking into account current information and data with respect to the impacts on emissions of hazardous air pollutants ("HAP") and the feasibility of fuel switching, as well as current natural gas infrastructure and supply conditions. A review of current information and data supports the conclusion that fuel switching is an appropriate control option for sources in the Proposed Major and Area Source

MACT Rules. As detailed in ANGA's comments, fuel switching will reduce HAP emissions, fuel switching is technically feasible with examples of companies making the switch, and as documented by several agencies natural gas is in abundant supply and the infrastructure is in place necessary to transport and store natural gas.

Response: See response to comment EPA-HQ-OAR-2006-0790-1998.1, excerpt 16 for supply of natural gas and fuel switching.

Commenter Name: Regina Hopper
Commenter Affiliation: America's Natural Gas Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1998.1
Comment Excerpt Number: 4

Comment: ANGA is concerned, however, that with respect to the Proposed ICI Boiler MACT Rules, EPA appears to rely on data and information that were developed in support of the Agency's ICI Boiler MACT rulemaking effort in the 2002-2004 timeframe in reaching the conclusion that fuel switching is not an appropriate control technology for purposes of evaluating the MACT floor and beyond-the-floor standards. We respectfully suggest that the Agency reconsider this conclusion, taking into account current information and data with respect to the impacts on emissions of HAPs and the feasibility of fuel switching, as well as current natural gas infrastructure and supply conditions. A review of current information and data supports the conclusion that fuel switching is an appropriate control option for the Proposed ICI Boiler MACT Rules. [Footnote: The discussion that follows cites to relevant information and data relating to the Proposed Major Source ICI Boiler MACT Rule; however, the underlying positions, arguments and rationale apply equally to the Agency's determination regarding fuel switching set forth in the Proposed Area Source ICI Boiler MACT rule at 75 Fed. Reg. 31905.]

Response: See response to comment EPA-HQ-OAR-2006-0790-1998.1, excerpt 16 for supply of natural gas and fuel switching.

Commenter Name: Regina Hopper
Commenter Affiliation: America's Natural Gas Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1998.1
Comment Excerpt Number: 7

Comment: EPA's Decision Not to Consider Fuel Switching as an "Appropriate Control Technology" for Purposes of Determining the MACT Floor is Arbitrary, Capricious, and Unsupported by Record Material
As indicated above, ANGA believes that the Agency should, and indeed must, consider fuel switching in its evaluation of strategies for reducing HAP emissions from boilers/process heaters. EPA appears to recognize this as well: "We first considered whether fuel switching would be an appropriate control option for sources in each subcategory. We considered the

feasibility of fuel switching to other fuels used in the subcategory and to fuels from other subcategories." [Footnote: 75 Fed. Reg. at 32019.]
The Agency's conclusion that "fuel switching was not an appropriate control technology for . . . any subcategory" [Footnote: 75 Fed. Reg. at 32019.] is not supported by evidence in the record, nor do we believe that there is other evidence to support that conclusion. To the contrary, we believe that fuel switching results in significant reductions in HAP emissions, is technically feasible, and is or could be readily available to meet increased demand driven by fuel switching. To the extent that the Agency seeks to support its conclusion against fuel switching in the Proposed Major Source ICI Boiler MACT Rule, it appears to be simply restating, often verbatim, positions taken in the 2002-2004 rulemaking. ANGA submits that both technology and the states of the natural gas market and infrastructure are very different than they were in the period leading up to the 2002-2004 rulemaking. These developments undercut the Agency's conclusions, and would lend strong support for a decision in favor of fuel switching as an effective and available control technology to reduce HAP emissions from ICI boilers.

Response: See response to comment EPA-HQ-OAR-2006-0790-1899.1, excerpt 9 for supporting or requesting reconsideration of fuel switching option.

Commenter Name: Mary L. Frontczak
Commenter Affiliation: Peabody Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2163.1
Comment Excerpt Number: 7

Comment: EPA consideration of the cost of controls that natural gas boilers and process heaters would have to bear in order to comply with MACT standards is not relevant under section 112, nor can EPA consider whether establishing MACT standards for natural gas units would incent these units to switch to coal, or disincent coal units to switch to natural gas. The phrases "dirty" and "clean" fuel have no place in a MACT-floor or work practice standard analysis, nor do EPA's views as to the "pollution prevention goals" of the CAA or section 112. If a category or sub-category emits HAPs above the statutory level, then EPA must establish a MACT standard ensuring that those emissions are abated in accordance with the specific statutory standards unless EPA can justify a work practice standard under the specific requirements of section 112(h). The "goals" of the CAA or even section 112 are irrelevant.
Indeed, EPA's references to "clean" and "dirty" fuels, to incentives for fuel-switching from coal to natural gas, and to the "emission reductions goals of the CAA" indicate that EPA is improperly trying to use section 112 to further the Agency's policy goals as to non-hazardous air pollutants such as carbon dioxide, sulfur dioxide, nitrogen oxides and particulate matter. EPA, however, has been repeatedly admonished by the courts that it must confine its regulatory actions to the specific CAA language under which it is regulating, including in a section 112 case. [Footnote: See, e.g., New Jersey v. EPA, 517 F.3d 574, 582-83 (D.C. Cir. 2008).] EPA's present attempt to use section 112 to promote the use of natural gas versus coal is exactly the type of policy-based regulatory action that departs from statutory text and therefore has run afoul of the judicial system in the past.

Response: See response to comment EPA-HQ-OAR-2006-0790-1899.1, excerpt 9 for supporting or requesting reconsideration of fuel switching option.

Commenter Name: Regina Hopper
Commenter Affiliation: America's Natural Gas Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1998.1
Comment Excerpt Number: 8

Comment: Overall Effect of Fuel Switching on HAP Emissions .

In the Proposed Major Source ICI Boiler MACT Rule, EPA discusses the issue of the emissions impact of fuel switching to natural gas in one sentence, with reference to an April 2010 memorandum prepared by ERG. [Footnote: Gibson, Graham. Memorandum to Eddinger, Jim, U.S. EPA, OAQPS. Development of Fuel Switching Costs and Emission Reductions for Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants. (April 2010) ("ERG Fuel Switching Memorandum").] EPA concludes that "while fuel switching from solid fuels to gaseous or liquid fuels would decrease PM and some metals emissions, emissions of some organic HAP (e,g., formaldehyde) would increase." [Footnote: 75 Fed. Reg. at 32019.]

The manner in which EPA presents data from the ERG Fuel Switching Memorandum in the Proposed Major Source ICI Boiler MACT Rule is both misleading and incomplete. The table that is Appendix A-6 to the ERG Fuel Switching Memorandum summarizes data regarding emissions reductions from fuel switching, by subcategory. A review of those data reveals that, aside from very minor (one ton per year ("tpy")) increases in chromium and nickel emissions from the biomass subcategory (which includes only approximately 3% of the total number of sources in the category), the only other organic HAP where emissions would increase is formaldehyde, and even for formaldehyde the increase is only for one "sub-subcategory" ("heavy liquid") and the total increase is 12 tons per year ("tpy"). [Footnote: There were also minor increases in certain non-mercury metallic HAP emissions from the refinery gas sub-subcategory and the "other gas" subcategory.]

There are no other increases of any HAPs, including organic HAPs, from any of the subcategories. Moreover, aggregating decreases of formaldehyde emissions from all subcategories in the source category reveals that total formaldehyde emissions from the source category would actually decrease by a total of 1,044 tpy. [Footnote: ERG Fuel Switching Memorandum, Table 2-3 (p.5).] Finally, emissions of CO (the pollutant EPA selected as the surrogate for organic HAPs such as formaldehyde) would decrease by over 407,000 tons per year as a result of fuel switching, more than 70,000 tons per year more than the decreases predicted as a result of the MACT option proposed by EPA in the Proposed Major Source ICI Boiler MACT Rule. [Footnote: ERG Fuel Switching Memorandum, Table 2-3 (p.5), Appendix A-7.]

It is misleading for the Agency to posit in the Proposed Major Source ICI Boiler MACT Rule that data in the ERG Fuel Switching Memorandum shows that "emissions of some organic HAP

(e.g., formaldehyde) would increase," when the data show that the increase in formaldehyde emissions is limited to two small subcategories, that formaldehyde is the only organic HAP whose emissions would increase from any subcategory, and that overall formaldehyde emissions would decrease by more than 1,000 tpy.

Response: See response to comment EPA-HQ-OAR-2006-0790-1899.1, excerpt 9 for supporting or requesting reconsideration of fuel switching option.

Commenter Name: Mary L. Frontczak
Commenter Affiliation: Peabody Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2163.1
Comment Excerpt Number: 9

Comment: In addition, EPA's concern that promulgating MACT standards for units fueled by "clean" gas might incent those units to switch to "dirty" coal—and might disincent coal units from switching to gas—is contradicted by another part of the regulatory preamble. EPA says that it considered establishing a MACT standard for coal-fueled units that would require them to switch to natural gas. EPA says it rejected such a standard because it would not produce a net emissions benefit. According to EPA, although switching coal units to gas would reduce some HAPs, others would increase. Thus, in terms of HAP emissions, which are the only relevant consideration under section 112, EPA has no basis to claim that coal is a "dirtier" fuel than gas.

In addition to determining that requiring coal and oil units to switch to natural gas would produce no net emissions benefits, EPA found that fuel-switching from coal to gas would cost these units three times as much in compliance costs as compared with the MACT standards that EPA has proposed for adoption. EPA further determined that many coal-fueled boilers could not feasibly convert to another fuel and many that could convert would not have access to natural gas pipelines. Given these considerations, it is hard to understand why EPA is concerned that establishing MACT standards for gas units might disincent coal units from switching to gas. If fuel-switching a coal-fueled boiler to gas costs more and produces no benefit as compared with complying with EPA's MACT standards, and may in any event not be feasible for many units because of design issues or lack of access to gas supplies, EPA should want to discourage coal-fueled boilers from converting to natural gas rather than the other way around.

Response: See response to comment EPA-HQ-OAR-2006-0790-1899.1, excerpt 9 for supporting or requesting reconsideration of fuel switching option.

Commenter Name: Michael A. Livermore
Commenter Affiliation: Institute for Policy Integrity New York University School of Law
Document Control Number: EPA-HQ-OAR-2006-0790-1899.1
Comment Excerpt Number: 13

Comment: EPA considered requiring fuel switching as a method of controlling HAP but decided against including such a requirement in the proposed rule. [Footnote: While, within the current statutory scheme, this type of analysis is necessary, one major advantage of market-based schemes is that EPA would no longer need to do this. Instead, each source would be able to analyze their options for fuel switching. One of the major successes of the Title IV sulfur dioxide marketable pollution permit program was the increased use of low-sulfur coal. This unforeseen development was one of the chief reasons that compliance costs for this program were significantly lower than initially projected. See RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 136-37 (2008).] EPA identified three concerns that cut against the imposition of fuel switching requirements: failure to achieve lower HAP emissions, lack of availability of certain sources of fuel, and difficulty in achieving fuel switching given current boilers and process heaters. [Footnote: 75 Fed. Reg. at 32,019.] There are flaws in all three rationales.

First, the agency determined that virtually all types of switching would increase some HAP, even if it would decrease others. [Footnote: 75 Fed. Reg. at 32,019.] This rationale is incomplete because it fails to recognize that not all HAPs are created equal. This rationale suggests that a complete elimination of an extremely dangerous HAP would not be permissible if it caused even a slight increase in a less dangerous HAP. While this goes against common sense, other parts of Section 112 take this into account. Section 112(g) stipulates that a change in operation is not deemed a "modification" if "such increase in the quantity of actual emissions of any hazardous air pollutant from such source will be offset by an equal or greater decrease in the quantity of emissions of another hazardous air pollutant (or pollutants) from such source which is deemed more hazardous. . . ." [Footnote: CAA § 112(g)(1)(A).] EPA should try to take a similar approach in determining whether fuel switching would be beneficial overall.

Second, EPA argues that biomass and natural gas supply may be limited in some areas. In particular, the agency notes that natural gas supplies are constrained in some places and that, in some cities in the winter, natural gas is prioritized for residential usage. These are the sorts of analyses that should be done by regulated entities on a case-by-case basis. Every fuel source has its own risks (both in terms of price and availability), and it is not obvious that the theoretical possibility of supply shortages in some parts of the country should prevent an otherwise sound policy from going forward.

Finally, EPA argues that it would be costly and technically difficult for many sources to switch fuels. In fact, it would not be "technically difficult" to purchase a natural gas boiler to replace boilers which combust other fuels. The agency implicitly acknowledges this because it analyzed requiring all sources to switch to natural gas. This analysis determined that such a requirement would be just as effective as the proposed rule but more costly:

The annualized cost of fuel switching was estimated to be $13.5 billion compared with $3.5 billion under the floor approach. . . .The cost for fuel switching is over double the cost of the floor approach while the emission reductions associated with fuel switching are approximately the same. [Footnote: 75 Fed. Reg. at 32,026.]

This is a mischaracterization of the emissions benefits from fuel switching. Appendix A-7 of the memorandum "Development (2010) of Fuel Switching Costs and Emissions Reductions for Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants" compares the emissions reductions from fuel switching to the emission reductions from the proposed rule. Table 3 shows the emissions reductions from a
hypothetical requirement for all boilers covered by the rule to switch to natural gas, along with the emission reductions from the proposed rule. [Footnote: Development of Fuel Switching Costs and Emissions Reductions for Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants at 24-25 (2010). The "Total" emissions reductions for PM from the proposed option shown at the bottom of the table does not equal the sum of each category. As a result, the sum of each category in Appendix A-7 is used in Table 3 instead of the given totals.]

Although the EPA characterizes this as "approximately the same," there are substantial additional emissions reductions for seven of the ten pollutants examined. Reductions are 24% higher for particulate matter and 7% for sulfur dioxide. Reductions in total hydrocarbons, volatile organic compounds, and hydrogen fluoride are all well over 100% higher. There is little or no difference for two pollutants (mercury and HCl). Only reductions in dioxins and furans may be significantly lower.

While these incremental reductions may not be cost-justified, EPA has not yet shown this to be the case. The benefits of emission reductions from fuel switching have not been quantified in either the Regulatory Impact Analysis or the document which develops the costs. EPA has not properly considered the option of fuel switching until these additional benefits have been quantified.
Even if requiring all sources to switch to natural gas is not justified by the incremental costs, such a requirement may still be cost-benefit justified for particular types of boilers. EPA should compare the incremental costs and benefits of fuel switching for each class of boilers.

In conclusion, EPA should improve its explanation for not requiring any fuel switching. In particular, EPA has failed to properly describe and quantify the benefits of this option.

Response: See response to comment EPA-HQ-OAR-2006-0790-1899.1, excerpt 9 for supporting or requesting reconsideration of fuel switching option.

Commenter Name: Regina Hopper
Commenter Affiliation: America's Natural Gas Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1998.1
Comment Excerpt Number: 15

Comment: Supply: With respect to the issue of supply, EPA makes a general statement that supplies of natural gas may not be adequate to meet demand if ICI boilers are required to switch fuels to natural gas. This runs contrary to recent findings in the MIT Interim Report, which

concluded that (a) abundant global natural gas resources imply greatly expanded natural gas use, with especially large growth in electricity generation; (b) natural gas will assume an increasing share of the U.S. energy mix over the next several decades, with the large unconventional resource playing a key role; and (c) the share of natural gas in the mix is likely to be even larger in the near to intermediate term. [Footnote: MIT Interim Report, Executive Summary, at xi.]

Initially, the universe of covered sources that are burning either coal or oil (and that would therefore potentially be required to switch to natural gas) is relatively small: 578 coal-fired units (4.2% of the total sources) and 826 oil-fired sources (6% of the total). [Footnote: 75 Fed. Reg. at 32038.] EPA does not include in the preamble to the Proposed Major Source ICI Boiler MACT Rule any discussion of the potential volume of natural gas that would be required to fire these units. However, in light of the significantly increased supply of natural gas discussed below, ANGA submits that there is sufficient capacity to meet the expected increased demand.

Response: See response to comment EPA-HQ-OAR-2006-0790-1998.1, excerpt 16 for supply of natural gas and fuel switching.

Commenter Name: Regina Hopper
Commenter Affiliation: America's Natural Gas Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1998.1
Comment Excerpt Number: 16

Comment: ANGA also takes issue with a curious Agency reference to “curtailment” and the possibility that curtailment policies could result in natural gas supplies to certain ICI equipment being cut off.

For example, it is common practice in cities during winter months (or periods of peak demand) to prioritize natural gas usage for residential areas before industrial usage. Requiring boilers and process heaters to switch to natural gas would place an even greater strain on natural gas resources. Consequently, even where pipelines exist, some units would not be able to run at normal or full capacity during these times if shortages were to occur. [Footnote: 75 Fed. Reg. at 32019.]

Once again, it appears that this concept was originally part of the 2003 proposed rule; we believe that it may have been driven at least in part by conditions in 2000- 2001, where a number of factors, including an extremely harsh winter weather period, resulted in constrained supplies and price spikes that were investigated by the U.S. General Accounting Office. [Footnote: U.S. General Accounting Office. Natural Gas: Analysis of Changes in Market Price (December 2002).] In that regard, the GAO concluded that “the inability of gas supplies to meet surging demands contributed to the . . . spikes” and that“[s]pecifically, natural gas supplies were constrained because of unusually low storage levels and the inability to quickly increase production levels.” [Footnote: U.S. General Accounting Office. Natural Gas: Analysis of Changes in Market Price (December 2002) at 13.]

As is discussed in great detail above, significant changes have occurred both with respect to natural supplies and infrastructure since 2000-2001. These developments more than adequately address the Agency's concerns regarding curtailment. With respect to storage, in its State of the Markets Report FERC reports that in late November 2009, U.S. inventories were 99% of capacity, [Footnote: FERC State of the Markets Report 2009, p. 11.] suggesting that storage and storage capacity should no longer be an issue. Also, as suggested directly above, changes in the production process address concerns regarding the ability to increase production quickly in response to market demands.

Because shale production has many of the characteristics of gas in storage, companies have greater flexibility to produce gas when the market calls for it. Production can be deferred without risking the integrity of the well. Ending long production lead times and the risk of failure or loss may dramatically temper the gas market's systemic boom-and-bust cycle. [Footnote: FERC State of the Markets Report 2009, p. 12.]

A 2005 study conducted for the National Association of Regulatory Utility Commissioners concluded that while states have broad curtailment authority, "none of the thirty-one (31) state respondents indicated that the Governor or the commission had responded to a natural gas shortage in the last five years. This includes states in the Northeast that were subject to the January 2004 Cold Snap." [Footnote: National Association of Regulatory Utility Commissioners Ad Hoc Committee on Critical Infrastructure. Technical Assistance Briefs: NARUC Inventory on Gas Curtailment Planning, p.6 (April 2005).] In addition, we have been unable to locate any information that suggests that the type of curtailment scenario offered in the Proposed Major Source ICI Boiler MACT Rule has actually occurred or could reasonably be expected to occur.

This wealth of information and data suggest that there is no reason to believe that gas supplies are not adequate to meet any increased demand for natural gas if ICI boilers and process heaters that are currently burning fuel other than natural gas are required to switch to natural gas. More broadly, there are insufficient evidence or data, in the record or otherwise, to support EPA's decision not to consider fuel switching as a control option in evaluating the MACT floor and beyond-the-floor, and we respectfully request that the Agency reconsider this conclusion, taking into account current conditions with respect to the effect of fuel switching on HAP emissions, the technical feasibility of fuel switching, and the ability of the current and future natural gas supply and infrastructure to meet demand driven by fuel switching.

Response: Please see the preamble for discussion on fuel-switching in the Beyond-the-Floor Analysis.

MACT Floor: Methodology: General Approach

Commenter Name: Gregg Tomberlin
Commenter Affiliation: Novo Energy, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-0834.1

Comment Excerpt Number: 4

Comment: The “best of the best” approach is not “real world” as there is a great degree of variability in technologies, operational characteristics and fuel quality. The restrictions imposed are not achievable for many existing facilities and will likely be the decisive factor in the “no-go” decision for developers looking to create biomass opportunities and jobs.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2 and Document Control Number: EPA-HQ-OAR-2006-0790-1949.1, Comment Excerpt Number: 13

Commenter Name: Brian Brady
Commenter Affiliation: DNRE Air Quality Division
Document Control Number: EPA-HQ-OAR-2006-0790-0835
Comment Excerpt Number: 1

Comment: The proposed emission standards for particulate and CO are unrealistic. As proposed, the standards would essentially ban new biomass-fired boilers. To my knowledge, no boiler exists that could meet the proposed limits. Clean and efficient use of biomass energy should be encouraged with reasonable, and attainable, performance standards.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: George Whiting
Commenter Affiliation: EcoHeat Solutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-0832
Comment Excerpt Number: 3

Comment: A second threshold on CO could also be directed. Wood pellet boilers do have very short-lived spikes in CO from time to time, but if tuned correctly, have CO levels that are much lower. In all cases, CO levels are infinitesimal compared to typical campfires, fireplaces, and forest fires. I don’t think its a good use of EPA resources to split hairs too thin on something like this.

Response: Please see the preamble for changes to the requirements set forth by the final rule.

Commenter Name: Carl Johnson
Commenter Affiliation: Southern Pressure Treaters' Association
Document Control Number: EPA-HQ-OAR-2006-0790-0870.1
Comment Excerpt Number: 3

Comment: The limits that EPA set for biomass fuel hazardous air pollutants were evidently based on which facility happened to be burning biomass with the lowest levels of these materials. The limits should have been based on control technology.

When setting limits for biomass fuel generated hazardous air pollutants, the Agency must consider the variability in biomass chemistry.

EPA set the MACT floor based on a pollutant by pollutant basis instead of on a source basis . Also the statue requires that the MACT floor be set using the best 12% of data from all boilers and not a small subset of data from the best of the best.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11, Document Control Number: EPA-HQ-OAR-2006-0790-1949.1, Comment Excerpt Number: 10, and Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 14

Comment: It is incorrect to say that "the MACT floor for POM achieved by the best controlled similar source is based on actual CO emission data. The information from the Fuels for Schools program is not applicable to the area source class because of scale in that Fuels for Schools is less than 10 MMBtu/hr and is very different technology from area source boilers. Permit values included in the analysis to establish the MACT floor are mixing apples and oranges and reflect a limit not an actual value. Page 68.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1798.1, Comment Excerpt Number: 4

Commenter Name: Arlington Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0396
Comment Excerpt Number: 51

Comment: We would like to remind EPA that MACT includes the word achievable. New source limits so low as to preclude installation of new sources are not in line with Congress' intentions in drafting NESHAP provisions for the Clean Air Act. Facility owners must be able to obtain combustion equipment and emission controls to utilize the available and most economical fuels

with vendor guaranties that emissions can actually meet the –- meet the limits during normal and expected operating conditions. The proposed existing, and especially new source emission, limits preclude that ability. CIBO challenges EPA to identify existing units that have demonstrated the ability to achieve all the proposed existing or new source emission limits simultaneously with the ability to be replicated any place in the United States.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 5

Comment: Use of permit levels is not an acceptable procedure for establishing the MACT floor. Likewise use of source test data is unacceptable or at least questionable because of the practice of putting your best foot forward during a source test. The MACT floor should have been established based on actual continuous emission monitor (CEM) data. CEM data is available from biomass boilers through the local Air Districts and State DEQ's. The population of biomass boilers that I have visited and that have CEM s for CO is more than 50 so the data base is more than adequate. CEM data should be analyzed for seasonal variation for each boiler. I recommend using data for August and March. Gaining access to the data for EPA use should be as simple as sending a letter to the local regulatory authority because the source is required to send the data to the local authority on a quarterly basis. A second approach to establishing the MACT floor is to get out of the office and measure the boilers performance. This second method is the accurate and cost effective method.

Response: Please see preamble for discussion of MACT floor methodologies used and changes to requirements set forth in the final rule.

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 13

Comment: Page 47 indicates that EPA has no emission data for POM, this is impossible. Please look at EPA AP-42, EPA FIRE, CARB AB 2588 Air Toxic Emission Factors, along with various source tests performed in Minnesota at Grand Rapids, in Michigan and elsewhere.

Response: Please see preamble for discussion of available data and MACT Floor methodologies used.

Commenter Name: Duane C. Feagley
Commenter Affiliation: Pennsylvania Anthracite Council
Document Control Number: EPA-HQ-OAR-2006-0790-1052.1
Comment Excerpt Number: 3

Comment: EPA should use a reasonable method to set the MACT limits based on what real best performing units actually can achieve. The method EPA is using to set the MACT emission standards is seriously flawed. Proposed emission limits are close to the detection limit of test methods and far beyond what normal best performing units can achieve. EPA is looking at only the best of the best units without latitude for variability among the extremely diverse universe of units and fuels used. Thus, EPA is setting the stage for an over-reaching regulation that will again be challenged for ignoring the practical capabilities of combustion units and controls. EPA must factor into the MACT the variability in operations, fuels, designs and testing performance across the many types of boilers. There are alternative ways to set the MACT limits that are consistent with the law and can be met by well performing combustion units and air pollution controls.

Response: Please see the preamble for MACT floor methodologies and changes to requirements set forth by the final rule.

Commenter Name: Houston Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0985
Comment Excerpt Number: 35

Comment: The floor analysis for area source boilers is
based largely on boilers so small they’re exempt from
the numerical limits, rather than boilers typically
found in area sources.
It takes a very large boiler to be a stand-alone major source. Most major source boilers would be area source boilers if located elsewhere. An
absurd result is that a 100 million BTU-per-hour biomass
boiler located at an area source has a much lower CO
limit and a much shorter compliance averaging time than
the same boiler at a major source.

Response: Please see the preamble for changes to the requirements set in the final rule.

Commenter Name: Houston Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0985

Comment Excerpt Number: 97

Comment: I encourage you to best-performance standards that are available out there, even if that means cherry picking data. I'm not against that. If
that is what you need to do to fulfill your mission and
to protect us here, the American people.

Response: The EPA appreciates the commenter's input and encourages the commenter to see the preamble for a discussion of the MACT floor methodology used.

Commenter Name: Michael J. Hagenbarth
Commenter Affiliation: RockTenn
Document Control Number: EPA-HQ-OAR-2006-0790-1473.1
Comment Excerpt Number: 5

Comment: The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. In short, the data are utterly inadequate to support the proposed standards — especially with regard to the proposed existing source numeric standards. When using a § 112(d) approach to standard setting, the statute requires EPA to determine MACT according to the "available" emissions information; however, this does not excuse EPA from using its resources and information gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The Agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.

The emissions data have three basic problems. First, the amount of data is wholly inadequate. Per the floor memo, EPA has collected very little emission data: no emission data for POM for any subcategory, no mercury emission data for the liquid subcategory, mercury emission data for only 9 coal boilers and 2 biomass boilers, no state regulations or permit data for mercury or POM, limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers)

Response: Please see preamble for discussion on MACT Floor methodologies, and changes to requirements set forth in the final rule.

Commenter Name: Jim Hickman
Commenter Affiliation: Langdale Forest Product Company
Document Control Number: EPA-HQ-OAR-2006-0790-1379.1
Comment Excerpt Number: 1

Comment: MACT floors should be determined on a source basis, not a pollutant by pollutant basis. EPA set the MACT floors using a small subset of data from the “best of the best” rather than the best 12% of data from all boilers as is required by the statute.

The limits in the rules as proposed are not achievable. Units with all the proposed controls still do not meet the limits.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Michael J. Hagenbarth
Commenter Affiliation: RockTenn
Document Control Number: EPA-HQ-OAR-2006-0790-1473.1
Comment Excerpt Number: 3

Comment: As in the major source standard, EPA uses a ‘pollutant by pollutant’ MACT approach for the new source standards in the oil and biomass subcategories and both the new and existing source standards in the coal subcategory for this rule. The proposed area source standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach is contrary to the language of § 112 and produces unrealistic and impracticable standards. [Footnote: Industry Faults Strict EPA MACT Method for Regulating "Best" Sources, Inside EPA’s Clean Air Report, Sept. 3, 2009.]

The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA’s discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA’s authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. [Footnote: Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).]

Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet

the proposed standards without taking any further control measures — i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.

EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Joe O'Rourke
Commenter Affiliation: F.H. Stoltze Land and Lumber Company
Document Control Number: EPA-HQ-OAR-2006-0790-1467.1
Comment Excerpt Number: 5

Comment: The EPA must base its standards on reasonable limits that can be achieved in the real world. These standards will have to be based on a large volume of real-time data that is meticulously collected and scientifically analyzed, in order to identify actual results that are currently being achieved by the top 12% of all boilers in the country, as the CAA demands. The data gathered to date is limited in scope and reflects highly selected conditions. It is not representative of conditions at the top 12% of existing boiler plants.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Steven D. Swanson
Commenter Affiliation: Swanson Group, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1241
Comment Excerpt Number: 6

Comment: Add to this differing boiler technologies (which were not recognized in the rule) and you begin to see how misguided the proposed one-size fits all approach really is. In fact industry data shows a much wider variation in averages, even for the highest performing boilers, meaning that only under the best of circumstances, and during short intervals, would the top 12% of biomass boilers achieve the proposed CO limits. Given this, we ask the agency to reconsider its

data collection methods and ensure that the final rule is reflective of biomass and boiler variability and that the final limits are achievable.

Response: Please see the preamble for changes to the requirements set forth by the final rule.

Commenter Name: Michael J. Hagenbarth
Commenter Affiliation: RockTenn
Document Control Number: EPA-HQ-OAR-2006-0790-1473.1
Comment Excerpt Number: 6

Comment: EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid), so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. Of course, for purposes of setting the existing source standard, EPA uses data from the top 12% of units for which data are available, which in this case represents an even smaller fraction of the units. So, EPA proposes to set a standard applicable to thousands of boilers based on data from less than 0.1% of the units in the subcategory. This data record is facially insufficient.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 11

Comment: Some of the data in EPA's MACT floor analysis spreadsheets indicates that units were co-firing gas during the emissions test. Gas co-firing introduces a low bias in the emissions for non-gas subcategories because emissions are averaged with a lower HAP-containing fuel. This bias can be significant depending on the gas firing rate and relative difference in pollutant concentration. This was a significant issue identified in our review of the Major Source IB-MACT ICR data. While the ICR data contains fuel-related information to confirm gas co-firing, there is insufficient data available in the Fuels for Schools data to confirm whether co-firing was also conducted during the reported emissions test.

RMB recommends that EPA verify whether the reported test data includes periods of gas co-firing and either exclude such data or adjust the data accordingly to remove the gas-firing bias. This would result in an emissions pool for each subcategory where the emissions are based on the equivalent of 100% combustion of the fuel type for that subcategory.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 2

Commenter Name: Robert L. Garfield
Commenter Affiliation: Food Industry Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1835.1
Comment Excerpt Number: 2

Comment: While FIEC supports certain aspects of the proposed rules described below, we remain fundamentally concerned that EPA has proposed standards that are not actually "achievable" or "achieved in practice" by existing "sources," as expressly required by the Clean Air Act.

Response: Please see the preamble for changes to the emission limits.

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 6

Comment: Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures – i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 1

Comment: The proposed industrial boiler ("IB") maximum achievable control technology ("MACT") limits were derived by determining a MACT floor for each HAP or HAP surrogate for each subcategory of sources. See 75 Fed. Reg. 32019. Under this approach, EPA puts on a set of blinders and identifies the lowest emitting units [Footnote: In the case of new units, EPA bases the MACT floor on the best performing source.] to determine the MACT floor for a given HAP. EPA then analyzes the next HAP, ignoring those units it just determined were the "best performing" in setting the MACT floor for the first HAP, and determines the next MACT floor

based on a different set of units. EPA repeats this process until MACT floors have been set for all HAPs emitted by each subcategory of industrial boilers. The end result is a set of MACT floors that do not represent the emission levels achieved by actual, best-performing units. Instead, they reflect the performance of a hypothetical, ideal unit that does not exist in the real world -- a “Franken-plant.” [Footnote: As has been noted in earlier comments on EPA’s proposed medical waste incinerator rule, just as Dr. Frankenstein’s fictitious monster bore no resemblance to an actual human being, EPA’s fictitious "Franken-plant" bears no resemblance to actual, best performing industrial boilers.] Section 112(d)(3) of the CAA expressly requires that emissions limitation for new units should not be less stringent “than the emissions control that is achieved in practice by the best controlled similar source.” For existing units, the emission standards “shall not be less stringent, and may be more stringent than -- the average emissions limitation achieved by the best performing 12 percent of sources.” CAA 112(d)(3)(A) (emphasis added). Section 112(a) defines major and area sources as any “stationary source located within a contiguous area and under common control.” That section also defines the term “stationary source” as having the same meaning as that term has under CAA 111(a). That subsection, in turn, defines a “stationary source” as “any building, structure, facility, or installation which emits or may emit any air pollutant.” CAA 111(a)(3).

These statutory provisions show a clear congressional intent that MACT standards promulgated under 12(d) must be based on the actual performance of an actual source or sources. They do not allow MACT standards to be based on a hypothetical, ideal units nor do they allow the “emissions control” achieved by the best sources to be determined using a pollutant-by-pollutant approach on a shifting group of best performing units.

EPA’s standard-setting approach violates the express language of 112(d)(3) for setting new source MACT limits. New MACT source limits look to the level of performance “achieved in practice by the best controlled similar source.” This language directs EPA to use a single “source” to set new source MACT limits. It does not direct EPA to use a collection of “sources” to set the lowest possible emission limit for each HAP for new sources. Had Congress intended EPA to follow the approach that the Agency has chosen in the proposed industrial boiler (“IB”) MACT rule, it would have added a phrase to the end of 112(d)(3) ordering EPA to set new source limits based on the performance achieved in practice by the best controlled source “for each HAP.” No such HAP-by-HAP command exists in 112(d)(3). Similar logic applies for existing units because MACT standard setting is premised on the performance of “sources.”

EPA’s approach for setting MACT floors in the proposed rule is illegal and should not be followed in the IB rulemaking or in subsequent 112(d) rulemakings. MACT standards must be set based on the level of performance achieved by actual sources. EPA needs to develop a weighting approach for identifying the best performing units in MACT rulemakings where the sources in the category emit multiple HAPs.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Robert Klemans
Commenter Affiliation: Florida Electric Power Coordinating Group
Document Control Number: EPA-HQ-OAR-2006-0790-1955.1
Comment Excerpt Number: 1

Comment: Section 112 Standards Must Reflect the Emissions Control Achieved by Actual Units, Not Hypothetical Composite Boilers. The proposed industrial boiler (IB) MACT limits were derived by determining a MACT "floor" for each hazardous air pollutant (HAP) or HAP surrogate for each subcategory of sources. Under this approach, EPA identified the lowest emitting units to determine the MACT floor for a given HAP. EPA then directs its attention to the next HAP, ignoring those units it just determined were the "best performing" in setting the MACT floor for the first HAP, and establishes the next MACT floor based on a different set of units. EPA repeats this process until MACT floors have been set for all HAPs emitted by each subcategory of industrial boilers. The end result is a set of MACT floors that do not represent the emission controls achieved by an actual, best-performing unit. Instead, they reflect the performance of a hypothetical, ideal unit that does not exist in the real world -a "Franken-plant".

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, and Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 2

Commenter Name: Dirk J. Krouskop
Commenter Affiliation: MeadWestvaco
Document Control Number: EPA-HQ-OAR-2006-0790-1946.1
Comment Excerpt Number: 1

Comment: The emissions data on which EPA relies are too limited and not representative of the population of boilers subject to the rule. When using a § 112(d) approach to standard setting, the statute requires EPA to determine MACT according to the "available" emissions information; however, in this rulemaking EPA has not used its resources and information gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The Agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.
EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid) that are affected by this rulemaking. EPA indicates that it has no data for polycyclic organic matter for any sources, mercury data from only 11 sources and carbon monoxide data from only 103 sources. The small amount of data collected represents significantly less than 1 percent of these boilers. In setting the proposed standards, EPA uses data from the top 12% of units for which data are available, which in this case represents an even smaller fraction of the units. EPA's data set is not sufficient to appropriately propose rules and is obligated to gather additional data.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Robert E. McKenna
Commenter Affiliation: Motor and Equipment Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1920.1
Comment Excerpt Number: 2

Comment: While MEMA supports certain aspects of the proposed rules described below, we remain fundamentally concerned that EPA has proposed standards that are not actually "achievable" or "achieved in practice" by existing "sources," as expressly required by the Clean Air Act (CAA). This unfortunate and unworkable result is driven by a series of flawed decisions embedded in the proposed rule. For example, by looking separately at emission data for each hazardous air pollutant, EPA has proposed standards based on hypothetical "best performing" units that demand performance not achieved by any actual sources, rather than using data that are representative of what is actually achieved by real sources. In addition, EPA's reliance on incomplete and defective data has resulted in flawed standards that are biased towards overly-restrictive limits. In order to avoid these results and to conform the rules to the requirements of the Clean Air Act, we request that EPA make significant changes to the proposed rule in light of the following points.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3

Commenter Name: Edward J. Wilusz
Commenter Affiliation: Wisconsin Paper Council
Document Control Number: EPA-HQ-OAR-2006-0790-2133
Comment Excerpt Number: 2

Comment: The "pollutant by pollutant" approach to determining MACT is not appropriate because it results in standards that do not reflect the performance of the best performing boilers.

The proposed Industrial Boiler MACT standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach [Footnote: Industry Faults EPA MACT Method for Regulating "Best" Sources, Inside EPA's Clean Air Report, Sept. 3, 2009] is contrary to the language of § 112 and produces unrealistic and impracticable standards.

The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that results in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).

Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers and process heaters will be able to meet the proposed standards without taking any further control measures – i.e., EPA not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.

EPA's database shows that very few units are best performers for more than one pollutant. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: John C. deRuyter
Commenter Affiliation: DuPont
Document Control Number: EPA-HQ-OAR-2006-0790-1964.1
Comment Excerpt Number: 2

Comment: Review of a few of the top performers indicates that EPA used emission data from units that were not appropriate for the subcategory (not an ICI area source unit), provided or used only a single run of emission test data, or cofired "cleaner" fuel during emissions tests, thus biasing emission rates down. If EPA proceeds with a MACT approach, they need to re-evaluate the emissions test data and utilize appropriate units and emissions data in determination of top performers and the resultant MACT Floor.

Response: Please see the preamble for a discussion on the MACT floor methodologies used.

Commenter Name: Mary Graham
Commenter Affiliation: Charles Metro Chamber of Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-1953.1
Comment Excerpt Number: 2

Comment: We believe that this proposal would impose stringent numeric emissions limitations that would be difficult, if not impossible, to meet. It also would require an expensive one time energy assessment that is beyond EPA's authority under § 112 to regulate "sources" of HAPs to require.

Response: Please see the preamble for a discussion of MACT floor methodologies used, the appropriateness of requiring an energy assessment and the requirements set forth in the final rule.

Commenter Name: Robert Klemans
Commenter Affiliation: Florida Electric Power Coordinating Group
Document Control Number: EPA-HQ-OAR-2006-0790-1955.1
Comment Excerpt Number: 2

Comment: Section 112(d)(3) of the Clean Air Act (CAA) expressly requires that emissions limitations for new units should not be less stringent "than the emissions control that is achieved in practice by the best controlled similar source." For existing units, the emission standards "shall not be less stringent, and may be more stringent than the average emissions limitation achieved by the best performing 12 percent of sources." CAA 112(d)(3)(A) (emphasis added). These statutory provisions reveal a clear congressional intent that MACT standards promulgated under 112(d) must be based on the actual performance of an actual source or sources. They do not allow MACT standards to be based on a hypothetical, ideal unit nor do they allow the emissions control achieved by the best sources to be determined using a pollutant-by-pollutant approach on a shifting group of best performing units.

Response: Agree with the commenter in the sense that the MACT standards should be based on available data, however if variability exist between pollutants then a pollutant-by pollutant approach is preferable, over a single emission limit based on combined data from different sources.

Commenter Name: Mark Denzler
Commenter Affiliation: Illinois Manufacturers' Association
Document Control Number: EPA-HQ-OAR-2006-0790-2004
Comment Excerpt Number: 3

Comment: EPA's phased approach to selecting the subset of sources and emissions levels from which to derive the MACT floor for each chemical constituent has resulted in the compilation of

a set of emission limits which are collectively extremely restrictive. The Clean Air Act and Court rulings do not require that EPA determine in all cases that the best performing sources are always those with the lowest emission rate. In taking this approach in this proposed rule the EPA has created a biased data set which has resulted in the fabrication of a set of emission limits that does not accurately represent the composite performance of the best performing 12% of the emissions sources. By picking the best performing source for each individual pollutant, the composite set of standards EPA has derived do not represent the best performing real-world sources. We do not believe that EPA can point to the best performing 12% of the emission sources and show that these meet the suite of emission standards that EPA has developed. Creating hypothetical "best performing" units that demand performance not achieved by any actual source in the category violates the language of Section 112 of the Clean Air Act, which focuses on actual "sources. The Clean Air Act clearly directs EPA to set standards based on the overall performance of "sources" which means that EPA should be able to point to the subset of sources from which it has derived its emission limits and show that these "best performing" sources can achieve the full set of emission limits that would apply to them. EPA's should give greater emphasis on the critical interplay between emissions controls and emissions of other pollutants. For example, we are concerned that the controls necessary to meet the stringent emissions limitations for CO will result in increased energy usage, which will then cause an increase in emissions of NOx and other pollutants. EPA has not accounted for this interrelationship in its economic analysis and should do so.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11 and for Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 2

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 4

Comment: Inequities Between Emission Limitations in the Area Source and Major Source NESHAPs
In the proposed NESHAP for area sources, the CO emission limitation for existing biomass boilers is 160 ppm (@7% 02) and for new biomass boilers is 100 ppm (@7% 02). However, in the proposed NESHAP for biomass boilers at major sources, the emission limitations range from 40 ppm to 1010 ppm (@3% 02). NHDES is concerned that biomass boiler CO emission limits for major sources are in most cases less stringent than the area source limits. The same comparison can be made between coal-fired boilers at area sources versus those at major sources. However, in those cases, the major source limitations are more stringent than the area source limits. Since EPA states in the preamble to the area source rule, that EPA is establishing MACT and not GACT emission limits for mercury and CO (as a surrogate for POM), NHDES questions why MACT for boilers burning the same fuel is different depending on the location of the boiler. Therefore, NHDES recommends that EPA establish consistent emission limitations for identical

boilers burning identical fuels regardless of whether the boilers are located at a major or area source.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-0985, Comment Excerpt Number: 35

Commenter Name: Charles R. Faulds
Commenter Affiliation: Texas Electric Cooperatives, Treating Division
Document Control Number: EPA-HQ-OAR-2006-0790-1641.1
Comment Excerpt Number: 4

Comment: MACT floors should be determined on a source basis not a pollutant by pollutant basis. EPA set the MACT floors using a small subset of data from the “best of the best” rather than the best 12% of data from all boilers as required by the statute. EPA set limits for biomass fuel-driven HAPs, such as Mercury, not based on control technology, but rather on which facility happened to be burning biomass with the lowest levels of these materials. EPA should consider the long term variability in biomass chemistry when setting those limits. The proposed rules may be “Maximum”, but are not “Achievable”.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11, Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3, and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Mary Graham
Commenter Affiliation: Charles Metro Chamber of Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-1953.1
Comment Excerpt Number: 4

Comment: The proposed Area Source Rule standards are based on pollutant-by-pollutant analyses that rely on a different set of "best performing" sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a theoretical set of best performing sources that simultaneously achieve the greatest emission reductions for individual HAPs rather than the actual performance of one or more real sources.

The statute clearly directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA’s discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the

product of pollutant-by-pollutant parsing that results in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).

EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Brad Hunter
Commenter Affiliation: GreenWood Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2099.1
Comment Excerpt Number: 4

Comment: (BTEC) recommends that initial minimum performance standards of Carbon Monoxide (CO) – 1,164ppm (@ 7% O2) and Particulate Matter (PM) - 0.23 lbs/MMBtu for all boilers, with reductions thereafter driven by data collected during the first two years of the rule's implementation.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1904.1, Comment Excerpt Number: 4

Commenter Name: John C. deRuyter
Commenter Affiliation: DuPont
Document Control Number: EPA-HQ-OAR-2006-0790-1964.1
Comment Excerpt Number: 5

Comment: EPA established MACT Floor emission limits on a pollutant by pollutant approach. While EPA believes that is appropriate based on court decisions, the results of that approach are not reasonable. There are many ways EPA can use their discretion to establish floor limits to avoid this problem, including selection of units as top performers, statistical analysis methods, fuel variability, and others. EPA needs to re-evaluate the data set and their floor setting methodology to establish appropriate MACT Floors that are actually achieved in practice by real boilers, and that can be achieved with an assurance of compliance by sources in the

subcategories. CIBO and ACC comments provide much more detail on issues with the standard setting methodology.

Response: Please see preamble for MACT Floor methodologies and changes to requirements set forth in the final rule.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 6

Comment: As in the major source standard, EPA uses a pollutant–by-pollutant MACT approach for the new source standards in the oil and biomass subcategories and both the new and existing source standards in the coal subcategory for this rule. The proposed Area Source standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data are obtained. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP, rather than the actual performance of one or more real sources. This approach is contrary to the language of § 112 and produces unrealistic and impracticable standards.

The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emission standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule.6

Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures – i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.

EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed

standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant-by-pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Robert E. McKenna
Commenter Affiliation: Motor and Equipment Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1920.1
Comment Excerpt Number: 6

Comment: EPA's HAP by HAP approach to setting the MACT floor violates the Clean Air Act. EPA has proposed MACT standards for industrial boilers and process heaters that are based on individual pollutant-by-pollutant – rather than source-by-source – analyses in patent violation of the Clean Air Act. EPA has set limits for the suite of HAPs that reflect the "best performing source" for each, individual HAP. Put differently, EPA has "cherry picked" the best data in setting each HAP standard, without regard for the sources from which the data come. This results in a combined set of standards for purely hypothetical boilers that may never have actually been achieved by any single, real-world source. Creating hypothetical "best performing" units that demand performance not achieved by any actual source in the category is arbitrary and capricious and violates the language of § 112, which focuses on actual "sources." See CAA § 112(d)(1), (2), and (3) Rather than focusing on individual HAPs, the Clean Air Act unambiguously directs EPA to set standards based on the overall performance of "sources."

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 7

Comment: EPA has calculated the proposed emissions floors using a grossly inadequate amount of emissions data. Each of the emissions floors are calculated based on data representing <<1% of the total population for each fuel type. Furthermore, there is insufficient data available to establish appropriate boiler-type subcategories for combustion-related HAPs. We believe that the lack of data has resulted in proposed emissions standards that are not representative of the affected boiler population.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Robert E. McKenna
Commenter Affiliation: Motor and Equipment Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1920.1
Comment Excerpt Number: 7

Comment: EPA has calculated its proposed MACT floors solely on the basis of emission data. EPA utterly ignored the plain mandate of the Clean Air Act by entirely neglecting to determine whether there was emission control equipment in use in each subcategory that could actually achieve those inordinately strict emission limits, a critical and necessary analysis required by the Clean Air Act.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Michael T. Palko
Commenter Affiliation: Pennsylvania Department of Conservation and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-1895.1
Comment Excerpt Number: 8

Comment: EPA's data set is incomplete and inaccurate regarding available technologies, boiler sizes, biomass fuel types, and health effect estimates. Moreover the fact that no boiler in the dataset can meet the dual emission limits of PM and CO shows the proposed standards are unreasonable.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 9

Comment: NHDES suggests that EPA use all available certified data along with appropriate subcategories to develop accurate emission limitations that will result in actual HAP emission reductions while taking into consideration the effect these limits will have on emissions of other pollutants.

Response: Please see the preamble for a discussion of MACT floor methodologies used and the requirements set forth in the final rule.

Commenter Name: Sarah E. Amick
Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 10

Comment: The "pollutant by pollutant" approach to determining MACT is not appropriate because it results in standards that do not reflect the performance of the best performing boilers. The proposed area source MACT standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach is contrary to the language of 112 and produces unrealistic and impracticable standards.
The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule.[Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).]

Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures – i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.
EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: David P. Tenny
Commenter Affiliation: National Alliance of Forest Owners
Document Control Number: EPA-HQ-OAR-2006-0790-1884.1
Comment Excerpt Number: 11

Comment: Finally, for the remaining HAPs—PM and CO—EPA should adopt more reasonable emissions limitations that are less stringent and less costly, but achieve the statutory requirements.

Response: Please see the preamble for changes to emission limits set by the final rule.

Commenter Name: John Huber
Commenter Affiliation: National Oilheat Research Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1831.1
Comment Excerpt Number: 11

Comment: EPA inappropriately relies on emissions data from very large boilers in determining the existing source MACT floors for very small boilers. As noted in the proposed rules, large boilers very often run in steady state for extended time periods. Small boilers, on the other hand, do not modulate and match input to load by operating in an on/off mode. As many as 40-60 cycles per day and 8,000 – 12,000 cycles per year is not uncommon.
Small boilers have short path lengths through the flame and a high ratio of cooled combustion chamber surface area to heat release rate. As a result of the shorter path length these flame can more easily radiate heat to the walls and will have lower flame temperatures. Contact between the still-reacting combustion products and the relatively cold walls is expected to be more significant in small boilers. These factors contribute to the potential for inherently higher CO emissions in smaller boilers. Results from large boilers cannot be extrapolated to small boilers without verification.
The pictures at the beginning of these comments show dramatic physical differences between the heavy industrial/utility boilers shown in Figure 1. Until data is available for these distinctly different boiler types is completed, EPA should not and cannot regulate emissions as proposed in this standard commercial/institutional and even industrial boilers categories (sizes less than 30,000,000 BTU) based on this data.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1945.1, Comment Excerpt Number: 3

Commenter Name: Sarah E. Amick

Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 11

Comment: The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. In short, the data are utterly inadequate to support the proposed standards – especially with regard to the proposed existing source numeric standards. The statute requires EPA to determine MACT according to the "available" emissions information; however, this does not excuse EPA from using its resources and information gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The Agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.
The emissions data have three basic problems. First, the amount of data is wholly inadequate. Per the floor memo, EPA has collected very little emission data:
* no emission data for POM for any subcategory,
* no mercury emission data for the liquid subcategory,
* mercury emission data for only 9 coal boilers and 2 biomass boilers,
* no state regulations or permit data for mercury or POM,
* limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers)
EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid), so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. Of course, for purposes of setting the existing source standard, EPA uses data from the top 12% of units for which data are available, which in this case represents an even smaller fraction of the units. So, EPA proposes to set a standard applicable to thousands of boilers based on data from less than 0.1% of the units in the subcategory. This data record is facially insufficient.

Response: Please see preamble for discussion of MACT Floor analysis and changes to requirements set forth in the final rule.

Commenter Name: David P. Tenny
Commenter Affiliation: National Alliance of Forest Owners
Document Control Number: EPA-HQ-OAR-2006-0790-1884.1
Comment Excerpt Number: 12

Comment: EPA's approach to setting the MACT floor is arbitrary and capricious and a violation of the requirements of the CAA. EPA explains that "[f]or each pollutant, we calculated the MACT floor for a subcategory of sources by ranking all the available emissions data from units within the subcategory from lowest emissions to highest emissions, and then taking the numerical average of the test results from the best performing (lowest emitting) 12 percent of sources." 75 Fed. Reg. at 32019. This "pollutant-by-pollutant " approach to determining MACT is not appropriate because it results in standards that do not reflect the performance of the best performing boilers for any fuel source.

The CAA requires that EPA set standards based on the performance of actual "sources." Yet EPA's analysis does not reflect the performance of any actual sources. Instead, it is a compilation of the best data, for each pollutant, regardless of which source the data came from. As a result, the proposed rule's limits are unnecessarily stringent. They do not reflect the variability that occurs in real-world. For example, boilers go through warm-ups, shutdowns, load swings, fuel mix and fuel quality changes, control efficiency differences, and performance testing adjustments. By relying on pollutant-by-pollutant test data from a short period of time, EPA overlooks the variability that occurs even at the best-performing boilers. As a result, the standards can not actually be achieved by the best-performing 12 percent of sources, as EPA suggests and as contemplated by the CAA. In fact, the source data shows that no existing facility simultaneously meets all the proposed limits. [See submittal for Attachment 1 at 3.] EPA's MACT determinations are also flawed because they are based on incomplete data. For example, even though the subcategory of biomass boilers is estimated to include 420 sources, EPA only has emissions testing data for a small subset of these sources (e.g. 192 units for PM, 91 units for mercury, and 92 units for HCl). EPA's lack of data makes its findings about the "best performing 12 percent of the existing sources," see CAA § 112(d)(3)(A), highly suspect and, in turn, makes the resulting emissions limits arbitrary and capricious.

For these reasons, EPA's approach to setting MACT is not within EPA's authority and is arbitrary and capricious. EPA should determine MACT based on data representing what is actually achieved by real sources. EPA should factor into the MACT the variability in operations, fuels, designs and testing performance across the many types of boilers.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research
Document Control Number: EPA-HQ-OAR-2006-0790-2140.1
Comment Excerpt Number: 10

Comment: The MACT floor for existing units for Hg (coal only) and CO (all fuel types) are calculated based on one or more data sets that contain less than three test runs. In order for a test result to be considered "achieved" it should contain at least three, valid test runs, which is the same criterion used to determine compliance with the proposed emissions standards. In some cases, the floor calculations include a single test run for a particular unit. RMB recommends eliminating all data sets containing less than three test runs from the emissions floor analysis.

Response: Please see the preamble for MACT floor methodologies and changes to the requirements set forth by the final rule.

Commenter Name: Fred Gordon

Commenter Affiliation: Herman Miller, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2046.1
Comment Excerpt Number: 7

Comment: EPA should provide for a removal efficiency standard as an alternative to the proposed concentration based emission standards.

Due to the differences in fuels used in the various sources potentially subject to this proposed rule and the challenges in reducing emissions to the proposed levels in the rule regardless of fuel source, EPA should consider an alternative to numerical emission standards for all pollutants. A reasonable alternative for many of the pollutants is a control device removal efficiency in lieu of a fixed outlet concentration. Specifying a removal efficiency of, say, 90% across an add-on control device as an alternate to the proposed concentration-based limits can provide for effective control of pollutants in situations where meeting all of the numerical standards is impractical. Offering the option of meeting the numerical limit or attaining a specified removal efficiency may be the only practical solution for units with certain combinations of fuels and add-on controls.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2004, Comment Excerpt Number: 5

Commenter Name: Houston Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0985
Comment Excerpt Number: 42

Comment: Combination boilers, those burning multiple fuels, can be addressed through subcategories. EPA's MACT floor analysis for biomass boilers is flawed. Far less than the expected 6 to 12 percent of biomass boilers anticipated by the statute can meet the proposed limits without additional control. This is the result of analyzing the data on a pollutant-by-pollutant basis rather than source-by-source, relying on data obtained from the top 12 percent of a subset of best performing boilers, rather than the population of boiler as a whole having insufficient data and relying on as few as two or three data points largely at or below detection limits to set limits for subcategories with large populations. Setting limits for fuel-based pollutants for biomass boilers without taking into consideration the natural variability of biomass fuel as a whole.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3 and Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 2

Commenter Name: James Happli, Jr
Commenter Affiliation: United Steel, Paper, Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union (Wausau Paper)
Document Control Number: EPA-HQ-OAR-2006-0790-1489.1
Comment Excerpt Number: 1

Comment: It seems highly likely that it may not be possible for many boiler operators to achieve the impractical standards necessary to comply with the rule's requirements; no matter what kind of pollution controls are installed. That makes no sense.

My understanding is that EPA has issued many MACT rules, but you're proposing to change the rules of the game for industrial boilers. Instead of looking at the overall performance of good boilers, you'd set rules that only some type of super boiler could comply with.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Ashley B. Peterson
Commenter Affiliation: American Meat Institute
Document Control Number: EPA-HQ-OAR-2006-0790-1486.1
Comment Excerpt Number: 2

Comment: Regarding technological concerns, the new Boiler MACT methodology would establish emissions standards that are more stringent than what real world best performing units can achieve. In some instances, the emissions limits approach levels that barely can be detected with current technology. Also, the Boiler MACT is expected to require installation of up to five different air pollution control devices that will conflict with other existing control requirements. EPA should not ignore the practical capabilities of controls and the variability in operations, fuels, and testing performance across the many regulated sectors.

Response: Please see the preamble for a discussion of MACT floor methodologies.

Commenter Name: Bill Wickman and Laurel Brent-Bumb
Commenter Affiliation: Sustainable Forest Action Coalition
Document Control Number: EPA-HQ-OAR-2006-0790-1487.1

Comment Excerpt Number: 2

Comment: The proposed Boiler MATCT rule sends a powerful message to the wood-products industry that limits are going to be imposed that are un-achievable and that are not representative of actual existing boilers, their varying fuel types, grate designs, or overall emissions. Instead, the proposed rule has taken a select group of boilers, disregarded significant variables, and isolated individual Hazardous Air Pollutants (HAP) that do not reflect overall boiler performance (e.g. comparing Particulates versus comparing Particulates, CO, NOx for boilers). This HAP by HAP comparison has resulted in the lack of this rule being achievable.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2 and Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 2

Commenter Name: Joe Fierst
Commenter Affiliation: Wausau Paper
Document Control Number: EPA-HQ-OAR-2006-0790-1488.1
Comment Excerpt Number: 3

Comment: Under the proposed Boiler MACT rule, affected facilities are required to install multiple air pollution control devices to reduce the emissions of five different pollutants of concern: particulate matter, hydrochloric acid, mercury, dioxin/furan and carbon monoxide. EPA has issued many MACT rules, but has changed the rules of the game for industrial boilers. EPA established emission limits for each of the individual pollutants by being selective as to which data were used to calculate the emission limit. This approach biased the resulting limits to inordinately low levels.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1991.1, Comment Excerpt Number: 2

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 3

Comment: 1. Inadequate Data Used to Establish Emissions Floors

EPA has calculated the proposed emissions floors using a grossly inadequate amount of emissions data. Each of the emissions floors are calculated based on data representing << 1% of the total population for each fuel type. Furthermore, there is insufficient data available to establish appropriate boiler-type subcategories for combustion-related HAPs. We believe that the

lack of data has resulted in proposed emissions standards that are not representative of the affected boiler population.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: George N. Clark
Commenter Affiliation: Manufacture Alabama
Document Control Number: EPA-HQ-OAR-2006-0790-1634.1
Comment Excerpt Number: 3

Comment: Section 112(d)(1), (2), and (3) directs EPA to set standards based on the performance of "sources" which may be distinguished by class, type, and size. The standards in the proposed rule are based on pollutant-bypollutant analyses that use a different set of "sources" to determine each separate pollutant standard. EPA picks the best data to set each standard without regard to the source of the data. The method the proposed rule uses to set the MACT emission standards is seriously flawed. The result is not the best performance of actual sources, but a hypothetical standard that is unrealistic and not determined as required by the statute.

EPA should use a reasonable method to set the MACT limits based on what real best performing units actually can achieve for all the regulated pollutants. Proposed emission limits are close to the detection limit of test methods and far beyond what normal best performing units can achieve. EPA is looking at only the best of the best units without latitude for variability among the extremely diverse universe of units and fuels used. Thus, EPA is setting the stage for an over-reaching regulation that will again be challenged for ignoring the practical capabilities of combustion units and controls. EPA must factor into the MACT the variability in operations, fuels, designs and testing performance across the many types of boilers. There are alternative ways to set the MACT limits that are consistent with the law and can be met by well performing combustion units and air pollution controls.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Kerry Flick
Commenter Affiliation: Metso Power
Document Control Number: EPA-HQ-OAR-2006-0790-1490.1
Comment Excerpt Number: 3

Comment: In Metso’s opinion, the data used to develop the proposed emissions limits does not have the required depth, and individual pollutant limits have been set without considering pollutant co-dependence. We recommend that additional existing sources be considered and that the emissions limits be set based on the complete data sets of the best performing sources.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 5 and Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Douglas J. Fulle
Commenter Affiliation: Oglethorpe Power Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1798.1
Comment Excerpt Number: 4

Comment: The continuous CO monitoring data that EPA presents in the major source industrial boiler MACT proposal is for units that will not be subject to the Area Source Rule and that are not the units that EPA has identified as the best controlled similar source for purposes of setting the area source CO standard for biomass boilers. Thus, the CO emissions data cannot lawfully be used in determining the area source CO standard because these data are derived from sources that do not belong to the area source category and, more particularly, from sources other than the best controlled similar source. The conclusion that a separate standard for startup and shutdown is not needed can only be based on data from the source that is actually used by EPA to set the area source CO biomass standard or on a showing that the data from some other boiler is representative of the performance of the best controlled similar source.

Response: Please see the preamble for discussion on changes to the requirements and MACT floor methodologies.

Commenter Name: Ashley B. Peterson
Commenter Affiliation: American Meat Institute
Document Control Number: EPA-HQ-OAR-2006-0790-1486.1
Comment Excerpt Number: 4

Comment: EPA should propose a reasonable method to set the MACT limits based on what real best performing units can achieve. The method EPA is using to set the MACT emission standards is seriously flawed. Projected emission limits are close to the detection limit of test methods and far beyond what normal best performing units can achieve. EPA is looking at only the best of the best units without allowing latitude for variability among the extremely diverse universe of units and fuel use. In so doing, EPA is setting the stage for an over-reaching regulation that will again be challenged for ignoring the practical capabilities of combustion units and controls.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 5

Comment: As stated in CIBO's comments on the Boiler MACT Proposed Rule, EPA's floor setting method is flawed for several reasons. [See DCN: 2006-0790-1783.2 for comments.] In addition to those comments, CIBO offers the following additional comments. In establishing the floors under the Proposed Rule, EPA has relied on questionable methods and data and failed to adequately consider variability.

The purpose of the floor setting procedure is to discover what techniques the "best performers" use to achieve low emissions so that the other, higher emitting sources in the category or subcategory can replicate those actions and achieve those same low levels. As EPA noted in Cement Kiln Recycling Coalition v. EPA, 255 F. 3d 855, 863 (DC Cir. 2001) (Cement Kiln), the intent of the standard setting process is to discover the "objective, duplicable control" techniques so that other performers in the source category could emulate those techniques, reduce their emissions, and achieve those levels. See EPA Response Brief, Cement Kiln at n. 57.

EPA's process for establishing floors for area sources is flawed considering the agency relied on a small amount of data for numerous boilers and applied MACT methodology in some instances instead of GACT. EPA has used a relatively little data to develop the proposed emission limitations in the Proposed Rule. See NESHAP for Area Sources: Acrylic and Modacrylic Fibers Production, Carbon Black Production, Chemical Manufacturing: Chromium Compounds, Flexible Polyurethane Foam Production and Fabrication, Lead Acid Battery Manufacturing and Wood Preserving. Such little data could not be representative of the thousands of existing boilers and EPA should propose a work practice standard in lieu of numerical emission limitations for CO. This is a much more reasonable approach for area sources.

Response: Please see preamble for discussion of MACT Floor methodology and changes to requirements set forth in the final rule.

Commenter Name: Joe Fierst
Commenter Affiliation: Wausau Paper
Document Control Number: EPA-HQ-OAR-2006-0790-1488.1
Comment Excerpt Number: 5

Comment: In order to attempt to comply with the conditions set forth in the proposed rule, facilities would be required to install up to five different pollution control devices that not only cross-interfere with each other, they also compromise the performance of existing pollution control equipment.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1486.1, Comment Excerpt Number: 2

Commenter Name: Kerry Flick
Commenter Affiliation: Metso Power
Document Control Number: EPA-HQ-OAR-2006-0790-1490.1
Comment Excerpt Number: 6

Comment: The source data shows that no existing facility simultaneously meets all the proposed limits, even the few plants with environmental controls. Pollutant co-dependence is critical in understanding environmental emissions from the combustion process as several pollutants are related to each other —some inversely to others, such as NOx and CO. The relevancy of utilizing the results from multiple boilers as the "best performer" for individual pollutants (one for CO and another for PM) is therefore not justified when setting limits for new units. The use of this method does not account for the co-dependence of these pollutants as they relate to boiler operating parameters and the variability in biomass type and composition. As such, if upheld, costly changes/additions in technology (many of which are currently unproven) to new and existing facilities will need to be made in order to comply with the proposed ruling. The payback period for making these changes will exceed the two year payback period set by section 325(o)(2)(B)(iii) of the Energy Policy and Conservation Act as a justifiable economic energy conservation standard for the installed cost to implement the given technology will be greater than 3x the value of the first year energy savings resulting from the change. The MACT floor for the "best performer" which establishes new facility regulations should therefore be based on all emissions measured from that plant at the same time and firing the same fuel, and not based on the performance from different plants for individual pollutants.

Response: Please see the preamble for discussion on pollutant-by-pollutant MACT analysis and changes to emission limits in the final rule.

Commenter Name: Douglas J. Fulle
Commenter Affiliation: Oglethorpe Power Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1798.1
Comment Excerpt Number: 11

Comment: To the extent that EPA relies on emission data obtained through the second phase major source ICR, these data demonstrably are not representative of the population of affected boilers because EPA intentionally sought to obtain information from the best performing boilers. Thus, if these data are to be used, it must be done in a manner that reflects the fact that EPA already knows that they are skewed toward the better performers. So, for example, in calculating the existing source MACT floor for CO, EPA should not take the top 12% of the sources reporting under the phase 2 ICR because that would cause the standard to be based on the "best of the best" rather than the best of the population as a whole. EPA instead should determine the

number of boilers that constitutes the top 12% for each subcategory, and then use phase 2 emissions data for as many of these top 12% of boilers for which such information is available.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 12

Comment: The MACT floor for existing units for Hg (coal only) and CO (all fuel types) are calculated based on one or more data sets that contain less than three test runs. In order for a test result to be considered "achieved" it should contain at least three, valid test runs, which is the same criterion used to determine compliance with the proposed emissions standards. In some cases, the floor calculations include a single test run for a particular unit. RMB recommends eliminating all data sets containing less than three test runs from the emissions floor analysis.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2140.1, Comment Excerpt Number: 10

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 12

Comment: EPA's floor approach is also unlawful and arbitrary in other respects. First, as noted above, EPA selected the best performers based on each source's lowest test result but then measured the best sources' actual performance based on their average test results. EPA's use of different measures of performance to identify the top sources on the one hand and to evaluate their performance on the other is inconsistent, irrational, and unexplained. No matter what metric EPA uses to measure sources' performance, the same metric should apply for purposes of identifying the best performers and identifying those sources' actual performance. Moreover, EPA's inconsistent approach to measuring performance has important practical effects. By using the lowest test result to identify the best performers but the average test result to reflect their performance, EPA artificially increases the variability of the data on which it bases floors. Specifically, the data for the top twelve percent of sources has more variability than if EPA had picked the top twelve percent based on the best average test result, and as a result the variability factor and the floors themselves are also higher. If EPA had either: (1) used average test results consistently to pick the best performers and measure their performance; or (2) consistently used sources' lowest emissions test to calculate floors and pick the top performers, the floors would be

lower. EPA does not provide any explanation for using different metrics to measure sources' performance for the purpose of identifying the best sources and for the purpose of assessing their performance. Given that EPA's choice affects the outcome of its floor analysis, the absence of a rational explanation for that choice is especially arbitrary.

Response: Please see the preamble for MACT floor methodologies and changes to the requirements set forth by the final rule.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 14

Comment: EPA has established CO limits that are not achievable, especially for units fired by liquid fuel. This is unreasonable. In enacting § 112(d), Congress established a statutory scheme whereby EPA is supposed to determine what the best performers do to achieve the "maximum degree of reduction in emissions." See CAA § 112(d)(2) and (d)(3). The floor limit, however, cannot be "less stringent than the emission control that is achieved in practice by the best controlled similar source." CAA § 112(d)(3). This requirement incorporates a concept of "reproducibility" by others in the source category or subcategory.

The concept of reproducibility emanates from two places. First, the legislative scheme incorporates it. The whole idea behind the floor setting procedure is to discover what techniques the "best performers" use to achieve low emissions so that the other, higher emitting sources in the category or subcategory can replicate those actions and achieve those same low levels. As EPA noted in the Cement Kiln case, the intent of the standard setting process is to discover the "objective, duplicable control" techniques so that other performers in the source category could emulate those techniques, reduce their emissions, and achieve those levels. See EPA Response Brief, Cement Kiln at n. 57.

Second, reproducibility is included in the statute's floor setting provisions. Section 112(d)(3) states that that the floor standards reflect what the "best controlled similar source" does. This reflects the Congressional directive that the best performers must actually be controlling their emissions and their technique must be capable of being reproduced by others in the source category. Thus, the Agency's floor determination must discover the techniques that the best performers are using to actually "control" emissions, i.e., exercising some degree of management that is duplicable by others. The EPA's analysis, therefore, must determine what is the maximum degree of reduction that the best similar source achieves through methods of control.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2 and Document Control Number: EPA-HQ-OAR-2006-0790-1949.1, Comment Excerpt Number: 10

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 16

Comment: EPA has used two (or three) different methods for establishing the "performance" of average of the best-performing 12 percent. In selecting the units to be included in the top 12 percent EPA assumed that the performance of those units was demonstrated by the best test result. Thereafter, in calculating the average of the selected units EPA assumes that the performance of a selected unit is defined by all test results [Footnote: EPA includes all test results of "best performers" in its calculation of the MACT floor for each subcategory. This effectively overweights the contribution of sources that have been tested multiple times compared to those that may have been tested only once.] available for that unit. EPA then multiplies these results by a fuel variability factor to establish the final number that it uses to calculate the floor. This fuel variability factor is also different for different units, and so, again, the unit with the lowest single test result is not necessarily the "best performer" as used in EPA's calculations. EPA should use either the best test result for both purposes or use the best average of all test results for both purposes. This use of inconsistent definitions of performance has resulted in at least one MACT floor that is higher than it should be, as units with better average performance over all tests were excluded in favor of other units with a lower individual test result but higher overall emissions. NACAA believes that use of the average of all test results for an individual unit is an appropriate measure of the performance of that unit, provided that the subsequent analysis of variability does not then treat that average as a single test result. One way to address this issue may be to use the average of all test results to identify the best performing units in the calculation of the average of the top 12 percent, but then include all test results of the "best performers" in the determination of the potential variability of that average. [Footnote: This is not the same as using the 99th percentile UPL of the individual runs as a factor to multiply the average.] The identification of the "best performers" should be made after all of the variability adjustments have been made to the universe of "candidate best performers." In this way the MACT floor would not be artificially increased by the use of data from sources that are ultimately not the best performers within a subcategory.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1982.1, Comment Excerpt Number: 12

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 20

Comment: EPA's approach to "rounding" introduces an additional inappropriate bias to the calculation of MACT floors and should be revised to reflect technically correct rounding procedures and the requirements of the statute. In determining the number of units in a

subcategory to include in the MACT floor analysis, EPA rounds the product of 0.12 times the number of units upward. For example, in a category with 103 emissions test averages (representing 103 units), 12 percent is 12.36. In this instance EPA based it MACT floor calculation on the performance of the top 13 units rather than the top 12 units, asserting that its process is consistent with the approach used by statisticians in survey sampling. NACAA does not take issue with this particular set of choices, but notes that it does bias the MACT floor calculation upward and leads to less stringent limits. However, in several other steps in the calculation of the MACT floor, such as the application of calculated UPLs, EPA "rounded" the interim values and in each such instance EPA rounded the values up. In most engineering calculations, rounding protocols provide for rounding down as well as up. Rounding ordinarily includes truncating the number of significant digits that are employed in a calculation and occurs at the end of the calculation process. EPA justifies its decision to only round up by asserting that to do otherwise would deprive sources of the "variability" cushion they were otherwise entitled to. Again, this argument ignores the public interest in reducing emissions of hazardous air pollutants as well as normal engineering protocols. It would also seem to be contrary to written EPA policy concerning rounding for NSPS compliance purposes. [Footnote: See, "Memorandum: Performance Test Calculation Guidelines", William Laxton, OAQPS, and John Seitz, OAQPS.] This policy, which has not been revised to our knowledge, adopts ASTM standard rounding protocols – carry at least five significant digits throughout all intermediate calculations and employ ASTM Procedure E 380 (round down if less than 5; round up if greater than 5) for the final calculation. Where a MACT floor would otherwise be calculated at 2.27, it would seem that "rounding" a final standard to 3.00 would be technically unjustifiable and would not comply with the requirement of section 112 that the MACT standard be not less stringent than the average of the top 12 percent.

EPA's "rounding" policy also addresses the issue of the number of significant digits that should be in an emission standard and states that all then-existing NSPS should be construed as having no less than two nor more than three significant digits. This was important at the time because the new rounding policy replaced an earlier policy that did not allow rounding at all. If a standard were set at 3, under the earlier policy a test result of 3.0001 would be a failure; under the new policy sources could "round down" to compliance. The expression of a standard in a minimum number of significant digits limited the adverse environmental effect of this change. Since that policy only retroactively changed the number of significant digits in standards in existence, EPA has been careful (where it chose to be) to set out standards in the appropriate number of significant digits. For example, in the gasoline sulfur rule EPA had forgotten to include any number after a decimal place in the proposed standard but incorporated two numbers after the decimal place in the final rule. When asked about the reason for this change, EPA responded:

EPA included the decimal places to ensure that the sulfur standards are not exceeded by rounding down actual average sulfur levels. We do not believe reporting the average sulfur level to two decimals creates any additional burden as the averaging calculation will yield this result to any number of decimal places. Although the decimals were not included in §80.216(a)(1)(i) for the geographic phase-in area (GPA) standard, EPA intends to revise this provision to include the decimals in a future rulemaking. [Footnote: See, EPA420-F-00-018, May 2000]

In the current proposal EPA identifies the mercury emission standard to only one significant digit, (for example, 3 lb/TBtu expressed in other units as 3 x10-6 lb/MMBtu or 0.000003 lb/MMBtu). [Footnote: This is still only one "significant" digit in this figure, irrespective of which of these two ways it is presented.] Under EPA's 1990 rounding policy, this will allow sources with emissions as high as 3.4999 lb/MMBtu to "comply." If the emission limitation were expressed as 3.00 lb/TBtu (0.00000300 lb/MMBtu) sources could still round down under the existing policy, but only from 3.0049. Since, as EPA's earlier memo points out, the calculation of the average of the top 12 percent, including a compliance margin, can be carried out to any number of decimal places, there is no reason to round the result. In this example, the average of the top 12 percent is 0.292 lb/TBtu. [Footnote: From EPA Appendix C-2, Table 1.] After application of its several "variability" factors (including the double counting associated with fuel variability), EPA increases this result by a factor of nine to 2.64 lb/TBtu. [Footnote: From EPA MACT Floor Analysis, April 2010, p.10.] This should be more than sufficient as a compliance margin for well-controlled units. But EPA then rounds [Footnote: Technically, this is not "rounding" but simply "increasing" the number since at this point EPA did not truncate significant digits. Later, EPA truncates.] up to 3.00lb/TBtu and truncates the result to 3, thereby allowing an additional 33-percent increase in mercury emissions to 3.4999 lb/TBtu without any technical or policy justification and without any discussion of the adverse effects of such an increase on public health and welfare. There is no reason to anticipate that a MACT floor, which is based on an average, should be a round number. In this example, if a recalculation in accordance with our comments and good engineering practices, yields a MACT floor of 2.15 lb/TBtu; EPA should set the standard at 2.15 lb/TBtu – unless, of course, it exercises its "beyond-the-floor" authority to set a more stringent standard.

Response: EPA has revised its treatment of significant figures consistent with the policy referenced by the commenter. In the final analysis all calculations were completed without rounding. After the final computation step the final values were rounded up to the nearest two significant figures.

EPA did not follow the ASTM rounding procedure E 380 (round down if less than 5; round up if greater than 5) for the final calculation. EPA determined that the ASTM procedure is more appropriate for performance stack testing not standard setting. Instead, we always rounded up to the next significant digit.

Commenter Name: William C. Scott
Commenter Affiliation: Collum's Lumber Products, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1796.1
Comment Excerpt Number: 1

Comment: The limits in the rules as proposed are not achievable. Units with all the proposed controls still do not meet the limits.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Marie Robinson
Commenter Affiliation: National Telecommunications Safety Panel
Document Control Number: EPA-HQ-OAR-2006-0790-1960.1
Comment Excerpt Number: 1

Comment: The NTSP is concerned that the EPA has insufficient data to support its proposal. Indeed, EPA indicates that it has no emission data for polycyclic organic matter ("POM") and limited emission data for mercury and carbon monoxide (CO) from
area source boilers. In addition, there is limited information available to EPA through state permitting actions regarding such boilers. From NTSP's review of the MACT floor analysis contained in the proposed rule, it appears that in formulating its regulatory standards, EPA has relied on mercury emission data for only 2 coal-fired boilers and CO emission data for only 5 such boilers; for biomass-fired boilers, EPA indicated no state data was available and that the only emission data available to EPA was from a program to promote the burning of woody biomass in schools; and for oil-fired area source boilers, EPA indicated that CO emission data was available for 68 boilers as part of the Boiler MACT Information Collection Request.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Joe Muehlbach
Commenter Affiliation: Quad/Graphics
Document Control Number: EPA-HQ-OAR-2006-0790-1961.1
Comment Excerpt Number: 2

Comment: EPA has selectively reviewed the data concerning the best performing individual source in each segment of the economy and has rolled it all into one standard without considering the variability of top performing boilers in use across the many segments of the economy. Differences in design, function, load, fuel mix and pollution control efficiencies must be considered by setting standards for individual sources. Setting performance standards based on a hypothetical boiler raises serious questions about the ability of any one specific boiler's ability to meet the standards as proposed.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3

Commenter Name: Hank Russell
Commenter Affiliation: Cuolumne County Economic Development Authority
Document Control Number: EPA-HQ-OAR-2006-0790-1658.1
Comment Excerpt Number: 2

Comment: The proposed rule sends a powerful message to the alternative energy industry with limits that are unachievable and that are not representative of actual existing boilers, their varying fuel types, grate designs, or overall emissions. Instead, the proposed rule has taken a select group of boilers, disregarded significant variables, and isolated individual hazard air pollutant emissions (HAPs) that do not reflect overall boiler performance (e.g. comparing PM versus comparing PM, CO, NOx for boilers). This HAP by HAP comparison has resulted in the lack of this rule being achievable.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3 and Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3

Commenter Name: William C. Scott
Commenter Affiliation: Collum's Lumber Products, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1796.1
Comment Excerpt Number: 2

Comment: MACT floors should be determined on a source basis, not a pollutant by pollutant basis.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4

Commenter Name: John P. Maultsby
Commenter Affiliation: Florida Plywoods, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1642.1
Comment Excerpt Number: 2

Comment: EPA should use a reasonable method to set the MACT limits based on what real best performing units actually can achieve. The method EPA is using to set the MACT emission standards is seriously flawed. Proposed emission limits are close to the detection limit of test methods and far beyond what normal best performing units can achieve. EPA is looking at only the best of the best units without latitude for variability among the extremely diverse universe of units and fuels used. Thus, EPA is setting the stage for an over-reaching regulation that will again be challenged for ignoring the practical capabilities of combustion units and controls. There are alternative ways to set the MACT limits that are consistent with the law and can be met by well performing combustion units and air pollution controls.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3

Commenter Name: Andrea Grant
Commenter Affiliation: Castle Oil Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1945.1
Comment Excerpt Number: 3

Comment: Assuming that EPA plans to move ahead and adopt numerical emission standards for oil-fired boilers, there is insufficient data to justify the standards currently proposed. EPA explains in the Preamble that it obtained information for the Area Source rule from several sources including various States' boiler inspection lists, State permits and the Information Collection Request conducted for the Major Source NESHAP proposed rule. There is real concern that the data obtained from these sources, particularly the ICR, relate primarily to larger boiler units, and EPA does not have sufficient data on which to regulate smaller units — those serving commercial and institutional facilities.

Response: Please see the preamble for information on the requirements set forth in the final rule.

Commenter Name: Robert L. Garfield
Commenter Affiliation: Food Industry Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1835.1
Comment Excerpt Number: 3

Comment: By looking separately at emission data for each hazardous air pollutant, EPA has proposed standards based on hypothetical "best performing" units that demand performance not achieved by any actual sources, rather than using data that are representative of what is actually achieved by real sources.

Response: Please see the preamble for discussion on pollutant-by-pollutant MACT analysis and changes to emission limits in the final rule.

Commenter Name: William C. Scott
Commenter Affiliation: Collum's Lumber Products, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1796.1
Comment Excerpt Number: 3

Comment: EPA set the MACT floors using a small subset of data from "best of the best" rather than the best 12% of data from all boilers as is required by the statute.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Andrea Grant
Commenter Affiliation: Castle Oil Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1945.1
Comment Excerpt Number: 4

Comment: It appears that in developing the proposed rule, EPA looked at very large boilers — those with a heat input capacity of 30 MMBtus/hr or greater that operate in steady state for extended periods of time. Smaller oil-fired boilers used in small apartments, churches, retail shops, large apartment houses and nursing homes/critical care facilities do not operate on a steady-state basis. Instead, when heat is demanded, they switch to an "on-mode," run for a relatively short period of time, and then switch to the "off-mode." Often they operate as many as 40 to 60 cycles per day. On average, the industry assumes that a boiler will run no more than 10 hours per day. The underlying data supporting the proposed Area Source rule for oil-fired boilers is thus based on distinctly different boiler types than those used in the facilities described above. Results obtained from larger boilers should not be extrapolated and applied to smaller boilers.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1945.1, Comment Excerpt Number: 3

Commenter Name: Jon Strimling
Commenter Affiliation: American Biomass Company
Document Control Number: EPA-HQ-OAR-2006-0790-1904.1
Comment Excerpt Number: 4

Comment: We recognize that as an industry, the EPA is a partner in improving air quality and environmental sustainability of energy, and so we advocate a ratcheting down of data driven emissions limits over a sensible time period. Such a path could involve biennial reduction goals beginning with the above limits (e.g. biomass limits: Carbon Monoxide (CO) – 1,164ppm (@ 7% O2) and Particulate Matter (PM) - 0.23 lbs/MMBtu), decreasing in a tiered approach based on the data generated from boilers tested in compliance with the new Area Source Boiler Rule, with a goal of allowing the marketplace to develop financially feasible emissions control options.

Response: Please see the preamble for changes to the requirements set forth by the final rule.

Commenter Name: Jeffery S. Hannapel

Commenter Affiliation: National Association for Surface Finishing
Document Control Number: EPA-HQ-OAR-2006-0790-1840.1
Comment Excerpt Number: 4

Comment: As discussed above, EPA was not required to adopt MACT standards for area source boilers. Nonetheless, EPA's process for establishing the proposed MACT standard is flawed. The proposed area source standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for a single HAP rather than the actual performance of one or more real sources. This biased approach is contrary to the language of section 112 of the CAA and produces unrealistic and impracticable standards.

The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) of the CAA specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress also provided express limits on EPA's authority to parse units and sources for purposes of setting standards under section 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).

Even if the Agency did have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures, i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to assess a critical and fundamental aspect of the proposed Boiler GACT renders the rulemaking process arbitrary and capricious.

Furthermore, EPA's database shows that very few units are best performers for more than one pollutant. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant-by-pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 5

Comment: As in the major source standard, EPA uses a 'pollutant by pollutant' MACT approach for the new source standards in the oil and biomass subcategories and for both new and existing source standards in the coal subcategory for this rule. EPA must develop a standard based on the average emission limitation achieved by the best performing 12 percent of existing sources in the same category. It appears that EPA has ignored this directive by developing an emission limitation that does not reflect this requirement. Although we understand there is a purpose for proposing limitations that go "beyond the floor", we do not believe the courts will have patience for this type of extreme reinterpretation of the Clean Air Act. We encourage the EPA to develop a legally defensible standard that uses quality assured, verifiable emissions data to establish an achievable MACT limitation based on this primary MACT limitation directive in the Clean Air Act.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11 and for Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 2

Commenter Name: Andrea Grant
Commenter Affiliation: Castle Oil Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1945.1
Comment Excerpt Number: 5

Comment: It appears that there are no data examining emissions from several smaller boilers (each with capacity of 5 to 7 MMBtus/hr) connected to provide heat and hot water in a larger apartment or critical care center. There is no evidence to indicate that emissions from these units can meet the same standards as an individual boiler with a much larger Btu per hour heat input capacity. Accordingly, there are insufficient data available for EPA to justify application of the proposed Area Source rule to smaller oil-fired boilers.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: N/A
Commenter Affiliation: Mercatus Center, George Mason University
Document Control Number: EPA-HQ-OAR-2006-0790-1837.1
Comment Excerpt Number: 7

Comment: Instead of treating the regulation as a whole, EPA could consider standards for each pollutant (or combinations of standards where the effect overlaps). For each pollutant, EPA should consider varying levels of stringency and produce a benefit-cost analysis identifying the marginal effect of increasing or decreasing the stringency of the regulation.

Response: Please see the preamble for discussion on pollutant-by-pollutant MACT analysis and changes to emission limits in the final rule.

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 8

Comment: The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. In short, the data are inadequate to support the proposed standards – especially with regard to the proposed existing source numeric standards. When using a § 112(d) approach to standard setting, the statute requires EPA to determine MACT according to the "available" emissions information; however, this does not excuse EPA from using its resources and information-gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The Agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: William C. Scott
Commenter Affiliation: Collum's Lumber Products, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1796.1
Comment Excerpt Number: 8

Comment: EPA has improperly established the CO limit for area source biomass boilers by including data from boilers that are too small to be representative of the area source boiler population, by establishing emission limits and averaging times that are most stringent for boilers located at area sources than at major sources, and failing to follow their own stated protocol for computing the CO limits for biomass boilers.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: Robert L. Garfield

Commenter Affiliation: Food Industry Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1835.1
Comment Excerpt Number: 9

Comment: EPA has proposed MACT standards for industrial boilers and process heaters that are based on individual pollutant-by-pollutant – rather than source-by-source – analyses in patent violation of the Clean Air Act. EPA has set limits for the suite of HAPs that reflect the "best performing source" for each individual HAP. Put differently, EPA has "cherry picked" the best data in setting each HAP standard, without regard for the sources from which the data come. This results in a combined set of standards for purely hypothetical boilers that may never have actually been achieved by any single, real world source. Creating hypothetical "best performing" units that demand performance not achieved by any actual source in the category is arbitrary and capricious and violates the language of § 112, which focuses on actual "sources." See CAA § 112(d)(1), (2), and (3) Rather than focusing on individual HAPs, the Clean Air Act unambiguously directs EPA to set standards based on the overall performance of "sources."

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 9

Comment: The amount of data is inadequate. Per the floor memo, EPA has collected very little emission data:
* no emission data for POM for any subcategory,
* no mercury emission data for the liquid subcategory,
* mercury emission data for only 9 coal boilers and 2 biomass boilers,
*no state regulations or permit data for mercury or POM, limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers)
EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid)6, so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. Of course, for purposes of setting the existing source standard, EPA uses data from the top 12% of units for which data are available, which in this case represents an even smaller fraction of the units. So, EPA proposes to set a standard applicable to thousands of boilers based on data from less than 0.1% of the units in the subcategory. This data record iswoefully insufficient to set a meaningful MACT emission limitation, and such an approach is absurd.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Robert L. Garfield
Commenter Affiliation: Food Industry Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1835.1
Comment Excerpt Number: 10

Comment: EPA has calculated its proposed MACT floors solely on the basis of emission data. EPA utterly ignored the plain mandate of the Clean Air Act by entirely neglecting to determine whether there was emission control equipment in use in each subcategory that could actually achieve those inordinately strict emission limits, a critical and necessary analysis required by the Clean Air Act.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 15

Comment: There are numerous technical reasons that the conclusions based on the analysis presented in the ERG MACT Floor memo[MACT Floor Analysis for the Industrial, Commercial, Institutional Boileers National Emission Standards for Hazardous Air Pollutants – Area Source; ERG Memo to EPA; Amanda Singleton; April, 2010] are flawed. The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. In short, the data are utterly inadequate to support the proposed standards – especially with regard to the proposed existing source numeric standards. The statute requires EPA to determine MACT according to the "available" emissions information; however, this does not excuse EPA from using its resources and information gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The Agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.
Even on its own merits, the proposal's approach to emission limit calculation misses the mark. Per the floor memo, EPA has collected very little emission data:
*no emission data for POM for any subcategory,

*no mercury emission data for the liquid subcategory,

*mercury emission data for only 9 coal boilers and 2 biomass boilers,

*no state regulations or permit data for mercury or POM,

*limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers)

EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal units, 10,958 biomass units, and 168,003 liquid units)31, so the small amount of data collected is only representative of the performance of a very small fraction of these boilers.

The emissions information is compiled in a confusing manner that does not have a consistent internal logic regarding the data points that are referenced, and is not compiled into one electronic database for easy review, as was done for the major source boiler rule. In our discussion and examples below, we refer to the data regarding biomass fired boilers. We believe many of the errors noted here also hold for the oil and coal-fired boilers.

There are numerous regulatory dataset problems: 1) the MACT Floor dataset is too small, 2) the MACT Floor units are not representative of the population of units in the proposed subcategories, 3) the MACT dataset includes facilities used inappropriately in the CO floor analysis for biomass , 4) the data points are not correctly accounted for, 5) the test information in the MACT dataset is not representative generally or specifically and does not include or consider long term data, 6) there are data quality issues, and 7) EPA did not follow its statistical variability rules for adjusting MACT Floors.

There are basic achievability problems as well: 1) the guarantees on boilers currently and historically sold do not meet either the existing or new boiler limits, 2) the CO limits for major source biomass boilers are higher than the proposed area source limits, 3) the limits can conflict with other environmental goals, rules, and standards, and 4) The averaging times for the proposed CO limit are too short. We believe these technical flaws are fundamental flaws that cannot be repaired in the limited time period EPA has been given to promulgate this standard and reinforces the recommendation we are making here to proceed in the direction of a GACT rule that refines and develops management or work practices in order to reduce HAP emissions from Area Source boilers.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 28

Comment: Since only facilities that have limits on their CO emissions are likely to have CO performance test data, the data collected through the ICR process is likely to only represent best performing sources. Thus, the MACT determination made using that data identified the best performing 12% of the best performing sources rather than on the best performing 12% of the source category.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 43

Comment: The MACT Floor memo cites 65 test series or permit limits from 72 facilities as the basis for a MACT floor analysis for CO for the biomass fired boiler subcategory, with actual test data from only 30 plants. 12% of 65 data points means the CO limit is set on the basis of tests from only 8 facilities. For some MACT analyses, data from 65 data points might be sufficient. However, EPA notes that their survey data show that 10,958 biomass fired boilers will be affected by this rule. Even on a prima fascia basis, using this limited amount of data to perform a representative MACT analysis does not hold water. Only 0.6% of the affected facilities are accounted for in the dataset used to generate the MACT floor units. A complete data set for the best performing 12% of units would contain data from 1315 facilities. Eight facilities simply cannot be seen as sufficient to build a MACT floor analysis representing nearly 11,000 biomass-fired boilers.

Similarly, for oil fired units, the ERG memo cites 125 test series or permit limits as the basis for a MACT floor analysis for CO for the liquid fired boiler subcategory, with actual test data from only 68 plants. With 168,000 oil fired units covered, an even smaller level of coverage is seen, less than 0.1%.

EPA included both test results and a very limited number of permit limits in their CO dataset. For instance, tables were provided from two states for biomass in the GACT Floor Memo. Thirteen states referenced were surveyed for their boiler inventories. Docket entries were noted in the Floor Memo for six states for area source boilers, but permit limits were not included for, apparently, many of the sources in those datasets. The quickest method to expand this database would be an effort to gather additional permit limit information from the sources identified, and expand the effort to the other states. Elsewhere in these comments, we note the general problem with single point in time, compliance test style CO data. An expansion of the dataset through permit limit information would be more representative of anticipated operating conditions at the permitted facilities.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 45

Comment: EPA has failed to characterize the biomass boilers in the area source database either by their size, type of biomass fuel used -wood, bark, agricultural residue, moisture level, etc.-, , the boiler design or the boiler's load pattern. Notably, in the Boiler MACT, with far fewer affected facilities, the database was subcategorized for size and boiler design. There was no apparent attempt to characterize the regulated universe of 10,958 units according to size, fuel properties, boiler design, or load. This is understandable since the database is inadequate to do so. EPA simply cannot substantiate any assertion that the dataset is representative.

Each of these important attributes of boiler operation can affect CO emissions performance and the dataset shows no indication that any consideration was made for these factors. It is thus, an unrepresentative dataset for the category. Making such consideration, we believe two conclusions that can be made are, first, that subcategorization is needed, second, there is inadequate data to both subcategorize and determine a standard and therefore that the only approach EPA can take with the dataset at hand is to promulgate a rule or an interim standard based on management or work practices, as advocated above, at least until such time as an adequate dataset can be developed to determine a standard.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 46

Comment: The boiler size data in the appendices of the Floor Memo are scattered, making comparisons done on this basis difficult and potentially imprecise. AF&PA was able to assemble a better sense of the size distribution of units in the CO dataset only by combining information from several of the appendices and data from the 2008 EPA Combustion survey. This involved considerable effort that would have been unnecessary if EPA made available its data bases in a more organized and transparent format. From the combustion database and documents referenced in the Floor Memo, AF&PA was able to determine that the dataset is dominated by small to medium size units. There are only 8 facilities/units larger than 100 MMBTU/hr. listed in the dataset. Notably, there were 14 facilities with capacities above 100 MMBTU/hr. listed in Appendix D-4 of the Floor Memo. Thus, if they had test information, test data from at least 6 of the units identified did not appear to make it into the dataset and therefore, the MACT floor analysis.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 8

Commenter Name: Paul Noe

Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 47

Comment: Given the limitations in the Area Source database that EPA has assembled, it is not surprising to observe that the MACT Floor units are not representative of the subcategory. Selecting boiler size as only one of the defining boiler characteristics cited above there is an obvious bias in the 8 facilities included in the MACT floor calculation. Most of the boilers are very small and several will not even be subject to numerical emission limitations under this rule. There are no boilers among the 8 that are above the 250 MMBTU/hr. level and only one above 100 MMBTU/hr. AF&PA members and other facilities affected by this rule have area source boilers spanning sizes from <10 MMBTU/hr. to over 500 MMBTU/hr. and the units chosen for the MACT floor calculation only reflect characteristics shared by a small minority of those units.

Response: We agree with the commenter in the sense that the MACT Floor units are not a representative sample of the corresponding subcategory. If EPA does not want to create standards for each identifiable subgroup, then it will be enough to justify the selection of the 8 sources based on their performance and not other measures such as size.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 48

Comment: The MACT Floor Dataset includes units whose capacity is under 10 MMBTU/hr. Since EPA proposes to regulate them separately and believes small boilers have different configurations and emission characteristics, logically the only way these units could have been used in this exercise is in the variability evaluation, not in setting the 'average of the best performing 12% of units in the subcategory,' a critical part of any 'floor' calculation. In Appendix F-1 of the Floor Memo, all the Fuels for Schools Tests are listed. All but one of the tests indicated a loading factor that was less than 10 MMBTU/hr., though some of the units had potential capacity that exceeded that level. One Fuels for Schools unit whose testing capacity load was above 10 MMBTU/hr. was not among the floor units. Consequently, we believe that none of the data from facilities less than 10 MMBTU/hr. is appropriately used. in the biomass CO limit calculation. The current MACT floor dataset contains 8 facilities, 4 of which have heat input capacities under 10 MMBTU/hr. according to the Fuels for Schools tests referenced in Floor Memo Appendix F-1. In a submittal is a list from the Fuels for Schools units in Floor Memo Appendix F-1 and the heat input rates during the stack tests included in the CO data set.

The boilers listed as 'operating permit review' data points in the Floor Memo Appendix A-1 MACT dataset are listed inconsistently and, we believe, inappropriately. For instance, Columbia Forest Products (data point #34) is listed individually, but in four other instances (data points #39, 42, 43 & 55) facilities/units with the same limit are listed together. Also, Snider Industries (data point # 11) is listed as from the combustion survey, but also is an individual permit

reference. For consistency they should all have been listed separately. When the inappropriate Fuels for Schools units are subtracted from the MACT dataset and the appropriate permit facilities listed in Floor Memo Appendix D-1 are added back in, AF&PA calculates that, if EPA had been internally consistent, the dataset size would be 62 data points. 14 Fuels for Schools data points should have only been used for variability calculations and would drop out of the best performing unit averaging calculation and 11 of the operating permit review facilities would be added (4 of the operating permit data units listed in Floor Memo Appendix D-1 are also below 10 MMBTU/hr., so they would remain out of the dataset). We believe this dataset problem, like the others noted here, reveals fundamental problems in the approach to setting limits taken by EPA in this proposal, reinforcing our recommendation that EPA must fundamentally re-orient its approach should EPA decide to set CO limits for biomass or oil boilers in this rule.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 8

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 67

Comment: The "pollutant by pollutant" approach used in the MACT based emission limit determinations for the new source biomass and liquid subcategories and for both the new and existing source coal subcategory is not appropriate because it results in standards that do not reflect the performance of the best performing boilers. The proposed area source MACT standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical best performing source that simultaneously achieves the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach[54 Industry Faults Strict EPA MACT Method for Regulating "Best" Sources, Inside EPA's Clean Air Report, Sept. 3, 2009.] is contrary to the language of § 112 and produces unrealistic and impracticable standards.

The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule.

Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures – i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.

EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 19

Comment: EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities[EPA-HQ-OAR-2006-0790-0037] , so the small amount of data collected is only representative of the performance of a very small fraction of these boilers. Therefore, we believe it is appropriate to examine what boiler manufacturers historically and currently guarantee for performance of these boilers and what states typically require as control technology and emission limits for these boilers. Appendix 5 of the submittal shows several current and historical specifications for oil and biomass boilers which are well in excess of the standards.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 14

Comment: We are concerned that EPA may have conducted a statistical analysis without first considering whether the emission limit is achievable across the very large group of sources being regulated. This has resulted in a proposed emission limit that is unachievable and impractical.

For example, rationale is lacking for why the proposed CO emission limit for area sources found in this rule is more stringent than the emission limits for CO for major HAP sources found in the National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial and Institutional Boilers and Process Heaters, (75 Federal Register 32006, June 4, 2010). For example, for several of our units that are biomass stoker fired boilers and minor sources of HAP, the proposed CO emission limit of 160 PPMVD at 7% O2 on a 24- hour basis is much, much more stringent than the existing major source biomass stoker MACT limit of 560 PPMVD at 7% O2, on a 30-day rolling average. Not only is the magnitude of the CO emission limit much more stringent for a minor source of HAPs compared to a major source of HAPs, but the averaging time is much more stringent for a minor source of HAPs than a major source of HAPs. Assuming that major HAP sources have more impact on the environment, it makes no sense to regulate smaller sources more stringently than larger sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-0985, Comment Excerpt Number: 35

Commenter Name: John Huber
Commenter Affiliation: National Oilheat Research Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1831.1
Comment Excerpt Number: 15

Comment: The "pollutant by pollutant" approach to determining MACT is not appropriate because it results in standards that do not reflect the performance of the best performing boilers. The proposed Industrial Boiler MACT standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This approach is contrary to the language of § 112 and produces unrealistic and impracticable standards.
Table 1 data shows that seven of the MACT top 12% boilers for CO have no PM data, two are not in the PM top 12% and of the five that are – four are from the same site with mega-boilers operating on jet fuel. (see submittal for supporting data.)
The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by

individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).
Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers and process heaters will be able to meet the proposed standards without taking any further control measures – i.e., EPA not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious. In our discussions with manufacturers of these small units, they have never tested to these levels, or designed equipment to verify that these standards can be reached.
EPA's database shows that very few units are best performers for more than one pollutant. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 16

Comment: The MACT floor for existing units for Hg (coal only) and CO (all fuel types) are calculated based on one or more data sets that contain less than three test runs. In order for a test result to be considered "achieved" it should contain at least three, valid test runs, which is the same criterion used to determine compliance with the proposed emissions standards. In some cases, the floor calculations include a single test run for a particular unit. RMB recommends eliminating all data sets containing less than three test runs from the emissions floor analysis.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2140.1, Comment Excerpt Number: 10

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 19

Comment: A cursory review of the data used to develop the CO emission limits indicates fundamental flaws in the methodology. It appears that EPA identifies over 10,000 biomass fired

area units, lumps them all together in one category, and then takes stack test data from only eight facilities to establish the MACT floor.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 21

Comment: Size: Fully half of the eight sources used to establish the CO limits are very small boilers located at schools. It is simply not reasonable to compare a small institutional boiler to our much larger power plants.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 8

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 22

Comment: Combustion technology: The type of combustion used must also be taken into account. For example, many newer small biomass units are of a gasifier type design, which is very different than a stoker fired boiler. As shown in the EPA proposed major MACT standard for boilers, CO varies considerably between different combustion types.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1241, Comment Excerpt Number: 6

Commenter Name: Mark Denzler
Commenter Affiliation: Illinois Manufacturers' Association
Document Control Number: EPA-HQ-OAR-2006-0790-2004
Comment Excerpt Number: 5

Comment: New Source MACT Floor Is Too Stringent. The emission standards for new sources are not attainable as a practical matter. The IMA does not believe that the EPA would be able to identify sources in each category that could consistently meet all proposed emission limits

simultaneously. EPA should better consider fuel variability and evaluate the possibility of using percent reduction as an alternative to absolute emission limits.

Response: Please see the preamble for changes to the requirements set forth by the final rule.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 7

Comment: The available emissions data are not of sufficient quantity and quality to support the proposed methodology for setting MACT floors. The limited data result in unachievable standards that are not justified under the facts or the law.

The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. In short, the data are inadequate to support the proposed standards – especially with regard to the proposed existing source numeric standards. When using a Section 112(d) approach to standard setting, the statute requires EPA to determine MACT according to the "available" emissions information; however, this does not excuse EPA from using its resources and information gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The Agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.

The emissions data have three basic problems. First, the amount of data is wholly inadequate. Given the size of the regulated community, EPA has collected very little emission data. For example in the biomass subcategory – no emission data for POM, mercury emission data for only two boilers, no state regulations or permit data for POM, and limited data (30 boilers) for CO.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 7

Comment: The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. In short, the data are inadequate to support the proposed standards – especially with regard to the proposed existing source numeric standards. The statute requires EPA to determine MACT according to the "available" emissions

information; however, this does not excuse EPA from using its resources and information gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.

The emissions data have three basic problems. First, the amount of data is wholly inadequate. Per the floor memo, EPA has collected very little emission data:

no emission data for POM for any subcategory,
no Hg emission data for the liquid subcategory,
Hg emission data for only 9 coal boilers and 2 biomass boilers,
no state regulations or permit data for Hg or POM,
limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers)

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Abbie Krebsbach
Commenter Affiliation: Montana Dakota Utilities Co
Document Control Number: EPA-HQ-OAR-2006-0790-1975.1
Comment Excerpt Number: 1

Comment: Montana-Dakota believes that the EPA does not take an adequate approach to establishing emission standards based on actual sources. EPA's proposed limits apply to all boiler technologies located at area source facilities, however, it appears the EPA has not considered sufficient actual performance data from different boiler categories and subcategories, as well as variability in fuel, when determining its proposed MACT limits, as it should per Sections 112(d)(1), (2), and (3) of the Clean Air Act (CAA). Section 112(d)(3)(A) specifically requires the EPA to set MACT limits for existing sources based on "the average emissions limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emission information)." The preamble to the rule indicates that the EPA based its proposed MACT standards in this rule using data from very few actual sources, using only one or two sources in a category at times to set a standard.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11 and for Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 2

Commenter Name: William Rogers
Commenter Affiliation: DTE Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2159.1
Comment Excerpt Number: 1

Comment: The process EPA used to determine a MACT floor for each HAP or HAP surrogate individually is a flawed process that will likely create a set of MACT floors that do not represent the emission controls achieved by any actual boilers. While the MACT floor for an individual HAP will be achieved at an individual boiler, there will not be an actual, best performing boiler that achieves the standard for the entire set of HAPs. MACT standards must be set based on the level of performance achieved by actual sources. EPA needs to develop an appropriate approach for identifying the best performing units in a MACT rulemaking where sources in the category emit multiple HAPs.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 1

Comment: The proposed IB MACT limits were derived by determining a MACT floor for each HAP or HAP surrogate for each subcategory of sources. See 75 Fed. Reg. at 32,019. Under this approach, EPA puts on a set of blinders and identifies the lowest emitting units [Footnote: In the case of new units, EPA bases the MACT floor on the best performing source.] to determine the MACT floor for a given HAP. EPA then directs its attention to the next HAP, ignoring those units it just determined were the “best performing” in setting the MACT floor for the first HAP, and establishes the next MACT floor based on a different set of units. EPA repeats this process until MACT floors have been set for all HAPs emitted by each subcategory of industrial boilers. The end result is a set of MACT floors that do not represent the emission controls achieved by an actual, best-performing unit. Instead, they reflect the performance of a hypothetical, ideal unit that does not exist in the real world -- a “Franken-plant.” [Footnote: As UARG noted in earlier comments on EPA’s proposed medical waste incinerator rule, just as Dr. Frankenstein’s fictitious monster bore no resemblance to an actual human being, EPA’s fictitious "Franken-plant" bears no resemblance to actual, best performing industrial boilers.]

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2 and Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 5

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 1

Comment: EPA should collect more data on emissions from biomass- and oil-fired area source boilers until it can develop an emissions data set that is reasonably representative of the actual population of these boilers. Moreover, biomass is a highly variable fuel, and emissions limits, if any, should be based on considerations such as biomass fuel type, boiler design and combustion methods. Finally, any MACT limits established for oil- and biomass-fired boilers should be based upon boilers subject to the MACT limits (and not on those which may qualify for an exemption to such limits).

Response: Please see preamble for MACT Floor methodologies discussion and changes to requirements set forth in the final rule.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 1

Comment: According to the email, the Maine Forest Service received information from the US Forest Service that several boiler manufacturers can meet the proposed CO Standard; and with the addition of an ESP meet the PM standard.

Response: Please see the preamble for current emission limits set forth in the final rule.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2198.1
Comment Excerpt Number: 1

Comment: Inadequate Data Used to Establish Emissions Floors

EPA has calculated the proposed emissions floors using a grossly inadequate amount of emissions data. Each of the emissions floors are calculated based on data representing << 1% of the total population for each fuel type. Furthermore, there is insufficient data available to establish appropriate boiler-type subcategories for combustion-related HAPs. We believe that the lack of data has resulted in proposed emissions standards that are not representative of the affected boiler population.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Per Carlsson

Commenter Affiliation: ABioNova
Document Control Number: EPA-HQ-OAR-2006-0790-2147.1
Comment Excerpt Number: 1

Comment: Why not try to harmonise to already proven directives like European EN303-5? This directive has proven itself for several years and driven the use of biomass boilers to be more clean-burning and high-efficiency appliances.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1949.1, Comment Excerpt Number: 12

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 1

Comment: In establishing achievable MACT emission standards for area sources, EPA should consider current manufacturer-guaranteed emission levels. In the preamble to the Proposed Area Source Rule, EPA notes that pursuant to the directives of Section 112(c)(6) of the Clean Air Act, it has developed maximum achievable control technology ("MACT") standards for mercury emissions from coal-fired area source boiler and for polycyclic organic material from all area source boilers. 42 U.S.C.A.§7412(c)(6). MACT is enumerated in section 112(d) of the Clean Air Act, which requires EPA to establish emission standards based on the "maximum degree of reductions in emissions of the hazardous air pollutants . . . that the Administrator, taking into consideration the cost of achieving such emission reduction . . . determines is achievable for new or existing sources in the category or subcategory to which such emission standard applies . . ." 42 U.S.C.A. §7412(d). In establishing "achievable" emission standards, section 112(d)(3) directs EPA to examine the emission control that is "achieved in practice" by top performers based on "emission information" available to the agency. ABMA acknowledges EPA's efforts to comply with the directives of Section 112 by evaluating stack testing and continuous emission monitoring system ("CEMS") data from boilers within the subcategories identified in the Proposed Area Source Rule. However, such testing and CEMS information may not be representative of the range of boiler design types within each subcategory, may not consider variable performance across the range of firing rates, and may not reflect practical operational constraints such as startup and shutdown periods, load swinging and other issues.

To evaluate these issues comprehensively, ABMA suggests that EPA should consider information that is available from boiler, burner, and emissions control equipment manufacturers, including currently available equipment design and guaranteed emission levels. Specifically, emission limits that are identified by EPA as "achieved in practice" should not be inconsistent with the most up-to-date equipment emission guarantees offered by equipment manufacturers. ABMA does not suggest that MACT emission levels should be equivalent in all cases with manufacturer guarantees. However, boiler, burner and control equipment manufacturers base guaranteed performance levels on a number of considerations that may be

beyond the scope of EPA's data set. Therefore, emission levels set well below the range of guaranteed performance may not be "achievable" in practice for all purposes. Further, regardless of mandated emission standards, equipment manufacturers cannot provide commercial warranties or guarantee an emission level associated with any product or technology, where the emission standard cannot be achieved continuously over a defined period of time using currently available technology. In short, due to commercial liability considerations, no boiler, combustion equipment or emissions controls manufacturer will sell technology for which the manufacturer cannot provide guaranteed performance and, conversely, no owner/operator will buy technology for which a performance guarantee is not provided. Without such guarantees, boiler owners and operators maybe left in a difficult position, and without a clear path to compliance. For these reasons, and where appropriate, ABMA has offered herein information and considerations that may impact manufacturers' emission guarantee levels for various pollutants and boiler types as an additional source of "emissions information" that may be considered by EPA in setting standards pursuant to Section 112.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2 and Document Control Number: EPA-HQ-OAR-2006-0790-1949.1, Comment Excerpt Number: 10

Commenter Name: Fred P. Osman
Commenter Affiliation: Osman Environmental Sollutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2146.1
Comment Excerpt Number: 1

Comment: The NESHAP for Boilers at area sources of HAPS proposes GACT-based CO limits for
biomass boilers (regardless of type) of 100 PPM (@7% 02) for new sources and 160 PPM (@7% 02) for existing sources.
The corresponding major source boiler MACT proposes CO limits of 560 PPM (@3% 02) for new and existing biomass stokers, which would equate to 435 PPM at 7% 02.
Clearly something is amiss in EPA's process when a GACT standard is 4 times more stringent than a MACT standard. One approach to consider may be to publish CO standards for stokers and fluidized bed boilers as two subcategories under the area source standard. The overriding issue, however, is that EPA must establish limits that make sense from a combustion engineering and air pollution control standpoint rather than from a blinders-on, statistical review of what is in many cases, a difficult-to-believe data base. Limits must be achievable in practice.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-0985, Comment Excerpt Number: 35

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association

Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 1

Comment: EPA has proposed MACT standards for industrial boilers and process heaters that are based on individual pollutant-by-pollutant — rather than source-by-source — analyses. In doing so, EPA has set standards based on hypothetical "best performing" units that demand performance not achieved by any actual sources. This arbitrary "cherry picking" approach to the data collection results in a combined set of standards for purely hypothetical boilers that may not, and likely have not, ever have been achieved by any single, real world source. Further, this approach would appear to be at odds with the Clean Air Act, which unambiguously directs EPA to set standards based on the overall performance of "sources."

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4, Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2, and Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 5

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research
Document Control Number: EPA-HQ-OAR-2006-0790-2140.1
Comment Excerpt Number: 1

Comment: EPA has calculated the proposed emissions floors using a grossly inadequate amount of emissions data. Each of the emissions floors are calculated based on data representing << 1% of the total population for each fuel type. Furthermore, there is insufficient data available to establish appropriate boiler-type subcategories for combustion-related HAPs. We believe that the lack of data has resulted in proposed emissions standards that are not representative of the affected boiler population.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Per Carlsson
Commenter Affiliation: Scandinavian Cleantech Export Association
Document Control Number: EPA-HQ-OAR-2006-0790-2202.1
Comment Excerpt Number: 1

Comment: SCEA also has the question: Why not try to harmonise to already proven directives like European EN303-5?
This directive has proven itself for several years and driven the use of biomass boilers to be more clean-burning and high-efficiency appliances.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1949.1, Comment Excerpt Number: 12

Commenter Name: Keith A. Craig
Commenter Affiliation: Pennsylvania Hardwoods Development Council
Document Control Number: EPA-HQ-OAR-2006-0790-2017.1
Comment Excerpt Number: 2

Comment: The methodology used by the EPA to set emission limits is unnecessarily extremely stringent, often resulting in limits that are barely detectable and impossible to achieve. The limits rely on data that do not consider the variability of best performing boilers such as warm-ups, shutdowns, load swings, fuel mix and fuel quality changes, control efficiency differences and performing testing adjustments. The data used in setting these limits is heavily biased toward the top performing units. Several of the limits for biomass are set unreasonable low, because the baseline for emissions is very low to begin with compared with other fuels.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Jay C. Moon
Commenter Affiliation: Mississippi Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2000
Comment Excerpt Number: 2

Comment: While MMA supports certain aspects of the proposed rules described below, we remain fundamentally concerned that EPA has proposed standards that are not actually "achievable" or "achieved in practice" by existing "sources," as expressly required by the Clean Air Act. This unfortunate and unworkable result is driven by a series of flawed decisions embedded in the proposed rule. For example, by looking separately at emission data for each hazardous air pollutant, EPA has proposed standards based on hypothetical "best performing" units that demand performance not achieved by any actual sources, rather than using data that are representative of what is actually achieved by real sources. In addition, EPA's reliance on incomplete and defective data has resulted in flawed standards that are biased towards overly-restrictive limits. In order to avoid these results and to conform the rules to the requirements of the Clean Air Act, we request that EPA make significant changes to the proposed rule in light of the following points.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2 and Document Control Number: EPA-HQ-OAR-2006-0790-1914.1, Comment Excerpt Number: 23

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 2

Comment: Section 112(d)(3) of the CAA expressly requires that emission limitations for new units should not be less stringent "than the emission control that is achieved in practice by the best controlled similar source" (emphasis added). For existing units, the emission standards "shall not be less stringent, and may be more stringent than -- the average emission limitation achieved by the best performing 12 percent of the existing sources." CAA § 112(d)(3)(A) (emphasis added). Section 112(a) defines "major source" as any "stationary sources located within a contiguous area and under common control." Section 112(a) defines "area source" as "any stationary source ... that is not a major source." That section also defines the term "stationary source" as having the same meaning as that term has under CAA § 111(a). That subsection, in turn, defines a "stationary source" as "any building, structure, facility, or installation which emits or may emit any air pollutant." CAA § 111(a)(3).

These statutory provisions reveal a clear congressional intent that MACT standards promulgated under § 112(d) must be based on the actual performance of an actual source or sources. They do not allow MACT standards to be based on hypothetical, ideal units nor do they allow the "emissions control" achieved by the best sources to be determined using a pollutantby-pollutant approach on a shifting group of best performing units.

EPA's standard-setting approach violates the express language of § 112(d)(3) for setting new source MACT limits. New MACT source limits look to the level of performance "achieved in practice by the best controlled similar source." This language directs EPA to use a single "source" to set new source MACT limits. It does not direct EPA to use a collection of "sources" to set the lowest possible emission limit for each HAP for new sources. Had Congress intended EPA to follow the approach the Agency has chosen in the proposed IB MACT rule, it would have added a phrase to the end of § 112(d)(3) ordering EPA to set new source limits based on the performance achieved in practice by the best controlled source "for each HAP." No such HAPby-HAP command exists in § 112(d)(3). Similar logic applies for existing units because MACT standard setting is premised on the performance of "sources."

The attached memorandum from RMB Consulting & Research, Inc. ("RMB Consulting") (Attachment A) demonstrates how EPA's MACT standard-setting approach in the IB MACT rulemaking produces emission limits that fail to reflect the performance of actual sources. For example, in the biomass subcategory, the source with the lowest particulate matter ("PM") emissions had hydrogen chloride ("HCl") emissions that were over two orders of magnitude higher than the source with the lowest HCl emissions. Similarly, the source with the lowest mercury ("Hg") emissions had PM emissions 10 times greater than the best performing PM unit and 146 times higher than the best performing HCl unit.

EPA's approach for setting MACT floors in the proposed rule is illegal and should not be followed in the industrial boiler rulemaking or in subsequent § 112(d) rulemakings. MACT standards must be set based on the level of performance achieved by actual sources. EPA needs to develop a weighting approach for identifying the best performing units in MACT rulemakings where the sources in the category emit multiple HAPs.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Lisa Jacobson
Commenter Affiliation: Business Council for Sustainable Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1991.1
Comment Excerpt Number: 2

Comment: Recognizing that the EPA interprets section 112(d)(3) as establishing Maximum Available Control Technology (MACT) floors on a HAP-by-HAP basis and has promulgated rules accordingly, the BCSE joins other groups in recommending that the EPA nevertheless work to ensure that standards and control requirements do not conflict such that it would become impossible for a facility to meet each standard collectively.

Response: Please see preamble for discussion of MACT floor methodologies used and changes to requirements set forth in the final rule.

Commenter Name: Paul Lyskava
Commenter Affiliation: Pennsylvania Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-2223.1
Comment Excerpt Number: 2

Comment: We have significant concerns that the stringent numeric emissions limitations in the regulation will be difficult, if not impossible, to meet.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1 Comment Excerpt Number: 2

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 2

Comment: Data used to develop the Area Source Boiler Rule

Out of EPA's estimated total population of 10,958 biomass boilers, the Maximum Achievable Control Technology (MACT) CO limits were determined by only 65 boilers (0.6%). The Generally Available Control Technology (GACT) PM limits were determined by only 20 boilers (0.2%). The biomass boilers that achieve the PM standard are not the same boilers that achieve the CO standard. The six biomass boilers in the dataset that are able to meet the proposed GACT standard for PM have an average CO emission of 1,164 ppm, which is more than 11 times higher than the proposed CO limit for new boilers. The eight biomass boilers in the dataset that are able to meet the MACT standard for CO have an average PM emission of 0.23 lbs/mmBtu, which is more than seven times higher than the proposed PM limit. In other words no biomass boiler tested by EPA can meet the proposed standards for PM and CO.

The population of tested boilers also was limited by boiler size. Only data from boilers >10 mmBtu/hr was used to develop PM limits, while only data from boilers >1.6 mmBtu/hr was used to develop CO limits. Area source boilers range in size from 200,000 btu/hr to >10 mmBtu/hr in size.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3

Commenter Name: Dennis Vroman
Commenter Affiliation: United Steel Workers
Document Control Number: EPA-HQ-OAR-2006-0790-2209
Comment Excerpt Number: 2

Comment: My understanding is that EPA has issued many MACT rules, but you're proposing to change the rules of the game for industrial boilers. Instead of looking at the overall performance of good boilers, you'd set rules that only some type of super boiler could comply with.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4

Commenter Name: A. Steven Young
Commenter Affiliation: Association of Independent Corrugated Converters
Document Control Number: EPA-HQ-OAR-2006-0790-1994.1
Comment Excerpt Number: 2

Comment: While AICC supports certain aspects of the proposed rules described below, we remain fundamentally concerned that EPA has proposed standards that are not actually "achievable" or "achieved in practice" by existing "sources," as expressly required by the Clean Air Act. This unfortunate and unworkable result is driven by a series of flawed decisions embedded in the proposed rule. For example, by looking separately at emission data for each

hazardous air pollutant, EPA has proposed standards based on hypothetical “best performing” units that demand performance not achieved by any actual sources, rather than using data that are representative of what is actually achieved by real sources. In addition, EPA’s reliance on incomplete and defective data has resulted in flawed standards that are biased towards overly-restrictive limits. In order to avoid these results and to conform the rules to the requirements of the Clean Air Act, we request that EPA make significant changes to the proposed rule.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Lewis F. Gossett
Commenter Affiliation: South Carolina Manufacturers Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-2196.1
Comment Excerpt Number: 2

Comment: The proposed Area Source Rule standards are based on pollutant-by-pollutant analyses that rely on a different set of “best performing” sources for each separate HAP standard. In other words, EPA has “cherry picked” the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a theoretical set of best performing sources that simultaneously achieve the greatest emission reductions for individual HAPs rather than the actual performance of one or more real sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4

Commenter Name: C.A. Vandersteen
Commenter Affiliation: Louisiana Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2246
Comment Excerpt Number: 3

Comment: Third, in these CAA rules, we believe EPA should use a method to set emissions standards that are based on what real world best performing units actually can achieve. Unfortunately, the Agency’s approach, which sets standards pollutantby-pollutant, does not reflect what real world units achieve in practice, despite the fact that EPA has the technical and legal discretion to promulgate standards that are much more reasonable.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4

Commenter Name: John T. Heard
Commenter Affiliation: Virginia Coal Association, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2155.1
Comment Excerpt Number: 3

Comment: The proposed Industrial Boiler MACT standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard (see submittal for footnote 4). In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach(see submittal for footnote 5) is contrary to the language of § 112 and produces unrealistic and impracticable standards.
The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that results in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 {D.C. Cir. 2008).
Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers and process heaters will be able to meet the proposed standards without taking any further control measures
EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.
EPA's database shows that very few units are best performers for more than one pollutant. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources. Of the approximately 2,000 sources within EPA's inventory of solid, liquid, and gas 2 boilers, based on the emissions data in EPA's database, we estimate that only 6 sources can currently comply with the proposed

standards. We believe such a result is well beyond what is required or intended for the MACT program.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Darrell Soyars
Commenter Affiliation: Avista Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-1989.1
Comment Excerpt Number: 3

Comment: It is well established that different boiler designs will have different CO emission rates. These differences are acknowledged in the EPA AP-42 Chapter 1.6 - Wood Residue Combustion in Boilers. The CO emission factors for fluidized bed combustors cells in AP-42 are three times lower than the emission factors for stoker boilers. This underscores that a single CO emission limit is not applicable to all boiler designs.
Any rulemaking should establish CO emission limits for different sizes of boilers based on heat input or ranges of heat input. Different sized boilers can have different combustion and emission characteristics. These differences should be accounted for when specifying CO emission limits for area source boilers. There is no technical basis to assume that, when using CO as a surrogate for organic HAP, the same CO emission limit for a 1 or a 10 MMBtu/hr boiler is appropriate for a 250 MMBtu/hr or larger boiler. In fact, EPA has already acknowledged that CO emission limits should be different for different sized boilers. The proposed regulations for major HAP source boilers has a CO emission limit for existing stoker biomass boilers of 560 ppm at 3% 02. If this CO emission rate is considered MACT for organic HAP from what are presumably large biomass stoker boilers, it should be considered MACT for an area source biomass stoker boiler of the same size.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-0985, Comment Excerpt Number: 35 and for Document Control Number: EPA-HQ-OAR-2006-0790-1241, Comment Excerpt Number: 6

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 3

Comment: As an industry, we support robust emission limits based on good science and rational costs of implementation; however, we believe that the EPA's proposed emission limits are derived from an incomplete data set that do not accurately reflect the range of normal biomass boiler operating variability. As a result, we do not endorse the EPA's proposed limits for PM and CO.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3

Commenter Name: Melissa Mullarkey
Commenter Affiliation: Recycled Energy Development, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2193.1
Comment Excerpt Number: 3

Comment: Rather than address each pollutant individually, EPA would achieve better environmental results by addressing what a facility can achieve in reductions from across all pollutants. The proposed pollutant-by-pollutant approach does not reflect how facilities operate in the real world, how managers simultaneously address multiple pollutants. It also does not acknowledge that different fuels can lead to a different mix of pollutants. Nor does it recognize that facility managers constantly make balancing decisions, such as selecting minor operating adjustments that substantially reduce their CO emissions but slightly increase their NOx emissions. Since EPA has the technical and legal discretion to promulgate standards that allow more real-world flexibility, RED suggests the agency address what the best performing facilities can achieve in reductions across the mix of pollutants.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4, Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3, and Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 5

Commenter Name: Arie Verloop
Commenter Affiliation: Jansen Combustion and Boiler Technologies, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1856.1
Comment Excerpt Number: 3

Comment: The data base used by the EPA in drafting the ruling appears to be flawed and the methodology does not account for the huge variations in fuel quality and boiler design.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1052.1, Comment Excerpt Number: 3

Commenter Name: John Ledger
Commenter Affiliation: Associated Oregon Industries
Document Control Number: EPA-HQ-OAR-2006-0790-2024.1
Comment Excerpt Number: 3

Comment: While we support certain aspects of the proposed rules, we remain fundamentally concerned that EPA has proposed standards that are not actually "achievable" or "achieved in practice" by existing sources as expressly required by the Clean Air Act. This unfortunate and unworkable result appears driven by a series of flawed decisions embedded in the proposed rule. Accordingly, we request that EPA make significant changes to the proposed rule.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1 Comment Excerpt Number: 2

Commenter Name: Duane Mummert
Commenter Affiliation: South Carolina Chamber of Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-2247
Comment Excerpt Number: 4

Comment: The proposed Area Source Rule standards are based on pollutant-by-pollutant analyses that rely on a different set of "best performing" sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a theoretical set of best performing sources that simultaneously achieve the greatest emission reductions for individual HAPs rather than the actual performance of one or more real sources.
The statute clearly directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that results in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).
EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Chris V. Isaacson
Commenter Affiliation: Alabama Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2060
Comment Excerpt Number: 4

Comment: The "pollutant by pollutant" approach to determining MACT is not appropriate because it results in standards that do not reflect the performance of the best performing boilers.

As in the major source standard, EPA uses a ‘pollutant by pollutant’ MACT approach for the new source standards in the oil and biomass subcategories and both the new and existing source standards in the coal subcategory for this rule. The proposed area source standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach" is contrary to the language of 112 and produces unrealistic and impracticable standards. [Footnote: Industry Faults Strict EPA MACT Method for Regulating "Best" Sources, Inside EPA’s Clean Air Report, Sept. 3, 2009.]

The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA’s discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA’s authority to parse units and sources for purposes of setting standards under 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. [Footnote: Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).]

Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures — i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.

EPA’s database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Keith A. Craig
Commenter Affiliation: Pennsylvania Hardwoods Development Council
Document Control Number: EPA-HQ-OAR-2006-0790-2017.1
Comment Excerpt Number: 4

Comment: We request that the Environmental Protection Agency revise the proposed Boiler MACT rule to:
Use a method to set emissions standards that is based on what real-world best performing units can achieve for all related HAPs and reflects the variability that occurs in real-world best performing boilers.

Response: Please see preamble for a discussion of MACT floor methodologies used and changes to requirements set forth in the final rule.

Commenter Name: Ben Brandes
Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 5

Comment: The "Pollutant By Pollutant" Approach to Determining MACT is
Not Appropriate Because it Results in Standards That Do Not Reflect the Performance of the Best Performing Boilers
The proposed Industrial Boiler MACT standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has ?cherry picked the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This ?Frankenstein approach is contrary to the language of § 112 and produces unrealistic and impracticable standards.
The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing which results in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to ?distinguish units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).
Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers and process heaters

will be able to meet the proposed standards without taking any further control measures – i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.
EPA's database shows that very few units are best performers for more than one pollutant. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources. Of the approximately 2,000 sources within EPA's inventory of solid, liquid, and gas 2 boilers, based on the emissions data in EPA's database, we estimate that only 6 sources can currently comply with the proposed standards. We believe such a result is well beyond what is required or intended for the MACT program.

[Footnote 40: See, e.g., 75 FR 32019 ("For each pollutant, we calculated the MACT floor for a subcategory of sources by ranking all the available emissions data from units within the subcategory from lowest emissions to highest emissions, and then taking the numerical average of the test results from the best performing (lowest emitting) 12 percent of sources."
[Footnote 41: Industry Faults Strict EPA MACT Method for Regulating "Best" Sources, Inside EPA's Clean Air Report, Sept. 3, 2009.]

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Frank A. Stanonik
Commenter Affiliation: Air-Conditioning, Heating, and Refrigeration Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2156.1
Comment Excerpt Number: 5

Comment: We have not seen any technical information that indicates that the unique circumstances of lower input oil boilers were analyzed or that the actual emissions of those products were considered in proposing this rule. The June 4, 2010 Federal Register notice summarized some information on actual CO emissions from oil-fired boilers that was used to develop the proposed limits. But that information does not describe the input of the boilers or any other relevant information. Based on this limited information it does not appear that any of this data came from lower input boilers.
We recommend that EPA either exclude new oil boilers with input rates less that 10,000,000 Btu/h or conduct a separate analysis of models in the input range of 50,000 Btu/h to 10,000,000 Btu/h to determine appropriate proposed emission levels for those products.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1945.1, Comment Excerpt Number: 3

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 5

Comment: The "Pollutant by Pollutant" Approach to Determining MACT is Not Appropriate Because It Results in Standards That do Not Reflect the Performance of the Best Performing Boilers

The proposed area source MACT standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach [Footnote: Industry Faults Strict EPA MACT Method for Regulating "Best" Sources, Inside EPA's Clean Air Report, Sept. 3, 2009.] is contrary to the language of 112 and produces unrealistic and impracticable standards.

The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. [Footnote: Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).]

Even assuming for the sake of argument that the agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures – i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.

EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source particulate matter (PM) and carbon monoxide (CO) standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Scott Manley
Commenter Affiliation: Wisconsin Manufacturers and Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-2258.1
Comment Excerpt Number: 5

Comment: EPA's HAP by HAP approach to setting the MACT floor violates the Clean Air Act. EPA has proposed MACT standards for industrial boilers and process heaters that are based on individual pollutant-by-pollutant - rather than source-by-source - analyses in patent violation of the Clean Air Act. EPA has set limits for the suite of HAPs that reflect the "best performing source" for each individual HAP. Put differently, EPA has "cherry picked" the best data in setting each HAP standard, without regard for the sources from which the data come. This results in a combined set of standards for purely hypothetical boilers that may never have actually been achieved by any single, real world source. Creating hypothetical "best performing" units that demand performance not achieved by any actual source in the category is arbitrary and capricious and violates the language of § 112, which focuses on actual "sources." See CAA § 112(d)(1), (2), and (3) Rather than focusing on individual HAPs, the Clean Air Act unambiguously directs EPA to set standards based on the overall performance of "sources."

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Michael Hutcheson
Commenter Affiliation: Ameren Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2012.1
Comment Excerpt Number: 5

Comment: The methods used to set the MACT floor and the resulting emission standards for most subcategories of sources was flawed and in direct contravention of the requirements of the Act. Ameren requests that US EPA review and revise the MACT floor analysis on the record with the underlying test data, revise the MACT standards accordingly and resubmit the revised standards for public comment. The flaws in the analysis used to establish the MACT floor are substantial and comment on the necessary changes impossible.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1914.1, Comment Excerpt Number: 23

Commenter Name: Winslow Sargeant
Commenter Affiliation: U.S. Small Business Administration
Document Control Number: EPA-HQ-OAR-2006-0790-2020
Comment Excerpt Number: 5

Comment: EPA's Proposed Emissions Standards Are Too Stringent.

Advocacy held two roundtables on the boiler rules with a wide variety of potentially affected small entities in attendance. There was widespread agreement among the participants representing a large diversity of manufacturing sectors that this proposal has impractical emissions limits that will be exceedingly costly to meet for almost all facilities.

EPA based emissions limits on a relatively small number of boilers in some subcategories, which in combination with significant non-detect data drove the MACT floor to unreasonably low levels in some cases. EPA needs to refine the statistical approach that it takes to setting emissions limits by taking emissions variability into account for sources, such as boilers. Because of this approach, Advocacy has heard repeatedly that the carbon monoxide (CO) limit will be exceedingly costly for many units to meet under any circumstances.

In addition, the rules cover at least five different HAPs, and in setting the emissions limits for each HAP EPA used the least emitting sources for each individual HAP to define the MACT floor. Unfortunately, combining data from separate sources, provides no evidence that actual existing sources can meet all of the criteria that compose this synthetic ("uber" facility, as it is sometimes labeled) source made up of a collection of the best controlled sources controlling different pollutants. As noted above, data variability and the heterogeneity of sources lead to significant variation in emissions for each HAP. By cherry picking the data for each HAP and then combining these emissions limits into a standard for real world sources, EPA has crafted a rule that costly and impractical. EPA should have instead observed the best-performing real world sources that address all the HAPs and crafted a standard wherein emissions limits mirrored their performance, thereby creating a more real world standard. The stringent new source provision of the proposal likewise will , deter many sources from upgrading to new boilers because the new source performance standards are also based on the emissions of the synthetic source which would be so impractical as to inhibit any potential gains from installing newer, more fuel-efficient, lower emitting technology.

Response: Please see preamble for a discussion of MACT floor methodologies and changes to requirements set forth in the final rule.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 5

Comment: EPA's HAP-by-HAP approach violates the Clean Air Act and is arbitrary and capricious .

EPA ignored the record evidence of the performance of actual "sources" when establishing the suite of emissions limits. Instead, for each subcategory, EPA set individual limits for each HAP that reflect the best performing source only for that individual HAP. EPA then combined the HAP limits into a suite of emissions standards for each subcategory. This results in a combined set of standards reflecting purely hypothetical boilers that have never actually been achieved by any single, real world source, and possibly never will. Creating hypothetical "best performing" units that demand compliance with emission standards not achieved by any actual source in a subcategory (let alone the necessary 12% of sources for a true floor) is arbitrary and capricious and violates EPA's statutory obligation to establish limits that are based on actual the performance of "sources."

The proposed MACT standards for industrial boilers and process heaters are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. See, e.g., 75 Fed. Reg. at 32019 ("For each pollutant, we calculated the MACT floor for a subcategory of sources by ranking all the available emissions data from units within the subcategory from lowest emissions to highest emissions, and then taking the numerical average of the test results from the best performing (lowest emitting) 12 percent of sources."). In other words, EPA "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. This approach violates the language of 112, which is focused on the performance of "sources," and produces arbitrary and capricious standards.

The statute unambiguously directs EPA to set standards based on the overall performance of "sources." Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" "in practice" for the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. In particular, Section 112(d)(3) emphasizes that EPA must focus on what emissions reductions are achievable "in practice" for a "source."

New and existing sources.- The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator. Emission standards promulgated under this subsection for existing sources in a category or subcategory may be less stringent than standards for new sources in the same category or subcategory but shall not be less stringent, and may be more stringent than - the average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emissions information) ... in the category or subcategory for categories and subcategories with 30 or more sources , or the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory for categories or subcategories with fewer than 30 sources .

These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that results in a set of composite standards that do not

necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008) (noting statutory limitations on EPA's authority to distinguish sources).

By focusing on a HAP-by-HAP approach and ignoring the performance of "sources" in crafting the proposed rule, EPA has gone beyond a proper exercise of discretion in this proposal and violated the Clean Air Act. EPA has failed to provide any assessment of how many existing boilers and process heaters will be able to meet the proposed standards without taking any further control measures. The arbitrary and capricious nature of EPA's approach is best demonstrated by comparing the standards that EPA ultimately established against the actual performance of existing sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Paul Lyskava
Commenter Affiliation: Pennsylvania Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-2223.1
Comment Excerpt Number: 5

Comment: We believe that EPA should abandon the "pollutant by pollutant" approach to determining GACT, as this is not appropriate because it results in unrealistic and impractible standards that do not reflect the performance of actual, real-world best performing boilers. Were the Agency to decide, nevertheless, to finalize numeric emissions limits, the proposed standards are not supported by the available data and would have to be substantially revised.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4

Commenter Name: Lewis F. Gossett
Commenter Affiliation: South Carolina Manufacturers Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-2196.1
Comment Excerpt Number: 5

Comment: The statute clearly directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that results in a set of composite standards that

do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).

EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Please see preamble for discussion on "pollutant-by-pollutant" and other MACT Floor methodologies, as well as changes to requirements set forth in the final rule.

Commenter Name: Patrick J. Medvecz
Commenter Affiliation: Wausau Paper Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2283
Comment Excerpt Number: 5

Comment: In order to attempt to comply with the conditions set forth in the proposed rule, facilities would be required to install up to five different pollution control devices that not only cross-interfere with each other, they also compromise the performance of existing pollution control equipment.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1486.1, Comment Excerpt Number: 2

Commenter Name: Jay C. Moon
Commenter Affiliation: Mississippi Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2000
Comment Excerpt Number: 6

Comment: EPA's HAP by HAP approach to setting the MACT floor violates the Clean Air Act. EPA has proposed MACT standards for industrial boilers and process heaters that are based on individual pollutant-by-pollutant – rather than source-by-source – analyses in patent violation of the Clean Air Act. EPA has set limits for the suite of HAPs that reflect the "best performing source" for each individual HAP. Put differently, EPA has "cherry picked" the best data in setting each HAP standard, without regard for the sources from which the data come. This results in a combined set of standards for purely hypothetical boilers that may never have actually been achieved by any single, real world source. Creating hypothetical "best performing" units that

demand performance not achieved by any actual source in the category is arbitrary and capricious and violates the language of 112, which focuses on actual “sources.” See CAA 112(d)(1), (2), and (3) Rather than focusing on individual HAPs, the Clean Air Act unambiguously directs EPA to set standards based on the overall performance of “sources.” Further, EPA has calculated its proposed MACT floors solely on the basis of emission data. EPA utterly ignored the plain mandate of the Clean Air Act by entirely neglecting to determine whether there was emission control equipment in use in each subcategory that could actually achieve those inordinately strict emission limits, a critical and necessary analysis required by the Clean Air Act.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 6

Comment: As in the major source standard, EPA uses a ‘pollutant-by-pollutant’ MACT approach for the new source standards in the oil and biomass subcategories and both the new and existing source standards in the coal subcategory for this rule. The proposed area source standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate. HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This approach [“Industry Faults Strict EPA MACT Method for Regulating ‘Best’ Sources”, Inside EPA’s Clean Air Report, Sept. 3, 2009.] is contrary to the language of 112 and produces unrealistic and impracticable standards.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 5 and Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Scott Manley
Commenter Affiliation: Wisconsin Manufacturers and Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-2258.1
Comment Excerpt Number: 6

Comment: EPA has calculated its proposed MACT floors solely on the basis of emission data. EPA utterly ignored the plain mandate of the Clean Air Act by entirely neglecting to determine

whether there was emission control equipment in use in each subcategory that could actually achieve those inordinately strict emission limits, a critical and necessary analysis required by the Clean Air Act.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 6

Comment: EPA should evaluate and select the best performing units based on their composite performance over all pollutants, and not on the basis of pollutantby-pollutant performance.

EPA's MACT floor setting methodology is described in an April, 2010 memorandum from Amanda Singleton of ERG to Jim Eddinger of US Environmental Protection Agency entitled "MACT Floors Analysis for the Industrial, Commercial, Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source", Docket Number EPA-HQ-OAR-2006-0790-0049 (hereinafter the "ERG Floor Memorandum"). The methodology identifies the best performing units used to set the new source biomass unit standards for each pollutant independently, and then sets each floor based on the performance of these best performing units. By "cherry-picking" the best performers on a pollutant-specific basis, EPA's approach fabricates integrated emission control performance that does not exist in practice.

EPA's pollutant-by-pollutant approach fails to account for the interrelationships among pollutant emissions. Emissions from combustion/air pollution control systems at biomass plants are interdependent – the presence or control of one can affect the control of others. These interrelationships must be considered in order to assure that unit emission reductions are effective for all pollutants, not just one at time. Examples of these interrelationships are:

Carbon Monoxide (CO) and Nitrogen Oxides (NOx) – CO is a product of incomplete combustion of organic materials and a function of oxygen levels, temperature, air/fuel mixing (turbulence) in the combustion zone, and residence time. NOx formation is dependent on the amount of fuel-bound nitrogen compounds, air-to-fuel ratio, and flame temperature. Because combustion conditions affect both pollutants the two are interrelated. Attempts to control CO can lead to increases in NOx and vice versa. In California and elsewhere, biomass-to-energy facility operators meet NOx permit limits in part by balancing the combustion process between emissions of CO and NOx with the result that CO emissions are significantly higher than EPA's proposed Boiler MACT standards. Attempts to reduce emissions of CO would result in increases in emissions of NOx, leading to an untenable situation. The following two graphs plot hourly CEM-measured CO and NOx readings over a ten day period at two California biomass-to-energy boilers – Burney Mountain Power in Burney and Mount Lassen Power in Westwood. The plots demonstrate the inverse relationship between CO and NOx. The third graph shows the same

interrelationship using 24-hour average plots over an annual period at Burney Mountain Power. [See submittal for graphs.]

These concerns are echoed in a report by the Maine Department of Environmental Protection which analyzed CEM and stack test data from 19 biomass boilers, stating "Test data demonstrated the relationship between NOx and CO. As NOx levels increased CO levels decreased and vice versa." [See submittal for letter; or see coded letter under DCN: EPA-HQ-OAR-2006-0790-1915.1.] The Maine DEP stated "We are also concerned that EPA may develop standards that do not take into account the NOx controls required for many of the Maine facilities and the effect that controlling for CO, which inversely affects NOx, as well as other pollutants." [Footnote: Letter James P. Brooks, Bureau Director, State of Maine Bureau of Air Quality to James Eddinger, USEPA, February 4, 2010.] See Attachment 1 which includes both the Maine DEP report and letter.

Nitrogen Oxides (NOx), Total Particulate Matter (PM), and Opacity – Selective Non-catalytic Reduction (SNCR) is frequently used for combustion source NOx control. SNCR involves injecting a reagent (urea or ammonia) into the furnace where it reacts within a temperature window to chemically reduce NOx. Control efficiency is limited by reagent/flue gas mixing and reaction kinetics. When pushed to higher performance unreacted ammonia "slip" increases which in the presence of SO3 and HCl in the flue gas forms condensable ammonium sulfate/chloride particulate matter and potentially high opacity stack plumes.

These interrelationships show the technical incompatibility of setting floors on a pollutant-by-pollutant basis. It also shows that EPA should consider the emissions and emission limitations of NOx and other pollutants regulated under other federal, state and local programs for determining what has been achieved in practice for CO.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 5.

Commenter Name: Anna K. Chittum
Commenter Affiliation: American Council for an Energy-Efficient Economy
Document Control Number: EPA-HQ-OAR-2006-0790-2189.1
Comment Excerpt Number: 6

Comment: ACEEE encourages the EPA to consider including an output-based emissions standard in this proposed rule. As currently written, the proposed rule uses a strictly input-based methodology to ascribe emissions levels to particular boilers, and allows for greater emissions as the amount of fuel consumed increases. Output-based standards instead set a limit on the maximum amount of emissions allowable given a particular energy output. As the EPA noted in its 2004 publication, Output-Based Regulations: A Handbook for Air Regulators

"Output-based emission limits, which do account for the emission reduction benefits of energy efficiency, make it more attractive for regulated sources to install clean energy technologies because these technologies provide greater compliance flexibility and the opportunity for reduced compliance costs."
ACEEE agrees with the above philosophy, and believes that limiting this rule to input-based calculations would discourage facilities from using increased efficiency investments to achieve emissions reductions. There is evidence that, when complying with input-based emissions regulations, industrial facilities may run generating units right up to the level at which the input-based limit has been set. This behavior may be exhibited despite the fact that the generating unit might be run more efficiently (producing more useful energy with a lower rate of emissions) at a different level, were its emissions calculated on an output basis. [Footnote: http://www.epa.gov/chp/documents/obr final 9105.pdf]

Response: Please see the preamble for changes to the requirements set forth by the final rule.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 6

Comment: EPA calculated its proposed floors solely on the basis of emission data, without making any effort to evaluate whether technically feasible means of achieving those levels are in actual use and hence generally available to (and thus achievable by) the units within the subcategory.

EPA must consider available emissions information to determine the MACT floors. For each pollutant, we calculated the MACT floor for a subcategory of sources by ranking all the available emissions data from units within the subcategory from lowest emissions to highest emissions, and then taking the numerical average of the test results from the best performing (lowest emitting) 12 percent of sources.
75 Fed. Reg. at 32019. With respect to new units, EPA stated: "Similar to the MACT floor process used for existing units, the approach for determining the MACT floor must be based on available emissions test data." Id. at 32027. More to the point, the relevant technical support document confirms that, as the preamble implies, EPA in fact based its floor determinations for existing and new units solely on the basis of available emissions data, without any examination of whether units have some feasible and proven way of achieving the floors.6 Indeed, the technical support document is explicit:
In response to concern over MACT floor analyses based on control technologies, the new approach ranks the performance of each pollutant according to the lowest emitting (based on stack test data), regardless of control technologies installed on the boiler/process heater.

Thus, EPA ignored the methodology Congress intended EPA to use in determining the floors for existing and new units, as described in the following subsections.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1991.1, Comment Excerpt Number: 2 and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3

Commenter Name: John Donahue
Commenter Affiliation: Sappi Fine Paper North America
Document Control Number: EPA-HQ-OAR-2006-0790-2210.1
Comment Excerpt Number: 6

Comment: As in the major source standard, EPA uses a 'pollutant by pollutant' MACT approach for the new source standards in the oil and biomass subcategories and both the new and existing source standards in the coal subcategory for this rule. The proposed area source standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach is contrary to the language of § 112 and produces unrealistic and impracticable standards. [Industry Faults Strict EPA MACT Method for Regulating "Best" Sources, Inside EPA's Clean Air Report, Sept. 3, 2009].
The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of settingstandards under § 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. [Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008)].
Even assuming for the sake of argument that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures – i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.
EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 6

Comment: Most of the data in the MACT floor is derived from an analysis of the best 12% of a subset of best performing boilers, rather than being representative of the best 12% of the entire population. Although the statute only directs EPA to determine the best 12% of sources for which the Agency has data, EPA has not considered all of the data available to it, nor has it sought to obtain data more representative of the population as a whole.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: A. Steven Young
Commenter Affiliation: Association of Independent Corrugated Converters
Document Control Number: EPA-HQ-OAR-2006-0790-1994.1
Comment Excerpt Number: 6

Comment: EPA's HAP by HAP approach to setting the MACT floor violates the Clean Air Act. EPA has proposed MACT standards for industrial boilers and process heaters that are based on individual pollutant-by-pollutant – rather than source-by-source – analyses in patent violation of the Clean Air Act. EPA has set limits for the suite of HAPs that reflect the "best performing source" for each individual HAP. Put differently, EPA has "cherry picked" the best data in setting each HAP standard, without regard for the sources from which the data come. This results in a combined set of standards for purely hypothetical boilers that may never have actually been achieved by any single, real world source. Creating hypothetical "best performing" units that demand performance not achieved by any actual source in the category is arbitrary and capricious and violates the language of § 112, which focuses on actual "sources." See CAA § 112(d)(1), (2), and (3) Rather than focusing on individual HAPs, the Clean Air Act unambiguously directs EPA to set standards based on the overall performance of "sources."

Response: Please see preamble for discussion of MACT floor methodologies and changes to requirements set forth in the final rule.

Commenter Name: Winslow Sargeant
Commenter Affiliation: U.S. Small Business Administration
Document Control Number: EPA-HQ-OAR-2006-0790-1950.1
Comment Excerpt Number: 7

Comment: In addition, the rules cover at least five different HAPs, and in setting the emissions limits for each HAP EPA used the least emitting sources for each individual HAP to define the MACT floor. Unfortunately, combining data from separate sources, provides no evidence that actual existing sources can meet all of the criteria that compose this synthetic ("uber" facility, as it is sometimes labeled) source made up of a collection of the best controlled sources controlling different pollutants. Data variability and the heterogeneity of sources lead to significant variation in emissions for each HAP. By cherrypicking the data for each HAP and then combining these emissions limits into a standard for real world sources, EPA has crafted a rule that costly and impractical. EPA should have instead observed the best-performing real world sources that address all the HAPs and crafted a standard wherein emissions limits mirrored their performance, thereby creating a more real world standard.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: A. Steven Young
Commenter Affiliation: Association of Independent Corrugated Converters
Document Control Number: EPA-HQ-OAR-2006-0790-1994.1
Comment Excerpt Number: 7

Comment: EPA has calculated its proposed MACT floors solely on the basis of emission data. EPA utterly ignored the plain mandate of the Clean Air Act by entirely neglecting to determine whether there was emission control equipment in use in each subcategory that could actually achieve those inordinately strict emission limits, a critical and necessary analysis required by the Clean Air Act.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 7

Comment: 3. The Agency's establishment of proposed limits on a pollutant by pollutant

basis rather than a source by source basis provides results that are inconsistent with the statutory language and intent.

The statute requires EPA to establish source categories and then to establish Maximum Achievable Control Technology standards for these source categories that are equivalent to the level of control exhibited by the average of the best 12% of sources within the source category for which the Agency has data. The method that EPA has used in developing the proposed standards is not based on the actual performance of sources regarding the combined effectiveness of controls for all of the HAPs emitted from the source, but, rather, on an individual pollutant basis. Pursing this approach is contrary to the statutory intent because it results in a set of limits that cannot be met by actual facilities in the best performing 12 percent.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 7

Comment: The Clean Air Act requires EPA to set standards that can be achieved by existing controls in use within the subcategory. The evidence of congressional intent strongly and unequivocally shows that Congress intended the regulatory machinery of sections 112(d)(1)-(3) to operate so as to: (1) identify those forms of emission control in actual use which produce maximum reductions in HAP emissions when applied to particular units; (2) pursue all existing and new units of the same type, characterized by basic production design to apply those controls or otherwise achieve at least the same reduced level of emissions, either through innovation or some other way; and (3) preserve, protect and enhance the economic vitality of the national economy. Thus, in line with other key provisions of the Clean Air Act, sections 112(d)(1)-(3) are technology-forcing. They are designed to propagate the general use of best HAP emissions control, not to produce dictates achievable only though widespread shutdowns and installation of newly designed production equipment.

Clearly, to implement that Congressional purpose, EPA must base the floors not only on available emissions test data, but also on a determination that some technically feasible means of achieving the floor is generally available to the units within the subcategory, as demonstrated by actual use within the subcategory. Otherwise, if EPA were to base the floors for a particular subcategory only on available test data, without examining technical feasibility and actual usage, it could produce a MACT standard which most – if not all – of units in the subcategory would have no hope of achieving. That would be a vast distortion of the congressional vision – which is to identify and spread the use of best controls, while preserving economic vitality, not to force widespread shutdowns and re-capitalization within industry segments.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11, Document Control Number: EPA-HQ-OAR-2006-0790-1949.1, Comment Excerpt Number: 10, and Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Christopher S. Colman
Commenter Affiliation: Hess Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2168.1
Comment Excerpt Number: 7

Comment: The MACT standards should be based on what the best performing units can comply with overall, not on a pollutant by pollutant basis.

Response: Please see preamble for a discussion of MACT floor methodologies and changes to requirements set forth in the final rule.

Commenter Name: John Ledger
Commenter Affiliation: Associated Oregon Industries
Document Control Number: EPA-HQ-OAR-2006-0790-2024.1
Comment Excerpt Number: 7

Comment: EPA's HAP-by-HAP approach to setting the MACT floor is inconsistent with the Clean Air Act. EPA has proposed MACT standards for industrial boilers and process heaters that are based on individual pollutant-by-pollutant, rather than source-bysource. EPA has set limits for the suite of HAPs that reflect the "best performing source" for each individual HAP. Put differently, EPA has selected the best data in setting each standard, without regard for the sources from which the data came. This creates a set of standards for purely hypothetical boilers that may never have actually been achieved by any single, real source.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 7

Comment: The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be

established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. [Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).]

Even assuming that the Agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly, exercised its discretion in this rule. EPA has not provided an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures — i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Sheila C. Holman
Commenter Affiliation: North Carolina Department of Environment and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2222.1
Comment Excerpt Number: 7

Comment: The CO floors for the MACT coal and biomass fired units are reversed relative to the corresponding GACT floors. For example, in the MACT the CO floor for coal is much lower than the biomass CO floor, whereas in the GACT the CO floor for coal is much higher than the biomass CO floor. Given the expected similarity in CO emission performance for the two fuels, it is hard to explain the relative difference between the two standards. One reasonable explanation is there is a difference in data quality between the MACT and GACT databases (note the GACT database only included 12 CO data

Given this unexplained difference, NC DAQ questions whether the 12% of existing units with the lowest measured CO emission rates selected for any Boiler MACT floors represent the CO emission rates associated with the best combustion control practices. We suggest EPA re-evaluate the available data base to identify the top combustion control performers holistically. This could be done by identifying the top performers with the lowest CO/NOx concentrations in combination with the lowest CO emission rates and best thermal energy efficiency, and then determine the CO floor level from the pool of those top performers.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-0985, Comment Excerpt Number: 35

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 8

Comment: EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid), so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. Of course, for purposes of setting the existing source standard, EPA uses data from the top 12% of units for which data are available, which in this case represents an even smaller fraction of the units. So, EPA proposes to set a standard applicable to thousands of boilers based on data from less than 0.1% of the units in the subcategory. This data record is facially insufficient.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 8

Comment: Section 112 is replete with textual evidence that Congress authorized EPA to set a floor only at a level which units within a subcategory generally had some means of achieving as a technical matter, as demonstrated by actual usage within the subcategory. In implementing section 112, EPA must give full effect to that textual evidence. See Whitman v. American Trucking Association, Inc., 531 U.S. 457, 485 (2001) ("The EPA may not construe the statute in a way that completely nullifies textually applicable provisions meant to limit its discretion.").

Key pieces of such evidence are as follows:

Section 112(d)(2), the overarching directive to EPA for establishing a MACT standard for any given subcategory, requires EPA to set the standard at a level that corresponds to the maximum degree of reduction of HAP emissions that is "achievable" for the subcategory through the "application of measures, processes, methods, systems, or techniques." (Emphasis added.) Sections 112(d)(2)(A)-(E) then define those various forms of emissions control as including a wide range of "measures". Specifically listed are process changes, materials substitution, enclosures, add-on control technology, work practices, and operational standards. Not listed, or even suggested, were changes to the basic design of the units in question, the HAP-emitting production equipment. Section 112(d)(2) thus reflects and reveals a fundamental conceptual orientation on the part of Congress which is universal to all of the technology-based standard-setting processes dictated by the CAA. In crafting the MACT standard setting process, Congress took production equipment, such as boilers and process heaters, as a given and envisioned that

the standards EPA generated would stimulate the “application” of control “measures” to the production equipment, without change to the basic design of the equipment.

Section 112(d)(3)(A) calls on EPA to set the floor for existing units within a subcategory at the average level actually “achieved” by the best “performing” 12 percent. The use of the terms “achieved” and “performing” imply that Congress had in mind a cause-and-effect relationship between the actual in-use application of one or more of the control measures listed in section 112(d)(2)(A)-(E) to a piece of HAP-emitting equipment and a resulting actual level of reduced emissions from the equipment. The terms indicate that Congress wanted to identify those measures by which EPA could reliably establish norms of behavior for pieces of equipment of like design. In other words, Congress sought to spread the use of those controls proven to be best by actual practice, but not force changes in the fundamental design of production equipment within an industry segment, e.g., through widespread shutdowns and re-capitalization.

The first sentence of section 112(d)(3) provides: “The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source ....” The phrases “reduction in emissions,” “achieved in practice,” and “best controlled” all focus on the application of control measures to HAP-emitting production equipment, especially in juxtaposition with section 112(d)(2). The first sentence of section 112(d)(3) thus confirms that Congress sought to identify the forms of control that experience showed to be the most effective and that companies could apply in a replicable way without altering the basic design of the production equipment.

Other provisions of the CAA similarly focus on the application of available and “demonstrated” control technology, namely: section 111 (New Source Performance Standards (NSPS)), section 129 (incinerators), section 165 (Best Available Control Technology (BACT) for certain new construction projects), section 172(c)(1) (Reasonably Available Control Technology (RACT) for existing sources as control by State Implementation Plans), and section 173 (Lowest Achievable Emission Rate (LAER) for certain new construction projects). In each case, the common theme is to establish a behavioral norm based on existing control technologies.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1949.1, Comment Excerpt Number: 10

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 8

Comment: EPA has estimated that there are 10,958 biomass boilers, [Footnote: EPA-HQ-OAR-2006-0790-0037] so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. For purposes of setting the existing source standard EPA uses

data from the best 12% of units for which data are available, which in this case represents an even smaller fraction of the units. So, EPA proposes to set a standard applicable to thousands of boilers based on data from a tiny fraction of the units in the subcategory. This data record is insufficient.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 8

Comment: The data set used to develop the rule does not adequately describe the performance of small boiler systems. The dataset used to set emissions standards for the proposed rule is incomplete in that the boilers capable of meeting the limit for PM are not capable of meeting the limit for carbon monoxide (CO) simultaneously. Additionally, of the 10,958 biomass burning boilers in existence the MACT standards were determined by 65 boilers for CO and only 20 boilers for PM. These limits do not represent the average capability of existing boilers.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1945.1, Comment Excerpt Number: 5

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 9

Comment: The legislative history of section 112 further confirms that Congress sought to identify and facilitate the spread of best, in-use-proven controls of HAP emissions within the appropriate categories and subcategories of HAP-emitting equipment, without fundamentally constraining the ability of companies to choose the basic design of that equipment. During the Senate debates on the conference bill that became the CAA Amendments of 1990, Senator Durenberger, the primary author of section 112, stated: “For each category of sources, EPA will promulgate a standard which requires the installation of maximum achievable control technology (MACT) by the sources in the category.” [Footnote: Committee on Environment and Public Works, U.S. Senate, Legislative History of the Clean Air Act Amendments of 1990, S. Prt. 103-38, at 863 (Nov. 1993).] Plainly, in Congress’s mind, section 112(d)(1)-(3) would cause companies to take action only to apply controls to an established equipment design, as opposed to cause changes in such design.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 9

Comment: EPA estimates that the number of affected industrial and commercial boilers in the United States will be in excess of 180,000 sources. 75 Fed. Reg. 31, 914 tbl.3. Roughly 11,000 industrial boilers are biomass-fired; over 160,000 are oil-fired. Id. Based on these numbers, the best performing 12 percent of biomass- and oil-fired boilers would include a population of over 1,100 and 16,000 units, respectively, from which the EPA should have drawn emissions data. Instead, for biomass-fired boilers, the EPA used emissions data from 8 sources as the top 12 percent. For oil-fired boilers, the number was 15 sources. 75 Fed. Reg. 31,906. In reality, the 8 biomass-fired sources EPA used to establish emissions limits represent only 0.0007 percent of industrial biomass-fired boilers; the 15 oil-fired sources represent only 0.00009 percent of all industrial oil-fired boilers. In addition, with respect to biomass-fired boilers, 4 were of a boiler size equal to or less than 10 MMBtu and would not be required under the rule to meet the CO MACT limit. The MACT floor analysis prepared by EPA in support of its proposal also acknowledges that "given the limited emission data available to calculate a MACT floor limit, the boiler combustor design was not a factor in developing the subcategories in the MACT floor. EPA's reliance on fewer than 30 sources to set the emissions standards for a population of over 170,000 boilers without any regard to their design clearly is inconsistent with the CAA and fails to consider important aspects of the boiler population. In addition, EPA failed to collect adequate data which demonstrates that 6% of the existing biomass- and oil-fired area source boilers can meet the respective CO limits without additional controls. Ethan Allen believes that EPA's failure to do so runs afoul of the precedent established in Sierra Club v. EPA, 479 F.3d 875 (D.C. Cir. 2007). As such, the emissions data upon which the EPA relied is inadequate to establish the MACT floor for CO for both oil- and biomass-fired area source boilers.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research
Document Control Number: EPA-HQ-OAR-2006-0790-2140.1
Comment Excerpt Number: 9

Comment: Some of the data in EPA's MACT floor analysis spreadsheets indicates that units were co-firing gas during the emissions test. Gas co-firing introduces a low bias in the emissions for non-gas subcategories because emissions are averaged with a lower HAP-containing fuel. This bias can be significant depending on the gas firing rate and relative difference in pollutant

concentration. This was a significant issue identified in our review of the Major Source IB-MACT ICR data. While the ICR data contains fuel-related information to confirm gas co-firing, there is insufficient data available in the Fuels for Schools data to confirm whether co-firing was also conducted during the reported emissions test.
RMB recommends that EPA verify whether the reported test data includes periods of gas co-firing and either exclude such data or adjust the data accordingly to remove the gas-firing bias. This would result in an emissions pool for each subcategory where the emissions are based on the equivalent of 100% combustion of the fuel type for that subcategory.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 2

Commenter Name: Lewis F. Gossett
Commenter Affiliation: South Carolina Manufacturers Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-2196.1
Comment Excerpt Number: 9

Comment: SCMA believes that a work practice standard is most appropriate due to the lack of relevant data and the fact that an emission testing during startup is not technically and economically practicable. If EPA decides that a numeric standard is needed, the Agency should rely on the available long term data from the better performing area source boilers to establish a standard with a reasonably long averaging time (such as a 30-day rolling average), rather than the proposed 24-hour averaging time.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: Anna K. Chittum
Commenter Affiliation: American Council for an Energy-Efficient Economy
Document Control Number: EPA-HQ-OAR-2006-0790-2189.1
Comment Excerpt Number: 9

Comment: The EPA has a history of preferring output-based methodologies for certain pollutants in multiple industries, and EPA clearly sees the benefits of promoting output-based emissions regulations for generating units. The most recent New Source Performance Standards for Stationary Gas Turbines ([EPA–HQ–OAR–2004–0490, FRL–8033–4], RIN 2060–AM79, p. 38483) provides turbine owners with the option of using an output-based standard for calculating NOx emitted per unit of useful recovered energy.
In its final NESHAP rule for the Portland Cement Manufacturing Industry ([EPA-HQ-OAR-2007-0877]; RIN 2060-AO42), EPA proposed an output-based methodology for PM, NOx and SO2. In support of such a methodology, EPA noted that “adopting an output-based standard avoids rewarding a source for becoming less efficient,” and that an output-based approach promotes “the most efficient production processes” (p. 97). In this case, EPA proposed that the

pollutants be normalized per ton of clinker produced. Since this proposed boiler rule will apply to a wide variety of manufacturing facilities in multiple sectors producing a variety of final products, normalizing pollutant output per useful energy output is a good way to ensure all affected facilities can be assessed on similar baselines.
Several U.S. states have adopted output-based emissions regulations for distributed generation, including CHP. Through the EPA's CHP Partnership, the EPA has encouraged all U.S. states to adopt such rules. Including an output-based compliance option in this proposed boiler rule would help reinforce the EPA's stated position that output-based emissions regulations recognize efficiency improvements as pollution prevention measures.
ACEEE praises the EPA for promoting a rule to reduce Hazardous Air Pollutants that recognizes the role energy efficiency can play in reducing emissions from the industrial, commercial and institutional sectors.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2189.1, Comment Excerpt Number: 6

Commenter Name: Tim W. Sonnichsen
Commenter Affiliation: Sonnichsen Engineering, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2139.1
Comment Excerpt Number: 9

Comment: Controlling all surrogate emissions for s single source to the MACT standards has not been demonstrated

The "achievable" control levels for each pollutant have been determined on an individual basis and then applied collectively. As far as I can determine from the data presented by EPA, there is no boiler operating anywhere that meets the requirements for all of the pollutants that are to be imposed on all boilers. Yet, this will be the standard that will be applied to all boilers. Unbelievable.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3 and Document Control Number: EPA-HQ-OAR-2006-0790-1964.1, Comment Excerpt Number: 5

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 9

Comment: EPA's approach has resulted in proposed standards that few, if any, actual sources can meet. EPA cannot propose standards that the average of the top 12% of performers cannot

meet without justifying a need to go "beyond the MACT floor" and EPA has made no such justification in the proposed rules.

Response: Please see the preamble for a discussion of MACT floor methodologies used and the requirements set forth in the final rule.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 10

Comment: The emissions dataset includes obvious errors that, if fixed, would have a significant impact on EPA's determination of the MACT floor and MACT standards. For example, several of the boilers used to determine the MACT floors have rated capacities of less than 10 MMBTU/hr. However, these units would not be subject to numeric emissions limitations under the Area Source Rule. Because EPA must determine existing source MACT standards based on emissions data from sources in the category or subcategory being regulated, emissions data from the small boilers cannot be used in setting emissions standards under the Area Source Rule.

Taken together, the available emissions data are inadequate and inaccurate and, thus, do not reasonably support the proposed standards.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 8

Commenter Name: Gailyn Messersmith
Commenter Affiliation: Messersmith Manufacturing, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1949.1
Comment Excerpt Number: 10

Comment: Conduct much more rigorous studies to establish or verify the following:
* A true, accurate and statistically valid representative sample of active biomass boilers emissions and what the best available current technology is.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1
Comment Excerpt Number: 10

Comment: The Alliance urges the EPA to consider developing output-based emissions standards for this rule and in general. As the EPA itself recognizes, output-based standards that define allowable maximum emissions per unit of useful energy output provide greater incentives for pollution prevention, energy efficiency, and emissions reduction than do traditional input-based standards that allow greater emissions as more fuel is consumed. (See, for instance, EPA Combined Heat and Power Output-Based Regulations web page at http://www.epa.gov/chp/statepolicy/output.html and the linked "Output-Based Environmental Regulations Factsheet" and "Output-Based Regulations: A Handbook for Air Regulators" documents.)
Currently the New Source Performance Standard for Electric Utility Steam Generating Units (40 CFR 60.40Da et seq.) includes an output-based emissions standard for mercury (Sec. 60.45Da Standard for mercury) and output-based standards are an option for several criteria pollutants (particulate matter, sulfur dioxide, and nitrogen oxides).
The aforementioned "Output-Based Environmental Regulations Factsheet" notes twelve states that have output-based emissions regulations, including four that recognize non-electricity thermal output, such as from combined heat and power systems. This is important as the Alliance recognizes that there may be some challenges in measuring useful thermal output from industrial process heating systems. The Alliance believes that it would be valuable for EPA to

investigate opportunities to develop and implement output-based emissions standards for industrial, commercial, and institutional facilities.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2189.1, Comment Excerpt Number: 6

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 10

Comment: After the additional sub-categorization EPA should seek sufficient long term CO data to determine the CO emissions limitation achieved. In the table below we provide an analysis of a year's daily CO averages from the Wheelabrator Shasta California biomass-fired units equipped with traveling grates stokers. For a total of 1040 combined unit operating days, the proposed Area Source Boiler MACT CO limit was achieved for only 22 days, a compliance rate of 2%. EPA should obtain CEM data from biomass plants before setting CO standards. [See submittal for table]

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: Alicia Oman

Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 10

Comment: EPA has previously recognized that the Clean Air Act requires that the Agency set emissions standards that can be achieved by existing controls in use within the subcategory. EPA accepted that it cannot look solely at emissions test data, without regard to whether there is a technically feasible means of emissions control in actual usage within the subcategory which is sufficient to achieve the floor. In its 2004 Boiler MACT rulemaking, EPA made clear that:

[S]etting emission standards on the basis of actual emission data alone where facilities have no way of controlling their HAP emissions would contravene the plain statutory language as well as Congressional intent that affected sources not be forced to shut down.

69 Fed. Reg. 55218, 55233 (Sep. 13, 2004). EPA explained: "This is because the statute requires EPA to set standards that are duplicable by others." Id.

Thus, in 2004, EPA interpreted the CAA as requiring it to determine when it sets the floors whether there are technically feasible means of compliance in actual usage within the subcategory. However, in their challenge to the 2004 Boiler MACT standard before the D.C. Circuit, NRDC and the other citizens groups disputed EPA's interpretation, contending that EPA must focus only on actual emission rates in setting the floor. [Footnote: Environmental Petitioners' Initial Opening Brief, at 31 (June 12, 2006) (NRDC v. EPA, Case No. 04-1385).] EPA vigorously defended its view in its responsive brief, saying:

Congress intended EPA to base its standards on the amount of emission reduction sources can achieve by the application of some form of control, and not on the levels some source may emit simply because of characteristics of the source or its operation that cannot be replicated by others." [Footnote: Final Brief for Respondent United States Environmental Protection Agency, at 49 (Dec. 4, 2006).]

Moreover, in EPA's view, it has a duty to examine the technical feasibility of a floor:

Congress did not intend that EPA consider just the level of emissions, but rather that the Agency consider how those emission levels are achieved and base the standard on the lowest level that can be achieved through the implementation of some sort of emission control."

Id. (emphasis added). The court, however, never decided this issue because it vacated the standard on a different ground. See NRDC v. EPA, 489 F.3d 1250, 1261 (June 8, 2007).

Manufacturers respectfully urge EPA to uphold its 2004 position. It would be arbitrary and capricious for EPA to change its 2004 approach without adequate justifiation. Further, as shown above, Congress did not authorize EPA to set a floor on the basis of emissions test data, without also determining that there are technologically feasible (as opposed to affordable) means of achieving that floor which actual usage within the subcategory has shown are available to all of the units in the subcategory given their particular basic design. If EPA were to determine that

there are no such means of control across the subcategory, it would have to subcategorize further in order to group units of like design or, if that were not practicable, base the ultimate standard on a universally applicable a work practice, such as annual tune-ups, as EPA has proposed here in the case of Gas 1 units.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1991.1, Comment Excerpt Number: 2 and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 10

Comment: EPA explains in the preamble that "Based upon continuous emission monitoring data obtained as part of the information collection effort for the major source boiler and process heater rulemaking, which included periods of startup and shutdown, over long averaging periods, startups and shutdowns will not affect the achievability of the standards." 75 Fed. Reg. at 31901.

The continuous monitoring data that EPA presents in the major source industrial boiler MACT proposal is for units that will not be subject to the Area Source Rule and are not the unit(s) from which EPA obtained the data used in setting the proposed area source standards. Thus, these emissions data cannot be used in determining the area source standards, because these data are derived from sources that do not belong to the area source category. The conclusion that a separate standard for startup and shutdown is not needed should only be based on data from the source(s) that are actually used by EPA to set the area source standards or on a showing that the data from some other boilers are representative of the performance of the area source boilers used as the basis for the proposed area source standards.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1798.1, Comment Excerpt Number: 4

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 11

Comment: Section 112 instructs EPA to set the MACT “floor” for existing sources in categories or subcategories with 30 or more sources at the “average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emissions information) ....” CAA § 112(d)(3)(A) (emphasis added). In the proposal, EPA interprets this provision as requiring the MACT floor to be calculated using data from the top 12% of sources

for which actual emissions testing data are available. This is an overly narrow and impermissible approach because it violates the unambiguous statutory obligation to calculate the floor using data from the top 12% of sources for which any “emissions information” is available. Specifically, there are plenty of industrial boilers and process heaters for which EPA does not have emissions testing data. However, the Agency has at least some “emissions information” from virtually all sources in the category. For example, EPA knows or can reasonably ascertain the types of fuels and emissions controls used by the vast majority of industrial boilers and process heaters in use today. This is “emissions information” that the Agency has impermissibly disregarded in selecting the group of sources that represent the top 12% of performers. In other words, the term “emissions information” unambiguously encompasses any information related to emissions – not just emissions rate information from performance testing or emissions monitoring devices.

Because at least some “emissions information” is available for virtually all sources in the category, EPA must calculate the MACT floor based on data from the best performing 12% of all sources in the category. For example, the preamble explains that EPA has identified 578 sources in the coal-fired boiler subcategory, that PM emissions testing data are available for 366 of these sources, and therefore that the MACT floor for PM for this subcategory must be based on the testing data from the top 44 sources (12% of 366). This approach is contrary to what the statute requires. Because 12% of 578 is roughly 70, and EPA has (or could reasonably obtain) some emissions information from all sources in the category, each MACT floor should be based on the average emissions limitation achieved by the best performing 70 sources.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11 and Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 12

Comment: GTMA also believes the base of data is too restrictive. Fifteen boilers out of thousands that are primarily gas but bum oil as a backup fuel and hence would be considered oil boilers do not constitute a sufficient sample. EPA also states that where emission data on oil boilers was not available for area sources, the major source data was used. Subsequently, EPA has applied the major source MACT limit to area sources since they claim "major source oil boilers are similar in design and controls as compared to area source oil boilers." Applying major source MACT to minor HAP sources just because the sources are similar is completely unreasonable. The quantity of HAP emissions determines whether a source is major or not, and the intent of the Clean Air Act is to apply MACT to the former and GACT to the latter.

Response: Please see the preamble for changes made to the requirements set forth in the final rule.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 12

Comment: The lowest-emitting sources are not representative of the actual performance of the best performing boilers, and EPA should use the relative performance of air pollution control technology to select the best performing sources.

EPA has established the proposed Boiler MACT floors by equating sources with the lowest emissions for particular HAPS with best performing sources and ignoring other measures of performance that might more accurately demonstrate the best performing sources.

Section 112(d) requires the MACT floor be no less stringent than "the emissions control achieved in practice by the best controlled similar source" for new sources, and the "average emission limitation achieved by the best performing 12 percent of the existing sources," for existing sources. Section 112(d)(3). Simply put, if Congress intended the MACT floor to be no less stringent than "the lowest emission levels" achieved by sources, it could have said so. "Best controlled" and "best performing" are not with the same as "lowest emission level."

The D.C. Circuit has never required that EPA equate the "lowest emitting" sources to the "best performing" sources. See Sierra Club v. EPA, 167 F.3d 658, 661 (D.C. Cir. 1998) (section 112(d) "on its own says nothing about how the performance of the best units is to be calculated"). In its review of the 1999 portland cement MACT standards, the court endorsed a "technology approach" to setting the MACT standard, whereby EPA would use the relative performance of air pollution control technology to select the best performing sources. In rejecting the view that emissions are the only factor EPA must consider, the D.C. Circuit stated:

According to the Sierra Club, section 7412(d)(3) requires EPA to set new source floors at the lowest recorded emission level for which it has data and existing source floors at the average of the lowest twelve percent of recorded emission levels for which it has data. Nothing in the statute, Sierra Club argues, permits the Agency to set floors based on the performance of technology as opposed to the recorded performance of plants.

In resolving this issue, we do not write on a clean slate. EPA's technology-based approach to setting new source emission standards has already faced and survived a Chevron one challenge. In Sierra, 334 U.S. App. D.C. 421, 167 F.3d 658, we reviewed a new source emission standard for solid waste combustion that EPA promulgated pursuant to section 7429, which establishes emission requirements virtually identical to section 7412's. There, as here, the Sierra Club argued that EPA's MACT technology approach to setting emission standards is unambiguously forbidden by the Clean Air Act. Sierra rejected that argument, holding that EPA may estimate

the performance of the best performing units and that it was not “impossible” that EPA’s methodology constituted a reasonable estimation technique. See 167 F.3d at 665.

Nat. Lime Ass’n v. EPA, 233 F.3d 625, 631 (D.C. Cir. 2000). Thus, the D.C. Circuit endorsed EPA’s use of a technology-based approach that uses the relative performance of pollution control technology rather than simply looking to the sources with the lowest emissions test report to set the MACT floor.

Indeed, this was the approach adopted by EPA in the previously promulgated Boiler MACT. There, EPA recognized that while it may be appropriate in certain circumstances to consider primarily available emissions test data, such an approach was ill-suited to setting the Boiler MACT floor:

[A]fter review of the available HAP emission test data, we determined that it was inappropriate to use this MACT floor approach to establish emission limits for boilers and process heaters. The main problem with using only the HAP emissions data is that, based on the test data alone, uncontrolled units (or units with low efficiency add-on controls) were frequently identified as being among the best performing 12 percent of sources in a subcategory, while many units with high efficiency controls were not. However, these uncontrolled or poorly controlled units are not truly among the best controlled units in the category. Rather, the emissions from these units are relatively low because of the particular characteristics of the fuel that they burn, that cannot reasonably be replicated by other units in the category or subcategory. A review of the fuel analyses indicate that the concentration of HAP (metals, HCl, mercury) vary greatly, not only between fuel types, but also within each fuel type. Therefore, a unit without any add-on controls, but burning a fuel containing lower amounts of HAP, can have emission levels that are lower than the emissions from a unit with the beset available add-on controls. If only the available HAP emissions data are used, the resulting MACT floor levels would, in most cases, be unachievable for many, if not most, existing units, even those that employ the most effective available emission control technology.

69 Fed. Reg. at 55,233 (emphasis added).

Response: EPA disagrees. Considering a unit to be the best controlled or best performing unit of its type is not necessarily the same as having the lowest emission level.

Commenter Name: Gailyn Messersmith
Commenter Affiliation: Messersmith Manufacturing, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1949.1
Comment Excerpt Number: 12

Comment: Conduct much more rigorous studies to establish or verify the following:
* The explanation and thought behind the discrepancies between the EPA’s emission standards for biomass boilers and what European standards are.

* Once the additional studies are completed, the EPA should revisit the emission standards for biomass boilers and strengthen them in a measured tiered approach.

Response: Please see the preamble for discussion on the MACT floor methodologies and emission limits set in the final rule.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 12

Comment: Out of EPA's estimated total population of 10,958 biomass boilers, the Maximum Achievable Control Technology (MACT) CO limits were determined by only 65 boilers (0.6%). The Generally Available Control Technology (GACT) PM limits were determined by only 20 boilers (0.2%). The biomass boilers that achieve the PM standard are not the same boilers that achieve the CO standard. The six biomass boilers in the dataset that are able to meet the proposed GACT standard for PM have an average CO emission of 1,164 ppm, which is more than 11 times higher than the proposed CO limit for new boilers. The eight biomass boilers in the dataset that are able to meet the MACT standard for CO have an average PM emission of 0.23 lbs/mmBtu, which is more than seven times higher than the proposed PM limit. In other words no biomass boiler tested by EPA can meet the proposed standards for PM and CO.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Gailyn Messersmith
Commenter Affiliation: Messersmith Manufacturing, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1949.1
Comment Excerpt Number: 13

Comment: Messersmith Manufacturing, Inc. wants to be on record as supporting rational emission limits based on good science and practical costs of implementation. However, the EPA's approach in determining the currently proposed limits is ill-conceived and flawed. These proposed limits will also negatively impact the Nation's goals to depend more on alternative fuels and less on fossil fuels. Finally, most biomass boilers are installed in rural areas with readily available fuel from forests and recently depressed forest products industries. Using wood fuels will help these local economies and decrease the usage of fossil fuels.

Response: Please see the preamble for discussion changes to emission limits in the final rule.

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 13

Comment: GIEC believes that EPA is relying on a set of limited data that is not representative of the population of boilers that will be subject to the rule.

The amount of data is insufficient. Per the floor memo [EPA-HQ-OAR-2006-0790-0049], EPA has collected:
- no emission data for POM for any subcategory,
- no mercury emission data for the liquid subcategory,
- mercury emission data for only 9 coal boilers and 2 biomass boilers,
- no state regulations or permit data for mercury or POM, and
- limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers).

EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid)[EPA-HQ-OAR-2006-0790-0037], so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. For purposes of setting the existing source standard, EPA uses data from the top 12% of units for which data are available, which represents an even smaller fraction of the units. In this case, EPA proposes to set a standard applicable to thousands of boilers based on data from less than 0.1% of the units in the subcategory.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 13

Comment: The population of tested boilers also was limited by boiler size. Only data from boilers >10 mmBtu/hr was used to develop PM limits, while only data from boilers >1.6 mmBtu/hr was used to develop CO limits. Area source boilers range in size from 200,000 btu/hr to >10 mmBtu/hr in size.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1473.1, Comment Excerpt Number: 5

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute

Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 13

Comment: The proposed area source MACT standards are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. In other words, EPA has "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The result is a set of standards that reflect the performance of a hypothetical set of best performing sources that simultaneously achieve the greatest emission reductions for each and every HAP rather than the actual performance of one or more real sources. This "Frankenstein" approach [Industry Faults Strict EPA MACT Method for Regulating "Best" Sources, Inside EPA's Clean Air Report, Sept. 3, 2009] is contrary to the language of §112 and produces unrealistic and impracticable standards.
The statute unambiguously directs EPA to set standards based on the overall performance of sources. Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" in the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express limits on EPA's authority to parse units and sources for purposes of setting standards under §112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule, [Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008)]. Even assuming for the sake of argument that the agency does have discretion to depart from a source-wide approach to standard setting, EPA has improperly exercised its discretion in this rule. EPA has failed to provide an assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures – i.e., EPA has not shown or attempted to show that the proposed standards reflect the performance of any actual affected sources. This failure to investigate a fundamental aspect of the proposed rule renders the rule arbitrary and capricious.
EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source particulate matter (PM) and carbon monoxide (CO) standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA had investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 13

Comment: For an area source where a CO catalyst is required, there is an additional issue EPA should consider. If the NOx emission limit requirement (not regulated under proposed MACT) is such that selective non-catalytic reduction ("SNCR") is required, then the nitrogen in the ammonia slip will be oxidized at the CO catalyst into NOx. This means that the SNCR needs to be sized to reduce NOx at the boiler outlet to a value lower than the permitted requirement with low ammonia slip. Essentially, 1 ppm of ammonia will make an additional ppm of NOx at the stack if it passes over a CO catalyst. Therefore, NOx at the boiler outlet must be low enough so that the new NOx made at the CO catalyst from the oxidation of the ammonia will not exceed the overall NOx emission requirement. To make this system work requires very close coordination between the boiler designer and the SNCR supplier. If the requirements for NOx control and CO control cannot be balanced as outlined in the foregoing, then SCR may be required even if the NOx requirement is not too difficult. This may be an unintended and possibly very costly consequence of the proposed Area Source rule. There is more than one way to integrate a SCR catalyst into an area source boiler system. Typically the CO catalyst comes first followed by a SCR if both systems are required. However, to meet the proposed Area Source requirements one other strategy that may be useful is to put a limited quantity of SCR catalyst before the CO catalyst with the express purpose of using up the ammonia in the flue gas. With this system, one will obtain an additional reduction in NOx, as well. Again, however, if the ammonia slip required to reduce the NOx is too high, a full SCR will be required after the CO catalyst. It is therefore ABMA's contention that the Area Source CO requirement for biomass boilers with stoker combustion technology is difficult with which to comply, definitely costly, and, in our experience, unfounded in good industry practice.

Response: Please see preamble for discussion of MACT Floor methodologies.

Commenter Name: Steven A. Brink
Commenter Affiliation: California Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2026.1
Comment Excerpt Number: 14

Comment: EPA's proposed emissions limits rely on a data set that is not representative of real-world technologies. Biomass boilers that achieve EPA's particulate matter (PM) standard are not the same boilers that achieve its carbon monoxide (CO) standard. Using EPA's own data set, it is obvious that there is no biomass boiler tested that can achieve both the proposed levels for PM and CO. Requiring new biomass boilers to meet standards that no single biomass boiler has ever achieved in testing is unreasonable.

Response: Refer to responses for Document Control Number: EPA-HQ-OAR-2006-0790-2017.1, Comment Excerpt Number: 4 and Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 2

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 14

Comment: EPA ignored the record evidence of the performance of actual "sources" when establishing the suite of proposed emissions limits. Instead, EPA set individual limits for each HAP that reflect the best performing sources in a subcategory only for that individual HAP. EPA then combined the HAP limits into a suite of emissions standards for each subcategory. This results in a combined set of standards that have not actually been achieved by any single, real world source,
and possibly never will. Creating hypothetical "best performing" units that demand compliance with emission standards not achieved by any actual source or sources in a subcategory (let alone the necessary 12% of sources for a true floor) is arbitrary and capricious and violates EPA's statutory obligation to establish limits that are based on the actual performance of "sources." The proposed MACT standards for area source industrial boilers are based on pollutant-by-pollutant analyses that rely on a different set of best performing sources for each separate HAP standard. See, 75 Fed. Reg. 31905 ("The MACT floor limits for each of the HAP and HAP surrogates (mercury and CO) are calculated based on the performance of the lowest emitting (best performing) sources in each of the subcategories."). In other words, EPA "cherry picked" the best data in setting each standard, without regard for the sources from which the data come. The statute unambiguously directs EPA to set standards based on the overall performance of "sources." Sections 112(d)(1), (2), and (3) specify that emissions standards must be established based on the performance of "sources" "in practice" for the category or subcategory and that EPA's discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of sources. In particular, Sections 112(d)(3) emphasizes that EPA must focus on what emissions reductions are achievable "in practice" for a "source."

(3) New and existing sources. The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator. Emission standards promulgated under this subsection for existing sources in a category or subcategory may be less stringent than standards for new sources in the same category or subcategory but shall not be less stringent, and may be more stringent than –

(A) the average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emissions information) ... in the category or subcategory for categories and subcategories with 30 or more sources, or

(B) the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory for categories or subcategories with fewer than 30 sources.

These provisions make clear that standards must be based on actual sources, and cannot be the product of pollutant-by-pollutant parsing that result in a set of composite standards that do not necessarily reflect the overall performance of any actual source. Congress provided express

limits on EPA's authority to parse units and sources for purposes of setting standards under 112 and that express authority does not allow EPA to "distinguish" units and sources by individual pollutant as is proposed in this rule. Sierra Club v. EPA, 551 F.3d 1019, 1028 (D.C. Cir. 2008).

By focusing on a HAP-by-HAP approach and ignoring the performance of "sources" in crafting the proposed rule, EPA has gone beyond a proper exercise of discretion in this proposal and violated the Clean Air Act. EPA has failed to provide any assessment of how many existing boilers will be able to meet the proposed standards without taking any further control measures. The arbitrary and capricious nature of EPA's approach is best demonstrated by comparing the proposed standards against the actual performance of existing sources. As discussed below, EPA's proposed limits are not achievable.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number: 6

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 15

Comment: EPA should acknowledge the inadequacy of its database and amend its floor setting methodology to account for the emissions variability inherent in many Boiler MACT units. EPA should conduct and utilize any statistical calculations performed with its nonrepresentative database very carefully, assuring that the selected floor values do indeed represent the average emission limitation achieved in practice at the best performing unit(s). EPA must err on the side of achievability; otherwise it risks setting the technology-based MACT standards at levels which technology cannot achieve, in contrast to Section 112. At a minimum, EPA should make the changes discussed in the comments that follow to reasonably assure that it conforms to the requirement that each MACT floor reflects the emissions limitation achieved under the worst foreseeable circumstances.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1914.1, Comment Excerpt Number: 23

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 15

Comment: EPA made no effort to determine whether there is emissions control technology that is in use in each of the various subcategories that can achieve the emissions limits that the Agency has proposed. Had EPA undertaken that required investigation, it would have found that

no such emission control technology exists. There is not a single boiler in EPA's emissions database that meets each of the emissions limits that EPA is proposing in the Boiler MACT rule.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1835.1, Comment Excerpt Number: 3

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 15

Comment: The emissions dataset includes errors that, if addressed, could have a significant impact on EPA's determination of the MACT floor and MACT standards. For example, several of the boilers used to determine the MACT floors have rated capacities of less than 10 MMBtu/hr. However, these units would not be subject to numeric emissions limitations under the Area Source Rule. Because EPA must determine existing source MACT standards based on emissions data from sources in the category or subcategory being regulated, emissions data from the small boilers should not be used in setting emissions standards under the Area Source Rule.

When considered together, GIEC suggests that the available emissions data are inadequate to reasonably support the proposed standards.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1796.1, Comment Excerpt Number: 8

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 15

Comment: EPA Violated The Clean Air Act By Failing To Set Floors That Can Be Achieved Using The Source's Existing Emissions Controls.
EPA inappropriately set its floors based purely on a review of emissions data, without examining whether there is existing control technology in use and available to meet those floors
EPA calculated its proposed floors solely on the basis of emission data, without evaluating whether technically feasible means of achieving those levels are in actual use and hence generally available to (and thus achievable by) the units within the subcategory. For example, with respect to existing units, EPA stated in the preamble:

The MACT floor limits for each of the HAP and HAP surrogates (mercury and CO) are calculated based on the performance of the lowest emitting (best performing) sources in each of

the subcategories. We ranked all of the sources for which we had data based on their emissions and identified the lowest emitting 12 percent of the sources for each HAP.

75 Fed. Reg. at 31905. More to the point, the relevant technical support document confirms that, as the preamble implies, EPA in fact based its floor determinations for existing and new units solely on the basis of available emissions data, without any examination of whether units have some feasible and proven way of achieving the floors. [FOOTNOTE: See ERG, MACT Floor Analysis (2010) for the Industrial, Commercial, and Institutional Boiler and Process Heaters National Emission Standards for Hazardous Air Pollutants – Major Source, at 3, 10 (April 2010) (Docket ID No. EPA-HQ-OAR-2002-0058-0815).] Thus, EPA ignored the methodology Congress intended EPA to use in determining the floors for existing and new units, as described in the following subsections.

The Clean Air Act requires EPA to set standards that can be achieved by existing controls in use within the subcategory. The evidence of congressional intent strongly and unequivocally shows that Congress intended the regulatory machinery of 112(d)(1)-(3) to operate so as to: (1) identify those forms of emission control in actual use which produce maximum reductions in HAP emissions when applied to particular units; (2) pursue all existing and new units of the same type, characterized by basic production design to apply those controls or otherwise achieve at least the same reduced level of emissions, either through innovation or some other way; and (3) preserve, protect and enhance the economic vitality of the national economy. Thus, in line with other key provisions of the Act, 112(d)(1)-(3) are technology-forcing. They are designed to propagate the general use of best HAP emissions control, not to produce dictates achievable only through widespread shutdowns and installation of newly designed production equipment.

Clearly, to implement that Congressional purpose, EPA must base the floors not only on available emissions test data, but also on a determination that some technically feasible means of achieving the floor is generally available to the units within the subcategory, as demonstrated by actual use within the subcategory. Otherwise, if EPA were to base the floors for a particular subcategory only on available test data, without examining technical feasibility and actual usage, it could produce a MACT standard which most – if not all – of units in the subcategory would have no hope of achieving. That would be a vast distortion of the congressional vision – which is to identify and spread the use of best controls, while preserving economic vitality, not to force widespread shutdowns and re-capitalization within industry segments.

Section 112 is replete with textual evidence that Congress authorized EPA to set a floor only at a level which units within a subcategory generally had some means of achieving as a technical matter, as demonstrated by actual usage within the subcategory. In implementing 112, EPA must give full effect to that textual evidence. See Whitman v. American Trucking Association, Inc., 531 U.S. 457, 485 (2001) ("The EPA may not construe the statute in a way that completely nullifies textually applicable provisions meant to limit its discretion.").

Key pieces of such evidence are as follows:

Section 112(d)(2), the overarching directive to EPA for establishing a MACT standard for any given subcategory, requires EPA to set the standard at a level that corresponds to the maximum

degree of reduction of HAP emissions that is “achievable” for the subcategory through the “application of measures, processes, methods, systems, or techniques.” (Emphasis added.) Sections 112(d)(2)(A)-(E) then define those various forms of emissions control as including a wide range of “measures”. Specifically listed are process changes, materials substitution, enclosures, add-on control technology, work practices, and operational standards. Not listed, or even suggested, were changes to the basic design of the units in question, the HAP-emitting production equipment. Section 112(d)(2) thus reflects and reveals a fundamental conceptual orientation on the part of Congress which is universal to all of the technology-based standard-setting processes dictated by the CAA. In crafting the MACT standard setting process, Congress took production equipment, such as boilers, as a given and envisioned that the standards EPA generated would stimulate the “application” of control “measures” to the production equipment, without change to the basic design of the equipment.

Section 112(d)(3)(A) calls on EPA to set the floor for existing units within a subcategory at the average level actually “achieved” by the best “performing” 12 percent. The use of the terms “achieved” and “performing” imply that Congress had in mind a cause-and-effect relationship between the actual in-use application of one or more of the control measures listed in 112(d)(2)(A)-(E) to a piece of HAP-emitting equipment and a resulting actual level of reduced emissions from the equipment. The terms indicate that Congress wanted to identify those measures by which EPA could reliably establish norms of behavior for pieces of equipment of like design. In other words, Congress sought to spread the use of those controls proven to be best by actual practice, but not force changes in the fundamental design of production equipment within an industry segment, e.g., through widespread shutdowns and re-capitalization.

The first sentence of 112(d)(3) provides: “The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source ....” The phrases “reduction in emissions,” “achieved in practice,” and “best controlled” all focus on the application of control measures to HAP-emitting production equipment, especially in juxtaposition with 112(d)(2). The first sentence of 112(d)(3) thus confirms that Congress sought to identify the forms of control that experience showed to be the most effective and that companies could apply in a replicable way without altering the basic design of the production equipment.

Other provisions of the CAA similarly focus on the application of available and “demonstrated” control technology, namely: 111 (New Source Performance Standards (NSPS)), 129 (incinerators), 165 (Best Available Control Technology (BACT) for certain new construction projects), 172(c)(1) (Reasonably Available Control Technology (RACT) for existing sources as control by State Implementation Plans), and 173 (Lowest Achievable Emission Rate (LAER) for certain new construction projects). In each case, the common theme is to establish a behavioral norm based on existing control technologies.

The legislative history of 112 further confirms that Congress sought to identify and facilitate the spread of best, in-use-proven controls of HAP emissions within the appropriate categories and subcategories of HAP-emitting equipment, without fundamentally constraining the ability of companies to choose the basic design of that equipment. During the Senate debates on the

conference bill that became the CAA Amendments of 1990, Senator Durenberger, the primary author of 112, stated: “For each category of sources, EPA will promulgate a standard which requires the installation of maximum achievable control technology (MACT) by the sources in the category.” [FOOTNOTE: Committee on Environment and Public Works, U.S. Senate, Legislative History of the Clean Air Act Amendments of 1990, S. Prt. 103-38, at 863 (Nov. 1993).] Plainly, in Congress’s mind, 112(d)(1)-(3) would cause companies to take action only to apply controls to an established equipment design, as opposed to cause changes in such design.

Indeed, EPA has already recognized that the Clean Air Act requires the Agency to set standards that can be achieved by existing emissions controls in use within the specific subcategory.

EPA has previously recognized that the CAA requires that the Agency set emissions standards that can be achieved by existing controls in use within the subcategory. EPA accepted that it cannot look solely at emissions test data, without regard to whether there is a technically feasible means of emissions control in actual usage within the subcategory which is sufficient to achieve the floor. In its 2004 Boiler MACT rulemaking, EPA made clear that:

[S]etting emission standards on the basis of actual emission data alone where facilities have no way of controlling their HAP emissions would contravene the plain statutory language as well as Congressional intent that affected sources not be forced to shut down.

69 Fed. Reg. 55218, 55233 col. 1 (Sep. 13, 2004). EPA explained: “This is because the statute requires EPA to set standards that are duplicable by others.” Id.

Thus, in 2004, EPA interpreted the CAA as requiring it to determine when it sets the floors whether there are technically feasible means of compliance in actual usage within the subcategory. However, in their challenge to the 2004 Boiler MACT standard before the D.C. Circuit, NRDC and the other citizens groups disputed EPA’s interpretation, contending that EPA must focus only on actual emission rates in setting the floor. [FOOTNOTE: Environmental Petitioners’ Initial Opening Brief, at 31 (June 12, 2006) (NRDC v. EPA, Case No. 04-1385).] EPA vigorously defended its view in its response brief, saying:

Congress intended EPA to base its standards on the amount of emission reduction sources can achieve by the application of some form of control, and not on the levels some source may emit simply because of characteristics of the source or its operation that cannot be replicated by others.” [FOOTNOTE: Final Brief for Respondent United States Environmental Protection Agency, at 49 (Dec. 4, 2006).]

Moreover, in EPA’s view, it has a duty to examine the technical feasibility of a floor:
Congress did not intend that EPA consider just the level of emissions, but rather that the Agency consider how those emission levels are achieved and base the standard on the lowest level that can be achieved through the implementation of some sort of emission control”

Id. (emphasis added). The court, however, never decided this issue because it vacated the standard on a different ground. See NRDC v. EPA, 489 F.3d 1250, 1261 (D.C. Cir. 2007).

ACC respectfully urges EPA to uphold its 2004 position. As shown above, Congress did not authorize EPA to set a floor on the basis of emissions test data, without also determining that there are technologically feasible (as opposed to affordable) means of achieving that floor which actual usage within the subcategory has shown are available to all of the units in the subcategory given their particular basic design. If EPA were to determine that there are no such means of control across the subcategory, it would have to subcategorize further in order to group units of like design or, if that were not practicable, base the ultimate standard on a universally applicable a work practice, such as annual tune-ups.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1994.1, Comment Excerpt Number:6

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 16

Comment: EPA's Failure To Use All Available "Emissions Information" Violates 112(d)(3)(a). Section 112 instructs EPA to set the MACT "floor" for existing sources in categories or subcategories with 30 or more sources at the "average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emissions information) ...." CAA 112(d)(3)(A) (emphasis added). In the proposal, EPA interprets this provision as requiring the MACT floor to be calculated using data from the top 12% of sources for which actual emissions testing data are available. This is an overly narrow and impermissible approach because it violates the unambiguous statutory obligation to calculate the floor using data from the top 12% of sources for which any "emissions information" is available. Specifically, there are plenty of industrial boilers for which EPA does not have emissions testing data. However, the Agency has at least some "emissions information" from virtually all sources in the category. For example, EPA knows or can reasonably determine the types of fuels and emissions controls used by the vast majority of industrial boilers in use today. This is "emissions information" that the Agency has impermissibly disregarded in selecting the group of sources that represent the top 12% of performers. In other words, the term "emissions information" unambiguously encompasses any information related to emissions – not just emissions rate information from performance testing or emissions monitoring devices.

Because at least some "emissions information" is available for virtually all sources in the category, EPA must calculate the MACT floor based on data from the best performing 12% of all sources in the category.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 11

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 16

Comment: BTEC is confident that its proposed alternative standards and requirements achieve a commonsense balance between significantly reducing emissions from new biomass boilers as well as fostering a strong renewable biomass thermal sector. EPA's dataset illustrates that no boiler can meet the two key emission factors; therefore BTEC suggests calculating the average CO of the six boilers with the lowest PM emissions and calculating the average PM of the eight boilers with the lowest CO to determine the minimum emissions limits.5 Based on this approach, the initial and interim recommended limits and practices include:

CO - 1,164ppm at 7% O2, for all boilers (Method 10);
PM - 0.23 lbs/MMBtu, for all boilers (Method 5);
Initial independent third party certification test for biomass boilers to prove compliance. Once a boiler (or range of boilers) is tested, that boiler would be approved for installation until a change was made in the boiler design;
Work practice standard for biomass boilers, consisting of an annual boiler tune-up according to manufacturers' specifications.

These recommendations are a starting point for reducing HAPs and other emissions; EPA must gather more inclusive, accurate data on biomass fuels, sizes, and technologies before moving forward on more restrictive limits. BTEC recognizes that as an industry, it is a partner in improving air quality and environmental sustainability of energy, and so the organization advocates a ratcheting down of data driven emissions limits over a sensible time period. Such a path could involve biennial reduction goals beginning with the above limits, then decreasing in a tiered approach based on the data generated from boilers tested in compliance with the new Area Source Boiler Rule, with a goal of allowing the marketplace to develop financially feasible emissions control options.

Response: The EPA appreciates the comment and the effort put forth to devise alternative standards. Please see the preamble for discussion on the approach used and requirements put forth in the final rule.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 21

Comment: The continuous monitoring data that EPA presents in the major source industrial boiler MACT proposal is for units that will not be subject to the Area Source Rule and that are not the unit(s) from which EPA obtained the data used in setting the proposed area source

standards. Thus, these emissions data cannot lawfully be used in determining the area source standards because these data are derived from sources that do not belong to the area source category. The conclusion that a separate standard for startup and shutdown is not needed can only be based on data from the source(s) that are actually used by EPA to set the area source standards or on a showing that the data from some other boilers are representative of the performance of the area source boilers used as the basis for the proposed area source standards.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1798.1, Comment Excerpt Number: 4

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 23

Comment: We want to be on record that we support reasonable emission limits based on good science and rational costs of implementation, but we believe the EPA's approach in determining the currently proposed limits is flawed and will have severely negative impacts on the biomass boiler industry if implemented as proposed.

Response: Please see the preamble for a discussion on the changes to emission limits in the final rule.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 23

Comment: EPA Should Establish Work/Management Practices Instead of Numerical Emission Limits for CO. We believe that EPA is authorized to establish GACT standards in lieu of MACT standards. Therefore, in order to greatly reduce the burden of this rule on small facilities operating boilers, EPA should establish a work practice standard for CO instead of emission limits. EPA acknowledges in the preamble that the state of New Jersey requires facilities to operate their boilers according to the manufacturer's specifications instead of setting numerical CO emission limits.[75 Fed. Reg. 31906]. For small sources, we believe that this is a much more appropriate approach than requiring ongoing monitoring, recordkeeping, and stack testing. EPA should propose tune-ups and proper boiler operation as work practice standards for CO.

Response: Please see preamble for changes to requirements set forth in the final rule.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 36

Comment: EPA should re-evaluate its proposed CO limits for liquid-fired units to ensure the limits represent what is generally achievable by the population of liquid-fired units. If units with low NOx limits are forced to meet CO limits of 2 ppm, an oxidation catalyst could be required, which is a very costly control option and may oxidize CO but not organic HAP, depending on the temperature of the gas stream at the location of the catalyst, which will necessarily vary with boiler firing rate.

Response: Please see the preamble for changes to the requirements set forth in the final rule.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 60

Comment: Just as Dr. Frankenstein's fictitious monster bore no resemblance to an actual human being, EPA's "Franken-plant" bears no resemblance to the actual, best performing HMIWI.5 EPA's "Frankenplant" bears no resemblance to the actual, best performing industrial boiler. EPA's approach for setting emission limits for existing sources is equally flawed to the Agency's approach for setting emission limits for new sources. However, it is easier to demonstrate and comprehend the Agency's error for new sources. The relevant statutory provision is, the maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source.6 Note that the statue refers to a single source - not multiple sources. If Congress had intended for EPA to set emission limits based on a "Franken-plant" approach, the statue would read -- best controlled similar sources. [See submittal for references.]

In this section we provide specific examples of how the "Franken-plant" approach leads to proposed emission limits that have never been achieved in practice. According to the preamble, EPA determined that the following HAPs are fuel-dependent: particulate matter (PM), hydrochloric acid (HC1) and mercury (Hg). For fuel-dependent HAPs, EPA identified five basic types of units as subcategories: (1) units designed to burn coal; (2) units designed to burn biomass; (3) units designed to burn liquid fuel; (4) units designed to burn natural gas/refinery gas; and (5) units designed to burn other process gas. For the fuel-related HAPs, EPA proposed identical numerical emission limits across each type of fue1.7 For example, EPA proposed four subcategories based on furnace type for biomass, but the same numerical emission limit for PM, HC1 and Hg for all four subcategories.8 EPA identified the following three industrial boilers as having the lowest emissions: (1) PM -- GP Cellulose Boiler No. 4 in Brunswick, GA; (2) HCl - Potlatch Forest in Warren, AR; and (3) Hg -- US Sugar Boiler No. 7 in FL.9 While the GP

Cellulose Boiler may have the lowest PM emissions of all the biomass units, its HC1 emissions rank 33rd and are 150 times higher than the Potlatch Forest unit. Likewise, the US Sugar Boiler No. 7 has the lowest Hg emissions of all the biomass units. Unfortunately, the US Sugar unit ranks 37th in both HC1 and PM emissions; its PM emissions are 10 times the GP units and its HC1 emissions are 146 times the Potlatch Forest unit. [See submittal for references.]

Response: Emissions limit should be based on the best performing sources (based on CAA) in the specific sub-category. When EPA proposes " identical numerical emission limits for PM, HC1 and Hg for all four subcategories", it assumes that emissions are not fuel dependent, emissions distributions (think about means, minimums, maximums, percentiles) are the same across fuel types, and then it is correct to select the best performers across the five subcategories instead of within each subcategory or fuel type. If there are differences among the emissions, then EPA should consider calculating emissions limit per subcategory or fuel type.
What is the purpose of the sub-category if they are not used to stratify the sources? If the purpose of the subcategories is stratification, then one must expect differences from one sub-category to another, otherwise the classification is not useful.
It is not expected that a source ranks as one of the best performers in several HAPs. Is the commenter trying to insinuate that EPA needs to find a source that would be ranked as one of the best performers in each HAP?

Commenter Name: Keith A. Craig
Commenter Affiliation: Pennsylvania Hardwoods Development Council
Document Control Number: EPA-HQ-OAR-2006-0790-2017.1
Comment Excerpt Number: 5

Comment: We request that the Environmental Protection Agency revise the proposed Boiler MACT rule to:
Be reflective of other available data beyond the top performing units to describe a more realistic picture of boiler performance for each HAP and subcategory.

Response: Please see the preamble for a discussion of MACT Floor methodologies and changes to requirements set forth in the final rule.

Commenter Name: Jim Pettiford
Commenter Affiliation: Fulton Thermal Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2192.1
Comment Excerpt Number: 2

Comment: Our primary comment regarding the proposed Area Source Boiler Rule, which would regulate industrial, commercial, and institutional boilers, is that the proposed standards are far more stringent than needed to assure protection of health and the environment.

Response: Please see the preamble for changes to the requirements set forth in the final rule.

Commenter Name: Trent A. Dougherty
Commenter Affiliation: Ohio Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1922.1
Comment Excerpt Number: 4

Comment: OEC urges the EPA to consider developing output-based emissions standards for this rule
and in general. As the EPA itself recognizes, output-based standards that define allowable maximum emissions per unit of useful energy output provide greater incentives for pollution prevention, energy efficiency, and emissions reduction than do traditional input-based standards that allow greater emissions as more fuel is consumed. (See, for instance, EPA Combined Heat and Power Output-Based Regulations web page at http://www.epa.gov/chp/statepolicy/output.html and the linked "Output-Based Environmental Regulations Factsheet" and "Output-Based Regulations: A Handbook for Air Regulators" documents.).

Currently, the New Source Performance Standard for Electric Utility Steam Generating Units (40 CFR 60.40Da et seq.) includes an output-based emissions standard for mercury (Sec. 60.45Da Standard for mercury), and output-based standards are an option for several criteria pollutants (particulate matter, sulfur dioxide, and nitrogen oxides).

Twelve states, according to the "Factsheet", have output-based emissions regulations, including four that regulate non-electricity thermal output, such as from combined heat and power systems. This is important as the OEC recognizes that there may be some challenges in measuring useful thermal output from industrial process heating systems. The OEC believes that it would be valuable for EPA to investigate opportunities to develop and implement output-based emissions standards for industrial, commercial, and institutional facilities.

As the EPA noted in its 2004 publication, Output-Based Regulations: A Handbook for Air Regulators. [Footnote: http://www.epa.gov/chp/documents/obr final 9105.pdf]

"Output-based emission limits, which do account for the emission reduction benefits of energy efficiency, make it more attractive for regulated sources to install clean energy technologies because these technologies provide greater compliance flexibility and the opportunity for reduced compliance costs."

The EPA has a history of preferring output-based methodologies for certain pollutants in multiple industries, and EPA clearly sees the benefits of promoting output-based emissions regulations for generating units. The most recent New Source Performance Standards for Stationary Gas Turbines ([EPA–HQ–OAR–2004–0490, FRL–8033–4], RIN 2060–AM79, p.

38483) provides turbine owners with the option of using an output-based standard for calculating NOx emitted per unit of useful recovered energy.

Response: Please see the preamble for changes to the requirements set forth by the final rule.

Commenter Name: Michael Wagner
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2271
Comment Excerpt Number: 4

Comment: Nearly 90 percent of the biomass (wood) boilers that I have inspected and or permitted during my tenure as a state regulator are stoker type boilers. Other types of biomass boilers (fluidized bed boilers, suspension burners/ dutch ovens, and fuel cells) are not commonly encountered. There are several wood pellet manufacturing plants or wood drying plants that use suspension burners to combust wood waste and provide the heat to dry wood chips, sawdust, and wood shavings. These units function as process heaters so they would be exempt under the proposed rule because they are not boilers.
The proposed rule for boilers and process heaters at major sources includes four subcategories of biomass boilers — stoker boilers, fluidized bed boilers, suspension burners/ dutch ovens, and fuel cells. Each of these subcategories has a carbon monoxide limit that is unique to the specified subcategory of biomass boilers. With the exception of fluidized bed boilers, the carbon monoxide limits for new and existing biomass boilers are equal. With the exception of new fluidized bed boilers, the most restrictive carbon monoxide emission limit is 250 parts per million corrected to 7 percent oxygen. The proposed carbon monoxide limit for stoker type boilers for major sources is 560 parts per million corrected to 7 percent oxygen yet U.S. EPA is proposing limits of 160 and 100 parts per million corrected to 7 percent oxygen respectively for existing and new biomass boilers at area sources. The proposed carbon monoxide emission limits for boilers at major sources range from 40 to 1010 parts per million corrected to 7 percent oxygen and the only subcategory with a proposed carbon monoxide emission limit more restrictive than 250 parts per million is for new fluidized bed boilers. If one compares the proposed carbon monoxide emission limits for biomass boilers at major sources to the proposed limits for biomass boilers at area sources, it is very apparent that U.S. EPA is proposing to hold small facilities (i.e. area sources) to much more restrictive carbon monoxide emission limits than major sources. The differences in the proposed carbon monoxide emission limits for major sources vs. area sources is not justified based on my experience working with both types of facilities.
-Change the proposed carbon monoxide emission limits so that the limits for boilers at area sources are no more restrictive than the limits for boilers at major sources.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-0985, Comment Excerpt Number: 35

MACT Floor: Methodology: Statistical Analysis

Commenter Name: Michael J. Hagenbarth
Commenter Affiliation: RockTenn
Document Control Number: EPA-HQ-OAR-2006-0790-1473.1
Comment Excerpt Number: 9

Comment: EPA proposes to use the 99 percent upper predictive limit ("UPC) to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor in the proposed area source rule. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the Agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot adequately account for the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.

This problem is magnified by the fact that performance tests are typically conducted when units are at least 90 percent of full load during normal operating conditions. Therefore, a stack test is going to represent the best operation of any boiler. Thus, the data represent only a small snapshot in time, captured during the best operating conditions. This means that EPA's statistical approach to determining variability fails to reflect the full range of variability that reasonably is expected from the best performing boilers.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 14

Comment: The CO emissions data [Footnote: From EPA Appendix C-3, Table 9.] below highlights a subcategory where application of EPA's calculation methodology does not lead to a reasonable result. [See submittal for figure showing coal CO emissions ranked by performance.]

The proposed pulverized coal (PC) CO emissions limit does not meet Congressional intent because of an extreme estimate of variability. Here 36 of the 41 units for which EPA had data would not need to reduce emissions of those HAPs for which CO is a surrogate. The ratio of the calculated average of the top 12 percent to the proposed floor, representing the sum of the different EPA variability calculations, is 120 (a variability factor of 12,000 percent). There is not engineering basis to believe that this estimate is within the range of what one would expect from this type of boiler. Based on this data, a more likely estimate would result in a MACT floor in the single digits of parts per million.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 15

Comment: EPA's procedure was to calculate the 99th percent "Upper Probability Limit: (UPL) of all of the test results available for these top 5 units. We believe that this procedure results in an extreme "variability" factor of 120, not because the units were too "dirty," but because some were too "clean." [Footnote: EPA should publish its calculations, rather than merely explaining how the calculations were performed in general and then publishing the solutions obtained. It is otherwise impossible to discern exactly what EPA has done. EPA's decision to create a separate subcategory for PC units led to a MACT floor that is defined by the performance of just five units. For three of the units the reported emission level was less than 0.06 ppm – an extremely low level25 that is below the detection level in most instances. [Footnote: Indeed, this may simply be a reporting error, as one might expect an emission level of 0.06lb/MMBtu (10 ppm) from such units rather than 0.06 ppm.] The other two units reported low, but more reasonable levels of 1.3 and 2.2 ppm. Since these latter levels are 20 to 40 times greater than the emission levels of the first three units, the use of inter-unit variability results in a large variability factor [Footnote: Inter-unit variability may simply reflect consistent differences in performance due to differences in the design of units rather than a variation in performance of all units. EPA's procedure claims to round CO test results less than 1 ppm up to 1 ppm, but it does not appear to have done so in this instance.] and a MACT floor (90 ppm) that is inconsistent with the average of the top performing units.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 17

Comment: In order to evaluate whether EPA's procedure for calculating variability is appropriate, one first has to examine what "variability" EPA is calculating and whether it is relevant to some matter under sections 112 or 129. EPA's procedure involved determining the 99th percentile UPL of the difference in performance between all test runs for all units in the top 12 percent. [Footnote: EPA does not have sufficient replicate testing information for each of the top units in each of its subcategories to accurately determine the variability in replicate testing performance for each unit. In many instances only one replicated test was available, in others, the source was tested only once.] This calculation improperly combines two factors: (1) the inter-unit difference between the "best performers" and "the best of the best performers" and (2) the

expected variability in performance for each of the best-performing units. EPA does not have the resources to evaluate each of these situations in detail to determine whether the difference represented inherent variability in performance of the unit or is a consequence of factors (such as fuel composition or specific hardware design) that are within the control of the source, and so it simply, and incorrectly, assumes that each of the units within the top 12 percent is identical and that all of the difference in performance is a "variability" in performance that is essentially random and therefore susceptible to statistical analysis. The difference in performance between units in the top 12 percent is unrelated to the variability in performance of any of those units. While we understand the resource constraints, the procedure to which EPA defaults seems to have no relationship to the average performance of the top 12 percent, the variability in performance that one might expect of a top-performing unit or the effect of such variability on the computation of the average. [Footnote: Indeed, the result of this procedure is a higher MACT floor than would be obtained by calculating the 99th percent UPL of the performance of the 12th (or even 50th) percentile unit.]

EPA's approach leads, in some instances, to wildly exaggerated predictions of "variability of performance" that are not reflected in the real world and to MACT floors that are not reflective of Congressional intent. [Footnote: Thus, we see the result, above, where the average of the top 12 percent is 0.75 ppm and EPA's calculation process yields 90 ppm. Based on the intra-unit variability calculated by NACAA in its Model Permit Guidance, the probability of a unit that emits 1 ppm over the course of a reference test then emitting 90 ppm in its next reference test is orders of magnitude less than 1 per cent. EPA employed this procedure in its recent Portland Cement NSPS, but that does not mean that it is correct – then or now.] While the courts have held that EPA has discretion in how it calculates the MACT floor, Congress has specifically determined how EPA is to calculate differences in performance among units in the top 12 percent – average them.

Other approaches are available under the statute that would yield reasonable results and that are more logically related to the statute. Rather than calculating a level of performance that is highly unlikely for each source, EPA could as a first step examine the variability in test results of the top performing 12 percent of performing units individually and ascertain the extent to which that variability might affect the calculation of the MACT floor. The probability that each of the units in the top 12 percent would experience its highest probable emissions during the same measurement period is vanishingly small and so the variability factors assigned to the actual average for this purpose would be negligible.

To understand this point, imagine that 30 sources constitute a MACT floor group and that this group is tested 100 times. Imagine that the mean value of the emissions for this group, based on the first round of testing, is 30, that emission results are normally distributed and that each unit has a 99 percent UPL of 50. As this group is tested and re-tested there will be some units that emit 35 or 40, or even occasionally 50. However, with a normal distribution of the data, there will also be some units that emit 25 or 20 or occasionally 10. As the number of tests increase, there will be a tendency for the average of these tests to approach a true "mean" value, perhaps 30.3 or 29.5. Any given calculation of the mean will vary slightly, but the probability that all 30 units in the MACT floor group will emit at 50 during a test is exceedingly small and so an average of the 99 percent UPL of the MACT floor units (i.e., a mean value of 50) would

represent an extremely unlikely [Footnote: Determining this probability is similar to calculating the odds of flipping a coin 30 times and having all 30 results being "heads," except that the probability for each individual occurrence is 1/100 rather than 1/2. For our example, we calculate this probability at 1 in 1060.] approximation of the effect of variation of the performance of those units on the calculated MACT floor. In our hypothetical example, EPA's calculation procedure does in fact lead to a value of 50, which EPA would then increase to 75 or more based on a fuel variability factor described below. The actual probability of variation in the arithmetic average of the top performing 12 percent, due to variation in individual measurements, is susceptible to calculation, but EPA's method does not address it and it is likely to be so small as to be irrelevant.

Having established the variability in the "average" due to the variability of individual units that make up the average, it would then be reasonable for EPA to establish a compliance margin such that "complying" units within the "best performing units" group are not in jeopardy of failing a replicate compliance test when operating as they did when their test results formed the basis of the MACT floor. Since nominally half of the top 12 percent do not meet the average and therefore are not complying units, [Footnote: Those units in the top 12 percent, but with emission levels greater than the average of the top 12 percent (i.e., the 6th through 12th percent best performers), do not "comply."] the development of a compliance margin should be limited to an evaluation of the variability of the top 6 percent performing units under the compliance conditions imposed by the regulation. Unfortunately, we largely only have data that reflect emissions variability when emissions are unconstrained, and do not have available a significant body of information that reflects how variable emissions might vary when sources are attempting to control them. [Footnote There are data in other contexts that demonstrate that facilities that employ continuous emission monitors (CEMs) are able to reduce emissions variability by controlling process and other parameters. Some sources in both EPA and NACAA's data sets were subject to some emission limitations. In many instances however, compliance margins were so large that close control of emissions variability was unnecessary.] For this reason any calculation of variability using pre-regulation testing will likely overstate the post-regulation variability to some degree. Nonetheless, some evaluation of variability must be conducted and some statistical norm employed at this time. EPA has suggested the use of the 99th percentile UPL of pre-regulation testing and argued that its use is justified because EPA used the same approach in the medical waste incinerator MACT rule. This rationale does not explain why EPA believes the 99th percentile UPL is appropriate and not the 50th, [Footnote: Civil enforcement of environmental standards is based on a "preponderance of the evidence," which merely requires that a violation be more likely than not (51st percentile).] 90th or, for that matter the 99.99th percentile. [Footnote: Some in industry have argued that the levels should be set so that there is no significant probability that a facility would fail a compliance test at any point in its useful life.]

The decision matters because with each increase in the "guaranteed" compliance margin the standard increases and there comes a point where the compliance margin is so great that sources can merely accept the risk of a failed compliance test rather than reducing emissions. [Footnote: The selection of a 16,100-percent variability factor, discussed above, meant that no source within the subcategory could fail the standard, even if it made no attempt at compliance.] If a source fails a compliance test it will ordinarily be afforded the opportunity for a retest and only if a

source has a confirmed deficiency in its control equipment will a modification be ordered. We are unaware of any situation where a source that is willing to make such modifications as are necessary to meet an applicable limit has ever been ordered to permanently cease operation on the basis of a single failed stack test. In contrast, where emission standards are overly lenient, emissions remain high, and people do become ill.

Fortunately, there are additional facts to help guide EPA's determination of a standard compliance margin to be applied to all subcategories – the compliance obligations and testing conditions that are imposed by the standard. It seems that an equitable balance is struck when the same conditions used to establish the compliance margin are thereafter used to set the compliance obligation (and vice versa). If a source is required to be regularly tested under conditions that represent the 99th percentile "worst-case" conditions, then a 99th percentile compliance margin might well be appropriate. Additionally, a larger compliance margin is ordinarily appropriate for standards with short averaging periods and continuous emission monitors than for standards that have long averaging periods or where compliance is determined by scheduled stack tests conducted by contractors engaged by the source. [Footnote: We do not intend to cast aspersions on such contractors. Our point is that the source has substantial prior notice of such tests and is in control of the operating conditions during the test.] We would agree with EPA that a larger compliance margin is warranted where the emission limit is at or near the detection limit of the reference method.

EPA observes that standards are to be complied with "at all times," but this is a truism that is not particularly helpful. [Footnote: EPA also asserts that the failure of a compliance test is not a violation of a standard until and unless some governmental authority agrees. We understand the reference in the context of the annual certification of compliance (where EPA does not intend sources to have to "confess" to a violation of law), but not otherwise.] What are helpful are the provisions in the rules that set out the conditions under which compliance will be determined. In years past, facilities were to be tested under "reasonable worst case conditions." Today, that standard has been reduced to "representative" conditions – a phrase that suggests that a compliance margin based on a 99th percentile projection [Footnote: We understand that a 99th percentile UPL is not precisely the same as a 99th percentile worst-case condition, but the differences are extremely subtle.] of possible emissions may be too large and that industry projections of severe test conditions may be overstated. Moreover, the structure of the compliance obligations itself suggests that the 99th percentile may be too stringent. The following factors, among others set out in the proposed rules, bear on a determination of the appropriate compliance margin:

1. For sources that intend to comply with mercury and HCl fuel sampling, the rules require that a source conduct a stack test and demonstrate compliance using 90th percentile worst-case fuel (employing the student's t-test to determine that percentile);
2. For other purposes (e.g., PM and CO compliance) the source may select a "representative" operating condition (suggesting that neither a 90th percentile nor a 99th percentile worst-case test is required for these pollutants);
3. A source whose emissions during a test are less than 75 percent of the applicable limit is entitled to a reduced frequency of stack testing (suggesting that EPA does not really believe that replicate testing of sources will vary by more than 33 percent);

4. Parametric operating limits may not generally be less effective than demonstrated during the stack test (a useful provision, but also one that suggests that EPA believes that in-use emissions variability is zero);
5. Many of the applicable standards and other requirements contain exclusions from full compliance at all times (e.g., six-minute exclusion under opacity requirements, 5-percent exclusion for bag leak detection systems); and
6. Power (voltage or amperage) to ESPs may not fall to less than 90 percent of that employed during a stack test [Footnote: If power to the ESP falls below that employed during the test, PM control efficiency would be reduced. The amount of this reduction is presumably unit-specific and so we can think of no justification for this provision. (for which we can think of no justification).

While EPA may have used the 99th percentile UPL in one recent NSPS, in other NSPS rulemaking exercises, such as the mercury limits under the utility NSPS 40 CFR Part 60, Subpart Da, [Footnote: See, Memorandum from Robert Wayland, OAQPS, to William Maxwell, OAQPS, "Revised new source performance standard (NSPS) statistical analysis for mercury emissions" (sic), May 31, 2006.] it has employed a 90th percentile statistical test (t-test) coupled with the same test for the fuel-sampling compliance demonstration.

Since we believe EPA is actually developing a reasonable compliance margin to apply to the best-complying sources, rather than anything to do with the calculation of the effect of individual unit variability on the average of the top performing 12 percent of units in a subcategory, we do not believe EPA is constrained to set a different compliance margin for each subcategory. Rather, we think that EPA could develop a factor for each of the complying units (i.e., top 6 percent) for which it has sufficient replicate testing, numerically average all such factors and apply this average factor to each of the calculated MACT floors (at least to all floors within a fuel category) and adjust this factor to reflect the realities of the compliance obligation for different pollutants. In this way the wide disparity in calculated floors occasioned by small sample sizes would be reduced and differences in the stringency of compliance demonstration methods can be accommodated.

Response: See the Preamble for response to use of the UPL.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 11

Comment: EPA created a 99th percentile "upper prediction limit" (UPL) from all the data for the sources in the top twelve percent. The UPL, according to EPA, is a statistically derived prediction of an emission level that all sources in the top twelve percent could be expected to meet ninety-nine percent of the time. The UPL is based on the median of the data points in a given set, the number of data points in that set, and the standard deviation of those points. Id.

Significantly, EPA did not apply the UPL to the test results for individual sources, or indeed, even attempt to predict the performance of individual sources over time. Rather, EPA applied the UPL to all the test results for all the sources in the top twelve percent.

Whatever else may be said of the EPA's 99th percentile UPL approach, the upper prediction limit of the emission level achieved by the best performing twelve percent of sources is not the "average" emission level achieved by those sources. Because Clean Air Act § 112(d)(3) unambiguously requires EPA to set floors reflecting the "average" emission level achieved by the best sources, setting floors that instead reflect a UPL for those sources is unlawful.

By claiming that it can use the UPL for all sources in the top twelve percent, EPA misreads its authority to consider variability under the Clean Air Act and relevant caselaw. Although EPA may consider variability in estimating an individual source's actual performance over time, nothing in the Act or the caselaw even suggests that the agency may account for differences in performance between sources except as § 112(d)(3) provides, by averaging the emission levels achieved by the sources in the top twelve percent. Indeed, EPA errs by viewing the different emission levels achieved by different sources as "variability" at all. The different emission levels achieved by different sources are just differences in performance and provide no basis for applying statistical methods.

EPA does not provide any explanation for its apparent assumption that sources' actual emission levels will vary to the full extent of the 99th percent UPL. By its nature, a UPL predicts sources' variability in performance based on characteristics of the data already available for them, the number of data points, the median of the data points, and the standard deviation. The UPL does not consider an operator's efforts to limit variability in emissions – or at least upward variability – by maintaining and operating the source carefully to control emissions. Yet, as both EPA and the D.C. Circuit have recognized, operator training and care and source maintenance do operate to control emissions. By using the UPL, EPA ignores the effect of operator training and care and source maintenance on emission levels. Doing so is just as unlawful and arbitrary as setting floors that ignore the effects of cleaner fuel use; it results in floors that do not reflect the best sources' actual performance.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 12

Comment: NACAA commends EPA for attempting to develop a statistical approach that is sound and that can be broadly applied to numerous different data sets. NACAA agrees with much of EPA's approach, including the use of log normal calculation procedures where the distribution of the data is skewed. However, this theoretical procedure involves a number of

decisions where no single approach is "correct." NACAA anticipates that EPA will receive numerous comments arguing for other approaches that will provide MACT floor calculations that are more acceptable to the commenters. NACAA suggests that, as with any other theoretical exercise, whatever process EPA finally relies on must be validated by looking at the result it creates and examining whether the end result is reasonable. Toward this end we recommend a simple test – whether the resulting floor requires a substantial majority of each subcategory to make some degree of emission reduction. This test is based on the overall structure of sections 112 and 129 that require EPA to set a MACT floor at what is nominally the performance of the 94th percentile of the units. A reasonable allowance for performance variability leads to MACT floors that will be somewhat higher, but should not be so high that no unit within the subcategory currently emits at levels greater than the floor. The following charts illustrate the concept. [See submittal for Figure 3 showing CO emissions for oil-fired boilers, ranked by performance.]

This graph illustrates a standard that does not meet either a reasonable definition of MACT or a reasonable interpretation of variability in establishing a MACT floor. Here, EPA's proposed CO limit for new units is easily met by over 95 percent of existing units. In contrast, NACAA's proposed range is met by one-third of the existing units and occurs at a "step" in the data that distinguishes between the best performing units and the rest of the class.

Response: See the Preamble for response to use of the UPL.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 13

Comment: EPA rounds up its emission test results for the purpose of setting standards even though the agency's policy is to round them down for the purpose of determining compliance. Specifically, EPA rounds up UPL values less than 100 to one significant figure, and rounds up UPL values between 100 and 1000 to two significant figures. Floor Memo at 3.3. Thus, as EPA points out, it rounded the mercury floor from the UPL, 2.42 x 10-6, to 3.0 x 10-6. Id. At the same time, EPA has a policy of allowing sources to be deemed in compliance with an emission standard if their emission test result can be rounded down to the level of the standard under normal rounding principles. For example, a test result of 3.49 x 10-6 would be deemed in compliance with the standard of 3.0 x 10-6. EPA's decision to round up is unlawful in itself. The Clean Air Act requires floors to reflect the emission levels achieved by the best sources not those emission levels rounded up to the nearest whole number. EPA's departure from normal rounding practices by always rounding up in setting floors – i.e., rounding up whether the fraction is above or below one half – exacerbates that unlawfulness and is arbitrary. And the agency's inconsistent approach to rounding for standard setting and compliance determinations is inconsistent, irrational, unexplained, and therefore arbitrary.

Response: EPA treats significant figures as follows. In the final analysis all calculations were completed without rounding. After the final computation step the final values were rounded up to the nearest two significant figures.

EPA did not follow the ASTM rounding procedure E 380 (round down if less than 5; round up if greater than 5) for the final calculation. EPA determined that the ASTM procedure is more appropriate for performance stack testing not standard setting. Instead, we always rounded up to the next significant digit.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 13

Comment: The next chart illustrates the range of PM (filterable) emissions performance of biomass-fired boilers. [Footnote: The PM emissions data for the six highest emitting units have been deleted to facilitate scaling.] [See submittal for Figure 4 showing PM emissions for biomass-fired boilers ranked by performance.]

In the proposed PM emission limit for biomass-fired boilers, EPA adjusted the calculated average of the top 12 percent by a factor of 11.7. This factor is higher than the variability in emissions performance one would expect from a well-controlled unit. However, a review of the emissions profile for the subcategory shows that it is an otherwise reasonable MACT floor limit in which approximately two-thirds of the existing units will need to reduce PM emissions and where the MACT floor seems to occur at a level that delineates the best performers from others in the subcategory. [Footnote: We note that, even here the variability for biomass-fueled units is overstated because of EPA's handling of mixed fuels in this process. For example, when combusting biomass with a small amount of natural gas, the performing biomass units' PM emissions are an order of magnitude lower than when the same units combust biomass with 16-25 percent "heavy liquids." EPA's calculation process does not directly compensate for the differences in secondary fuels, but incorporates these differences as "variability." NACAA recommends a different approach for mixed fuels. This limit is reasonably consistent with BACT determinations for PM (filterable) controls and at least addresses the Congressional intent outlined above.

Response: For the final rule PM limits are not based off MACT calculations, but rather are based on GACT. See the preamble for further discussion.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1

Comment Excerpt Number: 41

Comment: Appropriately in both the area and major source rules, EPA adjusts the MACT floor data to account for variability. However, we disagree with the method chosen. We believe EPA should use an Upper Tolerance Limit (UTL) approach to this adjustment as discussed below.

EPA is using the 99 percent upper predictive limit (UPL) to calculate the proposed MACT floors and states the following in the preamble "We then assess variability of the best performers by using a statistical formula designed to estimate a MACT floor level that is achievable by the average of the best performing sources if the best performing sources were able to replicate the compliance tests in our data base." The use of the 99 UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. EPA is using this statistical formula to attempt to overcome the fact that the amount of data being used to set floors is not adequate. Statistics cannot overcome the fact that the dataset is not representative of the entire population of boilers in each subcategory and the approach being used does not include enough variability when there only a few boilers in the floor in a subcategory of numbering almost 11,000.

The appropriateness of the use of the 99 UPL over the use of other statistical procedures typically used for censored or limited data sets is not discussed by EPA and is not consistent with statistical procedures used to develop other emission standards. For example, the EPA used a complicated statistical approach in the development of the hazardous waste combustor MACT standard to account for intraunit variability as well as inter-unit variability among the units in the MACT floor. EPA is using a statistical calculation it terms the 99 percent upper limit for calculating the emission limits proposed in the CISWI rule. Because EPA has chosen to use a limited data set that is biased toward top performers, consideration of variability and use of the appropriate statistical approach is crucial to ensuring units can achieve the emission limits. Therefore, EPA should use either a 99 percent upper limit (e.g., the mean of the emissions from the top performers times the standard deviation of emissions times the student's t statistic) or in cases of severely limited or censored data sets, the UTL, which is meant for use in situations where the amount of data available does not represent the entire population. In the Area Source Floor Memo EPA calculates an Upper Limit MACT floor for CO. Although we believe the best approach for this GACT rule is to base the control requirements on management or work practices, if EPA feels compelled to develop a floor based limit, the UL ot UTL should be used because of the limited data set.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 44

Comment: Statistical theory reinforces our point about dataset size. A limited sample from a large universe can be representative when the universe is uniform and the variability is known and limited. None of those conditions apply in this case.

The universe of biomass boilers is large and extremely diverse, with differences in size, fuel, boiler design, and load. The variability in this universe is unknown since an adequate database to determine variability has not been assembled by EPA. Though unknown, several of the factors that would influence this variability can be estimated in order to give a sense of how wide the variability might be. All the estimates show the inadequacy of the dataset to perform an emission limit setting function. The size of the units in the current subcategory spans from 10 MMBTU/hr. to over 500 MMBTU/hr., a 50 fold change. Operational load variability in the subcategory can typically range from less than 25% to almost 100% for industrial boilers, a 3 fold change. Iinstitutional boilers and commercial boilers are often used just for space heating – so both seasonal use and occupational use will lead to fluctuating load due to changing outdoor temperatures and business hours. Biomass moisture content can range from less than 5% (wet basis) to more than 50%, a 10 fold change. Clearly these factors alone show that variability will be large, when it is known and, just as obviously, the boilers in this universe are not uniform. This reason alone is sufficient to question the entire MACT floor exercise for CO as predicated and pursue an alternate path. Further (see below), test results from several boilers were used inappropriately on the basis of their size, including as many as 4 of the 8 used in the GACT floor calculation. Reconsideration of these units, which is a necessary and appropriate action, unfortunately increases the statistical probability of error. Adding more uncertainty is the lack of information in the Floor Memo on how many of the 72 facilities in the dataset are larger than 10 MMBTU/hr. Thus, though we arrive at a boiler number below, the population of boilers for which limits are calculated still contains uncertainties.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 53

Comment: Even on their own merit, the emission limit setting approaches carried out miss the mark. The statistical variability analysis used does not follow the criteria established in the proposal. In setting the MACT floor levels, EPA assumed normality in the skewness and kurtosis variability statistics when they were not normally distributed, as noted in Appendix B-2 of the Floor Memo. Instead, they were only normal when evaluated under a log-normal distribution analysis, according to the Floor memo. Had EPA followed the correct procedure and used its preferred Upper Predicted Limit (UPL) procedure, as noted, the calculations result in a MACT Floor of 242 PPM (@ 7% O2)) rather than 160 PPM.

As noted in the legal analysis above, GACT setting allows much greater flexibility in setting standard levels than the more narrow MACT rules for setting limits. That flexibility should

certainly extend to the use of the variability statistical analysis. This is especially true when all the uncertainty noted above is considered. As noted, AF&PA does not believe EPA has demonstrated that the data presented for this proposal justifies a CO limit nor do other GACT considerations require such a limit. Nevertheless, for any calculation done with this database, AF&PA believes that the only way a CO limit could be set is to use an appropriately inclusive variability and statistical analysis in order to account for all the uncertainty and the limited size of the database. Consequently, we believe the Upper Limit (UL) approach or the Upper Tolerance Limit (UTL - discussed above) is necessary to account for these factors, not the Upper Predictive Limit (UPL) that is used in the proposal. EPA has complete flexibility in the choice of variability tools and has used UL in other combustion MACT rules concurrently proposed. For example, the UL approach is used in the separate CISWI proposal published concurrently with this proposal; such a variability analysis approach is obviously acceptable to EPA for these combustion standards. As noted in the Floor Memo, such a change in an approach to statistical variability would result in a CO limit of 777 PPM (@ 7% O2) for area source biomass boilers, since the GACT Floor data are log-normally distributed.

EPA should use good science to identify the technical justification for using the UL variability approach in its own proposals but can also find justification for this limit if it were to benchmark other global emission standards. Emissions from European boilers are also highly regulated. As noted in EN 303-5, 777 PPM is actually lower than the current limits set for existing boilers in the European Union.[EN 303-5:1999 Heating Boilers, Part 5; Heating Boilers for Solid Fuels, Hand and Automatically Fired, Nominal Heat Input of up to 300 kW, Terminology, Requirements, Testing and Marking; European Union, Brussels, Belgium.] Again, AF&PA believes that the better approach is a management or work practice standard. But, given the problems noted above for this GACT Floor dataset, we believe that using the UL (or alternatively, the UTL) statistical measure would be the correct approach should such a limited dataset be used. We also believe that the flexibility to choose an appropriate and technically justified statistical measure is completely within the legal framework and flexibility provided to EPA for GACT regulations within the outlines of the Clean Air Act.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Jeffery S. Hannapel
Commenter Affiliation: National Association for Surface Finishing
Document Control Number: EPA-HQ-OAR-2006-0790-1840.1
Comment Excerpt Number: 8

Comment: EPA proposes to use the 99 percent upper predictive limit ("UPL") to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor in the proposed area source rule. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the Agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. This statistical approach cannot, however, overcome the fact that the data are not

representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.

The fact that performance tests are typically conducted when units are at least 90 percent of full load during normal operating conditions exacerbates this statistical error discussed above. This ensures that a stack test will represent the best operation of any boiler. As a result, the data represent only a small snapshot in time, captured during the best operating conditions. Thus, EPA's statistical approach to determining variability fails to reflect the full range of variability that reasonably is expected from the best performing boilers.

EPA's flawed variability analysis is further magnified by the fact that three-hour testing data are used to set standards with far longer averaging times. This creates a fundamental disconnect between the form of the data used to determine the standard and the form of the standard itself. These standards should be based on emissions data collected over longer averaging periods. Specifically, any emissions limits set for CO should be based on a 30-day averaging period to accommodate the significant variability in CO emissions reflected in long term CO monitoring data.

Response: See the Preamble for response to use of the UPL and a discussion of the CO limits.

Commenter Name: Britt S. Fleming
Commenter Affiliation: Auto Goup
Document Control Number: EPA-HQ-OAR-2006-0790-1916.1
Comment Excerpt Number: 15

Comment: EPA primarily relies on emissions testing data in determining the proposed MACT floors and corresponding MACT standards. Variability is generally accommodated by performing statistical analyses of the data to predict the upper confidence limit and, therefore, the emissions level above the straight numeric average at which the better performers might be expected to operate. For standards for "fuel related HAP," EPA additionally investigated variability associated with differences in fuel quality over time. For standards for "combustion-related HAP," EPA additionally investigated variability that might be associated with different firing rates or operating loads.

As a general matter, the Auto Group supports EPA's intention to account for variability in emissions from the better performers when determining floor levels of control. Accounting for variability has been upheld as appropriate and lawful by the D.C. Circuit and is necessary to fully characterize the performance of the sources used to set standards under section 112.[See Mossville Envt'l Action Now v. EPA, 370 F.3d 1232, 1241-42 (D.C. Cir. 2004) (holding that it is appropriate for EPA to establish standards that reflect variability of emissions from the best performing sources because "even the best performing sources occasionally have spikes").] That said, however, the Auto Group is concerned about the particular method EPA uses to account for variability employed by the agency in the proposal. EPA proposes to account for both "within test" and "between test" variability by calculating the upper confidence level of the available and

relevant emissions testing data, which is calculated based on the average or sample mean and sample standard deviation.[See 75 Fed. Reg. at 32,020.]

In concept, such an approach makes sense because setting the floor at the 99% confidence interval ostensibly would cause the floor to encompass virtually the entire range of emissions reasonably expected by the better performing sources from which the data were derived. In practice, however, this approach is flawed because the underlying data are not, in fact, representative of the range of expected operations and true variability that reasonably should be expected from the better performers.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Edward J. Wilusz
Commenter Affiliation: Wisconsin Paper Council
Document Control Number: EPA-HQ-OAR-2006-0790-2133
Comment Excerpt Number: 9

Comment: More generally, EPA proposes to use the 99 percent upper predictive limit ("UPL") to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the Agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot overcome the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Sarah E. Amick
Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 14

Comment: EPA proposes to use the 99 percent upper predictive limit ("UPL") to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the Agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot adequately account for the fact that the data are not representative of the entire population

of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 23

Comment: EPA's Rule Development Lacks a Sound Foundation.

It is the ASCL's position that the Proposed Rule unlawfully requires bagasse-fired boilers to comply with MACT standards. The ASCL strongly asserts that the EPA cannot mandate MACT standards to these boilers. Nonetheless, the ASCL provides the following comments regarding errors and inconsistencies in the proposed MACT standards, solely for the purpose of a complete public record. The ASCL comments regarding the MACT standards should not be viewed as indicating that such standards, even if modified as suggested herein, are applicable to the bagasse-fired boilers.

Section 3.2 of the MACT Floor Analysis document describes the statistical variability which was incorporated into the MACT floor emission limits. MACT Floor Analysis for Proposed Area Source Rule, April 2010, Doc. No. EPA-HQ-OAR-2006-0790-0049, Sec. 3.2.

In order to evaluate the distribution of the dataset from the best performing 12% of the units within each subcategory, the skewness and kurtosis statistics were computed and then hypothesis tests were conducted. The skewness and kurtosis hypothesis tests were applied to the reported test values and the lognormal values of the reported test values. As explained in the MACT Floor Analysis document, the results of the skewness and kurtosis hypothesis tests were mixed for the reported values and the natural log-transformed reported values, the normally distributed dataset would be selected as the basis of the MACT floor. Id.

According to Appendix B-2 of the MACT Floor Analysis document, the skewness and kurtosis tests were considered "non-normal" for the reported values and "normal" for the natural log-transformed reported values (LN) reported values. Doc. No. EPA-HQ-OAR-2006-0790- 0049, App. B-2. Therefore, EPA should have selected the 99% Upper Prediction Level (UPL) for the lognormal distribution, which is 312 ppm CO at 3% oxygen, rounded up to 320 ppm (or approximately 256 ppm CO at 7% oxygen). EPA selected the wrong distribution; and the CO emission limit in the Proposed Rule is incorrect and unsupported.

Response: See the Preamble for response to use of the UPL.

Commenter Name: John T. Heard
Commenter Affiliation: Virginia Coal Association, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2155.1
Comment Excerpt Number: 6

Comment: EPA has improperly developed a CO standard that boilers must meet at all times based on 3-run stack tests that fail to properly characterize the highly variable nature of CO emissions in solid fueled boilers. CO emissions from boilers can be highly variable, especially when fuel mix and load change. Facilities are typically required to conduct stack tests at least 90 percent of full load during normal operating conditions. Therefore, a CO stack test is going to represent the best operation of any boiler. EPA has used only 3-run stack test data, which represents only a small and unrepresentative snapshot in time captured during the best operating conditions, to set emission limits for a pollutant that is highly variable.
In fact, as demonstrated in the comments below, further analysis of CO CEMS data included in EPA's database for top performing units in each of the solid fuel subcategories reveals that even the top performing sources would not be able to meet the proposed CO standards that are based on the performance of those very units. Further analysis of record data also clearly shows that EPA is mistaken in its suggestion that CO emissions do not vary with load. In fact, to adequately accommodate expected CO emissions variability with load, the 2004 Industrial Boiler MACT rule did not require CO EMS data obtained at less than 50 percent of maximum load to be included in the 30-day CO average. EPA's proposal not to accommodate load variability is not supported by the record and inexplicable as a technical matter.

More generally, EPA proposes to use the 99 percent upper predictive limit ("UPL") to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the Agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot overcome the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.
In the final rule, EPA must use data to set the standard that are consistent with the form of the standard. As compliance with the CO standard is to be measured at all times using CO CEMS for units of 100 MMBtu/hr and greater and the averaging time is 30 days, EPA should use 30-day CEMS data from affected boilers to establish the appropriate MACT floors and not 3-run stack test data. To assure that startup, shutdown, and malfunction are appropriately accommodated, EPA must either assure that the data on which the standard is based include representative data from such periods or, alternatively, set a separate work practice standard to properly accommodate startup, shutdown, and malfunction. Lastly, instead of using the UPL. EPA should use the upper tolerance limit ("UTL"), which is meant for use in situations where the available data does not represent the entire population. In addition, since the proposed 99% confidence interval is applied to all 5 HAPs, the combined probability of achieving the set of limits drops to 95%, which is inappropriately low when facilities must he in compliance 100% of the time. EPA therefore should use a 99.9% confidence limit for all standards.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Ben Brandes
Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 8

Comment: More generally, EPA proposes to use the 99 percent upper predictive limit ("UPL") to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the Agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot overcome the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Chris V. Isaacson
Commenter Affiliation: Alabama Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2060
Comment Excerpt Number: 10

Comment: The proposed rule fails to adequately account for variability in emissions that reasonably is expected from the top performing sources.

EPA proposes to use the 99 percent upper predictive limit ("UPL") to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor in the proposed area source rule. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the Agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot adequately account for the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.

This problem is magnified by the fact that performance tests are typically conducted when units are at least 90 percent of full load during normal operating conditions. Therefore, a stack test is going to represent the best operation of any boiler. Thus, the data represent only a small snapshot in time, captured during the best operating conditions. This means that EPA's statistical

approach to determining variability fails to reflect the full range of variability that reasonably is expected from the best performing boilers.

EPA's variability analysis also is magnified by the fact that 3-hour testing data are used to set standards with far longer averaging times. Thus, there is a fundamental disconnect between the form of the data used to determine the standard and the form of the standard itself. We support longer averaging times than proposed in the Area Source Rule, and these standards should be based on emissions data collected over comparable periods. Any emissions limits set for CO should be based on a 30-day averaging period to accommodate the significant variability in CO emissions reflected in long term CO monitoring data.

Response: See the Preamble for response to use of the UPL and a discussion of the CO limits.

Commenter Name: Ben Brandes
Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 10

Comment: Lastly, we identify two statistical errors needing correction. First, instead of using the UPL, EPA should use the upper tolerance limit ("UTL"), which is meant for use in situations where the available data does not represent the entire population. In addition, since the proposed 99% confidence interval is applied to all 5 HAPs, the combined probability of achieving the set of limits drops to 95%, which is inappropriately low when facilities must be in compliance 100% of the time. EPA therefore should use a 99.9% confidence limit for all standards.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 11

Comment: The D.C. Circuit in National Lime Ass'n v. EPA held that where a statute requires a standard to be "achievable," it must be achievable "under most adverse conditions which can reasonably be expected to recur." 627 F.2d 416, 433 n.46 (D.C. Cir. 1980). The court expanded on this holding in Sierra Club v. U.S. EPA, 167 F.3d 658, 665 (D.C. Cir. 1999), when it stated that "[i]t is reasonable to suppose that if an emissions standard is as stringent as 'the emissions control that is achieved in practice' by a particular unit, then that particular unit will not violate the standard." In order to assure that an emission limit is set at a level the best performing source(s) will not violate, EPA must assess the variability in emissions of that unit. See Mossville Envtl. Action Now v. EPA, 370 F.3d 1232, 1242 (D.C. Cir. 2004) (EPA's standard was reasonable because EPA recognized the large variability in emissions and supported its

standard with record data). In Cement Kiln Recycling Coal. v. EPA, 255 F.3d 855, 864-65 (D.C. Cir. 2001), the court instructed EPA to consider the efficiency of control equipment but also non-technology factors that may influence the emissions of the best performing units.

In the proposed IB MACT rule, EPA has determined MACT floors based on a variability adjustment using an upper prediction limit ("UPL"). [Footnote: 75 Fed. Reg. at 32,020.] EPA's UPL equation attempts to identify an interval that will, with a specified degree of confidence, contain the next randomly selected observation from the population distribution. In theory, EPA's statistical analysis is reasonable provided the mean and standard deviations are computed from a distribution of values that reflect all operating conditions. Unfortunately, EPA lacks sufficient data to perform a meaningful UPL calculation for industrial boilers.

EPA computes the within-source variance on the basis of three short-term (snapshot) tests. Three snapshot tests cannot possibly capture the level of performance that a unit will achieve "under the most adverse circumstances which can reasonably be expected to recur" -- the condition the D.C. Circuit has repeatedly said must be considered in setting MACT floors. For virtually all source categories imaginable, short-term test data are not representative of long-term operation of a unit nor are they likely to reflect the "worst reasonably foreseeable circumstances" a unit may experience. Actual emissions variability for the best performing unit results from a variety of factors, including different plant operating conditions, different control equipment settings, and different trace element constituents in the process raw materials. The fortuitous chance that each and every one of these variables would be present in the worst possible way for a short-term emissions test is miniscule, at best. The problem with EPA's variability adjustment is that it does not guarantee a proper assessment of the 99th percentile performance of a given unit if the emissions data from three days of testing of that unit are not representative of all the unit's operating conditions over an extended period of operation. The three ICR tests runs for each boiler were performed hours apart and most likely under identical operating conditions. They did not include any startup, shutdown or routine load following operations. As a result, EPA lacks the data needed to determine whether the best performing units could ever perform as well as they did during the ICR testing.

The lesson for future MACT rulemakings is that if EPA fails to obtain a complete picture of operating conditions of the best performing units over a sufficiently extended period of time, it cannot hope to develop an accurate assessment of the level of performance those plants will achieve under the worst reasonably foreseeable circumstances. No amount of statistical hand-waving can solve a lack of appropriate data.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 11

Comment: The Proposed Rule Fails to Adequately Account for Emissions Variability That is Reasonably Expected from the Top Performing Sources

EPA proposes to use the 99% upper predictive limit (UPL) to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor. The use of the 99% UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot adequately account for the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.

This problem is magnified by the fact that performance tests are typically conducted when units are at least 90% of full load during normal operating conditions.

Therefore, a stack test is going to represent the best operation of any boiler. Thus, the data represent only a small snapshot in time, captured during the best operating conditions. This means that EPA's statistical approach to determining variability fails to reflect the full range of variability that reasonably is expected from the best performing boilers.

Response: See the Preamble for response to use of the UPL.

Commenter Name: John Donahue
Commenter Affiliation: Sappi Fine Paper North America
Document Control Number: EPA-HQ-OAR-2006-0790-2210.1
Comment Excerpt Number: 13

Comment: EPA proposes to use the 99 percent upper predictive limit ("UPL") to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor in the proposed area source rule. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the Agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot adequately account for the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.
This problem is magnified by the fact that performance tests are typically conducted when units are at least 90 percent of full load during normal operating conditions. Therefore, a stack test is going to represent the best operation of any boiler. Thus, the data represent only a small snapshot in time, captured during the best operating conditions. This means that EPA's statistical approach to determining variability fails to reflect the full range of variability that reasonably is expected from the best performing boilers.

EPA's variability analysis also is magnified by the fact that 3-hour testing data are used to set standards with far longer averaging times. Thus, there is a fundamental disconnect between the form of the data used to determine the standard and the form of the standard itself. We support longer averaging times than proposed in the Area Source Rule, and these standards should be based on emissions data collected over comparable periods. Any emissions limits set for CO should be based on a 30-day averaging period to accommodate the significant variability in CO emissions reflected in long term CO monitoring data.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 16

Comment: EPA proposes to use the 99 percent upper predictive limit ("UPL") to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor in the proposed area source rule. The use of the 99 percent UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. EPA is using this statistical method in an attempt to overcome the fact that the amount of data being used to set floors is not adequate. However, this statistical approach cannot adequately account for the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.

This problem is magnified by the fact that performance tests are typically conducted when units are at least 90 percent of full load during normal operating conditions. Therefore, a stack test is going to represent the best operation of any boiler. Thus, the data represent only a small snapshot in time captured during the best operating conditions. This means that EPA's statistical approach to determining variability fails to reflect the full range of variability that reasonably is expected from the best performing boilers.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 17

Comment: EPA's upper predictive limit (UPL) calculations do not properly account for emissions variability. EPA should correct these calculations to account for both intra-unit and

inter-unit variability, similar to procedures EPA used in the Portland Cement and Hazardous Waste Combustor MACT rules.

EPA's proposal uses a statistical metric, the upper predictive limit (UPL), to set MACT floors. (75 FR 31905). ERC believes that the UPL could be used, but EPA's calculation is incorrect. In its UPL calculations EPA has used the square root of sample variance instead of the total variance. By substituting sample variance for total variance EPA has not properly accounted for total variability. Total variability is the sum of both within (intra) and between (inter) unit variability. Inter-unit variability is an additive value because the variance in emissions from each of the best performing sources is independent of one another and dependent on each individual unit's waste composition, combustor type, air pollution control types, test conditions and sample matrix. Intra-unit variability is the variability observed in test results from the same unit due to differences in waste composition, and process and air pollution control operation conditions during each test run. As such, if total variability is not addressed MACT floors will not represent achieved limitations.

If EPA adopts the UPL approach to determining MACT floors it should use the modified UPL that accounts for total variability as used the Portland Cement rule [Footnote: Development of the MACT Floor for the Proposed NESHAP for Portland Cement, April 2009. EPA-HQOAR-2002-0051-2011.pdf.] and the HWC MACT Rule. [Footnote: Technical Support Document for HWC MACT Standards, Volume III: Selection of MACT Standards. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September 2005, Pages 7-5 to 7-7. EPA-HQ-OAR-2004-0022-0453.pdf] EPA offered no explanation of why it diverged from the approach used in these two rules for its Area Source Boiler MACT rule proposal, especially since those rules were designed to establish MACT floors that have been achieved by the best performing units.

The equations for the Modified UPL that addresses total variation are:

UPL = Mean + t ? VT

Where Mean is the average of the best performing MACT unit averages and VT is the total variance determined as the sum of the within (intra) source variance and the between (inter) source variance. Also,

Total Variance, VT = VB + VW

Where, VB is the variance of the average of the best performing unit averages. As described above VB is additive because the variance of each unit is independent of one another and dependent on individual units waste composition, combustor type, air pollution control type and sample matrix affects when sampling. VW is the within or intra-unit variance and calculated as the sum of the variances of individual runs within each of the best performing units since individual unit test results will vary with waste composition, and process and air pollution control operation conditions during each test run.

Using the Modified UPL outlined in the HWC MACT Rule would result in significantly different MACT floors.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 18

Comment: For the purposes of characterizing emission data distributions EPA should default to non-normal unless sufficient data are available to conduct robust analyses which unambiguously shows the distribution can only be described by normal statistics.

The first step in statistical analysis on a dataset is to determine the type of distribution the data follow, typically characterized as normal or non-normal (log-normal). In its proposed Area Source Boiler Rule methodology EPA employs simplistic criteria using two Excel functions (skewness and kurtosis) to decide whether emission data are normally or non-normally distributed. Using its criteria EPA finds that all data used for floor determinations follow normal distributions. (ERG Floor Memorandum, Appendices B-1, B-2, C-1 and C-2). This finding is inconsistent with both conventional wisdom and EPA's own Guidance for Data Quality Assessment Manual, [Footnote: U.S. Environmental Protection Agency, Office of Environmental Information, "Guidance for Data Quality Assessment: Practical Methods for Data Analysis", EPA/600/R-96/084, July 2000] hereinafter referred to as "EPA Guidance for Data Assessment", which hold that it is more likely that environmental data are distributed log-normally. EPA's Guidance for Data Assessment provides that the log-normal distribution is "a commonly met distribution in environmental work." (p. 2-40), also stating "Environmental data commonly exhibit frequency distributions that are non-negative and skewed with heavy or long right tails," (p. 4-7), and "The lognormal distribution is a commonly used distribution for modeling environmental contaminant data." (p. 4-7). It is reasonable to believe environmental emissions distributions are non-normal, since frequency plots typically show many readings approaching zero and fewer large readings forming a one-tailed distribution. Normal distributions are less common and may exist for a pollutant like SNCR-controlled NOx where the entire dataset is many standard deviations away from zero (two-tailed), CEMS provides copious data, and values are controlled by an air pollution control process with minute to minute feedback and controls.

EPA's characterization approach using Excel functions is not robust. The Guidance for Data Assessment states that skewness and kurtosis tests are "rarely used as they are less powerful than many alternatives." It is therefore reasonable to conclude that EPA's data distribution designations are flawed and that they bias the resulting MACT floor determinations.

Distribution determination is not an exact science, even with datasets that are representative of the entire data population. Graphical methods and mathematical methods such as Shapiro Wilk are frequently employed but can still lead to ambiguous results. Add the additional confounding

factor of EPA's tiny and unrepresentative database and the determination becomes highly uncertain. In many cases (new units in particular) EPA is applying its Excel criteria to as few as three data points. Any conclusion reached from such a cursory analysis must be viewed as inappropriate and speculative. In addition datasets do not lend themselves to simple black and white normal/non-normal designations, there are shades of grey. EPA's force-fitting analysis belies this fact.

Yet the normal/non-normal designation is too important to be left to chance. MACT floor values can differ significantly between floors determined using normal and non-normal distributions. Coupled with the significant uncertainties EPA's criteria lead to a high probability that MACT floors do not represent emissions achieved in practice.
EPA should, by default, assume that emissions data it analyses are log-normally distributed unless rigorous statistical analysis conducted in accordance with EPA guidance unambiguously show otherwise. EPA should not rely on cursory Excel tests and criteria applied to small non-representative datasets to determine distributions. This is reasonable and consistent with the requirement to err on the side of achievability .

Response: See the Preamble for response to use of the UPL.

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 18

Comment: In cases of severely limited or censored data sets, GIEC recommends that EPA use the upper tolerance limit (UTL), which is meant for use in situations where the amount of data available does not represent the entire population. EPA should reanalyze its data and re-propose the standards based on the use of the UTL instead of the UPL.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 19

Comment: In its statistical calculations EPA should select the 99.9% upper limit (and not the 99% upper limit) as representative of achieved emission limitations.

In its proposal EPA determined MACT floor emission limits for existing and new units based on the 99th percent upper predictive limit (UPL). While a 99% probability would seem to suggest a high likelihood of compliance, probability must be viewed from a violation perspective, i.e. that

there is a 1% likelihood that a given pollutant test on a given unit will exceed the selected limitation. In this regard 99% is inadequate. Compliance will be determined through continuous emission monitoring (CEM) of up to three pollutants per unit where there are 365 24-hour block averaging periods per year. At a two unit facility the annual rate of predicted emissions exceedances is 365 x 3 x 2 x 1% = 22 days annually. This is an unacceptable risk level to any responsible operator, and should likewise be unacceptable to EPA.

The consequences of emission limit exceedances are severe. Operators face stiff fines, retesting costs, additional regulatory scrutiny, bad press, and negative public opinion. All diligent operators try to keep emissions well below limits in order to account for emissions variability and thereby avoid violations and their consequences. In setting limits on the basis of a 99% probability EPA should recognize that unit operators will be compelled to set emissions targets even lower in order to create the compliance margin they know they will need to avoid violations.

If EPA employs the statistical limit to set MACT floor emission limits it should use 99.9%. This represents a predicted 2 days per year exceedance frequency for a 2-unit facility, a value that better encompasses unit emissions variability and represents a manageable risk to the responsible facility operator.

EPA originally proposed using the 99.9% UL in its Hospital/Medical/Infectious Waste Incinerator (HMIWI) MACT rule (73 FR 72962), stating "The 99.9 percent UCL [Footnote: The HMIWI rule used the term upper confidence limit (UCL); however, EPA acknowledged that the term as used in the HMIWI rule is the same as the upper limit (UL) used in the CISWI proposal. See 75 FR 31943, footnote 3.] is appropriate for use in this analysis because sources must meet the standards at all times, and as mentioned above, the limited amount of test data introduces a degree of uncertainty." (73 FR 72977). EPA changed its protocol to 99% in the final HMIWI rule in response to public comments, "The 99 percent UCL values are more in line with the highest test runs for the MACT floor units than the other percentiles, indicating that the 99 percent UCL provides a more reasonable compensation for variability." (74 FR 51387). EPA's conclusion is invalid because, like the major boiler unit database, the HMIWI database consisted of scant emission test results, few enough to require EPA to use individual test runs in order to have more data to use in its statistical analyses. With so few data points it is highly unlikely that the highest emissions and full variability would have been observed. Indeed, the inability to capture and describe the full range of emissions and emission distribution is the very reason for relying on statistics to predict upper limits! EPA's conclusion to use 99% in the HMIWI rule therefore has no valid statistical basis and only serves to increase the probability of emissions violations. In the Major Boiler MACT rule EPA should use 99.9% as originally proposed in the HMIWI rule.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute

Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 19

Comment: EPA proposes to use the 99% upper predictive limit (UPL) to accommodate and reflect variability in the operation of the best performers in calculating the MACT floor. The use of the 99% UPL calculated on only a small number of sources in a subcategory does not adequately capture variability or serve to predict the MACT floor level achievable by the top performers. In essence, the agency is using this statistical method in an attempt to overcome the limited amount of emissions data available for top performers. However, this statistical approach cannot adequately account for the fact that the data are not representative of the entire population of boilers in each subcategory and that the available data do not reflect the true variability of the top performing sources.
This problem is magnified by the fact that performance tests are typically conducted when units are at least 90% of full load during normal operating conditions. Therefore, a stack test is going to represent the best operation of any boiler. Thus, the data represent only a small snapshot in time, captured during the best operating conditions. This means that EPA's statistical approach to determining variability fails to reflect the full range of variability that reasonably is expected from the best performing boilers.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 62

Comment: In the preamble, EPA acknowledges that previous court decisions have validated the Agency's authority to consider emission variability in determining the performance achieved by the best performing sources and may set the floor at the level that the best performing sources can expect to meet every day and under all operating conditions.1° In effort to implement the concept of estimating the level of performance achieved under all operating conditions, EPA relies on a statistical formula to calculate an upper prediction level (UPL). EPA calculated the UPL using Equation 1.

Equation 1

UPL = x + t(0.99, n —1) x
1 1
S2 x -±-
Where:

x = average of individual test runs
s = standard deviation of individual test runs
n = number of test runs

m = number of test runs in compliance average
t = one-tailed t-value with probability of 0.01 and sample size = n.

The prediction interval for a future observation (or in this case, measurement) is an interval that will, with a specified degree of confidence, contain the next randomly selected observation from the population distribution. Since EPA typically assesses compliance with an emission limit based on the average of three test runs as opposed to a single observation, EPA modified the UPL equation by adding a term to account for the number of runs.

EPA's approach fails to accomplish the Agency's stated objective (i.e., predicting the level of performance achieved by the best performing sources under all operating conditions). EPA's approach fails not because of a poor statistical framework but because of an inadequate database. Equation 1 can predict the upper 99 percent level of a population only if the mean and standard deviation are computed from a distribution of values that reflect all operating conditions. EPA's emission database consists of three test runs for each boiler, which were generally conducted only hours apart and almost assuredly under identical operating conditions. In accordance with EPA's MACT floor procedure, the Agency rank orders the three-run averages from low to high and computes the mean and standard deviation of the lowest (best performing) 12 percent of the boilers. The fundamental problem is that EPA does not data to determine if these best performing boilers can ever perform that well again. In other words, an apparent best performer may actually be an average performer that was tested on its best day.

While the above argument is easily understood by individuals with either a statistical background or a "nose for numbers," a non-statistical example may be helpful for others. Suppose a group of old college buddies go to Myrtle Beach for a long-weekend of golfing. The group plans to play three rounds on one of the public courses. By virtue of the course being near the coast, it is relatively flat and designed more for the occasional golfer than for the avid country dubber. After the three of play, the better golfers of the group are easy to identify. There is some variability in the best golfer's score from round to round, but his average is clearly the lowest. At this point, our golfing example mimics EPA's 1B database. As fate would have it, one of our lucky golfers wins a substantial purse from the lottery. She decides to treat the group to an all expense paid trip to California to play golf on the world famous Pebble Beach course. After three rounds, the best golfer at Myrtle Beach also has the best average score at Pebble Beach. But, his scores are much higher and more variable than from the tourist-friendly Myrtle Beach course. We could continue the golfing saga with stops at challenging courses such as Bethpage Black and Pinehurst No. 2. While the best golfer may continue to be the same individual, we believe it is easy to understand how the more and varied golfing challenges will yield more variable scores. Likewise, if EPA had emission data from more and varied operating conditions, then the Agency could use Equation 1 to predict the true upper 99th percentile of performance. The best way for EPA to correct its faulty UPL calculations would be to collect additional data from MACT pool units that would encompass a wider and more representative range of operating conditions. Then, when EPA calculates the standard deviation of the individual data points and makes use of Equation 1, the Agency will be able to estimate the true upper 99th percentile of performance.

Response: See the Preamble for response to use of the UPL.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 14

Comment: EPA's methodology employs statistical calculations to quantify emissions variability and derive emission standards. The use of statistics can be an appropriate and pragmatic way to capture the composite effects of emissions performance variables that affect emissions from commercial scale combustion units and would otherwise frustrate concise analysis. These variables include waste characteristics, operation and maintenance cycles including startup/shutdown, combustion and air pollution control system performance, seasonal effects, unit load, etc. However, statistics has obvious limitations, notably the need for representative emission data for the entire unit emissions population being studied, including consideration of the above performance variables. Unfortunately EPA's scant database fails dramatically in this regard. Frequently a unit's emission data consists of only a single test over as little as three hours or 0.04% of a typical operating year. Tests generating the emission data are typically conducted when the units are operating at steady-state full-load conditions, ignoring other operating conditions. For biomass units tests inadequately assess CO variability due to seasonal effects on biomass moisture and unit load variations. [See submittal for letter.] [Footnote: Maine Department of Environmental Protection, "Carbon Monoxide Variability in Maine Wood Fired Boilers, February 2010, page 10. Attachment to letter from James P. Brooks, Bureau Director, State of Maine Bureau of Air Quality to James Eddinger, USEPA, February 4, 2010.] Many of the best performing unit emission values are non-detects, frustrating statistical analysis. By its very nature biomass fuels have variable combustion and emission characteristics over time yet EPA offers very limited data for only CO and from only two units (that are major source units) to address this. In short, EPA's database fails to represent emissions fluctuations that occur over time and under the worst foreseeable circumstances and thereby understates the full range of emissions, including those of the selected best performer(s). These shortcomings notwithstanding, EPA applies its statistically-based methodology to derive MACT floors as though it reflected all emission conditions, and seemingly without regard to whether the results have been achieved in practice.

Response: See the Preamble for response to use of the UPL.

MACT Floor: Methodology: Non-Detect Values

Commenter Name: Glenn C. England
Commenter Affiliation: Environ Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-1967.1
Comment Excerpt Number: 1

Comment: Because of large uncertainty in lower values, it is inappropriate to use results that are less than the limit of quantitation for establishing regulatory limits. EPA should use only data that are above the limit of quantitation for the purposes of establishing emission limits for HAPs. The American Chemical Society Committee on Environmental Improvement, which included stakeholders from industry, government and academia, explained the inappropriateness of using data below the limit of quantitation in describing underlying scientific principles and guidelines for environmental data acquisition and analysis (MacDougal et al., 1980; Keith et al., 1983). EPA has cited such guidelines in its discussion of detection limits for stationary source measurements at http://www.epa.gov/ttnemc01/facts.html.

Measurements at levels near or below method detection limits have larger uncertainty than higher levels. In measurement terms, "error" is the difference between a measurement and the true value. Uncertainty is a statistically defined metric representing random and systematic errors within a population of measurement data at a given level of confidence – the "fuzziness" of a number. As a measurement value approaches zero, the uncertainty or "fuzziness" of that value contributed by random error becomes larger. Only when levels reach a value considerably above the method detection limit, referred to as the limit of quantitation (LOQ), does uncertainty fall to acceptable levels. An uncertainty of up to ±30% at the 99% confidence level is considered acceptable for environmental measurements. Id.

A further complication of using results near the lower limit of a method's capability is that the definition of detection limit varies widely among reference methods, laboratories and/or stack testers, or it is not defined at all. In the absence of uniform definitions and guidance for establishing a method detection limit for CO, for example, test reports may include any number of different values ranging from the lowest resolution on a digital readout, the lowest digit on a spreadsheet, a "comfortable" number rounded up from zero, etc. In its ICR guidance on CO measurements, EPA specified that [para.] instrument response should be reported and flagged as above detection limit, including values less than zero. Any of these values may be below the true overall CO detection limit of the test method, yet results are reported and used by EPA in

the proposed rulemaking as though they had the same acceptable level of uncertainty as levels above the LOQ.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Michael Bradley
Commenter Affiliation: The Clean Energy Group
Document Control Number: EPA-HQ-OAR-2006-0790-1689.1
Comment Excerpt Number: 3

Comment: To assess the feasibility of meeting the CO standards for existing liquid-fired boilers, we contacted testing contractors, who indicated that the standards for CO proposed in this rule for liquid-fired units are at or near the non-detect level of testing equipment. As such, accurately

determining compliance may be difficult or impossible. [Footnote: Current CO testing using a CEMS would follow Performance Specification 4, which was developed primarily for CEMS having span values of 1,000 ppmv CO. As such, accuracy below 10 ppm would be considered the lower detection threshold. Stack testing would be done using EPA Method 10, which has an instrument sensitivity of 2 percent of the calibration span. Performance specifications dictate that the span be 1.5 to 2 times the standard. For a CO emission limit of 1 ppm, the span would be 1.5 ppm to 2 ppm. In this situation, the calibration gases, which need to include concentrations at 30%, 50%, and 80% of span, would necessitate calibration gases to be available in concentrations ranging from 0.5 ppm for the low calibration, 0.75 ppm for the mid calibration and 1.2 ppm for the high span. These calibration gases are not currently available with the Method 10 requirement for Protocol 1 traceability. Use of a "zero" gas is often substituted for the low calibration point; however, certified zero gas could contain an impurity concentration of CO above 1 ppm.] The Clean Energy Group recommends that EPA verify with National Institute of Standards and Technology (NIST) that testing for these very low standards can be accurate (considering the error range, e.g., "plus-minus"). We recommend that EPA not finalize any emission standard set lower than can reasonably be expected to be detected using continuous emission monitoring equipment. As an alternative, EPA could reduce the monitoring requirement to an annual stack test rather than a continuous monitoring requirement.

Response: See preamble for response to changes to the standard for oil/liquid fuel boilers.

Commenter Name: Rich Raiders
Commenter Affiliation: Arkema Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1958.1
Comment Excerpt Number: 4

Comment: A flaw in the proposed standards is the use of data at or below published detection limits of required compliance demonstration methods. Facilities using common testing methods, acceptable in the proposed standards, may not be able to demonstrate compliance with an EPA emissions limit using approved EPA methods described in the proposed rules. In the HCl MACT and the Hazardous Waste Combustion ("HWC") MACT at 40 CFR 63 Subpart EEE, EPA faced a similar detection limit problem. The common hydrochloric acid test method, 40 CFR 60 Appendix A Method 26a, is published accurate to a 20 parts per million by volume ("ppmv") detection limit. However, EPA proposed several HCl limits far less than 20 ppmv in HCl, HWC, and CISWI. EPA reset several HCl and HWC emissions standards to, or just above, the published detection limit. EPA should reset below detection limit CISWI and Boiler standards to above the detection limits.

Response: Please see the Area Source Boiler Preamble for information on this topic.

Commenter Name: Joe Fierst
Commenter Affiliation: Wausau Paper

Document Control Number: EPA-HQ-OAR-2006-0790-1488.1
Comment Excerpt Number: 4

Comment: For several of the pollutants, the Agency applied inappropriate statistical techniques to "non-detect" test results that generated proposed emissions limits that are in some cases below the detection capability of the required test method. In effect, facilities will be unable to demonstrate compliance. Compounding the problem, EPA has elected to collectively apply these poorly crafted and extremely low individual pollutant limits to all boilers resulting in compliance criteria that are effectively impossible to achieve, and this for a rule that, by definition, is intended to demonstrate maximum achievable control.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 4

Comment: Some of the data in EPA's MACT floor analysis spreadsheets is based on analytical detection limits (i.e. MIVikingEnergyofLincoln – Unit 1 (mercury)). While none of this data appears to be utilized in the development of the proposed standards, it is possible that EPA may utilize some of this data in revising the standards in the final rule. RMB provides the following comments and recommendations on utilizing data reported as "non-detect" in the MACT floor analysis:

A "detection limit" (DL) can be defined in many ways, but, in general, the term refers to the minimum concentration of a substance whose presence can be verified or "detected" with reasonable confidence using a particular test method or instrument (depending on how the detection limit is defined). A detection limit does not provide information regarding the ability to produce a quantifiable measurement using a particular test method. Rather, the lower limit for which a particular analytical method can produce a repeatable and quantifiable measurement with reasonable confidence is referred to as a "limit of quantification" or "limit of quantitation" (LOQ). The LOQ can also be defined in many ways; however, one variant that provides a comprehensive accounting for method and laboratory-related variability is the "Practical Quantitation Limit" (PQL) or "Estimated Quantitation Limit" (EQL). The PQL is defined by EPA as "the lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy during routine laboratory operation conditions". The PQL was defined by the EPA Water Program in the 1980s as a "means of integrating information on the performance of approved analytical methods into the development of a drinking water regulation. The PQL incorporates the following: (1) Quantitation, (2) Precision and bias, (3) Normal operations of a laboratory and (3) the programmatic need to have a sufficient number of laboratories available to conduct compliance monitoring analyses of drinking water samples". The need for the use of the PQL for MACT standard setting is clearly analogous to the need for the use of the PQL in the development of EPA's water quality standards.

The ideal approach for establishing and applying method-specific PQL values would be to conduct a controlled study for the analytical portion of each reference method involving a number of different laboratories. The PQL value would replace any reported non-detect value in the analytical results of a particular test method. The PQL value would then be used to calculate the equivalent in-stack pollutant concentration. However, in the absence of such a study, the PQL can be estimated by applying a multiplier to the maximum reported in-stack detection limit for a particular test method. This multiplier may range between 5 and 10, depending on the degree of concern about the specific contaminant.

Response: Need help with response. Comment talks about using Practical Quantitation Limit Values to set the limit. Also see preamble for response to using data at or below detection limits.

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 9

Comment: At least one of the reported CO test data sets using EPA Reference Method 10 (RM-10) is within the range of uncertainty for the test method. The accuracy for most nondispersive infrared analyzers (NDIR) is approximately ±5 percent of span after calibration.4 The average reported CO emissions for the Thompson Falls wood-fired boiler is 20.6 PPM using an analyzer span value of 600 PPM. The accuracy of RM-10 in this case is ±30 PPM. These test runs should be treated as “non-detect” values. RMB recommends that EPA screen the remaining MACT floor data to determine whether similar problems exist for other test data.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Kerry Flick
Commenter Affiliation: Metso Power
Document Control Number: EPA-HQ-OAR-2006-0790-1490.1
Comment Excerpt Number: 9

Comment: Per the proposed ruling, a plant is defined as an "Area Source" facility provided it emits less than 25 tons per year of total toxic air pollutants, and less than 10 tons per year of any individual toxic pollutant. Above these thresholds a facility would be deemed a "Major Source" location. While the above definition establishes a basis for classification, the threshold of 10 tons per year of any individual toxic pollutant equates to a very low amount in parts per million (ppm) — the basis of measurement for these various pollutants (i.e. HC1, HF, H2SO4, etc..). In order to ensure compliance, it is imperative then that one can accurately measure and consistently demonstrate compliance with all the noted air toxic pollutants. However, some of the measurement and test methods typically used to measure these given pollutants are unable to

reliably or accurately measure the proposed low-level emissions on a consistent basis with repeatability. We recommend that the EPA make modifications to the basis of the proposed ruling to ensure an accurate and reliable means is available to measure these low-level emissions. Measurement tolerances should also be established to account for variability in testing as well as given biases.

In reviewing the required values for various toxic air pollutants, we have questioned the ability to accurately and consistently measure these emissions at these limits. For this reason we sought the advice of the Energy & Environmental Research Center (EERC). Attached is a formal response from EERC addressing these issues. The EERC is a former National Laboratory that currently operates as a private research center located at the University of North Dakota. In 1992, the US-EPA established EERC as the Center of Excellence for Air Toxic Metals (CATM). Their input provides great insight into the relevancy of the proposed ruling. In summarizing the EERC letter, utilizing the current approved EPA methods for the various acid gas pollutants (such as Method 26A for HC1; Method 13B for HF; Method 8 for H2S0a) will be quite difficult, if not impossible, to accurately measure at or below the required emission levels. Values less than 5 ppm will lack precision and accuracy. To account for error associated with all known biases and achieve a high degree of confidence and accuracy, a limit of 20 ppmdv should be considered. Therefore, should the proposed ruling become law, it is incumbent that the EPA quickly develop appropriate test methods that will address this issue.

To aid in this low-level measurement issue, as a minimum, the emission limit should recognize and allow for measurement variance within a given test method and the instruments used. This is currently not the case in the United States. In Europe for example, acceptable testing tolerances for given pollutants have been established to account for these variances. For clarity, please reference Annex III contained in the DIRECTIVE 2000/76/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL or 4 December 2000.

Further, testing at these low levels will require testing contractors who are extremely familiar with the stated methods and their inherent biases and/or interferences. There are a very limited number of testing contractors that fit this criterion.

The Energy & Environmental Research Center (EERC) assessed the ability of several U.S. Environmental Protection Agency (EPA)-approved methods for measuring low levels of HC1, HF, and H2SO4 relative to emission limits that Metso Power is being asked to guarantee, as shown in the table below. It should be clearly noted that the EERC did not assess whether the emission limits are achievable but only whether appropriate methods can be used for accurate measurement at or below the stated limits. [See submittal for table of methods analyzed and lb/MMBtu values.]

To compare to method detection limits, based on fuel properties and calculated flue gas flow rates, the above emission limits are presented on a dry volumetric basis, corrected to standard conditions, as follows. [See submitted for table with ppmv values.]

Based on this assessment, accurate measurement of HCI and HF at or below the stated emission limits of 0.00163 lb/MMBtu, 1.35 and 2.46 ppmv (dry), respectively, will be problematic and not possible using M26A, M13B, or other methods as further explained.

This attachment is a more thorough discussion of the Energy & Environmental Research Center’s (EERC’s) assessment of the methods used to measure HC1, HF, and H2SO4 emissions from combustion sources.

HCI and HF

From a sampling standpoint, and for the methods that are available, there are not any U.S. Environmental Protection Agency (EPA)-approved methods (such as Method [1\4]26 or M13B) that are appropriate for measuring HC1 and HF at or below the emission limits of 0.00163 lb/MMBtu, 1.35 and 2.46 ppmv (dry), respectively.

The EERC would not recommend using M26A ("Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method") for HC1 and HF measurements in the range needed to verify compliance with these low-level emission limits. The emission limit for HCI is below the ability of M26A to reliably and accurately determine the stack gas concentrations.

It should be noted that the newly released EPA Information Collection Request (ICR) for coal-fired utilities specifies M26A for the measurement of HC1 and HF and does not mention M13B as a possible alternative for HF. The ICR, however, is not attempting to demonstrate compliance at these low levels.

Advances in ion chromatography (IC) capabilities and the ease of sample recovery make M26A a better choice over M13A and M13B for HF measurements; however, potential bias for HF when using M26A as compared to M13B would be similar. Neither of these methods would be appropriate for low-level measurements of HF in the range of the above-stated emission limits. The M26A laboratory analytical detection limit using IC for F- detection is 0.2 tg/mL, compared to the M13B ion-specific electrode analytical detection limit of 0.02 µg/mL. The concentration of HF, assuming the emission limit value of 2.20 mg/m3, a total gas sample volume collected of 1 dscm, and the HF being collected in 500 mL of solution, would give a theoretical sample concentration of approximately 4.4 p.g/mL. A comparison of the analytical detection limits and the values in a sample to be measured at the emission limit would indicate that either method would provide an analytical detection limit well below the value that is required to measure the emission rate. The worst case (M26A) would indicate the measured values at the emission rate would be approximately 20 times the detection limit. The limitation of the method is not the analytical detection limit but the method detection limit.

The detection limit of the methods are a result of uncertainty in the analytical, errors in the collection of the sample, and possible biases associated with the sample collection in flue gases. Both HCl and HF have biases that would be similar in nature because of the properties of both HCl and HF. It should be recognized that M26A has a potential high bias for HC1 in the presence of volatile materials, such as chlorine dioxide and ammonium chloride. There is also a potential measurable low bias for HCI under 20 ppmv, caused by moisture in the flue gas. This bias can be reduced by operating the probe at temperatures at the upper limits of the specified temperature and insuring that no water droplets are collected on probe surfaces. However, there is still likely to be some associated uncertainty, error, or bias. The issue of low bias can be especially problematical if the samples are taken after a wet scrubber and at high moisture levels. Low-level halogen measurements, taken after a wet scrubber or at high moisture levels, should be assumed to be biased low, and this would also be true when using the optional cyclone at the probe inlet. Some of this bias can be reduced by elevating sample train temperatures, but this may lead to a high bias if ammonia is present in the flue gas. At this point, the EERC is not aware of any proposed alternative sampling methods that resolve the low-bias issue.

A short discussion follows of the biases associated with M26A, as outlined in the EPA document entitled "Stack Sampling Methods for Halogens and Halogen Acids." [Footnote 1: Johnson, L.D. Stack Sampling Methods for Halogens and Halogen Acids. Presented at the EPA/AWMA

International Symposium on Measurement of Toxic and Related Air Pollutants, Research Triangle Park, NC, May 1996.]

As stated in this document, the low bias associated with the method was not consistent from test to test but can be roughly correlated with the moisture content of the flue gas. Tests at 4.8 ppm HC1 indicated a low bias of 50%. Another test indicated that spiked impinger recoveries were reasonable but that full-train spikes were low by a factor of 3 to 5. The presence of NH4C1 was found to produce a positive bias in all cases, and any attempt to mitigate this bias aggravated the moisture bias. In flue gases containing ammonia slip, it could be assumed that the high bias for HC1 because of NH4C1 could be as high as the ammonia slip value in the flue gas if the ammonia reacted with available ions.

Since the emission limit for ammonia is over 10 ppm, the potential high bias using M26A could be several times the above-stated emission limit; certainly, it could be as high as 10 ppm. It should be noted that if the flue gas temperature is below 0°C (212°F), NH4F could exist and the same bias that applies to HC1 could exist.

The validation status discussed in this document indicates that the method is valid from “a few” ppm to 500 ppm but does not address the high bias potential and does not define what is meant by a few ppm; certainly, the proposed limit of 1.35 ppm would not be considered a few. The precision of the method was evaluated from 3.9 to 15.3 ppm HC1, and the stated precision was up to 0.49 ppm.

The test for the precision of this method did not challenge the method with worst-case scenarios: high moisture and ammonia. Since this test did not include ammonia, which is known to cause a higher bias, the 0.49 ppm precision could easily be 10 ppm in the presence of a 10 ppm or greater ammonia slip.

One final note: EPA M0050 is nearly identical to M26A; it uses the same sampling probe, filter housing, and impinger configuration. Yet M0050 very clearly states the method SHOULD NOT BE USED FOR HC1 CONCENTRATIONS LESS THAN 20 PARTS PER MILLION.

An alternative to M26A would be the use of an HC1 continuous emission monitor, either a Fourier transform infrared-based system or a photometric-based system. In clean gasses, both of these methods can provide detection limits low enough to provide measurements at and below the detection limits required for showing compliance with the stated emission limit. However, the problem with both instruments is similar to the problem with analytical detection limits versus method detection limits as discussed previously. Both methods could potentially eliminate bias because of NH4C1, but other compounds in the flue gas can cause a decrease in sensitivity. As stated by the vendors, it appears that the lower detection limits for both methods would be in the range of 2 to 5 ppmv. It may be possible for the vendors of these instruments to optimize these instruments for lower detection limits in this flue gas matrix. However, they would be custom systems, and a great deal of trial and error or product development may be needed to extend the ranges down to values at or below the values needed to show compliance. The lack of an appropriate reference method (as previously discussed) at these low concentrations would also complicate verification of these instruments in real flue gas.

In summary, there are methods to measure HCl and HF with a stated detection limit of 0.04 ppm in the stack gas for both HC1 and HF, which, taken by itself, should provide values that are within emission limits of 1 to 2 ppm in the flue gas. However, when considering uncertainties and errors associated with sample collection and known biases as documented by the EPA,’ the methods will not likely provide reliable values that are accurate and repeatable below 5 ppm,’ and even values below 20 ppm have shown bias values as much as 20%.

This is consistent with the conclusion from EPA's Method Branch Office; a quote taken from the EPA's "Stack Sampling Methods for Halogens and Halogen Acids" document states that "good precision and accuracy become difficult to achieve with these methods (M26 and M26A) at concentrations below 5 ppm." Similar methods, such as M0050, further state that the accurate measurement of HC1 should be limited to 20 ppm or higher.

H2SO4

The stated detection limit in M8 ("Determination of Sulfuric Acid and Sulfur Dioxide Emissions from Stationary Sources") for H2SO4 is 0.05 mg/m3, and the emission limit proposed is approximately 1.35 mg/m3. Based on these numbers, M8 as written should theoretically provide accurate measurement. Unfortunately, this detection limit does not take into account the method bias and uncertainty at low concentrations. The problem with this method is that it is subject to several documented positive biases, and therefore, the EERC does not recommend it for measurement of H2SO4.
The only methods that should be considered for this low-level measurement are the controlled condensation method and the newly proposed ASTM International (ASTM) Standard (WK22846, "Test Method for Determination of Sulfur Oxides Including Sulfur Dioxide, Sulfur Trioxide, and Sulfuric Acid Vapor and Mist from Stationary Sources Using the Controlled Condensation Sampling System"); these methods would be preferred over other older methods. EPA has long known that M8 has a positive bias in the presence of other flue gas constituents; most notably, the bias is related to SO2, but NH3 and others can create biases as well. Page 55 of EPA Document No. EPA-600/R-04-107 ("Identification of [and Responses to] Potential Effects of SCR [selective catalytic reduction] and Wet Scrubbers on Submicron Particulate Emissions and Plume Characteristics") indicates that the M8 detection limit could be as high as 50 mg/m3.

EPA Document No. EPAJ600/R-06/156 ("Evaluation and Mitigation of Visible Acidic Aerosol Plumes From Coal-Fired Power Boilers") in Section 3 indicates that the use of controlled condensation for measurement of H2SO4 is a better test method for H2SO4 than M8. M8 uses isopropanol in the first impinger to capture I-12SO4; the most significant problem with this is that it will also trap SO2 and report it as H2SO4. Another possible interference comes from NH3, and this could be especially problematic should a SCR unit be installed, as the NH3 slip could significantly outweigh the H2SO4. EPA attempted to improve upon M8 by adopting a controlled condensation test method referred to as Conditional Test Method 013 (CTM-013), which was originally developed for Kraft Recovery Furnaces and is now EPA M8A. [Footnote 2: Method 8A — Determination of Sulfuric Acid Vapor or Mist and Sulfur Dioxide Emissions from Kraft Recovery Furnaces, U.S. Environmental Protection Agency, December 1996.] Note, M8A has most of the features that will be incorporated into the ASTM test method. The main differences between M8A and the ASTM method are probe, filter and condenser temperatures, condenser/backup filter configuration, and analytical methods. Although this method was developed for Kraft Recovery Furnaces, it is expected to be a better method for H2SO4 at power plants than M8 but not as good as the ASTM method. Other test methods such as EPA OTM28 are focused on improving measurement of condensable particulate matter (CPM). [Footnote 3: 3Other Test Method 28 — Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources, U.S. Environmental Protection Agency, April 2009.] OTM28 was partially developed to help reduce the high bias in CPM fractions of particulate

sampling trains because of SO2 present in the flue gas. For sources that are required to report CPM, SO2 present in the flue gas can be trapped in the impinger solutions and reported as CPM, thus biasing the condensable portion high. This problem is similar to the M8 bias but is even more pronounced as deionized water is used in the front impingers and SO2 is even more soluble in water than the isopropyl alcohol used in the M8 front impingers.
Another issue worth discussion is the margin of error that is expected as values approach the detection limit of the method. The new ASTM standard includes a quality assurance/quality control section that specifies spike recovery limits of +1-30% for measurements in the range of the proposed emission limits. This would indicate that a great deal of variability still exists with these low-level measurements, and it should also be noted that EPA Document No. EPA-600/7-79-156 indicates that, with only three H2SO4 measurements (standard for most compliance tests), the coefficient of variance exceeds 25% of the true value.
Taking all of these factors into consideration, the EERC believes that it will be virtually impossible to measure values for H2SO4 near the target emission value of 0.31 ppmv (1.35 mg/m3) with an accuracy of greater than +/-30%, even with the ASTM controlled condensation method being used as the reference method. These values should be considered as having a variability of much greater than +/-30% when you take into account the coefficient of variance. If the permit requires a specific number that is never to be exceeded, the 0.001 lb/MMBtu (0.31 ppmv, 1.35 mg/m3) should be increased to at least 0.0016 lb/MMBtu (0.001 x 130% x 125% = 0.0016) (0.50 ppmv, 2.20 mg/m3) to account for possible variability in measured values.

Response: Please see the preamble for information on this topic.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 14

Comment: EPA's treatment of the data substantially overstated sources' emission levels by assuming that every time a test result did not detect the presence of a particular pollutant, that pollutant was present at the detection level. Floor Memo at 3.1. As EPA is well aware, such non-detects indicate that actual emissions could be anywhere from zero to the detection limit. By artificially assuming that all non-detects were as high a number as they possibly could be – instead of somewhere between zero and the detection limit – EPA arbitrarily inflates sources' actual emission levels.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1

Comment Excerpt Number: 21

Comment: Other examples of an upward bias can be found in EPA's calculation process [Footnote: The rounding process employed by EPA can increase MACT floor results significantly. The other biases we mention are unlikely to have a large impact on the MACT floor. The use of log-normal statistical procedures may or may not result in lower MACT limits than would otherwise be the case, but is technically justified where non-normal distributions are observed.] including: (1) exclusion of test results where the result provided is "zero" or "non-detect," but the detection limit is not provided, and (2) failure to include homogeneous waste material combusted by some biomass boilers in the fuel variability analysis (EPA argued that such data should be excluded because it is not a representative material for other boilers in the biomass subcategory).

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 8

Comment: As with CO emission limits, the proposed mercury and hydrogen chloride emission limits are set too close to the detection limits for their respective specified test methods.

Response: Please see the Area Source Boiler preamble for information on this topic.

Commenter Name: Robert L. Garfield
Commenter Affiliation: Food Industry Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1835.1
Comment Excerpt Number: 14

Comment: In addition, EPA's proposed limits are unduly impacted by issues associated with the limits of detection. Fundamentally, numerical limits should be based on quantifiable and reproducible test results consistent with reliable source test methods that have well-established performance. Limits should not be based on tests and methods that raise issues of significant measurement and other uncertainties.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Matthew Todd and David Friedman

Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 27

Comment: The Agency failed to account for the limits of detection associated with Method 10 or the CEMs used to gather the CO data, blithely and unscientifically accepting whatever reading was provided.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Robert Klemans
Commenter Affiliation: Florida Electric Power Coordinating Group
Document Control Number: EPA-HQ-OAR-2006-0790-1955.1
Comment Excerpt Number: 3

Comment: The Proposed Rule Fails to Address HAP Emissions That Are At or Below the Method Detection Limit. EPA's effort to set emission limits for all HAPs emitted by industrial boilers is greatly complicated by the fact than a number of HAPs are emitted at levels at or below the detection limit of the method that was used to collect and analyze HAP emissions during the IB MACT ICR. Detection limit issues have significant impacts on MACT standard setting as well as later compliance demonstrations.
Testing accuracy, reliability, and representativeness are vital in setting MACT standards because those limits must reflect the level of performance "achieved in practice" by the best performing units. They are also vital to permittees for demonstrating compliance with emissions limits. In order to be meaningful, measurable, and enforceable an emission limit must not be set below the quantification level of the method chosen for demonstrating compliance. FCG believes that EPA should determine a practical quantification level for each compliance method and adjust the MACT floors based on those values.
In addition, setting emission limits for certain HAPs from boilers using low-emitting fuels is unnecessary and impractical. For example, establishing mercury emission limits for units burning any fuel other than coal, given the minute amounts of mercury those fuels contain, is unnecessary because those emissions cannot reliably be measured as discussed above. FCG urges EPA to remove these limits from the rule.

Response: See preamble for response to the use or surrogates for HAP emissions and using data at or below detection limits.

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 8

Comment: Some of the data in EPA's MACT floor analysis spreadsheets is based on analytical detection limits (i.e. MIVikingEnergyofLincoln - Unit 1 (mercury». While none of this data appears to be utilized in the development of the proposed standards, it is possible that EPA may utilize some of this data in revising the standards in the final rule. RMB provides the following comments and recommendations on utilizing data reported as "non-detect" in the MACT floor analysis:

A "detection limit" (DL) can be defined in many ways, but, in general, the term refers to the minimum concentration of a substance whose presence can be verified or "detected" with reasonable confidence using a particular test method or instrument (depending on how the detection limit is defined). A detection limit does not provide information regarding the ability to produce a quantifiable measurement using a particular test method. Rather, the lower limit for which a particular analytical method can produce a repeatable and quantifiable measurement with reasonable confidence is referred to as a "limit of quantification" or "limit of quantitation" (LOQ). The LOQ can also be defined in many ways; however, one variant that provides a comprehensive accounting for method and laboratory-related variability is the "Practical Quantitation Limit" (PQL) or "Estimated Quantitation Limit" (EQL). The PQL is defined by EP A as "the lowest concentration of an analyte that can be reliably measured within specified imits of precision and accuracy during routine laboratory operation conditions". The PQL was defined by the EPA Water Program in the 1980s as a "means of integrating information on the performance of approved analytical methods into the development of a drinking water regulation. The PQL incorporates the following: (1) Quantitation, (2) Precision and bias, (3) Normal operations of a laboratory and (3) the programmatic need to have a sufficient number of laboratories available to conduct compliance monitoring analyses of drinking water samples". The need for the use of the PQL for MACT standard setting is clearly analogous to the need for the use of the PQL in the development of EPA's water quality standards.
The ideal approach for establishing and applying method-specific PQL values would be to conduct a controlled study for the analytical portion of each reference method involving a number of different laboratories. The PQL value would replace any reported non-detect value in the analytical results of a particular test method. The PQL value would then be used to calculate the equivalent in-stack pollutant concentration. However, in the absence of such a study, the PQL can be estimated by applying a multiplier to the maximum reported in-stack detection limit for a particular test method. This multiplier may range between 5 and 10, depending on the degree of concern about the specific contaminant.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Robert E. McKenna
Commenter Affiliation: Motor and Equipment Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1920.1
Comment Excerpt Number: 12

Comment: EPA's proposed limits are unduly impacted by issues associated with the limits of detection. Fundamentally, numerical limits should be based on quantifiable and reproducible test results consistent with reliable source test methods that have well-established performance. Limits should not be based on tests and methods that raise issues of significant measurement and other uncertainties.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Jay C. Moon
Commenter Affiliation: Mississippi Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2000
Comment Excerpt Number: 11

Comment: EPA's proposed limits do not appropriately address the variability in emissions of various HAPs. In addition, EPA's proposed limits are unduly impacted by issues associated with the limits of detection. Fundamentally, numerical limits should be based on quantifiable and reproducible test results consistent with reliable source test methods that have well-established performance. Limits should not be based on tests and methods that raise issues of significant measurement and other uncertainties.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2198.1
Comment Excerpt Number: 2

Comment: Some of the data in EPA's MACT floor analysis spreadsheets is based on analytical detection limits (i.e. MIVikingEnergyofLincoln – Unit 1 (mercury)). While none of this data appears to be utilized in the development of the proposed standards, it is possible that EPA may utilize some of this data in revising the standards in the final rule. RMB provides the following comments and recommendations on utilizing data reported as "non-detect" in the MACT floor analysis:

A "detection limit" (DL) can be defined in many ways, but, in general, the term refers to the minimum concentration of a substance whose presence can be verified or "detected" with reasonable confidence using a particular test method or instrument (depending on how the detection limit is defined). A detection limit does not provide information regarding the ability to produce a quantifiable measurement using a particular test method. Rather, the lower limit for which a particular analytical method can produce a repeatable and quantifiable measurement with reasonable confidence is referred to as a "limit of quantification" or "limit of quantitation" (LOQ). The LOQ can also be defined in many ways; however, one variant that provides a

comprehensive accounting for method and laboratory-related variability is the “Practical Quantitation Limit” (PQL) or “Estimated Quantitation Limit” (EQL). The PQL is defined by EPA as “the lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy during routine laboratory operation conditions”. The PQL was defined by the EPA Water Program in the 1980s as a “means of integrating information on the performance of approved analytical methods into the development of a drinking water regulation. The PQL incorporates the following: (1) Quantitation, (2) Precision and bias, (3) Normal operations of a laboratory and (3) the programmatic need to have a sufficient number of laboratories available to conduct compliance monitoring analyses of drinking water samples”. The need for the use of the PQL for MACT standard setting is clearly analogous to the need for the use of the PQL in the development of EPA’s water quality standards.

The ideal approach for establishing and applying method-specific PQL values would be to conduct a controlled study for the analytical portion of each reference method involving a number of different laboratories. The PQL value would replace any reported non-detect value in the analytical results of a particular test method. The PQL value would then be used to calculate the equivalent in-stack pollutant concentration. However, in the absence of such a study, the PQL can be estimated by applying a multiplier to the maximum reported in-stack detection limit for a particular test method. This multiplier may range between 5 and 10, depending on the degree of concern about the specific contaminant.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research
Document Control Number: EPA-HQ-OAR-2006-0790-2140.1
Comment Excerpt Number: 2

Comment: Some of the data in EPA’s MACT floor analysis spreadsheets is based on analytical detection limits (i.e. MIVikingEnergyofLincoln – Unit 1 (mercury)). While none of this data appears to be utilized in the development of the proposed standards, it is possible that EPA may utilize some of this data in revising the standards in the final rule. RMB provides the following comments and recommendations on utilizing data reported as “non-detect” in the MACT floor analysis:
A “detection limit” (DL) can be defined in many ways, but, in general, the term refers to the minimum concentration of a substance whose presence can be verified or “detected” with reasonable confidence using a particular test method or instrument (depending on how the detection limit is defined). A detection limit does not provide information regarding the ability to produce a quantifiable measurement using a particular test method. Rather, the lower limit for which a particular analytical method can produce a repeatable and quantifiable measurement with reasonable confidence is referred to as a “limit of quantification” or “limit of quantitation” (LOQ). The LOQ can also be defined in many ways; however, one variant that provides a comprehensive accounting for method and laboratory-related variability is the “Practical Quantitation Limit” (PQL) or “Estimated Quantitation Limit” (EQL). The PQL is defined by

EPA as “the lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy during routine laboratory operation conditions”. The PQL was defined by the EPA Water Program in the 1980s as a “means of integrating information on the performance of approved analytical methods into the development of a drinking water regulation. The PQL incorporates the following: (1) Quantitation, (2) Precision and bias, (3) Normal operations of a laboratory and (3) the programmatic need to have a sufficient number of laboratories available to conduct compliance monitoring analyses of drinking water samples”. The need for the use of the PQL for MACT standard setting is clearly analogous to the need for the use of the PQL in the development of EPA’s water quality standards.
The ideal approach for establishing and applying method-specific PQL values would be to conduct a controlled study for the analytical portion of each reference method involving a number of different laboratories. The PQL value would replace any reported non-detect value in the analytical results of a particular test method. The PQL value would then be used to calculate the equivalent in-stack pollutant concentration. However, in the absence of such a study, the PQL can be estimated by applying a multiplier to the maximum reported in-stack detection limit for a particular test method. This multiplier may range between 5 and 10, depending on the degree of concern about the specific contaminant.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 3

Comment: EPA’s effort to set emission limits for all HAPs emitted by industrial boilers is greatly complicated by the fact that a number of HAPs are emitted at levels at or below the detection limit of the method used to collect and analyze HAP emissions during the IB MACT ICR. Detection limit issues have significant impacts on MACT standard setting as well as later compliance demonstrations.

Any reasoned discussion of detection limit issues must begin with a clear definitional framework for two important terms -- “detection limit” and “quantitation limit.” The detection limit defines the threshold below which a test method cannot distinguish whether a substance is present or not. In EPA’s prior efforts to implement the Clean Water Act, the Agency defined the term “detection limit” to mean “the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.” 40 C.F.R. § 136.2(f). Stated differently, a measured value at the detection limit has an error band as large as the value being reported. One does not have great confidence in the quantity of material measured because the error band is so large; one simply knows it is more likely than not that the substance is actually present.

By contrast, the “quantitation limit” is the smallest detectable concentration of analyte greater than the detection limit where the accuracy, including both precision and bias, achieves the

objectives of the intended purpose of the measurement. Target objectives are generally stated in terms of the precision of the measurement expressed as a relative standard deviation ("RSD"). There is no single agreed approach for determining the quantitation limit of a method. The quantitation limit for a given method can be three to ten times higher than that method's detection limit depending on method-specific factors such as matrix effects and purity of reagents. One does not have confidence in the accuracy of a measured value unless that value is at or above the quantitation limit for the method.

Testing accuracy, reliability, and representativeness are vital in setting MACT standards because those limits must reflect the level of performance "achieved in practice" by the best performing units. They are also vital to permittees because test results, once they are sworn to be "accurate" on a monitoring report, are virtually unassailable in an enforcement action. See Sierra Club v. Union Oil Co. of Cal., 813 F.2d 1480,1492 (9th Cir. 1987) ("We conclude that when a permittee's reports indicate that the permittee has exceeded permit limitations, the permittee may not impeach its own reports by showing sampling error."); see also Conn. Fund for the Env't, Inc. v. Upjohn Co., 660 F. Supp. 1397, 1416-17 (D. Conn. 1987); NRDC v. Texaco Refining & Mktg., Inc., 906 F.2d 934, 936 (3rd Cir. 1990); and United States v. ALCOA, 824 F. Supp. 640, 648-49 (E.D. Tex. 1993).

The court in Amoco Oil Co. v. EPA, 501 F.2d 722, 743 (D.C. Cir. 1974), grappled with the accuracy of analytical methods in compliance demonstrations. There, the court stated:

The possibility of statistical measurement error, which is often unavoidable where regulations set quantitative standards, does not detract from an agency's power to set such standards. It merely deprives the agency of the power to find a violation of the standards, in enforcement proceedings, where the measured departure from them is within the boundaries of probable measurement error. Furthermore, if the test methods eventually adopted raise a greater potential for error than is practical or necessary, a reviewing court may order revisions.

501 F.2d at 743. The important point from this legal history is that an emission limit must not be set below the quantitation limit of the method chosen for demonstrating compliance. If an emission standard is set below the quantitation level, then as the court in Amoco Oil cautioned, the standard would not be enforceable.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 4

Comment: In the proposed IB MACT rule, EPA has established MACT emission limits based on reported detection limits. [Footnote: In the preamble to the proposed rule, EPA acknowledges the problems with this chosen approach:

...we believe that a floor emissions limit based on a truncated data base or otherwise including values at or near the method detection level may not adequately account for data measurement variability. We did not adjust the calculated floor for the data used for this proposal; although, we believe that accounting for measurement imprecision should be an important consideration in calculating the floor emissions limit. We request comment on approaches suitable to account for measurement variability in establishing the floor emissions limit when based on measurements at or near the method detection limit.

75 Fed. Reg. at 32,020-21.]

EPA's approach is flawed for several reasons. First, the Agency failed to provide a clear and proper definition of detection limit in the industrial boiler ICR. As a result, the detection limits listed in the ICR test reports are inconsistent and are not even based on a common understanding of the term "detection limit." Most industrial boiler owners seem to have reported the "detection limit" value they were provided by the laboratory analyzing the ICR samples. A cursory review of the ICR data shows that some "reported" values are actually below the detection limit values reported in other ICR tests. This would not have happened if EPA had properly determined the detection limit for each method before issuing the industrial boiler ICR.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 4

Comment: The Agency has failed to obtain and use an adequate number of data points in the floor analysis, and the Agency has improperly relied on non-detect values to set numerical limits.

In some cases the proposed MACT standards are based on only one or two data points, and in several instances these data points are non-detect values. An example would be the proposed chlorinated dioxin limits for biomass boilers in the major source proposal. The Agency's attempt to use statistical analysis of non-detect data from only one or two units is technically unsupported.

Another issue with the use of non-detect data is the lack of published demonstrated detection limits for the constituents of concern in the EPA standard methods that must be used to demonstrate compliance. This issue can be observed in the floor data itself, where the detection limits vary by two or more orders of magnitude for a single constituent during multiple runs at a single facility. Given the diverse universe of facilities, stack testing contractors, and analytical laboratories, attempting to set a numerical standard based on non-detect values from only one or two sources is clearly technically incorrect. Facilities may find themselves in "non-compliance"

even though their compliance test results may have been non-detect when using EPA standard methods.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Patrick J. Medvecz
Commenter Affiliation: Wausau Paper Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2283
Comment Excerpt Number: 4

Comment: For several of the pollutants, the Agency applied inappropriate statistical techniques to "non-detect" test results that generated proposed emissions limits that are in some cases below the detection capability of the required test method. In effect, facilities will be unable to demonstrate compliance. Compounding the problem, EPA has elected to collectively apply these poorly crafted and extremely low individual pollutant limits to all boilers resulting in compliance criteria that are effectively impossible to achieve, and this for a rule that, by definition, is intended to demonstrate maximum achievable control.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 5

Comment: The EPA's focus on the method detection limit reported by a given laboratory ignores many sources of measurement error that can affect a reported result. Accuracy considerations are not limited to the ability of a single laboratory to precisely measure the amount of a substance in a given sample it receives. Measurement errors also occur during the collection of a sample at the stack, the transfer of that collected sample to whatever means are used to transport the sample to an analytical laboratory, and the interlaboratory inaccuracies of different laboratories testing the same sample. EPA's proposed rule does not address these areas of collection and analytical error. As a result, EPA's detection limit analysis is fatally flawed.

Response: See preamble for response to using data at or below detection limits and variability.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research
Document Control Number: EPA-HQ-OAR-2006-0790-2140.1
Comment Excerpt Number: 7

Comment: At least one of the reported CO test data sets using EPA Reference Method 10 (RM-10) is within the range of uncertainty for the test method. The accuracy for most nondispersive infrared analyzers (NDIR) is approximately ±5 percent of span after calibration (see submittal for footnote 4). The average reported CO emissions for the Thompson Falls wood-fired boiler is 20.6 PPM using an analyzer span value of 600 PPM. The accuracy of RM-10 in this case is ±30 PPM. These test runs should be treated as "non-detect" values. RMB recommends that EPA screen the remaining MACT floor data to determine whether similar problems exist for other test data.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Michael Hutcheson
Commenter Affiliation: Ameren Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2012.1
Comment Excerpt Number: 8

Comment: The US EPA set MACT floors and corresponding MACT standards for existing sources utilizing stack test (and fuel analysis) data which reported pollutants below detectable limits. In fact, US EPA mischaracterizes the amount of data used which is at or below detectable limits in its MACT Floor analysis deflating the number of source tests which had below detectable limit test results. The use of a significant amount of data which is below detectable limits biases the MACT floor and the resulting MACT standard to a standard representative of method detection limitations and not to real emission rates of pollutants. It also biases the US EPA's analysis of variability because the best performing sources had test data below the limits of detection of the method. Utilizing method detection limits from several stack test runs results in a smaller standard deviation because the method detection limits from individual test runs are relatively constant for the test method and is unrelated to the amount of pollutant in the stack exhaust. Compliance with the emission standard that results from such a MACT floor analysis, then becomes a mere test of the stack tester's ability to test in a way that the resulting method detection limit is less than the emission standard for the source category. If the tester is unable to obtain a test run (or runs) that result in a method detection limit below the standard, then compliance with the standard can not be shown even if the results of the test are below detection limits. The result will be sources being unable to show compliance with a standard even if the actual levels of the pollutant in the exhaust is below any levels actually detected at sources used to establish the MACT Floor and associated MACT standard. In these cases, sources would have to repeat costly stack testing even though they should be shown to be in compliance.
In addition, Ameren questions how sources can show with any confidence that any test data (even at the method detection limit) is representative of an actual emission rate below the MACT floor and below the resulting standards set. If as US EPA asserts, the method detection limit is the lowest value at which one is assured that an analyte has been detected then statistically, any result at the MDL really reflects a value anywhere from 0 to 2 times the MDL. For liquid fuel fired sources and Hg standards, the MACT standard proposed is below the practical quantification limit of the stack test methods and also below several BDL test results reported in

the US EPA's Boiler MACT ICR stack test database (EPA-HQ-OAR-2002-0058-0789). In essence, US EPA has data in the docket showing that several sources who could not detect these pollutants in stack exhaust for their affected source would not be able to comply with the standards set.

Response: See preamble for response to using data at or below detection limits and changes to the standards.

Commenter Name: Scott Manley
Commenter Affiliation: Wisconsin Manufacturers and Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-2258.1
Comment Excerpt Number: 11

Comment: EPA's proposed limits are unduly impacted by issues associated with the limits of detection. Fundamentally, numerical limits should be based on quantifiable and reproducible test results consistent with reliable source test methods that have well-established performance. Limits should not be based on tests and methods that raise issues of significant measurement and other uncertainties.

Response: See preamble for response to using data at or below detection limits.

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 11

Comment: A CO measurement system typically consists of a sample probe, heated sample lines, a pump, a conditioning system, CO and O2 analyzers, calibration systems, calibration gases and a data acquisition system. Each of these components and systems contributes error to the CO measurement. Normal CO reference measurement systems such as those used for EPA Method 10 applied to boiler/heater tests generally are not designed/tuned to achieve acceptable measurement performance at 1 or 2 ppm because there has been no requirement to accurately measure CO at these levels.

These considerations clearly suggest that EPA's reliance on CO test data of undocumented quality at single digit ppm levels and lower to establish CO emission limits fails to adequately consider uncertainty (variability) in the measurement process. The reliability of these data is highly questionable. A study of CO measurement errors and reproducibility by different test organizations and systems for boiler and process heater applications is required to quantify minimum CO levels that can be measured with acceptable uncertainty. Further, even if reference measurement systems and CEMS are optimized for single digit CO levels, it is likely that measurements at the 1 or 2 ppm levels and lower have errors that are too large for regulatory

enforcement. Therefore, the CO limits established by EPA lack scientific basis and it is technically infeasible to enforce a 1 or 2 ppm emission limit.
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EPA needs to consider true real world monitoring schemes and recognize measurement limitations when establishing emission limits.

Response: See preamble for response to using data at or below detection limits and changes to the standards.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 19

Comment: EPA's use of emissions data at or below the analytical detection limit introduces an improper bias to setting the MACT floor.

EPA acknowledges that data used to support this rule were often reported near or below a test method's pollutant detection capability. Thus, the Agency observes that "the inherent imprecision in the pollutant measurement method has a large influence on the reliability of the data underlying the regulatory floor or beyond-the –floor emissions limit." 75 Fed. Reg. at 32,020. EPA recognizes that when setting a floor emissions limit, "including values at or near the method detection level may not adequately account for data measurement variability." Id. Remarkably, despite recognizing this fact, EPA did not adjust the calculated floor for the data used. Id. Rather, EPA proposed a three-step process for defining a "method detection level that is representative of the data used in establishing the floor emissions limits and also minimizes the influence of an outlier test-specific method detection value." 75 Fed. Reg. at 32,201. EPA requested comment on this approach. We believe this approach is unworkable because EPA's fundamental approach to defining the detection level itself is in error.

EPA specified that in-stack detection limits (ISDL) be calculated from laboratory detection limits (as 'floor' values) and actual test run data. This approach misrepresents reality in two significant ways. First, EPA defines detection limit as the lowest value differentiable from zero, a departure from the conventional definition of a detection limit as the lowest value differentiable from a blank. Second, EPA's calculation of ISDL ignores the variability in method performance introduced by sampling and related activities, including sample train preparation and recovery. The result of using these unrealistic assumptions to calculate ISDLs are unrealistically and indefensibly low emissions estimates, drawn, as noted above from a series of tests wherein 'ND' is the most common analytical result.

In order to establish emission limits at the already low detection levels that EPA proposes, simply correcting unrealistically low lab detection limits will not produce realistic ISDLs; it is also necessary to include sampling method variability.

The entire Boiler MACT ICR project represented an enormous departure from the way source emissions testers usually work. The process lacked the usual site-specific protocol / agency approval process, agency guidance on data quality, and clear project objectives other than completing some kind of testing prior to the deadline. The result is a great many indeterminate test results, and a very small number of results useful for emissions limits determinations, making the limits determined thereby statistically suspect. As a result, EPA's entire approach, relying as it does on comparing the proposed floor to the detection limit, must be reconsidered.

Response: See preamble for response to using data at or below detection limits, variability, and changes to the standards.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 59

Comment: We believe that a floor emission limit based on a truncated data base or otherwise including values at or near the method detection level may not adequately account for data measurement variability. We did not adjust the calculated floors for the data used for this propocal; although we believe that accounting for measurement imprecision should be an important consideration in calculating the floor emission limit. We request comment on the approaches suitable to account for measurement variability in estimating the floow emission limit when based on measurements at or near the method detection limit. (75 FR 32020)

This is an odd admission by EPA. The Agency is saying that it knew it should do something in determining emission floors (i.e., account for measurement imprecision), but says that EPA failed to do this. In RMB's opinion the Agency's mishandling of low level emission measurements has led to proposed emission limits that are basically unachievable - at least at realistic control technology costs. Unfortunately, we believe EPA's shortcomings with respect to its treatment of low level emission data are even more egregious than acknowledged in the proposed rule.

EPA mainly concentrates on the fact that its methodology causes emission measurements to be truncated at a method detection limits (MDL), and this in and of itself obscures variability. EPA is absolutely correct. Using an MDL value is not significantly different than using a constant for the emission value and of course -- constants have no variability. Perhaps the starting point should be a review of the meaning of MDL. Quoting from 40 C.F.R. 136, Appendix B, the method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. In other words, the MDL is the minimum concentration where one can be confident that the substance is actually present; it is not the concentration at which a reliable measurement or quantification can be made. To ensure that a measurement is not only correctly identified as present or not present

but is also accurate, the value should be greater than the quantification limit. [See submittal for reference.] Depending on a number of method-specific factors (e.g., matrix effects, purity of reagents, etc.) the quantification limit of a method may be 3, 5 or even 10 times the MDL.

By using measurements truncated at the MDL to determine emission floors, EPA has not only obscured emission variability, but the Agency has based emission limits on values that have neither been achieved nor may be achievable. We cannot conceive how emission limits so inappropriately determined could withstand a court challenge.

Response: See preamble for response to using data at or below detection limits, MDL, and changes to the standards.

MACT Floor: Methodology: Potential Three-times Method Detection Level Approach for Limits

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 19

Comment: Where the "adjusted" average emissions of the top 12 percent is "near" the detection level, EPA proposes [Footnote: EPA employed this technique in the cement kiln NSPS rule.] to increase the calculated average so that the floor is not less than 300 percent of the detection level. To justify this increase EPA observes that when measurements are near the detection level the measurement uncertainty can be as high as (+/-) 40 percent, while such uncertainty is reduced to (+/-) 15 percent if the measured value is three times (300 percent) the detection level. Since such measurement uncertainties are necessarily part of the overall variability determined in step one of EPA's procedure there is no need or basis to substitute this arbitrary figure for the actual emission data that the statute requires be used. Additionally, it also makes no technical sense to introduce a known error of 300 percent in the MACT floor in order to avoid a possible error of 25 percent [Footnote: The difference between the potential error at the detection level and that at three times the detection level.] in any individual measurement. This step constitutes yet one more bias in favor of allowing higher levels of HAP emissions.

Response: See preamble for response to using data at or below detection limits.
See response to comment EPA-HQ-OAR-2003-0119-2101, excerpt 10 from CISWI below.

We agree that test method measurement imprecision is a contributor to the variability of a set of emissions data. One element is associated with method detection capabilities and a second is a function of the measurement value. Measurement imprecision is proportionally highest for values measured below or near a method's detection level and proportionally decreasing for values measured above the method detection level.

Probability procedures applied in calculating the floor or an emissions limit inherently and reasonably account for emissions data variability including measurement imprecision when the database represents multiple tests from multiple emissions units for which all of the data are measured significantly above the method detection level. That is less true when the database includes emissions occurring below method detection capabilities and are reported as the method detection level values.

We applied the following procedures to account for the effect of measurement imprecision associated with a database that includes method detection level data. The first step was to define a method detection level that is representative of the data used in establishing the floor or emissions limit and that also minimizes the influence of an outlier test-specific method detection level value. We reviewed each pollutant-specific data set to identify the highest test-specific method detection level reported that was also equal to or less than the average emissions level (i.e., unadjusted for probability confidence level) calculated for the data set. We believe that this approach is representative of the data collected to develop the floor or emissions limit while to some degree minimizes the effect of a test(s) with an inordinately high method detection level (e.g., the sample volume was too small, the laboratory technique was insufficiently sensitive, or the procedure for determining the detection level was other than that specified).

The second step in the process is to calculate three times the representative method detection level and compare that value to the calculated floor or emissions limit. If three times the representative method detection level were less than the calculated floor or emissions limit calculated from the UPL, we would conclude that measurement variability was adequately addressed. The calculated floor or emissions limit would need no adjustment. If, on the other hand, the value equal to three times the representative method detection level were greater than the UPL, we would conclude that the calculated floor or emissions limit does not account entirely for measurement variability. If indicated, we substituted the value equal to three times the representative method detection level to apply as the adjusted floor or emissions limit. This adjusted value would ensure measurement variability is adequately addressed in the floor or the emissions limit.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 6

Comment: EPA recognizes some of the issues related to its use of detection limits. See 75 Fed. Reg.. at 32,020-21. EPA requests comments on whether it should adjust the representative detection limit by applying a multiplier of three to account for measurement variability. While EPA's suggested adjustment is a step in the right direction, EPA needs to determine the practical quantitation level ("PQL") [Footnote: EPA previously defined PQL as "the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions." 52 Fed. Reg. 25,690, 25,699 (July 8, 1987). EPA has explained that the PQL incorporates (1) quantitation, (2) precision and bias, (3) normal operations of a laboratory and (4) the programmatic need to have a sufficient number of laboratories available to conduct compliance monitoring analyses. See EPA, "Revised Assessment of Detection and Quantitation

Approaches," EPA-821-B-04-005, p. 2-6 (Oct. 2004).] for each compliance method and adjust the MACT floors based on those values. As EPA notes, a value three times the method detection limit still has an error band of 10 to 15%. This uncertainty is too large and therefore a larger multiplier is needed. More importantly, a method detection limit supplied by a given laboratory does not account for all sources of variability in sample collection nor interlaboratory variability in analyzing a given sample. EPA needs to conduct broad based studies to determine the PQLs for the compliance methods it chooses for showing compliance with its HAP limits and then set MACT limits based on those PQLs.

Response: See preamble for response to using data at or below detection limits.

MACT Floor: Methodology : Load Variability

Commenter Name: William H. Verner
Commenter Affiliation: Georgia Electric Membership Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1797.1
Comment Excerpt Number: 2

Comment: If EPA were to provide flexible approaches in the boiler MACT rule and appropriately address the diversity of units, operations, sectors, fuels, extension of emission averaging period from 24-hours to 30-days, and the use of representative data, it could prevent severe job losses and billions in unnecessary regulatory costs.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 6

Comment: The MACT floor analysis does not account for effects of startup, shutdown, or malfunction (SSM) on CO emissions for new or existing units. This is critical for units that are required to demonstrate continuous compliance with the CO limit using a CO CEMS since Part 63 no longer includes exemptions for SSM periods.

Unfortunately, EPA has not presented sufficient data for those units in the MACT floor pool to address load-related variability. EPA will need to obtain additional data (e.g. CO CEMS data) in order to conduct this analysis. In obtaining this data, RMB recommends that EPA include periods of startup/shutdown (particularly cold-start) that are representative of each boiler class.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 7

Comment: EPA did not consider variability sufficiently in establishing floors under the Proposed Rule. For example, EPA has coal mercury data for nine boilers, yet only used two boilers in establishing the floor. In establishing the CO standard for oil based units, EPA only relied on data from fifteen boilers with no long term variability data and analysis. This limited data resulted in an inappropriate floor.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 11

Comment: We offer a caution to EPA and the regulated community regarding the notion of "variability" in compliance with emission limits. NACAA agrees that common sense and several court decisions support the notion of incorporating a reasonable compliance margin in MACT floors. However, this concept is not incorporated in the statute itself and EPA could lose its discretionary authority to incorporate reasonable compliance margins if it continues to accept the ever-more creative arguments put forth by industry for larger and larger determinations of variability. This is not mere speculation; in the now-vacated rule, EPA had accepted in its final rule an industry argument that a "variability" factor of 16,100 percent should be applied to the MACT floor for a subcategory. In other words, EPA had agreed that the calculated MACT floor should be multiplied by a factor of 161 to account for "variability." We submit that, had the court reached the merits of that provision, it would not have survived and, with its rejection, EPA's ability to provide reasonable compliance margins might have been constrained in important ways. The latest proposal similarly contains a number of errors that each improperly inflate the variability assigned to the MACT floors and, in combination, lead to excessively high MACT floors for certain subcategories. These errors include the use of differences in performance of units instead of the variability of the performance of each "clean unit," double counting the variability associated with fuel, the use of inconsistent assumptions in standard setting and

compliance determinations and the use of inconsistent definitions of “performance” in the MACT floor calculation process. They also include a failure to consider the adverse public health impacts associated with the procedures advocated by industry and a failure to rationally address the statistical impact on variability associated with industry arguments for a large number of subcategories with small numbers of sources.20 NACAA anticipates that industry representatives may submit comments suggesting even more creative methods for calculating large variability factors and so, in addition to commenting on issues that appear from the proposed MACT floor calculations, we offer several methods for judging the overall appropriateness of variability factors that might be developed for the final rule.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 20

Comment: We cite two examples. Babcock & Wilcox’ Power Generation Group, which operates boilers, and manufacturers both boilers and air quality control systems (AQCS) made the following statement in comments filed for the major source proposal. Regarding similar requirements for liquid fuels in that rule, they said, “B&W is not aware of combustion or AQCS technology (or a combination of both) that would allow an equipment supplier, such as ourselves, to offer commercial guarantees on the ability to control CO emissions to the levels identified...” Also, the Coen Company, a leading supplier of burners for gas- and oil-fired boiler applications was asked to determine what CO emission guarantees would be provided for their installations. For oil-fired applications, Coen offers a CO emissions guarantee of 100 ppmvd (@ 3% O2), for loads ranging from 25% to 100%. The Coen emissions guarantees are not valid below 25% load. This is due to the higher levels of excess air at low loads that result from the minimum airflow levels required by NFPA. In addition, Coen noted that CO emissions during a cold startup would be significant due to the reduced temperatures of the boiler heat recovery surfaces. Under these conditions, unburned fuel that comes into contact with the cold surfaces will smolder (instead of combusting completely), and will form significant amounts of CO. Coen noted that CO emissions during a cold startup could average several hundred ppm for the first hour or more.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Matthew Todd and David Friedman

Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 26

Comment: As we discuss, in Section VI.B of our comments on the major source proposal [See DCN: EPA-HQ-OAR-2002-0058-2960.1 for comments], a statistical variability correction does not address the real variability present in the subcategory, due to such factors as boiler size, design or fuel characteristics or temporal variability in fuel, weather or operating conditions (e.g., rates). The test data used doesn?t even address the temporal variability of the boilers tested.

EPA indicates that the data for the 15 boilers that establish the floor were "test runs." Thus, this data only represents operation at test conditions (typically >80% firing under ideal operating conditions). Yet, the Agency would impose the MACT standard at all times. There is nothing in the record that indicates that any of the 15 boilers used as the basis for MACT, in fact, meets the proposed 2 ppm daily average CO limit for existing sources at all times, much less that other boilers could.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 49

Comment: The testing information in the database is based on performance tests that only capture a moment in time. Long term variability due to factors like changing load demand and the effect of seasonality on biomass fuel moisture are not accounted for in the testing data despite the fact that these are important factors affecting variability in CO emissions. For instance, in a letter provided to EPA by the Maine Department of Environmental Protection (MDEP, See Appendix 3), a tremendous amount of variability in CO emissions from well controlled and highly regulated wood fired boilers was noted. We have attached in Appendix 3 data provided by MDEP and seasonality data from area source boilers in Michigan that have CO CEMS (See Appendix 4 of the submittal).

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Paul Noe

Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 16

Comment: A&PA believes the proposed 160 PPM existing source CO limit and the 100 PPM new source CO limit for biomass boilers as well as the 1 PPM new and 2 PPM existing source CO limits for oil fired boilers are unachievable. The massive evidence of unachievability for continuous compliance resides in the CO CEMS data discussed elsewhere in these comments and from other sources that EPA apparently did not review. Certainly, no such review was noted in the Floor Memo accompanying the rule. That EPA can find extremely low CO emission values in its small dataset of short term test results is not surprising given the inherent CO emission variability discussed elsewhere in these comments. However, those tests are not a measure of achievability over the typical range of operating conditions and they are inappropriate to base a continuous compliance MACT floor limit on. We have noted that, particularly in the case of biomass boilers, wide CO variability is simply a testimony to their nature. Variability is also a normal, natural indication of the wide variety and types of units both from the standpoint of fuels burned and boiler design. EPA's decision to aggregate these boilers into a set of single fuel subcategories is inexplicable. State permitting agencies, which have regulated CO emissions for years, understand this variability and take into account in their regulations. From a recent report from Maine sent to EPA (see Appendix 3), here is what they have to say about CO variability from wood fired boilers in their state:
"...The CO standard for units burning this type of fuel would have to be higher and should take into account the inherent variability encountered when combusting only wood.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 13

Comment: If EPA is requiring CEMS for compliance, the agency should look at CEMS data when accounting for variability. For a discussion of EPA's flawed statistical approach, please refer to CIBO's comments on the Boiler MACT Proposed Rule. [See DCN: 2006-0790-1783.2 for related comments.]

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 18

Comment: If CO limits are imposed in the final rule for those units which are not required to use CO CEMS, CIBO recommends that the CO limit be based on the average of three test runs using M10 with the boiler operating between 80-100% of rated heat input, with appropriate latitude to account for the diverse population of boilers, burners, atomization systems, and applications. As such, the basis for the standard would also change from the current daily average basis for those units. As proposed, units without CO CEMS would appear to need to conduct a 24 hour M10 emission test in order to determine compliance, which appears at odds with at least 1-hour sampling time for each test run stated in § 63.11212(d).
EPA should re-evaluate its proposed CO limits for liquid-fired units to ensure they represent what is generally achievable by the population of liquid-fired units. If units with low NOx limits are forced to meet CO limits of 2 ppm, an oxidation catalyst could be required, which is a very costly control option and may oxidize CO but not organic HAP, depending on the temperature of the gas stream at the location of the catalyst, which will necessarily vary with boiler firing rate.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: James P. Brooks
Commenter Affiliation: Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1915.1
Comment Excerpt Number: 10

Comment: Information available in the docket suggests that limited monitoring data was available to EPA from area source boilers upon which to base the proposed standards. We believe it is inappropriate to include data from Chiptec biomass gasifiers for development of standards for existing units because the gasifier is a different type of technology than a boiler. We do, however, believe it is appropriate for setting a standard for new units, which should be designed to compete with comparable available combustion devices.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1

Comment Excerpt Number: 29

Comment: It appears that in the process for setting emission limits for CO in oil and biomass fired boilers that many general technical considerations concerning the operation and nature were not taken into account. Appendix 2 of the submittal provides many of the technical considerations that need to be made if all the factors that impact these units are to be understood. Additionally, AF&PA addresses this issue in our comments on the major source boiler rule, almost all of which are relevant in this regulation as well (See Section XIV on Achievability and Section XVIII on Start Ups and Shut Downs in Docket EPA-HQ-OAR-2002-0058; we incorporate those comments by reference).

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 35

Comment: We believe that this fundamental flaw, assuming single or even multiple compliance stack tests capture CO emission variability, can be corrected. Additionally, correcting this flaw will provide the basis of an improved standard. Certainly, if EPA wishes to use CEMS to show compliance with the standard, then the standard must be developed using CEMS data. This is the approach we believe EPA should take. We believe that a much sounder procedure for developing CO emission limits for each subcategory would involve the following steps:
1. Obtain at least one year of reportable hourly CO CEMS data from boilers in each subcategory that have CEMS data, and compute the average CO concentration (ppm at 7% O2).
2. Identify the best performing 12% of units in each subcategory based on the annual averages.
3. Calculate 3 hour block averages and 30-day rolling averages for these best performers.
4. Many boilers under 100 MMBTU/hr. will not have CEMS. For these existing boilers that do not have CEMS and that will determine compliance using EPA Method 10, set a 24-hour average limit equal to the highest 24-hour average in the best performer data set. For existing boilers that will determine compliance based on 30-day rolling averages, set a 30-day average limit equal to the highest 30-day average in the best performer data set. The same procedure should be used to set new source limits using just the CEMS data for the boiler with the lowest long-term average.

We recognize that EPA has expressed concerns regarding the use of long term data in the past, but in this circumstance, we believe the dataset itself makes it imperative to use this kind of data to set the standard. In the discussions on determination of MACT for organic HAP, EPA has stated that the CO CEMS data they collected showed that CO “from best performing units did not vary much when such unit is operated at below design capacity” and “no additional variability due to operating load needs to be accounted for.”43 Examination of the CEMS data shows that not only does CO vary with load, but it can vary quite a bit over a 30-day period. We

have selected data to show this from the EPA databases and included it in Appendix 2 to these comments. Again, we believe that EPA should use CEMS to develop the standard as outlined above, and further, must do so since it is using CEMS to show compliance with the standard.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: John P. Maultsby
Commenter Affiliation: Florida Plywoods, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1642.1
Comment Excerpt Number: 3

Comment: EPA must factor into the MACT the variability in operations, fuels, designs and testing performance across the many types of boilers.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 7

Comment: Continuous compliance may be unachievable for CO limits for biomass units, as the proposed emissions limits are based on stack tests, and not CEMS data. The CO emission rate will likely vary over time due to changes in load conditions and fuel variability. It is unlikely that available stack test data have adequately characterized this variability.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Britt S. Fleming
Commenter Affiliation: Auto Goup
Document Control Number: EPA-HQ-OAR-2006-0790-1916.1
Comment Excerpt Number: 16

Comment: The reason the test data are not representative is that the emissions data relied on to set the floors in the proposal were produced during "Reference Method" performance testing. Emission testing is typically performed when the unit is operating under relatively steady conditions (at a near constant firing rate or load) and at the maximum and "normal" firing rates. Testing is rarely (if ever) performed during startup or shutdown conditions on industrial units as the exhaust and emission rates are in a state of flux or near constant variation. Any results obtained during these conditions are typically discarded as being unreliable or not reproducible and not in accordance with what is required by EPA Reference Methods. Low-fire or idle operation is another condition that is not typically emission tested. This is of particular concern since these sources frequently operate at low-fire or idle conditions where CO concentrations are typically the highest.

Performance testing is required to be conducted under "representative operating conditions."[See 40 C.F.R. § 60.55c(b)(1).] The rules do not define the term "representative operating conditions." However, EPA's National Stack Testing Guidance suggests that such conditions: (1) represent the range of conditions under which the facility expects to operate (regardless of the frequency of the conditions); and are likely to most challenge the emissions control measures of the facility (but without creating an unsafe condition).[Clean Air Act National Stack Testing Guidance at 14.]
This guidance further defines "representative" as "normal" as it states that "[t]he MACT program further defines representative performance as normal operating conditions" and again when describing the performances test conditions as described above to be "under . . . those representative (normal) conditions . . . ."[Id.] Of course, as expressly stated in the document itself, the National Stack Testing Guidance is "intended solely as guidance" and, as such, "is not a regulation."[Id. at 2.]

Properly conducted, performance tests are a reliable measure of compliance at a given point in time with the relevant standard. However, such tests typically should not be expected to reveal the true range of variability in operating conditions because sources strive to maintain rigorous, yet consistent, operating conditions during tests, between testing runs within a given testing session, and between testing sessions. As indicated by the Stack Testing Guidance, the goal of performance testing is to challenge the applicable control device or control measure to assure that compliance will be maintained under rigorous conditions. Variable operations during testing are inconsistent with the purpose and intent of such testing and can invalidate the test results. For example, Method 5 requires isokinetic sampling to within a certain percentage during the test, which is virtually impossible if the exhaust flow is changing due to changing operating conditions. Varying the operation of the source and, consequently, varying the exhaust flow rate makes it impossible to calculate the relationship between the mass of pollutant captured and the source's flow rate during the test.

Moreover, while owners and operators may seek to conduct testing at reasonable worst case conditions to assure compliance during less rigorous conditions, it is entirely possible that operations during less rigorous conditions could nevertheless accommodate variation that would not threaten compliance with the standard, but nevertheless could be relevant when the data are used to set standards on a pollutant-specific basis rather than a unit-specific basis.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 23

Comment: Short Term tests vs. long term CEMs data: Emission test data cannot be used to establish a CO emission limit for our sources, since short term emission tests will not take into account the variability seen over time. In the case of forest-based wood waste, data must be looked at over a period of at least a year to understand the variability due to seasonal changes in wood moisture content. We have attached some data from several facilities to demonstrate this:
Attachment A: Uncorrected CO PPM data Viking Energy/Lincoln, wood/TDF

Attachment B: Uncorrected CO PPM data, Hillman Power Co. wood/TDF

Attachment C: Uncorrected CO PPM data, full & partial load operation, wood/TDF, Grayling Generating Sta.

Attachment D: Full & partial load operation, wood only, Cadillac Renewable Energy
[SEE submittal for attachments]

We have hourly CO data for many years from our facilities. The data provided is just a small sampling of what is available.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 2

Comment: Unlike the smaller institutional boilers used in the US Fuel for Schools Program, the firing rate on industrial boilers ‘swings’ to meet the variable steam demands of the processes they support. As a consequence, the boiler’s firing conditions (fuel and air input rates) are constantly changing. These changes alter the combustion conditions within the boiler’s furnace that determine CO generation rates. Even with the most advanced combustion hardware and

control systems, CO emissions in existing large industrial boilers will not be able to consistently meet the proposed 160 ppmvd standard.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 5

Comment: Seasonal variability in the quality of wood fuels (particularly with regards to moisture content) also results in variable CO emissions from wood fired units. Some of the variability is due to moisture content in the fuel and some is due to unit load rates. Lower loads and higher moisture content results in higher CO levels and more variability.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Kevin F. Biernacki
Commenter Affiliation: Veolia Energy North America
Document Control Number: EPA-HQ-OAR-2006-0790-2273
Comment Excerpt Number: 7

Comment: The proposed CO ppmvdc emission limits were developed from and are meant to apply to steady state emissions considering boilers operating during transient events (i.e. startup/shutdown/load changes/non-normal operating times) can not satisfy 1 ppmvdc or 2 ppmvdc emission limits. However, the proposed CO emission limits under the proposed rule would be applied during all boiler operating times. We operate boilers that load change very frequently throughout a given day depending upon the necessary load demand, and these boilers will not be able to satisfy the proposed 2 ppmvdc CO emission limit.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Edward J. Wilusz
Commenter Affiliation: Wisconsin Paper Council

Document Control Number: EPA-HQ-OAR-2006-0790-2133
Comment Excerpt Number: 7

Comment: The proposed rule fails to adequately account for variability in emissions that reasonably is expected from the top performing sources.
EPA has improperly developed a CO standard that boilers must meet at all times based on 3-run stack tests that fail to properly characterize the highly variable nature of CO emissions in solid fueled boilers. CO emissions from boilers can be highly variable, especially when fuel mix and load change. Facilities are typically required to conduct stack tests at least 90 percent of full load during normal operating conditions. Therefore, a CO stack test is going to represent the best operation of any boiler. EPA has used only 3-run stack test data, which represents only a small and unrepresentative snapshot in time captured during the best operating conditions, to set emission limits for a pollutant that is highly variable.

In fact, as demonstrated in the comments below, further analysis of CO CEMS data included in EPA's database for top performing units in each of the solid fuel subcategories reveals that even the top performing sources would not be able to meet the proposed CO standards that are based on the performance of those very units. Further analysis of record data also clearly shows that EPA is mistaken in its suggestion that CO emissions do not vary with load. In fact, to adequately accommodate expected CO emissions variability with load, the 2004 Industrial Boiler MACT rule did not require CO CEMS data obtained at less than 50 percent of maximum load to be included in the 30-day CO average. EPA's proposal not to accommodate load variability is not supported by the record and inexplicable as a technical matter. In the final rule, EPA must use data to set the standard that are consistent with the form of the standard. As compliance with the CO standard is to be measured at all times using CO CEMS for units of 100 MMBtu/hr and greater and the averaging time is 30 days, EPA should use 30-day CEMS data from affected boilers to establish the appropriate MACT floors and not 3-run stack test data. To assure that startup, shutdown, and malfunction are appropriately accommodated, EPA must either assure that the data on which the standard is based include representative data from such periods or, alternatively, set a separate work practice standard to properly accommodate startup, shutdown, and malfunction.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Kevin F. Biernacki
Commenter Affiliation: Veolia Energy North America
Document Control Number: EPA-HQ-OAR-2006-0790-2273
Comment Excerpt Number: 9

Comment: If an unrepresentative steady state emission limit and/or compliance averaging time is implemented (e.g.. 1 or 2 ppmvdc CO using a daily average of CEMS data), we request an

alternative compliance method during startup/shutdown/load changing/non-routine operating times for units that are required to install CEMS.

For units that will be required to install CO CEMS we request the option to use the facility CO CEMS data to develop site specific startup/shutdown/load changing/non-routine operating times emission limits based upon historical CEMS data. These limits would be documented within the site specific monitoring plan.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: David Suess
Commenter Affiliation: DSG Solutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1977.1
Comment Excerpt Number: 10

Comment: The proposed CO ppmvdc emission limits were obviously developed from and are meant to apply to steady state emissions considering boilers operating during transient events (i.e. startup/shutdown/load changes/non-normal operating times) can not satisfy 1 ppmvdc or 2 ppmvdc emission limits. However, the proposed CO emission limits according to the proposed rule are meant to be applied during all boiler operating times. Our clients operate boilers that load change very frequently throughout a given day depending upon the necessary load demand and these boilers will not be able to satisfy the proposed 2 ppmvdc CO emission limit.

We believe the CO ppmvdc emissions limit magnitude needs to be reevaluated and increased.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Sarah E. Amick
Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 15

Comment: This problem is magnified by the fact that performance tests are typically conducted when units are at least 90 percent of full load during normal operating conditions. Therefore, a stack test is going to represent the best operation of any boiler. Thus, the data represent only a small snapshot in time, captured during the best operating conditions. This means that EPA's statistical approach to determining variability fails to reflect the full range of variability that reasonably is expected from the best performing boilers.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 22

Comment: EPA has not only failed to recognize turndown in establishing the MACT Floor, but it has also failed to recognize the variability that occurs during the non-steady state period when boilers are changing load. All boilers experience periods where they must change their output to meet different demands. This load change is often very rapid and in many cases will cause increases in various emission rates, particularly carbon monoxide. The following graph contains load, CO and CO_2 data for a Duke Energy generating unit recorded in early 2010. [See submittal for plot showing CO, CO_2, and Load data over time] The CO and CO_2 data was obtained using a temporary Continuous Emissions Monitoring System (CEMS) during a baseline period prior to a test of biomass material. While data was not obtained during all operating hours, never the less it dramatically shows how short term spikes of CO can occur as a result of rapid load changes. At their peak value, these short term spikes caused by non-steady state operation can be at least an order of magnitude higher than during the baseline period.

EPA's proposed MACT standard is based on reference method test data obtained during the Information Collection Request (ICR). In the ICR, EPA's mandated steady state, high load test conditions precluded sources from collecting data during changes in load. Moreover, most sources do not have CO CEMS, so they generally do not have data they could have provided to EPA.

Duke Energy believes that this data is generally indicative of utility and industrial boilers burning solid fuels, including those used to establish the MACT Floor. EPA's proposed CO standard is flawed since it does not consider that an hour with a short term spike, an order of magnitude greater than the baseline, will require a very long period below the standard to average down the effect of the spike. As a result the proposed standard becomes unattainable for many sources. Duke Energy urges EPA to include this form of variability and increase the magnitude of the CO limit that would apply when the unit is operating above 40% of capacity. This limit should reflect the variability in CO emissions that result from of load following operations at greater than 40% of design capacity.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 5

Comment: For those systems greater than 10MMBtu, however, we do not support the absolute 160 ppm limit for CO for all hours of operation, for the same reasons we will outline later for objecting to the 100 ppm limit for all new sources: options for low-load conditions covering stand-by or pilot modes are required for all systems, existing and new, for CO up to approximately 50 MMBtu/hr capacity. The calculation presented by ERG in the MACT Floor Memo (Singleton, 2010) is not appropriately reflecting the operation of biomass systems in this class – existing or new. Options to address this are presented in the discussion of CO for new systems, but are equally applicable to existing systems under approximately 50MMBtu.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Ben Brandes
Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 9

Comment: In the final rule, EPA must use data to set the standard that are consistent with the form of the standard. As compliance with the CO standard is to be measured at all times using CO CEMS for units of 100 MMBtu/hr and greater and the averaging time is 30 days, EPA should use 30-day CEMS data from affected boilers to establish the appropriate MACT floors and not 3-run stack test data. To assure that startup, shutdown, and malfunction are appropriately accommodated, EPA must either assure that the data on which the standard is based include representative data from such periods or, alternatively, set a separate work practice standard to properly accommodate startup, shutdown, and malfunction.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 32

Comment: If EPA is going to require CO CEMS as the compliance method as it proposes for units >100MMBtu/hr, the Agency should utilize CO CEMS data to set the standard.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 35

Comment: If CO limits are imposed in the final rule, for those units which are not required to use CO CEMS, ACC recommends that the CO limit be based on the average of 3 test runs using M10 with the boiler operating between 80-100% of rated heat input, with appropriate latitude to account for th ivers population of boilers, burners, atomizion systems, and applications. As such, the basis for the standard would also change from the current daily average basis for those units. As proposed, units without CO CEMS would appear to need to conduct a 24 hour M10 emission test in order to determine compliance, which appears at odds with at least 1-hour sampling time for each test run stated in 63.11212(d).

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Ben Brandes
Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 7

Comment: EPA makes a similar mistake with regard to its proposal not to set a separate standard for periods of startup, shutdown, and malfunction. On the one hand, EPA asserts that "[t]he standards we are proposing are daily or monthly averages ... [t]hus, we are not establishing separate emission standards for these periods because startup and shutdown are part of their routine operations and, therefore, are already addressed by the standards." On the other hand, EPA uses short term performance test results to set the standards rather than the results of long-term CEMS monitoring. As a result, the emissions data on which the standards are based do not, in fact, reflect or adequately accommodate emissions from periods of startup, shutdown, or malfunction.
[Footnote 42: 75 FR 32013]

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Melissa Mullarkey
Commenter Affiliation: Recycled Energy Development, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2193.1
Comment Excerpt Number: 4

Comment: EPA should assure that its emissions databases are representative of all units and operating periods. The agency's standards should encompass the practical capabilities of controls and the variability in operations, fuels, raw materials and emissions performance across the many regulated sectors.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Ben Brandes
Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 6

Comment: The Proposed Rule Fails to Adequately Account for Variability in Emissions That Reasonably is Expected From the Top Performing Sources
EPA has improperly developed a CO standard that boilers must meet at all times based on 3-run stack tests that fail to properly characterize the highly variable nature of CO emissions in solid-fueled boilers. CO emissions from boilers can be highly variable, especially when fuel mix and load change. Facilities are typically required to conduct stack tests at least 90 percent of full load during normal operating conditions. Therefore, a CO stack test is going to represent the best operation of any boiler. EPA has used only 3-run stack test data, which represents only a small and unrepresentative snapshot in time captured during the best operating conditions, to set emission limits for a pollutant that is highly variable.

In fact, as demonstrated in the comments below, further analysis of CO CEMS data included in EPA's database for top performing units in each of the solid fuel subcategories reveals that even the top performing sources would not be able to meet the proposed CO standards that are based on the performance of those very units. Further analysis of record data also clearly shows that EPA is mistaken in its suggestion that CO emissions do not vary with load. In fact, to adequately accommodate expected CO emissions variability with load, the 2004 Industrial Boiler MACT rule did not require CO CEMS data obtained at less than 50 percent of maximum load to be included in the 30-day CO average. EPA's proposal not to accommodate load variability is not supported by the record and inexplicable as a technical matter.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Paul Lyskava
Commenter Affiliation: Pennsylvania Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-2223.1
Comment Excerpt Number: 6

Comment: Additionally, the proposed rule fails to adequately account for variability in emissions that reasonably is expected from the top performing sources.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Debra J. Jezouit
Commenter Affiliation: The Class of '85 Regulatory Response Group
Document Control Number: EPA-HQ-OAR-2006-0790-1986.1
Comment Excerpt Number: 7

Comment: EPA should revise the proposed CO emission limits. The Proposed Rule would require continuous compliance with CO emissions limits that boiler vendors will not guarantee are achievable on a continuous basis. Some vendors will guarantee a boiler can operate at these levels at a specific load point, such as at or near full load. If the boiler operates at any other load point CO emissions may spike because most low emission boilers are tuned for lower nitrogen oxide ("NOx") emission levels. For example, a typical low-emission boiler guaranteed to achieve 9 parts per million ("ppm") NOx will be guaranteed for 50 ppm CO with the potential of spiking to 150 ppm CO at less than 25 percent load. Boilers are routinely operated at a variety of load points. To account for this variability, EPA should set the proposed CO emission limits no lower than the level a boiler is guaranteed to achieve on a continuous basis.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1

Comment Excerpt Number: 7

Comment: EPA did not adequately account for load variability in establishing the proposed CO limit of 1ppm for oil-fired units. As a general matter, stack testing data is not representative of load variability because stack tests are conducted at steady state loads where CO is minimized (i.e. 50-90%). By contrast, CO will increase at lower firing rates due to the decreased mixing energy of the flame and the reduced temperature in the furnace. (This is more pronounced in single-burner boilers, since the burner needs to cover the entire turndown range, than for multiple-burner boilers in which turndown can be achieved by taking burners out of service.) It is common for boiler burners to be required to operate across an 8:1 turndown range (down to 12.5% firing rate) on oil. CO may also increase at higher firing rates, when the flame fills the furnace and approaches the tube walls where temperatures become too cool to promote CO oxidation. CO may also vary dramatically when a boiler is modulating load to follow a steam demand. This results from metered control systems which allow air to lead fuel on increasing load, and fuel to lead air on decreasing load. Fuel-lean operation during transient load conditions reduces flame temperature and increases CO production. As a general matter, the faster a unit is required to change load, the greater the magnitude of CO increases.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 8

Comment: Some wood-fired boilers at wood products facilities operate in a swing mode, necessitated by the fluctuating steam demands of the facility. As the Maine study points out, fluctuating loads can cause huge upset conditions in the boiler, especially with reference to boiler CO emissions. If EPA has only included CO emissions data from boilers that were operating in steady state mode, then perhaps this analysis does not apply to swing boilers and a separate category of biomass boilers that are characterized by frequent swings in operation needs to be looked into. In the least, an analysis needs to be carried out to include the impact of such data especially among the top 12% of the boilers considered in arriving at the GACT limits.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp

Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 9

Comment: Some boilers only produce measurable CO when they are experiencing load variations. The testing that is being used to establish the MACT floor was all conducted at steady load. A boiler may have little or no CO emissions at steady load, but significant emissions as the load varies. As such, the CO data used to establish the floor may not be representative of normal boiler operation and a low CO limit may not be achievable by even the top performers at all times.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Scott Manley
Commenter Affiliation: Wisconsin Manufacturers and Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-2258.1
Comment Excerpt Number: 10

Comment: EPA's analysis failed to properly address the variability of the data, as well as emissions associated with startup, shutdown and malfunction. Thus, EPA's proposed limits do not appropriately address the variability in emissions of various HAPs.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 11

Comment: Furthermore, emissions from all boilers, particularly biomass-fired boilers, will vary widely depending on the capacity at which the boiler is running. These boilers perform best once they are running at about 90%-95% capacity. It is unclear whether EPA took these factors into consideration when compiling and reviewing its limited emissions data. It is reasonable to assume that an adequate sample of the actual population of biomass and oil-fired boilers likely would have reflected a much different picture of the "real-world" average emissions from these sources.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: A. Steven Young
Commenter Affiliation: Association of Independent Corrugated Converters
Document Control Number: EPA-HQ-OAR-2006-0790-1994.1
Comment Excerpt Number: 11

Comment: EPA's analysis failed to properly address the variability of the data, as well as emissions associated with startup, shutdown and malfunction. Thus, EPA's proposed limits do not appropriately address the variability in emissions of various HAPs. In addition, EPA's proposed limits are unduly impacted by issues associated with the limits of detection. Fundamentally, numerical limits should be based on quantifiable and reproducible test results consistent with reliable source test methods that have well-established performance. Limits should not be based on tests and methods that raise issues of significant measurement and other uncertainties.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 18

Comment: EPA Failed To Properly Consider Variability.
Overall, ACC fully supports EPA's proposal to account for variability in emissions from the better performers when determining floor levels of control. Accounting for variability has been upheld as appropriate and lawful by the D.C. Circuit and, in any event, is necessary to fully characterize the performance of the sources used to set standards under 112. However, as discussed below, EPA failed to properly address variability when it set the MACT floors.

In evaluating the emission limits achieved by existing sources, EPA is required to estimate the variability associated with all factors that impact a source's emissions, including process, operational and non-technological variables. See Nat'l Lime Ass'n v EPA, 627 F.2d 416, 443 (D.C. Cir. 1980). Any method used to estimate emissions rather than actually measure them "must 'allow a reasonable inference as to the performance of the top 12 percent of units,' "and EPA must show "why its methodology yields the required estimate." Cement Kiln Recycling Coalition v. EPA, 255 F.3d 855, 862 (D.C. Cir. 2001) (emphasis in original) (citing Sierra Club v. EPA, 167 F.3d 658, 663 (D.C. Cir. 1999).

EPA has acknowledged this responsibility and identified a number of factors that contribute to variability in emissions test data, including (1) the emission test method; (2) the emission analytical method; (3) the design of the unit and the control device(s); (4) operating conditions of the facility and the control device(s); and (5) the composition and relative amounts of fuel constituents in the fuel or flue gases. See Prop Nat'l Emissions Std. for Haz Air Pollutants for Electric Utility Steam Generating Units, 69 Fed. Reg. 4652, 4670 (Jan. 30, 2004).

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 21

Comment: EPA arbitrarily and capriciously failed to properly consider variability.

As a general matter, Manufacturers fully support EPA's proposal to account for variability in emissions from the better performers when determining floor levels of control. Accounting for variability has been upheld as appropriate and lawful by the D.C. Circuit and, in any event, is necessary to fully characterize the performance of the sources used to set standards under § 112. However, as discussed below, EPA failed to properly address variability when it set the MACT floors.

In evaluating the emission limits achieved by existing sources, EPA is required to estimate the variability associated with all factors that impact a source's emissions, including process, operational and non-technological variables. See Nat'l Lime Ass'n v. EPA, 627 F.2d 416, 443 (D.C. Cir. 1980). Any method used to estimate emissions rather than actually measure them "must 'allow a reasonable inference as to the performance of the top 12 percent of units,'" and EPA must show "why its methodology yields the required estimate." Cement Kiln Recycling Coalition v. EPA, 255 F.3d 855, 862 (D.C. Cir. 2001) (emphasis in original) (citing Sierra Club v. EPA, 167 F.3d 658, 663 (D.C. Cir. 1999).

EPA has acknowledged this responsibility in general and identified a number of factors that contribute to variability in emissions test data, including (1) the emission test method; (2) the emission analytical method; (3) the design of the unit and the control device(s); (4) operating conditions of the facility and the control device(s); and (5) the composition and relative amounts of fuel constituents in the fuel or flue gases. See Prop. Nat'l Emissions Std. for Haz. Air Pollutants for Electric Utility Steam Generating Units, 69 Fed. Reg. 4,652, 4,670 (Jan. 30, 2004).

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 25

Comment: We are concerned about the particular method of accounting for variability employed by the Agency in the proposal. EPA proposes to account for both "within test" and "between test" variability by calculating the 99.9% upper confidence level of the available and relevant emissions testing data, which is calculated as the mean value of the data plus an amount equal to 3.09 times the standard deviation. In concept, such an approach may initially appear rational because setting the floor at the 99.9% confidence interval ostensibly would cause the floor to encompass virtually the entire range of emissions reasonably expected by the better performing sources from which the data were derived. In practice, however, this approach is flawed because the underlying data are not, in fact, representative of the range of expected operations and true variability that reasonably should be expected from the better performers. The reason is that the emissions data relied upon in the proposal were produced during reference method performance testing rather than during day-to-day operations.

Performance testing is required to be conducted under "representative operating conditions." See 40 C.F.R. 60.55c(b)(1). The rules do not define the term "representative operating conditions." However, EPA's National Stack Testing Guidance suggests that such conditions: (1) represent the range of conditions under which the facility expects to operate (regardless of the frequency of the conditions); and (2) are likely to most challenge the emissions control measures of the facility (but without creating an unsafe condition). Clean Air Act National Stack Testing Guidance at 14. This guidance further defines "representative" as "normal" as it states that "The MACT program further defines representative performance as normal operating conditions" and again when describing the performances test conditions as described above to be "under...those representative (normal) conditions...." Id.

Properly conducted, performance tests are, indeed, a reliable measure of compliance at a given point in time with the relevant standard. However, such tests typically should not be expected to reveal the true range of variability in operating conditions because sources strive to maintain rigorous, yet consistent, operating conditions during tests, between testing runs within a given testing session, and between testing sessions. As indicated by the Stack Testing Guidance, the goal of performance testing is to challenge the applicable control device or control measure to assure that compliance will be maintained under rigorous conditions. Variable operations during testing are inconsistent with the purpose and intent of such testing.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 34

Comment: EPA does not have long term CO CEMS data for oil fired boilers in support of this rule or for the proposed Boiler MACT rule. This is a major omission, since liquid fired boilers present additional complexity over load range due to fuel atomization requirements. Lower firing rates decrease velocities through oil atomizers and fuel/atomizing steam or air pressures typically are lower at low firing rates. Fuel atomization, as well as fuel/air mixing variations over load, contribute to increased CO emissions over the firing rate. Reference the following chart showing O2 and CO measured with a portable analyzer for a watertube boiler retrofit with a new Low NOx Burner installed in 2006 firing low sulfur No.6 Oil.[SEE SUBMITTAL FOR CHART LABELLED FIGURE 1] The key point is the variation in CO over load for a well-tuned boiler as well as the considerably higher CO emission rate than proposed. Recognize there is no reasonable method to reduce CO without negatively impacting unit efficiency (increasing excess air) and even then there is no assurance the proposed limit can ever be reached. In this example, 0% firing rate is for the unit operating at minimum fire condition.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 41

Comment: EPA Failed To Consider Emissions During Startups And Shutdowns. As highlighted above, we do not agree with EPA's statement in the preamble that it has taken startup and shutdown periods into account when setting the proposed standards.[75 Fed. Reg. 31901] The data used to set the proposed limits fail to account for the dynamic conditions and variable emissions occurring during startup and shutdown episodes because the limits are being set using data only from stack tests conducted under normal operating conditions. EPA also states that the proposed averaging periods are adequate to cover these periods because the Agency is proposing daily and monthly averages. There are no proposed standards that are based on monthly averages, although we recommend that if EPA retains a numerical CO standard and requires CO CEMS for compliance, 30 day rolling averages are appropriate. EPA references data collected under the major source rulemaking that it states indicates "startups and shutdowns will not affect

the achievability of the standard." We respectfully disagree that startups and shutdowns will not affect a unit's ability to comply with a CO standard.

Examination of the data in the emissions database shows that CO emissions vary with load and can vary quite a bit over a 30-day period. The following graph represents the CO data from biomass boiler PB-44 at Facility TXDibollTemple-Inland plotted against the steam data. [SEE SUBMITTAL FOR GRAPH]

This graph shows that EPA's statement in the preamble that CO does not vary with load and no adjustment is needed for CO emissions variability for load [75 Fed. Reg. 32024] is in accurate. In fact, the MACT floor memo states that the 2 biomass boilers for which EPA gathered 30-day CO CEMS data show higher CO emissions at lower loads. It is improper to exclude the data for the Domtar Arkansas boiler from the discussion just because it was burning a material that may be defined as "solid waste"; the unit is still operating as a biomass boiler and the data can be used with the Diboll data to show a trend: CO emissions are higher at low loads. Data obtained during periods of SSM also should not be excluded from any analysis of 30-day CO data because EPA has proposed that the CO limit must be met at all times, even during periods of SSM. Therefore, EPA must include and consider any emissions data from these periods, especially from a top performing boiler like the Diboll boiler, in floor setting. This discussion ignores for the moment that ACC strongly recommends that startup, shutdown, and malfunction periods should be addressed through work or management practices, using unit-specific SSM plans to minimize potential HAP emissions during those periods.

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 31

Comment: It is inappropriate to set daily average CO limits that must be met at all times on 3-run stack tests that were likely conducted near full load conditions and at steady state operation. This method of establishing a standard does not take into account the variability of CO emissions over operating loads. Even EPA acknowledges this fact in the proposed Boiler MACT preamble at 75 Fed. Reg. 32021: "We believe that single short term stack test data (typically a few hours) are probably not indicative of long term emissions performance, and so are not the best indicators of performance over time."

Response: See preamble for discussion of load variability, revised final standards for CO, changes to limits for PM, CO and Hg, and work practice standards for periods of startup, shutdown, and malfunction.

MACT Floor: Methodology : Fuel Analysis Variability

Commenter Name: N/A
Commenter Affiliation: N/A
Document Control Number: EPA-HQ-OAR-2006-0790-0067.1
Comment Excerpt Number: 3

Comment: The proposed NESHAP also states that there was no coal analysis available for the two sources that were sampled so the variability of mercury in coal could not be considered. The table below summarizes the variation in mercury content of various types of coal[See submittal for table provided by commenter]. These samples were collected from coal fired boilers between 2003 and 2006. The table includes three types of coal: Eastern Bituminous, Powder River Basin, and Texas Lignite. There is considerable variation in the mercury content between the three types of coal, and there is also considerable variation between various sources that use the same type of coal. Overall, the average mercury content of these coal samples is 10.5x10-6 lb/MMBtu with a standard deviation of 7.1x10-6 lb/MMBtu. Since the standard deviation of mercury in coal is more than double the proposed mercury emission limit, it is unlikely that the 2 sources are representative of the best 12% of sources.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Margaret E. Sheehan
Commenter Affiliation: Energy Justice Network
Document Control Number: EPA-HQ-OAR-2006-0790-1053.1
Comment Excerpt Number: 3

Comment: An additional reason that annual and/or quarterly testing for mercury emissions will not provide accurate data about the actual day-to-day emissions is because emissions can vary by type of fuel used. According to the EPA, the formation of fuel-dependent HAP (hazardous air pollutants), including mercury, is dependent upon the composition of t he fuel.Biomass plants mix fuels day-to-day and over time, particularly those burning construction, demolition and disaster debris and those co-firing different types of biomass fuels or wastes, where the fuel mix may vary depending on market conditions. The fact that biomass facilities do not necessarily burn the same materials on a day-to-day basis is reflected in the EPA's definition of biomass that includes many types of materials. Each fuel source (i.e. animal litter, trees, etc.) has different constituents. Some biomass plants burn poultry litter, which is included in the EPA's definition

of biomass, and which contains mercury. [See Reference 11 in submittal.] Mercury is expected to be present in wood in trace amounts attributable to root uptake from soil and deposition of airborne mercury to leaves, buds and bark. [See Reference 12 in submittal.] Some waste wood may contain mercury or other metals in paints applied to their surfaces. Id. The same fuel can also vary by the treatment it has been given. For example, if pesticides and herbicides are used on the agricultural wastes, the emissions will be different than for agricultural wastes without herbicides and pesticides.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Steven D. Swanson
Commenter Affiliation: Swanson Group, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1241
Comment Excerpt Number: 5

Comment: The proposed CO limit is so low that it is likely unachievable and in no way reflects the variability of boilers and biomass fuel sources in the real world. Given how low the CO limit is, experts in our industry seriously question how the EPA collected its data on the average performance of the top 12% of boilers in the United States. To this point, biomass fuel is a renewable resource that varies widely in its qualities, including type, moisture content, size and other variables.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 5

Comment: EPA's methodology does not estimate fuel-related variability for Hg for the new or existing coal-fired subcategories. EPA's analysis suggests that there was insufficient data from which to derive fuel-related variability factors. However, this does not obviate the need to address such variability in setting emissions standards for these subcategories. If such data is lacking, EPA is required to obtain the necessary data to "fill in the gaps", otherwise the proposed standards are technically flawed.

Assuming EPA can acquire the necessary data to develop fuel-related variability factors; RMB recommends calculating fuel variability adjustment based on the fuel HAP content observed during the emissions test and the maximum fuel HAP concentration obtained from all fuel sampling data for that HAP and fuel type from all other sources within the MACT floor pool. Unit-specific variability factors (Kfuel) can be calculated based on the ratio of the average fuel HAP concentration (Ctest) observed during the test to Cmax as expressed in the following equation: Kfuel = Cmax / Ctest..
RMB notes that the same value of Cmax for each HAP should be applied in the evaluation of emissions standards for both new and existing units since same fuel related variability for each fuel type applies regardless. In fact, notwithstanding the recent Brick MACT decision, one could make a case that Cmax should be based on all of the fuel sampling data available from the ICR for each fuel type and not only those data within the MACT floor.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Ashley B. Peterson
Commenter Affiliation: American Meat Institute
Document Control Number: EPA-HQ-OAR-2006-0790-1486.1
Comment Excerpt Number: 5

Comment: EPA must factor into the Boiler MACT the variability in operations, fuels, designs, and testing performance across many types of boilers.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO

Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 12

Comment: In addition to its lack of data and inappropriate use of data as indicated above, EPA also failed to conduct fuel sampling and analysis for boilers in top 12%. Instead, EPA relied on the 99% upper prediction limit (UPL) only and did not consider additional variability such as that related to highly variable fuel quality. This approach is arbitrary and does not address limits in data and assessment methodology. In setting the coal boiler mercury emission limit, EPA failed to collect any fuel variability data to supplement its analysis. For a discussion of fuel variability, please refer to CIBO's comments on the Boiler MACT Proposed Rule. [See DCN: 2006-0790-1783.2 for related comments.] In addition to those comments, if EPA does not adopt a work practices standard for mercury, it should revisit the floor setting process and take coal mercury content in to account when establishing standards using available data indicative of fuels area source units burn.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 18

Comment: EPA takes the result of its 99th percentile UPL calculation and applies a second variability factor, what it styles as a "fuel variability factor" to determine the overall variability to apply to a "best performing unit." This constitutes double counting and should not be permitted. [Footnote: EPA also contemplated separate "load" variability but ultimately concluded that this variability was incorporated in the test-to-test variability of sources. We suggest that the same result should apply to consideration of fuel variability.] This double counting occurs because fuel variability is part of, and in many instances the major part of, the test-to-test variability that forms the basis of the 99th percentile UPL calculation.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM

Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 9

Comment: The HCl and Hg limits do not account for fuel variability. The NESCAUM states recommend that EPA revise these numbers to account for these issues.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 18

Comment: Seasonal variability in the quality of wood fuels (particularly with regards to moisture content) also results in variable CO emissions from wood fired units. Some of the variability is due to moisture content in the fuel and some is due to unit load rates. Lower loads and higher moisture content results in higher CO levels and more variability."[Carbon Monoxide Variability in Maine Wood Fired Boilers; Maine Department of Environmental Protection; Report to Jim Eddinger, EPA, February, 2010]

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 50

Comment: The testing information in the database is based on performance tests that only capture a moment in time. Long term variability due to factors like changing load demand and the effect of seasonality on biomass fuel moisture are not accounted for in the testing data despite

the fact that these are important factors affecting variability in CO emissions. For instance, in a letter provided to EPA by the Maine Department of Environmental Protection (MDEP, See Appendix 3), a tremendous amount of variability in CO emissions from well controlled and highly regulated wood fired boilers was noted. We have attached in Appendix 3 data provided by MDEP and seasonality data from area source boilers in Michigan that have CO CEMS (See Appendix 4 of the submittal).

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 18

Comment: EPA should use alternative approaches in the Area Source Boiler MACT to address boiler efficiency at biomass-fired boilers. Ethan Allen does not believe that CO emissions are an adequate surrogate for gauging boiler efficiency of biomass-fired boilers, particularly those boilers firing wood and bark. Biomass-fired boilers like those used by Ethan Allen have widely varying emissions of CO depending on the compositional characteristics of the fuel being burned (e.g., moisture content, density, particle size). Because biomass does not have a constant or otherwise predictable heating value or emissions profile, unlike coal and other fossil fuels, using emissions to evaluate the efficiency of these boilers is not the correct approach. Simply put, biomass-fired boilers cannot be and should not be regulated in the same way as coal and other fossil fuel-fired boilers.

EPA must recognize that biomass, as a category of fuel, is highly variable, and almost as variable are the different boilers and combustion techniques that use biomass as a fuel. This is particularly true even with respect to the fleet of wood-fired boilers that Ethan Allen employs at its various facilities. Fundamentally, fossil fuels and biomass fuels should not be regulated in the same way. And while EPA has based it proposed controls for biomass-fired boilers on emissions data taken from a number, albeit limited, of biomass-fired units, the agency's basic approach to regulating emissions from these units treats biomass no differently than fossil fuel. As such, EPA makes assumptions about combustion variability, system controls and combustion methods that will have a profound effect upon the use of a renewable natural resource with great potential for future expansion. These effects are only magnified in light of EPA's use of a limited dataset.

This is why it is so critical for EPA to base any regulation of emissions from biomass-fired boilers on a sufficient sample size for each combustion fuel type. One-size regulation will not fit all, nor should it.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 19

Comment: With respect to biomass combustion, regulations should be focused on the methods for controlling wood combustion rather than end-of-pipe restrictions. Instead, more emphasis should be placed on operator training. This is because there is a big difference between the assumptions made in the regulations regarding combustion and real world application. For example, the theoretical weight of air required to burn one pound of fuel at 20 percent moisture with 20 percent excess air would require approximately 5.7 pounds of air. A boiler requiring 2000 pounds of fuel per hour would require nearly 141,300 cubic feet of air (2354 CFM). In the "real world," however, there must always be more air supplied to the combustion process than the theoretical air requirements because there are no "perfect combustion chambers." For biomass-fired boilers this is an extremely important variable because few fireboxes have the same internal shape or features. Some flexibility is needed to maintain the correct air/fuel ratio for all operating conditions, and this requires operators to have a good grasp of the dynamics of specific boiler operations and the ability to constantly adjust the air being introduced with the fuel. Too much air means inefficient combustion, too little means too much carbon monoxide and particulate carryover. The ability to react to the combustion process with variations in wood moisture is of great importance. This does not mean that wood fuel is less efficient than other fuels but rather that it is very different from fossil fuels and that regulations should take these differences specifically into account.

The EPA's proposed regulations do not recognize the difference between biomass and fossil fuels or the different requirements needed to combust them efficiently. Nor do the proposed regulations acknowledge or account for the great variability among biomass-based fuels and the diversity of the systems and combustion techniques captured within the larger biomass-fired boiler category. Failure to understand and address these differences will needlessly curtail future

opportunities to innovate and expand the use of clean, effective biomass-based energy systems in the United States.

To illustrate this point, Ethan Allen notes that direct CO emissions readings for at least one of its biomass-fired boilers likely would exceed the proposed CO standard. However, this boiler continues to meet the boiler efficiency requirements of the State of operation. For the reasons stated above, EPA should consider developing an alternative methodology for measuring the efficiency of biomass-fired boilers. In recognition of the unique and diverse dynamics of biomass-fired boiler operations (i.e., relative to fuel variety, boiler type and boiler size), Ethan Allen suggests that EPA also may consider requiring periodic operator training in order to ensure that boilers are being run as efficiently as possible in lieu of a CO emission limit.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 19

Comment: The proposed biomass emission limits are exceedingly low because of errors in standard-setting discussed above. The PM limit for biomass units does not account for fuel-related variability. PM emissions are directly related to the ash content of a fuel. The ash content of unadulterated wood is highly variable. Similarly, EPA does not appear to have made any fuel-related adjustments for varying levels of chlorides or Hg in biomass.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council

Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 19

Comment: EPA Failed To Properly Consider The Full Range Of Variables Potentially Impacting Emissions. EPA is correct to incorporate variability analysis into the MACT floor analysis in this rulemaking, but EPA's analysis does not appear to reflect the full range of variables potentially impacting emissions. Variability in boilers depends on price fluctuations and changing availability of various fuel types (both between fuel categories and between types of the same fuel, e.g., No. 2 oil and No. 6 oil), as well as a host of other operating and load conditions. While EPA evaluated some of these variables, it did not evaluate a sufficient number to provide "an accurate picture of the relevant sources' actual performance." Cement Kiln Recycling Coalition, 255 F.3d at 862 ((D.C. Cir. 2001) (emphasis in original). For example, EPA does not have fuel quality data for all top performers, nor is it clear that has EPA made available all of the fuel quality data that it received for top performers. As a result, commenters cannot review the data to discern the relationship between the fuel quality variability for each top performer and the emissions data.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 22

Comment: EPA arbitrarily and capriciously failed to properly consider the full range of variables potentially impacting emissions.

EPA is correct to incorporate variability analysis into the MACT floor analysis in this rulemaking, but EPA's analysis does not appear to reflect the full range of variables potentially impacting emissions. Variability in boilers depends on price fluctuations and changing availability of various fuel types (both between fuel categories and between types of the same fuel, e.g., No. 2 oil and No. 6 oil), as well as a host of other operating and load conditions. While EPA evaluated some of these variables, it did not evaluate a sufficient number to provide "an accurate picture of the relevant sources' actual performance." Cement Kiln Recycling Coalition, 255 F.3d at 862 (emphasis in original). For example, EPA does not have fuel quality data for all top performers, nor is it clear that has EPA made available all of the fuel quality data that it received for top performers. As a result, commenters cannot review the data to discern the relationship between the fuel quality variability for each top performer and the emissions data.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 22

Comment: EPA Must Consider Fuel Mercury Content Variability In Establishing Proposed Limits. EPA has also inappropriately ignored fuel mercury content variability as a parameter that influences emissions under this rule, despite establishing fuel pollutant content variability factors under the Boiler MACT rule.[75 Fed. Reg. 32021] As EPA is using some data from the proposed Boiler MACT rule to set limits under this area source rule, EPA should also acknowledge similar fuel variability factors the Agency acknowledged when developing the proposed MACT limits, especially when EPA is using such a limited amount of test data to establish the proposed limits. The proposed coal mercury limit should be adjusted to account for the full range of coal mercury content that can be expected by a source located anywhere in the USA, recognizing inherent limitations to availability and shipping. The US Geological Survey has a coal quality database that can be examined for this information.[http://energy.er.usgs.gov/products/databases/CoalQual/index.htm]

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 23

Comment: While EPA did consider a wider range of units for variability in coal, variability in coal quality occurs within individual seams and within one unit's supply, which may come from different sources, and EPA's testing did not account for this difference in fuel quality. If considering variability in fuel quality across different types of fuel within a single subcategory is too difficult, that may be an indication that EPA should subcategorize based on fuel types down

to specific fuels and materials. Additional subcategorizing within fuel groups may be particularly warranted here, given that EPA has (rightfully) ruled out fuel switching, which would in any event be impossible for many regulated sources. Section 112(d)(1) authorizes the Administrator to "distinguish among classes, types and sizes of sources within a category or subcategory," and the Agency's discretion in identifying these subcategories quite broad, perhaps simply "limited by the usual ideas of reasonableness." See Brick MACT, 479 F.3d at 885 (Williams, J., concurring).

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 24

Comment: EPA should use a national variability factor for mercury in coal.

In its floor analysis, EPA only accounts for local, not national, variability in mercury levels in coal. As with sulfur levels, mercury levels vary widely across the country. Failure to account for this fact is unfair to companies that operate in regions of the country that do not have access to low- mercury coal. It is neither economically feasible nor environmentally responsible to transport coal long distances when it is available locally. To solve this problem, EPA should use a national rather than local, variability factor for mercury in coal. It should be easy for EPA to develop this factor given the data already in its possession.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1

Comment Excerpt Number: 24

Comment: The overall lack of data magnifies another problem in EPA's approach to setting the MACT floors: EPA's analysis identifies a number of higher emissions data points that the Agency has exclude as "outliers" without providing sufficient explanation. In addition, EPA appears to have discounted "outliers" for fuel quality but not for emissions data. Without some explanation from the Agency, it is impossible for the public to determine whether this discrepancy in treatment of data is justified. For example, EPA excluded 25% of the analyzed sources in the biomass fuel category in its mercury fuel analysis variability factor outlier analysis without explaining how fully one-quarter of the sources can be statistical outliers. See ERG MACT Floor Analysis, Appendix A-1a. Even the best performing sources occasionally have spikes. Mossville Environmental Action Now v. EPA, 370 F.3d 1232, 1242 (D.C. Cir. 2004). The D.C. Circuit has held that an accurate picture of the lowest emission limitation that has been "achieved in practice" refers to the performance of the source "under the worst foreseeable circumstances." Sierra Club v. EPA, 167 F.3d 658, 664 (D.C. Cir. 1999). In Sierra Club, the D.C. Circuit said that where a statute requires that a standard be "achievable," it must be achievable "under most adverse circumstances which can reasonably be expected to recur." Id. (citing National Lime Ass'n, 627 F.2d at 431 n. 46). "The same principle should apply when a standard is to be derived from the operating characteristics of a particular unit." Id. Again, without some explanation for why EPA has elected to exclude outliers for fuel variability, regulated sources have no way to determine whether the emissions limits proposed by EPA are achievable considering the variability in fuel quality.

As a result, EPA has calculated a multiplier factor that has an extremely low variability impact versus the 99% UPL that simply fails to account for all variables and fuel quality variability present in the top 12% best-performing units across all the subcategories, and certainly across all regulated units.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 26

Comment: CO values below 100 ppm have been achieved in the past by Wellons equipment but they were achieved with a Wellons technician supervising the operation of the system coupled with optimal fuel conditions. The truth behind wood fired combustion chambers is that we are not always dealing with a normalised and homogenous fuel such as oil or natural gas. Changes in fuel density, particle size and moisture content will change the operating conditions of the boiler.

Although a well trained operator can tune the energy system in order to compensate for these changes, guaranteeing CO values below 100 ppm year round on a consistent basis would be very challenging if not to say impossible to achieve. This is especially true for the small systems targeted by the area source rules. When analysing the data in order to determine these limits the EPA must be careful to distinguish what is achievable through optimum conditions and what the system will actually produce throughout the year during normal operation. In our opinion an average CO level of 300 ppm would be more reasonable and would give some margin for the fuel variability and operating conditions mentioned above.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 39

Comment: The new source limits for mercury for coal-fired boilers should take fuel variability into account in order to accommodate regional fuel supplies and not restrict new boilers to a certain type of coal.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: Stephen E. Woock
Commenter Affiliation: Weyerhaeuser Company
Document Control Number: EPA-HQ-OAR-2006-0790-1984.1
Comment Excerpt Number: 3

Comment: EPA creates disincentives for biomass use at area sources because the proposed CO emission limits for existing and new sources are infeasible for most boilers to meet. The stringent CO limits proposed for both existing and new biomass boilers can only be reliably met, if at all, under dry fuel conditions (biomass moisture content is influenced by weather conditions) and when boilers are operated at relatively steady rates. Wet fuels, along with design and operational characteristics of biomass boilers can lead to higher CO emissions than EPA's proposed limits acknowledge.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 10

Comment: Affect on Fuel Type and Moisture Content on CO variability

SAPPI - Somerset provided data (Figure #13) for June 2008 which includes where the boiler burned fuel oil at various levels. The average CO emission rate was 180 ppm, varying from 125 to 297 ppm, with the fuel mix containing 0-60% fuel oil. When fuel oil was increased to a 100% of the fuel mix, the average CO average dropped to 34 ppm and varied from 21 to 53 ppm. Verso Bucksport provided additional data showing that drier fuels result in better control of CO. Verso Bucksport provided data for two months, April 2008 and July 2008. In April, biomass composed 38% of the fuel mix, while in July, biomass contributed to 70.8% of the fuel mix (Figure #14). The CO and NOx emissions were less variable in April than in July 2008. Verso's data also illustrates the challenge of controlling NOx and CO. Although, Verso is equipped with low NOx burners, Verso experienced higher NOx emissions and lower CO emissions when drier fuels were being fired. Table 3 provides fuel mix details for April and July 2008.

Another reason for the change in CO maybe related to the difference in how the fuels are supplied and fired in the boiler. In April, over half of the heat input was obtained from fuel burned in suspension above the grate. This is believed to provide an afterburner effect to finish the combustion of the incompletely combusted gases. Bucksport's addition of these fuels in their fuel mix helps results in low CO emissions at this facility.

Response: See preamble for discussion of load variability.

See “Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source” for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits’ achievability and adequacy as a surrogate for POM.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 11

Comment: Affect on Fuel Type and Moisture Content on CO variability

SAPPI - Somerset provided data (Figure #13) for June 2008 which includes where the boiler burned fuel oil at various levels. The average CO emission rate was 180 ppm, varying from 125 to 297 ppm, with the fuel mix containing 0-60% fuel oil. When fuel oil was increased to a 100% of the fuel mix, the average CO average dropped to 34 ppm and varied from 21 to 53 ppm. Verso Bucksport provided additional data showing that drier fuels result in better control of CO. Verso Bucksport provided data for two months, April 2008 and July 2008. In April, biomass composed 38% of the fuel mix, while in July, biomass contributed to 70.8% of the fuel mix (Figure #14). The CO and NOx emissions were less variable in April than in July 2008. Verso’s data also illustrates the challenge of controlling NOx and CO. Although, Verso is equipped with low NOx burners, Verso experienced higher NOx emissions and lower CO emissions when drier fuels were being fired. Table 3 provides fuel mix details for April and July 2008.

Another reason for the change in CO maybe related to the difference in how the fuels are supplied and fired in the boiler. In April, over half of the heat input was obtained from fuel burned in suspension above the grate. This is believed to provide an afterburner effect to finish the combustion of the incompletely combusted gases. Bucksport’s addition of these fuels in their fuel mix helps results in low CO emissions at this facility.

Response: See preamble for discussion of load variability.
See “Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source” for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits’ achievability and adequacy as a surrogate for POM.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 12

Comment: Seasonality

Lincoln Pulp and Tissue, and SAPPI — Somerset, provided monthly/seasonal data and Red Shield. Lincoln provided CO data for January, April, June, and October (Figure #15) demonstrating the possible affect of the season and fuel moisture content on CO emissions. For Lincoln, the CO emissions were the lowest in June, suggesting a possible link between biomass moisture and CO emissions. [See submittal for all figures.] Typically, biomass fuel piles are stored outside with the summer months being warmer and drier. This drier fuel should result in lower CO emissions, but this effect can be negated since the reduced steam flow in the summer months can actually increase CO emissions. Seasonal variability because of seasonal fuel content variations and changes in steam load demands is a significant factor in Maine and northern manufacturing facilities contributing to additional CO variability.

SAPPI provided CO and NOx data for April, May, June and July (Figure #16, 17, 18, and 19). Although a decrease in CO was seen between April, when fuel moisture contents were higher, and the following months, this relationship was not seen for the No.2 boiler which has a Selective non-catalytic reduction (SNCR) NOx Control system. On boilers with SNCR, the boiler operators do not have to focus on balancing NOx and CO since the SNCR will keep the NOx under the boiler's emission standard. This allows the operators to concentrate on burning the wood hotter while not exceeding the NOx limit.

Seasonality may play a part in fuel moisture and CO emissions; it was not seen consistently at all facilities partly because of the interactions between fuel content, steam load and NOx control.

Steam Load being lower, such as in the summer months, may also lead to higher CO rates due to the fact the unit had more room for the pyrolized fuel to expand in and less oxygen interaction. The net result is less mixing and more CO.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability, relationship to NOx emissions, and adequacy as a surrogate for POM.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 6

Comment: Examples of errors in the standard setting include adopting PM limits for biomass units that do not account for fuel-related variability. PM emissions are directly related to the ash content of a fuel. The ash content of unadulterated wood is highly variable. Similarly, EPA does not appear to have made any fuel-related adjustments for chlorides or mercury in biomass.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

Commenter Name: John C. deRuyter
Commenter Affiliation: DuPont
Document Control Number: EPA-HQ-OAR-2006-0790-1964.1
Comment Excerpt Number: 8

Comment: It appears that EPA did not allow for fuel variability in establishing any of the area source MACT Floor limits. EPA's standard setting process must recognize the restriction in available fuel supplies to specific facilities due to equipment limitations and fuel availability. Enough latitude in emissions limits must be provided to allow for continued reliable operation with consideration of available fuel supplies.

Additionally, it is critical for EPA to consider the range of fuels that a new unit might actually use when establishing the MACT Floor for new units. While EPA may identify an existing source in its present location that is the best performing similar source, the new boiler limits apply to units that can be located anywhere in the U.S., not only at the location of the best performing similar source. Therefore, it is incumbent on EPA to evaluate the full range of potential fuels that might be used by new sources if located anywhere in the U.S., and not just the variability of fuel for the best performing unit. This level of fuel variability analysis and consideration has not been done by EPA and is a serious omission that directly impacts the achievability of the standard by any new units. EPA must correct this deficiency.

Response: See “Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source” for discussion of fuel variability.
See preamble for discussion of the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 9

Comment: EPA’s methodology does not estimate fuel-related variability for Hg for the new or existing coal-fired subcategories. EPA’s analysis suggests that there was insufficient data from which to derive fuel-related variability factors. However, this does not obviate the need to address such variability in setting emissions standards for these subcategories. If such data is lacking, EPA is required to obtain the necessary data to “fill in the gaps”, otherwise the proposed standards are technically flawed.
Assuming EPA can acquire the necessary data to develop fuel-related variability factors; RMB recommends calculating fuel variability adjustment based on the fuel HAP content observed during the emissions test and the maximum fuel HAP concentration obtained from all fuel sampling data for that HAP and fuel type from all other sources within the MACT floor pool. Unit-specific variability factors (Kfuel) can be calculated based on the ratio of the average fuel HAP concentration (Ctest) observed during the test to Cmax as expressed in the following equation: Kfuel = Cmax / Ctest ..
RMB notes that the same value of Cmax for each HAP should be applied in the evaluation of emissions standards for both new and existing units since same fuel related variability for each fuel type applies regardless. In fact, notwithstanding the recent Brick MACT decision, one could make a case that Cmax should be based on all of the fuel sampling data available from the ICR for each fuel type and not only those data within the MACT floor.

Response: See “Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source” for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Sarah E. Amick
Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 12

Comment: EPA makes no effort to show that the limited data that are available are in any way representative of the population of boilers that will be subject to the rule. Again using the biomass subcategory as an example, the Agency has failed to characterize the wood fired boilers in the database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect HAP emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size. EPA's failure to investigate whether the available data adequately characterize the boilers that will be subject to the Area Source Rule is arbitrary and capricious.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 20

Comment: There are many variables that can drastically affect CO emissions that have not been taken into account in the development of the proposed CO standard. Critical variables include the following:

Fuel mix: Units that fire over 10% biomass are assumed to be biomass units. Emission data from mixed fuel boilers, particularly those that fire biomass in combination with a drier fuel, such as natural gas, should not be compared to a unit firing 100% biomass. It is well known that mixing a drier fuel with green biomass will reduce CO emissions.

Fuel moisture content: The moisture content of the biomass must be considered. A boiler firing dry wood (e.g., wood pellets, kiln dried wood) will have much lower CO emissions than a boiler firing forest-based residues with higher moisture content.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 21

Comment: Compared to gaseous and liquid fossil fuels, solid fuels can exhibit much more variability in their fuel characteristics that can inhibit efficient combustion. Listed below are examples of these differences in their characteristics:

Variable fuel mix, e.g. often residuals from various processes.
Variable heating values and moisture contents.
Variable size distribution.
Higher noncombustible material contamination, e.g. rocks, dirt, metal debris, etc.

Due to the variability of the solid fuel characteristics, combustion efficiency will be affected. As a result, this may lead to elevated CO emission levels, as well as inconsistent CO emission rates throughout the day. However, there are significant economic incentives for the boilers to be operated as efficiently as possible. Therefore, over the course of the day the operation of the boiler will be continuously tuned to account for and accommodate fuel variability as best it can be. For that reason, a daily averaging period would allow for these changes to be properly included in the averaging period, and not be penalized for the short-term effects of making these changes.

All boilers have a rated steam production capacity. This is typically the manufacturer's recommended steam production capacity, often listed as thousands of pounds of steam produced per hour. The decrease of fuel to the boiler will reduce steam production. This activity is commonly referred to as turning down the boiler (from its rated capacity). A measure of the boiler turndown is the inverse of the ratio between the actual steam level and the rated capacity. For example, a boiler operating at 80% of its rated capacity would have a 20% turndown.

Higher CO emissions are a common occurrence with all solid fuel boilers during high turndown operation. The high CO concentrations experienced during high turndown can be explained through combustion fundamentals. Boiler combustion efficiency is a function of three basic elements: (1) maintaining an adequate temperature in the boiler, (2) providing sufficient mixing or turbulence of the combustion air with the fuel, and (3) allowing adequate retention time in the boiler. Changes in the boiler operation that diminish any one or more of these elements may result in incomplete combustion of carbon monoxide. As a consequence, higher CO emissions could result.

Most boilers have the ability to incur some turndown before the combustion elements are adversely affected. However, at some turndown threshold both the temperature and turbulence in

the boiler will be significantly impacted. The amount of turndown that can be achieved in a solid fuel boiler is a function of type of solid fuel burned and the boiler design. Examples of common boiler designs and their CO emission characteristics are provided below.

Fluidized Bed Boilers - Fluidized or bubbling bed boilers have very distinct air turndown constraints. Because a minimum amount of air flow must be maintained to keep the bed fluidized, the air-to-fuel ratio will inhibit the boiler combustion efficiency during high turndown periods.

Suspension Burners - Solid fuel suspension burners have the widest turndown ratios of solid fuel boilers. The air-to-fuel mixing for these burners are similar to those of gas and oil burner. However, these burners can only burn fairly dry, pulverized fuels. They are not suitable for burning high moisture biomass fuels that can be commonly found at forest products facilities.

CO emissions during high boiler turndown periods should not be subject to the CO concentration standard proposed for Subpart DDDDD. Duke Energy requests that the rule be changed such that new boilers would be subject to the CO concentration limit only when operating at greater than 40% of design capacity, and adopt work practice standards that would apply when operating at or below 40% of design capacity. EPA should recognize that there may be 24-hour periods when no CO concentration is accumulated due to extended periods of high boiler turndown.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research
Document Control Number: EPA-HQ-OAR-2006-0790-2140.1
Comment Excerpt Number: 3

Comment: EPA's methodology does not estimate fuel-related variability for Hg for the new or existing coal-fired subcategories. EPA's analysis suggests that there was insufficient data from which to derive fuel-related variability factors. However, this does not obviate the need to address such variability in setting emissions standards for these subcategories. If such data is lacking, EPA is required to obtain the necessary data to "fill in the gaps", otherwise the proposed standards are technically flawed.

Assuming EPA can acquire the necessary data to develop fuel-related variability factors; RMB recommends calculating fuel variability adjustment based on the fuel HAP content observed during the emissions test and the maximum fuel HAP concentration obtained from all fuel sampling data for that HAP and fuel type from all other sources within the MACT floor pool. Unit-specific variability factors (Kfuel) can be calculated based on the ratio of the average fuel HAP concentration (Ctest) observed during the test to Cmax as expressed in the following equation:
Kfuel = Cmax / Ctest..
RMB notes that the same value of Cmax for each HAP should be applied in the evaluation of emissions standards for both new and existing units since same fuel related variability for each fuel type applies regardless. In fact, notwithstanding the recent Brick MACT decision, one could make a case that Cmax should be based on all of the fuel sampling data available from the ICR for each fuel type and not only those data within the MACT floor.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.of data.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2198.1
Comment Excerpt Number: 3

Comment: EPA's methodology does not estimate fuel-related variability for Hg for the new or existing coal-fired subcategories. EPA's analysis suggests that there was insufficient data from which to derive fuel-related variability factors. However, this does not obviate the need to address such variability in setting emissions standards for these subcategories. If such data is lacking, EPA is required to obtain the necessary data to "fill in the gaps", otherwise the proposed standards are technically flawed.

Assuming EPA can acquire the necessary data to develop fuel-related variability factors; RMB recommends calculating fuel variability adjustment based on the fuel HAP content observed during the emissions test and the maximum fuel HAP concentration obtained from all fuel sampling data for that HAP and fuel type from all other sources within the MACT floor pool. Unit-specific variability factors (Kfuel) can be calculated based on the ratio of the average fuel HAP concentration (Ctest) observed during the test to Cmax as expressed in the following equation:

Kfuel = Cmax / Ctest..

RMB notes that the same value of Cmax for each HAP should be applied in the evaluation of emissions standards for both new and existing units since same fuel related variability for each fuel type applies regardless. In fact, notwithstanding the recent Brick MACT decision, one could make a case that Cmax should be based on all of the fuel sampling data available from the ICR for each fuel type and not only those data within the MACT floor.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 5

Comment: Seasonal variability in the quality of wood fuels (particularly with regards to moisture content) also results in variable CO emissions from wood fired units. Some of the variability is due to moisture content in the fuel and some is due to unit load rates. Lower loads and higher moisture content results in higher CO levels and more variability.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: W. Allan Cagnoli
Commenter Affiliation: Hearth, Patio, and Barbecue Association
Document Control Number: EPA-HQ-OAR-2006-0790-1900.1
Comment Excerpt Number: 6

Comment: There is too little information, because EPA has not taken stock of the varieties of combustion design, particularly in the case of biomass boilers below 10 mmBtu/hr. While EPA can guess at an appropriate CO standard for such boilers, it cannot determine that there are technologically feasible ways in actual usage by which such boilers generally can achieve the standard, as section 112(d) requires. And, the resulting PM standard still could be too expensive from a GACT standpoint.

EPA's development of the MACT "floor" for CO for new area source biomass boilers is a prime example. While EPA does have emissions data showing that several area source biomass boilers below 10 mmBtu/hr had, under the tested operating conditions, CO emission levels which were less than 100 ppm, [See generally, TSD. See also Biomass Thermal Energy Council (BTEC), Comments on Proposed Area Source Rules, Docket ID No. EPA-HQ-OAR-2006-0790, at 2 (July 9, 2010) (herein, the "BTEC Comments"). Incidentally, the Thomson Falls, MT wood boiler listed as Rank #3 in the biomass CO MACT analysis in the TSD is in fact a biogas boiler, the fuel for which is produced by a separate Chiptec wood gasifier. Aspen Consulting & Testing, Inc., Particulate Matter, Nitrogen Oxides, and Carbon Monoxide Source Test Report, Bitter Root RC&D Area, Inc., Thompson Falls School District #2, Fuels for Schools Project, at 1 (Report BRT06021) (April 29, 2006). This source does not belong in the biomass boiler category and should be deleted from EPA's analysis.] EPA has no factual basis for thinking that other such small biomass boilers, especially those below 1 mmBtu/hr, generally have some way of achieving those levels given their fundamental design. In a word, EPA has not — and indeed cannot — demonstrate that that the CO emissions data it has are representative for the broad range of designs of such small biomass boilers, as required by the rationality and achievability principles underpinning section 112(d). As illustrated below, the design of such boilers, including fuel type, varies greatly. Just the fuels are myriad: stick wood, wood chips, sawdust, pellets, corn, stover, grasses, forest residues, yard waste, paper mill sludge, etc. Fuel conditions, e.g., moisture content, vary greatly as well. Also, designs for small biomass boilers vary greatly with respect to the fuel feeding system, heating demands, temperature control, combustion technology, heat transfer systems, parameter monitoring, and automation.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 8

Comment: In many cases the data included in the MACT floor is not the result of a control technology performance, it is simply a reflection of the materials contained in the fuel being combusted at the time of the test. For instance, the level of metals in wood fuel varies depending upon where the tree was growing. The best performing units are not best performing because of a control technology, but due to the fact that they were burning the cleanest fuel at the time of the

test. Although it is clear that emissions will vary dependent upon the natural changes in the wood fuel, EPA has not given adequate consideration to this variability in its analysis.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 10

Comment: EPA should be well aware that industrial boilers vary in their design. Output (and emissions) from these boilers also can vary widely by season according to the location and variations in production levels. Moreover, at least with respect to biomass-fired boilers, EPA also should be fully aware that different types of wood burn differently and that emissions of CO will vary by the density and moisture content, among other things, of the combusted wood fuel.

Response: See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.

MACT Floor: Methodology: Data Exemptions

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 10

Comment: EPA MAY NOT IGNORE EMISSIONS DATA MAINTAINED BY STATE AND LOCAL PERMITTING AUTHORITIES

EPA acknowledges that it did not use any of the emission test reports in state and local permit authority files and provided to it in the summer of 2008 (in the NACAA Model Rule database) in establishing its proposed MACT floors.18 Instead, EPA based its calculations entirely on its "new" data set that incorporates data collected by emission sources. We believe this is a clear error that will jeopardize the final rule. We acknowledge that the subsequently collected data fills gaps that existed in the NACAA data set and do not object to EPA's use of this additional information. Incorporation of these test results in EPA's MACT floor calculations is not likely to change the calculated floor for many subcategories, but, especially considering the proposed adoption of many small subcategories, this cannot be known or assumed to be true. Exclusion of reference test results merely because they were maintained in the files of the regulatory authorities rather than those subject to regulation is arbitrary.

NACAA believes that its data set is more objective than the subsequent industry testing, since the NACAA testing was often supervised by state or local inspectors and was conducted without knowledge by the source (or the permitting authority) that the data would be used in developing emission limitations. In contrast, testing conducted as part of EPA's more recent information-gathering activities was almost universally conducted by sources who understood that it was in their interest to obtain high emission levels during the testing and was conducted without oversight by federal, state or local authorities. The regulated community was allowed to define the operating parameters for the tests. [Footnote: We do not assert that there was widespread "gaming" by industry, only that there is no reason to believe that the more recent data is more credible than the information submitted by NACAA. We do note that the Office of Management and Budget (OMB) was extensively involved in the development of the test plan and that NACAA's comments respecting the test plan were largely ignored by EPA and OMB, while industry requests were accommodated. NACAA hereby incorporates its comments to EPA and OMB on the proposed testing in this comment and the administrative record in this matter.] More importantly, the EPA data includes numerous entries where a source was combusting different fuel mixes, which NACAA believes will be difficult to translate into enforceable MACT limitations. While NACAA and EPA data sets often produce generally consistent results, EPA is not free to exclude from the calculation of the top performing 12 percent testing conducted for other compliance purposes as required by state and local permit officials. EPA has asserted that it does not need to consider the information provided to it by NACAA since industry sources "should" have provided this information. This assumption has not been shown to be correct and is insufficient given EPA's obligation to consider all emissions data and the relative ease of determining whether there are any NACAA-provided test results that should be included in the evaluation of the top 12 percent of performing units or any variability analyses that are conducted.

NACAA does not assert that the MACT floor calculations should be based on the data it provided to EPA in lieu of that subsequently collected by EPA, just that EPA must consider all of the emissions data available to it and not ignore the NACAA-provided information. Indeed, the EPA data fills significant gaps in needed knowledge of mercury, HCl and dioxin/furan information.

Response: See preamble for response.

Commenter Name: Chris V. Isaacson
Commenter Affiliation: Alabama Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2060
Comment Excerpt Number: 9

Comment: The emissions dataset includes obvious errors that, if fixed, would have a significant impact on EPA's determination of the MACT floor and MACT standards. For example, several of the boilers used to determine the MACT floors have rated capacities of less than 10 mmBtu/hr. However, these units would not be subject to numeric emissions limitations under the Area Source Rule. Because EPA must determine existing source MACT standards based on emissions data from sources in the category or subcategory being regulated, emissions data from the small boilers cannot be used in setting emissions standards under the Area Source Rule.

Response: Please see the preamble for discussion addressing commenters' concerns about the dataset used in MACT floor analyses.

Commenter Name: Bill Thomas
Commenter Affiliation: Shuqualak Lumber Company
Document Control Number: EPA-HQ-OAR-2006-0790-1948.1
Comment Excerpt Number: 5

Comment: We are also concerned that EPA's survey that produced the new MACT floor did not include boilers or process heaters from non-major HAP facilities. We are aware of several boilers in our area that fire similar (biomass) fuels to ours, have similar capacities, and operate in the same industry, but were not included in EPA's survey. It seems that leaving those facilities out further biases the results of EPA's survey by only collecting data from the "best" and "biggest" rather than the typical in the category.

Response: See preamble for response.

MACT Floor: Results: Existing Units

Commenter Name: Allan Muller
Commenter Affiliation: Green Deleware
Document Control Number: EPA-HQ-OAR-2006-0790-1104
Comment Excerpt Number: 4

Comment: Many existing facilities have high emissions and cause local air quality problems. One example of this is the "Fibrominn" poultry waste burner in Benson, Minnesota, identified in an EPA data base as a "significant chronic violator" and a target of state enforcement actions.

Therefore, at a bare minimum, the EPA should adopt the most stringent alternatives offered in the Federal Register notices for the subject dockets.

Response: See preamble for discussion of MACT floor methodologies, achievability of limits and where EPA determined work practice standards were appropriate.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 15

Comment: For units between 1 and 10 mmBtu/hr, NESCAUM recommends that EPA set emission limits as follows: Biomass units: PM limit of 0.08 lb/mmBtu and a CO limit of 100 ppm – this emission performance level has been achieved by several units without installation of an electrostatic precipitator (ESP) or baghouse; Oil units (firing fuels other than 15 ppm #2 distillate): PM limit of 0.03 lb/mmBtu and a CO limit of 10 ppm.

We further recommend that EPA require compliance testing when control equipment is installed, as well as annual tune-ups thereafter.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for a discussion of achievability of limits and where EPA determined work practice standards were appropriate.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 24

Comment: For existing boilers, Detroit Stoker's comments indicated that a typical boiler installed prior to 1985, a warranty could have been given for 450 to 700 PPM for ideal operating conditions. However, they note that many operating conditions, including some that might result in other desirable environmental impacts, like reduced NOx, could easily result in emissions exceeding 2000 PPM. 1985 appears to be a good modal point for determining technology in America's existing, installed boiler capacity. According to a document filed in the docket for this rule, The Annual Sales Data Report of the American Boiler Manufacturer's Association, a large

majority of the installed boiler capacity was installed prior to the development of the MACT rules and the 1985 circa existing source example represents a relevant view of the capabilities of that installed capacity. Clearly, if the proposed limits chosen for both new and existing area sources are not even in the range of the emission guarantees and the technological capabilities for these units, the limits are unachievable.

Additionally, we would like to refer to comments filed by Metso Power, a company with extensive biomass boiler technology experience. Metso also challenges the achievability of this proposal. Metso included a relevant analysis by the Energy & Environment Research Center (EERC) in their comments.

Further, to this point, state regulatory authorities have been evaluating CO control capabilities for decades and are continuously updating their technology evaluations. The state of Wisconsin has published guidance on the type of Good Wood Combustion control that EPA could consider in their evaluation of work practice control for GACT in this rulemaking. The Texas Commission on Environmental Quality's presumptive BACT for oil fired boilers greater than 40 MMBTU/hr. is 50 ppmvd at 3% O2.38 A review of EPA's RACT/BACT/LAER Clearinghouse database for oil-fired boilers less than 100 MMBTU/hr. indicates that a 100 ppm CO BACT limit is appropriate. If levels of 2 ppm are not being guaranteed by boiler and burner manufacturers or being required by states as BACT in PSD analyses, then it is not appropriate to require 2 ppm CO as a GACT limit in this rule. EPA should re-evaluate the CO limit being proposed as GACT and set the limit based on levels recommended by states and manufacturers (e.g., 100 ppm). [See submission for references]

Similarly, a recent BACT/PSD analysis, from December 2009, for the Hertford Renewable Energy Plant in North Carolina (NC Permit # 09947R00) resulted in an approved PSD permit that anticipated a potential one hour impact of over 1600 PPM and an eight hour impact of over 400 PPM (See Appendix 6). The permit is based on good combustion practices, explicitly rejecting catalytic oxidation control for CO and recognizes long term variability by setting an annual emission limit based on a limit of 940 tons/year or 0.25 lb./MMBTU, on average at full capacity. For this 858 MMBTU/hr. capacity plant, the average emission level at full operation at the limit would be approximately 360 PPM. Though nominally this unit would fall into the 'existing' source bin, it represents recent best control technology judgments by state permit authorities. Clearly, if the proposed limits chosen for both new and existing area sources are not even in the range of the emission limits for a recent BACT/PSD unit, the limits are unachievable.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for a discussion of achievability of limits and where EPA determined work practice standards were appropriate.

Commenter Name: Winslow Sargeant

Commenter Affiliation: U.S. Small Business Administration
Document Control Number: EPA-HQ-OAR-2006-0790-1950.1
Comment Excerpt Number: 3

Comment: Advocacy believes that EPA's proposed boiler rules impose emission standards that are virtually impossible for most existing facilities to meet, and are not based on representative boiler performance data.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for a discussion of achievability of limits and where EPA determined work practice standards were appropriate.

MACT Floor: Results: Existing Coal

Commenter Name: N/A
Commenter Affiliation: N/A
Document Control Number: EPA-HQ-OAR-2006-0790-0067.1
Comment Excerpt Number: 2

Comment: The USEPA proposes to set a mercury emission limit of 3.0 x 10-6 lb/MMBtu for coal fired boiler area sources. The MACT limit proposed in the NESHAP is based on measurements from only 2 sources. These are the best 12% out of 9 total sources measured as required by the MACT standard (Federal Register, June 4, 2010). This is not an adequate number of sources on which to base a national emission limit when there are a total of 3,710 existing coal fired sources.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 32

Comment: EPA's proposed rule would set a MACT standard of 3.00 x10-6 lb/MMBtu for mercury emissions from new and existing coal-fired boilers with a heat capacity greater than 10 MMBtu/hr. This proposed standard was increased by approximately 20 percent in the rounding process and thus should be reduced to 2.50 x10-6 lb/MMBtu, in accordance with the comments outlined above, but is within a reasonable range of that limit and is otherwise feasible. The CO

limit for coal-fired boilers appears to be an artifact of the limited number of test results employed in the MACT floor analysis and does not reflect a MACT level of performance for these units.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 37

Comment: EPA has inappropriately developed a coal boiler mercury emission limit using very limited data and has not collected any fuel variability data to supplement its analysis. EPA has assumed that fabric filters will be adequate to meet the proposed limit. However, sources could be burning coal with sufficiently variable mercury content to make carbon injection necessary as a control measure, which would increase the cost of compliance. EPA only gathered mercury emissions data from 9 coal boilers out of the estimated 3,710 that will be regulated by this rule and they have gathered no fuel variability data for these boilers. An analysis of EPA's database for boilers at major sources[EPA-HQ-OAR-2002-0058-0789] shows that there are over 100 boilers in the coal subcategory with emissions greater than the proposed area source limit of 3E-06 lb Hg/MMBtu and over 40 of these units are equipped with fabric filters. As EPA has acknowledged that mercury is a fuel-based HAP, it is reasonable to assume that there are also coal-fired boilers at area sources that will not meet the proposed mercury limits with a fabric filter alone. Therefore, if EPA retains a numerical emission limit for mercury under this rule, the appropriate requirement for GACT should be re-evaluated, taking coal mercury content variability across the entire USA and generally available controls into account. Additional subcategorization based on fuel type may also be appropriate depending on the approach taken.

Response: See response to comment EPA-HQ-OAR-2006-0790-0067.1, excerpt 2 for adequacy of data for existing coal-fired units.

See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Lewis F. Gossett
Commenter Affiliation: South Carolina Manufacturers Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-2196.1
Comment Excerpt Number: 3

Comment: SCMA does not believe EPA can justify the proposed mercury limit with just data from 9 sources, and then only 2 representing the 12% best controlled sources, when there are hundreds or maybe thousands of coal burning area source boilers in the U.S. Lowering the mercury limit from the original 9 lb/TBtu limit in the original vacated major source boiler MACT (original subpart DDDDD from 9/12/04) to 3 lb/TBtu in this proposed area source rule cannot be justified from such a small sampling of sources. Many sources that are currently emitting just over 3 lb/TBtu will potentially spend tens or hundreds of thousands of dollars to reduce mercury emissions by fewer than sixteen ounces. At approximately 1 lb of mercury compounds produced for every 10,000 tons of coal burned, many sources burning between 10,000 and 50,000 tons of coal per year may be just over the proposed limit and be required to eliminate a pound of mercury at a considerable expense.

Response: See response to comment EPA-HQ-OAR-2006-0790-0067.1, excerpt 2 for adequacy of data for existing coal-fired units.

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 22

Comment: The proposed mercury limit does not appear justified because of the limited nature of the data sources. EPA has used data from only nine sources, and then only two representing the 12% best controlled sources, when there are hundreds, perhaps even thousands, of coal-burning area source boilers in the United States. Lowering the mercury limit from the original 9 lb/TBtu limit in the original vacated major source boiler MACT (original subpart DDDDD from 9/12/04) to 3 lb/TBtu in this proposed area source rule cannot be justified from such a small sampling of sources. Many sources that are currently emitting just over 3 lb/TBtu will potentially spend tens or hundreds of thousands of dollars to reduce mercury emissions by fewer than sixteen ounces. At approximately 1 lb of mercury compounds produced for every 10,000 tons of coal burned, many sources burning between 10,000 and 50,000 tons of coal per year may be just over the proposed limit and be required to eliminate a pound of mercury at a considerable expense. Again, this will provide no measurable benefit in terms of air quality, but will simply add another burdensome regulation that will create unnecessary expenses for area sources.

Response: See response to comment EPA-HQ-OAR-2006-0790-0067.1, excerpt 2 for adequacy of data for existing coal-fired units.

MACT Floor: Results: Existing Biomass

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 1

Comment: I formed Yanke Energy with my business partner Ron Yanke in 1982. Yanke Energy has designed built, owned and operated seven biomass fired boilers that would be classified as area sources under the rule. Four of the boilers designed, built owned and operated by Yanke Energy have measured and quantified emissions of toxic air pollutants under the California AB-2588 California Air Toxics program. Yanke Energy's experience designing, constructing, owning and operating the biomass boilers transformed into providing technical, manufacturing and installation services to the renewable energy industry. Much of the service provided to our clients is efficiency, reliability and operation improvement all with emissions control and reduction as a necessary element of the work. Yanke Energy has supported operation of more than one hundred biomass fired boilers designed, built, owned and operated by others. Improved control of emissions is always part of the work scope in the services we provide.

Comments:
The impact of the proposed rule will be devastating on the biomass renewable energy industry and on forest products industries. Many biomass boiler designs can't achieve 160 ppm CO at 7% dry oxygen and can't be altered to reach this level. Boiler designs the currently achieve this level of CO exhibit significant operational problems of low efficiency, very high operation and maintenance cost and low availability. Bubbling atmospheric fluidized bed boilers without significant furnace wall heat transfer surface achieve this level at the expense of high station service energy requirements and low efficiency operation at nine to ten percent oxygen in the flue gas. Circulating fluidized bed boilers achieve the CO emissions level at the cost of very high station power requirements and excessive erosion that leads to very high maintenance cost and very low availability.

Grate boilers generally can't achieve the 160 ppm level. Most biomass boilers are grate boilers. I have experience with two grate boilers using catalysts. The flue gas exiting the boilers is increased about 50 degrees F to light off the catalyst and approximately 40% control of CO is achieved to reach an outlet level of 200 ppm CO. There is no evidence that controlling 40% of the stack CO emissions has any impact of emissions of VOC or other combustible organic compounds. My observation is that while the catalyst oxidizes some of the CO there is no evidence that the catalyst breaks down more complex organic molecules.

Response: See preamble for discussion of cost impacts on renewable energy, achievability of CO limits, and changes made to emission limits for CO.

Commenter Name: Charles Niebling
Commenter Affiliation: New England Wood Pellet
Document Control Number: EPA-HQ-OAR-2006-0790-0836
Comment Excerpt Number: 4

Comment: Inconsistency with other established biomass emission limits.
Further illustrating the dataset's weaknesses are the contrasting proposed limits for Major Source boilers. Four different classifications of biomass boilers (stoker, fluidized bed, suspension burner/dutch oven, and fuel cell) each have a range of permitted HAP emissions and associated allowable CO limits. For Area Source boilers, there is a single biomass class which does not reflect the diversity of Area Source boiler types. The stoker and dutch oven/suspension burner boilers are most similar to Area Source biomass boiler types; these have proposed CO emission levels of 560 ppm and 1,010 ppm @ 3% O, respectively (converted to 434ppm and 764ppm @ 7% O). Therefore it seems unreasonable that 22 smaller boilers would be subject to CO limits that are so much lower when major sources are allowed much less stringent CO limits.
Also, the proposed standards are sixteen and five times lower for CO and PM, respectively, than the recently proposed European Regulations for similarly sized boilers and USEPA's residential wood boilers that are within the same size range as small commercial units [See submittal for Table 3, comparing European to EPA Standards].
EPA's standard is required to be based on the "available" data, but with such gaps in the data set, inconsistencies within EPA's own emission limits, and a divergence from international standards, NEWP believes the proposed limits are unreasonable.

Response: See preamble for discussion of achievability of CO limits and changes made to emission limits for CO.

Commenter Name: Carl Johnson
Commenter Affiliation: Southern Pressure Treaters' Association
Document Control Number: EPA-HQ-OAR-2006-0790-0870.1
Comment Excerpt Number: 4

Comment: We believe the proposed limits in the rules are not achievable. The limits can not be met by units already using all the proposed controls.

Response: See the preamble for discussion of achievability of emission limits.

Commenter Name: Los Angeles Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters

Document Control Number: EPA-HQ-OAR-2006-0790-0397
Comment Excerpt Number: 15

Comment: We recommend that EPA remove the carbon monoxide standard for area sources, if area source emissions standards are adopted, EPA should abandon a one-size-fits-all approach for biomass boilers. At the very minimum, EPA needs to recognize the various boiler types as is already done in the MACT proposal.

Response: See the preamble for discussion of changes to emission limits for PM, CO and Hg.

Commenter Name: Los Angeles Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0397
Comment Excerpt Number: 23

Comment: The reality is that the proposed rules penalize clean fuels like biomass, whose proposed limits are extremely low because the baseline of emissions is so low relative to other fuels. Biomass is an inconsequential source of mercury, dioxin and hydrochloric acid. Yet, the marginal course of controlling such small quantities is exponentially more expensive and with no guarantee of consistent compliance.

Response: See preamble for discussion of cost impacts, including impact to renewable energy.

Commenter Name: Los Angeles Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0397
Comment Excerpt Number: 51

Comment: As far as the Boiler MACT -- or I'm sorry, the boiler GACT rule, SierraPine operates a sander dust fuel combustible boiler located in area source of HAPs and the unit will be subject to the Boiler GACT rule. We do not offer a CEMS on the unit, so it's difficult at this point to determine the specific impact of the rule; however, we do operate CO-CEMS on two other sander dust-fired boilers at other facilities. And we know that that limit will be very difficult to meet.

Response: See the preamble for discussion of compliance requirements and achievability of emission limits.

Commenter Name: Fred T Simpson
Commenter Affiliation: Scotch and Gulf Lumber, LLC

Document Control Number: EPA-HQ-OAR-2006-0790-1061.1
Comment Excerpt Number: 2

Comment: Proposed emission limits for biomass boilers should be based on data from units burning only biomass and not upon combinations of biomass with other fuels such as fuel oil and natural gas.

Response: See preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: W. James Wagoner
Commenter Affiliation: Butte County Air Quality Management District
Document Control Number: EPA-HQ-OAR-2006-0790-1993.1
Comment Excerpt Number: 2

Comment: In reviewing the supporting data for the proposal, the District noted and has concerns that the biomass plants reviewed did not appear to use biomass fuels common in the West, including chips from forest operations, orchard prunings, nut shells, and fruit and olive pits. The primary fuel for the POPI is whole-hog wood chips from forest operations; however, POPI is required by permit to include at least 20% agricultural biomass and other greenwaste sources as fuel and, in the last few years, over 45% of the fuel burned annually has been derived from agricultural biomass sources. These types of fuels are commonly used in California biomass operations and appear to have much higher moisture content than those used in the analysis for the MACT standards, which will greatly impact the CO emissions from these types of facilities.

The District understands that setting the MACT standards is a complex and involved process and is intended to set standards at levels achieved by the best performing units in that industry; however, the District does not believe the process and data used for the proposed regulation accounts for the biomass units similar to the facility in our District.

Response: See preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Ray Penick
Commenter Affiliation: Barge Forest Products Company
Document Control Number: EPA-HQ-OAR-2006-0790-1778.1
Comment Excerpt Number: 2

Comment: We have been told by professional consultants that some of the proposed contaminant limits are technically unattainable for our boiler system.

On behalf of the lumber industry, Noxubee County, MS, and the good employees at Barge Forest Products Company, we respectfully ask that you reconsider the unattainable standards of the proposed Boiler MACT Rules and Boiler GACT Rules

Response: See preamble for discussion of achievability of CO limits and changes to emission limits for PM, CO and Hg.

Commenter Name: James P. Brooks
Commenter Affiliation: Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1915.1
Comment Excerpt Number: 6

Comment: We recommend that existing biomass boilers of at least 30 MMBtu/hr capacities be required to perform biennial PM testing and install continuous opacity monitoring systems (consistent with 40 CFR Part 60, Subpart D standards), unless they combust only ultra-low sulfur #2 oil.

Response: See preamble for discussion of changes to emission limits for PM and compliance requirements.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 6

Comment: For biomass units, the CO limit for existing wood boilers in the proposed area source rule is four times lower than the limit for existing wood boilers in the proposed major source rule. This appears to place a larger compliance burden on the same sized units located at smaller facilities; is this EPA's intent?

Response: See preamble for discussion of changes to emission limits for CO and compliance requirements.

Commenter Name: Renee Lesjak Bashel
Commenter Affiliation: Small Business Environmental Assistance Programs, SBEAP
Document Control Number: EPA-HQ-OAR-2006-0790-2195.1
Comment Excerpt Number: 9

Comment: Recommendation: Reconsider the heavy regulation of biomass boilers as industry looks to renewable sources of fuel for reducing the use of more heavily polluting fuels.
At a time when states and even the federal government are creating programs to drive higher use of renewable energy sources, the EPA should seriously reconsider applying more stringent requirements on the use of biomass in boilers as this rule does. Consider applying the additional

requirements to only units greater than 50 MMBTU/hr and below that level units would have the same limits as the existing units in Table 1 below 10 MMBTU/hr.

Response: See preamble for discussion of legal applicability issues and cost impact analysis for renewable energy.

Commenter Name: William C. Scott
Commenter Affiliation: Collum's Lumber Products, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1796.1
Comment Excerpt Number: 11

Comment: Limits of biomass boilers should be based on data from units burning only biomass, not a combination of other fuels.

Response: See preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: David J. Prior
Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 12

Comment: Lower limits could be revisited on a periodic basis, perhaps every five years as technology develops to meet the latest standard.

Response: See preamble for discussion of compliance requirements and legal applicability issues.

Commenter Name: Charles Thomas III
Commenter Affiliation: Shuqualak Lumber Co., Inc.
Document Control Number: EPA-HQ-OAR-2006-0790-0609
Comment Excerpt Number: 2

Comment: I strongly disagree with the proposed rules due to the fact that the rules as proposed are unachievable. Our government is encouraging the increased use of biomass fired boilers at the same time that the proposed rules will completely eliminate them. There is not a wood fired boiler in the United States that can meet the limits that are set in the rules. The limits are absurd! In some cases, the proposed limits are based on only one or two data points and there are obvious errors in the various data points. The EPA should immediately stop the rulemaking process! The EPA needs to go back and validate the data and re-propose the rules after errors have been

corrected. Biomass is a fuel and not a waste! The EPA should recognize this and treat all biomass in such a manner. Limits for biomass boilers should be based on data from units burning only biomass and not a combination of other fuels.

Response: See preamble for discussion of cost impact analysis for renewable energy, dataset used for the MACT floor analysis and achievability of CO limits.

Commenter Name: Fred T Simpson
Commenter Affiliation: Scotch and Gulf Lumber, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1061.1
Comment Excerpt Number: 5

Comment: EPA has improperly established the CO limit for area source biomass boilers by: (1) including data from boilers that are too small to be representative of the area source boiler population, (2) establishing emission limits and averaging times that are more stringent for boilers located at area sources than at major sources, and (3) failing to follow their own stated protocol for computing the CO limits for biomass boilers.

EPA should abandon the proposed CO limits for area source boilers and use work practices, such as required tune-ups, to ensure good combustion practices are being followed.

Response: See preamble for discussion of changes to emission limits for PM, CO and Hg. Also see preamble for discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Houston Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0985
Comment Excerpt Number: 38

Comment: Appendix B-2 of the area source MACT floor analysis shows that that limit was calculated using the raw data, which checked as non-normal while the log data was shown to be normal. Therefore, it would appear that the CO limit in the proposed for biomass area sources is incorrect.

Response: See preamble for discussion of changes to emission limits for PM, CO and Hg. Also see preamble for discussion of MACT floor methodologies.

Commenter Name: Joe O'Rourke
Commenter Affiliation: F.H. Stoltze Land and Lumber Company
Document Control Number: EPA-HQ-OAR-2006-0790-1467.1

Comment Excerpt Number: 6

Comment: The EPA's analysis punishes clean fuels like woody biomass. Because it is so clean, the new source limits are extremely low. In some instances, they are so low that they are almost undetectable using today's technology. Clean fuels, like biomass, should not be singled out and punished for their natural advantages and virtues.

Response: See preamble for discussion of cost impact analysis for renewable energy.

Commenter Name: Jim Hickman
Commenter Affiliation: Langdale Forest Product Company
Document Control Number: EPA-HQ-OAR-2006-0790-1379.1
Comment Excerpt Number: 9

Comment: EPA has improperly established the CO limit for area source biomass boilers by: including data from boilers that are too small to be representative of the area source boiler population; establishing emission limits and averaging times that are more stringent for boilers located at area sources than at major sources; and failing to follow their own stated protocol for computing the CO limits for biomass boilers.

Response: See preamble for achievability of CO limits and discussion of changes made to emission limits for PM, Co and Hg. Also see preamble for discussion of dataset used for the MACT floor analysis.

Commenter Name: Kerry Flick
Commenter Affiliation: Metso Power
Document Control Number: EPA-HQ-OAR-2006-0790-1490.1
Comment Excerpt Number: 1

Comment: The proposed ruling provides for CO emission limits that are considerably below those set in Europe, where the combustion of biomass as a renewable energy source has been in practice for several years.

Response: See preamble for achievability of CO limits and discussion of changes made to emission limits for PM, Co and Hg.

Commenter Name: William H. Carlson
Commenter Affiliation: Carlson Small Power Consultants
Document Control Number: EPA-HQ-OAR-2006-0790-1493.1
Comment Excerpt Number: 2

Comment: It is disturbing to me that EPA would believe that simply arraying the biomass emission data that they were able to obtain into separate lists for CO and PM, and, of necessity, choosing the top 12% to establish standards, adequately represents the biomass combustion industry and its diverse fuel mix. It is common knowledge in the industry that the highest moisture fuels, and fuels with a number of different size fractions produce much higher CO that drier more uniform fuels. it is also common knowledge that CO emissions during startup and shutdown may be orders of magnitudes higher than during normal operation.

Despite this common understanding, EPA's list of the boilers with the best CO performance is made up of the following:
1 Boilers burning very dry fuels
2 Very small boilers where intimate contact of air and fuel can be more easily obtained
3 Boilers in institutions that carefully control the particle size of the fuel due to design limitations

The list of the boilers with the best CO performance are about the most atypical set that EPA could have chosen to represent the industry. Not only does EPA propose to base regulations on this atypical set, it also proposes to include startup and shutdown emissions in the calculation, a sure way to force violations. The chosen set includes no major sources and only one even moderate sized boiler (Douglas County, OR).

A typical biomass boiler in a forest products facility is perhaps 40-50 years old and is undersized for its current duty, being unable to produce the requested steam output in the winter due to wet fuel, high demand for product drying and adverse climatic conditions. The owner often burns his driest fuel, planer shavings, in order to get the most out of the undersized boiler. The boiler is stack tested in the summer using these same planer shavings, produces a low CO number and ends up on EPA's list as one of the best units. That same boiler would be out of compliance for much of the year for CO using the very data it was part of producing. Though being used to set the standard, this boiler is atypical of the larger fleet which uses wetter fuel from multiple sources.

Response: See preamble for achievability of CO limits and discussion of changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of dataset used for the MACT floor analysis.

Commenter Name: Russ Mull
Commenter Affiliation: Shasta County Air Quality Management Distric
Document Control Number: EPA-HQ-OAR-2006-0790-1167
Comment Excerpt Number: 2

Comment: Within the forested areas of California, the wood-biomass fuels at these facilities will have a moisture content of approximately 50 percent. The Maximum Achievable Control Technology (MACT) floor analysis document by ERG appears to use data from facilities using wood products' finishing waste such as sander dust, with moisture contents ranging from 2

percent to 20 percent. Stand-alone and primary processing biomass facilities processing fuel at natural-wood moisture content will not meet the proposed MACT floor standards for carbon monoxide. The use of catalytic oxidation after particulate removal is untested on these facilities and is extremely costly to operate, with the ultimate outcome of shutting the facility down.

Response: See preamble for discussion of achievability of CO limits and cost impact analysis for renewable energy.

Commenter Name: Bill Wickman and Laurel Brent-Bumb
Commenter Affiliation: Sustainable Forest Action Coalition
Document Control Number: EPA-HQ-OAR-2006-0790-1487.1
Comment Excerpt Number: 3

Comment: SFAC respectfully request that all biomass-related portions of the rule be omitted and/or that a new section, specific to non fossil-fuel is developed. The new section may utilize some of the ERG MACT Floor Analysis referenced in the rule, however, should be supplemented to consider each boiler on a case by case basis, rather than a HAP by HAP basis, and to include data from at least 75% of all boilers. This could be done as a mandatory reporting (potentially electronic) through the current EPA Title V Program or the Electronic Reporting Tool (ERT) reference in the rule.

Response: See preamble for discussion of subcategories and MACT floor methodologies.

Commenter Name: Steven Jarvis
Commenter Affiliation: Missouri Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-1477.1
Comment Excerpt Number: 8

Comment: It may be difficult, if not impossible for existing biomass boilers to come into compliance with the proposed CO levels. Most existing biomass combustions systems in the U.S. were permitted with CO levels between 500 and 600 ppm and in some cases no CO level was indicated on the permit. Analysis of the EPA biomass boiler database used to develop the rule shows that the set of boilers that were the best performers for PM had CO levels of 1,164 ppm at 7% O2. The proposed Area Source Boiler rule will mean that many existing biomass boilers will have to be taken out of service in three years. Impacts on existing businesses, particularly in the forest products sector, will be severe given the current economic downturn impacting this industry sector.
MFPA requests that the EPA if numeric GHG emission limits are deemed necessary for new boilers, allow the permitted CO limits to apply to existing boilers rather than the proposed limit of 160 ppm, in order to avoid expensive retrofits that may still be unable to meet the ultra-low emission limits for CO.

Response: See preamble for discussion of achievability of CO limits and changes to emission limits for PM, CO and Hg.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 51

Comment: EPA's inclusion of one particular facility's datum, which notably is the lowest data point in the MACT floor database, brings the entire floor calculation exercise into question. The Simpson Door test is listed as a single run using Method 10, and the reported value is extremely low compared to Method 10 test results in the Major Source Boiler MACT database for two similar Dutch oven units – 256 and 410 ppm at 3% O2 (3-run averages for WAGraysHarborPaper No. 6 Boiler and ORRosboroSpringfield DV01.1, respectively). AF&PA understands that some of the specifics about the Simpson unit make it particularly inappropriate for inclusion in a database of this sort. Reportedly, the unit at Simpson Door is a 34.5 MMBTU/hr. boiler installed 90 years ago and has a 9' diameter and 236' high stack and burns only dry wood. According to Simpson, this boiler was recovered from a ship salvage operation before World War 2 and converted to burn wood. It seems extremely likely that this "best in class" emission result is not a representative boiler, new or existing. We understand this facility has submitted additional information to EPA to clarify that the reported test result was actually the average of a 3-run test, and has submitted results from two additional stack tests for CO. facility. Columbia has provided AF&PA with additional test data on Boiler N that we are providing with these comments. It is notable that typically, this boiler is operated at low loads, relative to its capacity and very high O2 levels - 15-16%, an untypically high level. As is widely acknowledged, these kinds of operating parameters will often yield low CO values but will also de-rate a boiler, reducing its capacity. To compare, the other boiler at the Columbia facility, Boiler S, is operated at more typical O2 levels and has notably higher CO emissions. Given the large temporal variability in biomass boiler CO emissions, which is well documented in continuous CO measurements data (see CO technical issues discussion in Appendix 2), these low tests should not be taken as representative of CO emission rates for boilers in the subcategory, during all periods of operation, perhaps not even for these two facilities. Furthermore, because Dutch ovens are an old and inefficient design for biomass combustion, it is improbable that these two units would be identified as top performers for CO emissions among all biomass boilers at all area sources. In other words, we believe their inclusion in the MACT Floor for all boilers is an indictment of the way the subcategory was defined and the way the data were collected and assembled. We do not believe these data points are representativeness of top performers in the subcategory.

As noted above, the ERG test evaluation completely ignored CO long term continuous monitoring (CEMS) data from area sources that were provided to EPA in Phase 1 of its ICR survey. We have noted above that there are several wood-fired boilers with CEMS located at area sources and that this data needs to be integrated into any emission limit based standard that is developed.

We do not believe EPA did an adequate job collecting a sufficient quantity of data to characterize this subcategory. We also do not believe EPA did an adequate job collecting or considering the right type and quality of data since variability was not adequately considered and long term data was not considered at all.

Response: See preamble for discussion of compliance requirements, achievability of CO limits, dataset used for the MACT floor analysis, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Brad Cooley
Commenter Affiliation: GDF SUEZ Energy Generation North America, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2134.1
Comment Excerpt Number: 1

Comment: PROPOSED CO EMISSIONS LIMITS: GSEGNA owns and operates several biomass facilities. Though several of these facilities have made significant improvement to their CO emissions in recent years, they still struggle to meet their current permit limits at times. The proposed CO limits are significantly lower than their current permit limits and are virtually impossible to meet without potentially multi-million dollar modifications. There is also some confusion as to why the Area Source limits for CO (160 ppm) are significantly lower than the limits proposed for major HAP sources in the Boiler MACT rule (where biomass stokers are limited to 560 ppm on a 30-day average). GSEGNA requests that the Agency reconsider the proposed CO limits to make them more achievable and more in line with the limit for major HAP sources.

Response: See preamble for discussion of achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1944.1
Comment Excerpt Number: 1

Comment: We have been taking a look at what would be typical values regarding CO emissions. This is a somewhat difficult question to answer due to multiple factors. However, we believe that we can attempt a broad based approach considering our experiences.

Existing Biomass Boilers
As we look at the majority of biomass power boilers designed and commissioned from the 1970-1985 period; we find the parameters noted in Table A to be typical. [See submittal for Table A.]

With these values, keep in mind that many of these units are operated above the original MCR capacities. We have often seen outputs safely increased by 20%, yet the downside is increases in the CO emissions. Historically, the limiting factor for increasing steam production is the ID fan. As owners reach the upper limit of the fan's performance curve, excess air drops to maintain furnace draft. Lower excess air can easily increase CO values beyond 2,000 ppm and generally occurs at or below 4% O2 as measured at the boiler outlet.

Existing Biomass Boilers - Retrofits
Relying on the parameters in Table A and we find the following retrofits or equipment selections to be common.

1. Replacement of air-cooled traveling grates with water-cooled vibrating grates
2. Staged, high capacity secondary air systems (+50% of the total combustion air)
3. Reduction of tramp air (Seals, tune-ups, etc)
4. Improved fuel distributors
5. Increase of pre-heated combustion air temperatures (650-700ºF maximum)
6. Improved fuel metering systems
7. Improved fuel management
8. SNCR as required for reduction of NOx

For most purposes, these retrofits are to help add some efficiency gains to increase steam production although not increasing existing emission limits or carbon losses. Post-combustion NOx reduction was generally added on to the boilers due to new permit requirements. If we simply assume that the parameters from Table A remain the same, and items listed above and incorporated. The CO is generally reduced to values ranging from 0.25-0.35 lbs/MMBtu or approximately 300-450 ppm @3% O2. We would also like to point out that these values are at MCR conditions. CO can radically increase at loads below 50%. This can be further complicated by SNCR's. Early SNCR systems often lacked controls to respond to load changes which ultimately moves the temperature window for effective use of the reagent. Therefore some SNCR systems keep injecting excess reagent for no benefit and cool the flue gases. We have seen increases in CO as a direct result, along with significant increase in ammonia slip.

We would like to note that biomass boilers built between 1985-1995 did incorporate most if not all of the eight (8) retrofit items note above. These boilers also have CO values ranging from 300-450 ppm@3% O2.

Low, uncontrolled CO values also have undesirable effects to NOx values. While NOx is not a regulated emission under the proposed MACT, we can only assume that new regulations for decreased NOx will be forthcoming. NOx and CO have well known inverse relationships based on excess air values.

Response: See preamble for discussion of achievability of CO limits, changes to emission limits for PM, CO and Hg.

Commenter Name: Katherine Fry
Commenter Affiliation: SierraPine Composite Solutions
Document Control Number: EPA-HQ-OAR-2006-0790-2272
Comment Excerpt Number: 1

Comment: While the proposed rule for area source industrial boilers includes a number of laudable provisions, we have significant concern with the proposal because it would impose stringent numeric emissions limitations for carbon monoxide (POM surrogate) on biomass fueled units that would be difficult, if not impossible, to meet. We believe that EPA has not justified the need to impose numeric emissions limitations on area source industrial boilers and that ample authority and justification exists for establishing work practice standards for all area source boilers. Were the Agency to decide, nevertheless, to finalize numeric emissions limits, the proposed standards are not supported by the available data and would have to be substantially revised.

Response: See preamble for discussion of achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 1

Comment: For existing sources, MACT cannot be less stringent than the average emission limitation achieved by the best performing 12 percent of existing sources (for which data is available) for categories and subcategories with 30 or more sources or the best performing five sources for subcategories with less than 30 sources. As specified in the MACT Floor Memo for Area Sources, there are eight sources that fall under the best performing 12 percent of the existing sources and are used to estimate the existing biomass boiler carbon monoxide (CO) emission limit. Out of these eight sources, four of the biomass boilers are very small units operating under the US Fuel for School Program. These boilers fire specially prepared wood fuels produced by chipping forest residue materials. The fuel has a consistent quality (size and moisture content) and can therefore be fired in a consistent and highly controlled fashion, achieving nearly complete combustion (and minimal CO levels) at all times. Their characteristically low CO emissions are reflective of these tightly controlled combustion conditions.

As provided in the Fuel for School and Beyond website (http://www.fuelsforschools.info/air_emission_test_reports.html), Council, Idaho and Thompson Falls boilers are rated at 1.3 and 1.6 MMBtu/hr, respectively. Because the boilers are less than 10 MMBtu/hr, they are exempt from emission limits in the proposed regulation. Therefore, these sources are not appropriate to be used in setting emission standards under the proposed regulation.

Larger industrial boilers, such as those operated by Columbia, burn fuels that are produced at the wood products manufacturing site. The quality of these fuels can vary considerably within short periods of time, depending on the products produced and the raw woods used by the mill. These transient variations directly affect boiler combustion conditions and thereby, the generation and control of CO emissions.

Response: See preamble for discussion of MACT floor methodologies and variability. Also see preamble for discussion of achievability of CO limits.

Commenter Name: Malcolm Milne
Commenter Affiliation: Durgin and Crowell Lumber Co. Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1987.1
Comment Excerpt Number: 2

Comment: According to the Biomass Thermal Energy Council (BTEC), "the EPA's data set is incomplete and inaccurate regarding available technologies", and the proposed emissions limits are "unachievable and unrealistic" (http://vvww.biornassthermal.org/pdPBTEC Boiler M ACT Cornments.pdf).

Response: See preamble for discussion of adequacy of dataset used for MACT floor analysis.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 3

Comment: According to the emission estimation methodology utilized by EPA to support the inclusion of "Industrial Wood/Wood Residue Combustion" as a §112(c)(6) source subcategory, the emission factor used for 7-PAH was 0.000059 pound/ton and 0.00336 pound/ton for 16-PAH. 1990 Emissions Inventory of Section 112(c)(6) Pollutants: Final Report, April 1998, Section B.6.

In contrast, emission factors for bagasse-fired boilers have been proven to be a fraction of that used for industrial wood combustion. At the request of the sugar industry group involved with the Industrial Combustion Coordinated Rulemaking (ICCR), the ASCL conducted emission tests in 1998 and 1999 at three Louisiana sugar mills. The ASCL-sponsored stack tests reveal that the 7-PAH emission rate from an industrial bagasse combustion is 0.0000102 pound/ton for 7-PAH and 0.0007242 pound/ton for 16-PAH. (See submittal for data in Tables 1 and 2.). The emission rate from wood combustion is 6 times higher than from bagasse combustion for 7-PAH and nearly 5 times higher for 16-PAH.

These data demonstrate that it is arbitrary and unreasonable to regulate all biomass combustion, and bagasse combustion in particular, on the basis of information obtained only from the combustion of wood.

Further, in the event biomass-fired boilers were to be listed as a source category under §112(c)(6) at some point in the future, bagasse-fired boilers would certainly be eligible for exemption because they are insignificant contributors of POM (as 7-PAH) within that subcategory. As noted by EPA in the Notice listing source categories to be regulated under §112(c)(6), "[s]ome area source categories may be negligible contributors to the 90 percent goal, and as such pose unwarranted burdens for subjecting to standards. These trivial source categories will be removed from the listing as they are evaluated since they will not contribute significantly to the 90 percent goal." 63 Fed. Reg. 17847 (April 10, 1998). Bagasse-fired boilers qualify for such treatment.

EPA has expanded its regulatory authority to apply MACT standards to area sources which have negligible POM and 7-PAH emissions, and which were never listed for such regulation. The applicability of the MACT standards for POM should be limited to those source categories and subcategories identified by EPA as being contributors of POM and listed for §112(d)(2) rulemaking pursuant to §112(c)(6).

Response: See preamble for discussion of subcategories, legal and applicability issues, and the dataset used for the MACT floor analysis.

Commenter Name: Arnold Schwarzenegger
Commenter Affiliation: Governor of the State of California
Document Control Number: EPA-HQ-OAR-2006-0790-1777.1
Comment Excerpt Number: 3

Comment: The proposed MACT Standard does not acknowledge the technological differences and does not establish separate requirements for the different combustion type categories for BTE facilities such as those-that were delineated in the Major Source MACT Standard (stoker, fluidized bed, fuel cell oven, and suspension burner/Dutch oven). U.S. EPA staff acknowledged they did not have the information on the combustion types used for the Area Source Standard for biomass. It appears that the Area Source CO Standard may have been developed relative to what fluidized bed combustors can achieve. The analysis did not take into account that there are significant technological differences among biomass combustor designs and the associated emissions. Most BTE facilities in California utilize a stoker, Dutch oven or fuel cell oven design. Any proposed standard should be based on the ability of a particular combustion technology to reasonably meet the limits established by regulation.

Response: See preamble for discussion of subcategories.

Commenter Name: Arnold Schwarzenegger
Commenter Affiliation: Governor of the State of California
Document Control Number: EPA-HQ-OAR-2006-0790-1777.1
Comment Excerpt Number: 4

Comment: The proposed MACT Standards did not take into account the technological and economic feasibility for some of the existing BTE facilities to meet the proposed emission limits. The supporting documentation to the MACT Standards stated that boilers with CO emission levels between 400 parts per million (ppm) and 1,000 ppm (at 3 percent O2) could install a Linkageless Burner Management Systems (LBMS) for under $20,000 dollars. However, there is no documentation that these systems can or have been successfully retrofitted to existing BTE facilities using stoker or fuel cell oven combustion to achieve the proposed levels. For units burning biomass, the draft regulatory analysis estimated that 72 percent of the units are exceeding the MACT floor emission limits, and that these units would need to install an LBMS. Based on ARB staff conversations with several stoker burner manufacturers, we could find no stoker units that have been retrofitted with these systems. Further, these manufacturers stated that a successful retrofit to meet the proposed standards was doubtful based on the inherent leakage of air in these types of facilities. In consulting with several LBMS manufacturers, none of these manufacturers were aware of any retrofits of stoker type boilers with a LBMS system. ARB recommends U.S. EPA conduct a more thorough analysis of the feasibility and costs for existing biomass facilities utilizing stoker or fuel cell/Dutch oven combustors to be retrofitted with a LBMS system.

Response: See preamble for discussion of achievability of CO limits and cost impact analysis for renewable energy.

Commenter Name: David P. Tenny
Commenter Affiliation: National Alliance of Forest Owners
Document Control Number: EPA-HQ-OAR-2006-0790-1884.1
Comment Excerpt Number: 4

Comment: The limits for biomass boilers are set extremely low because their baseline for emissions is very low compared to other fuels. Biomass contains very small amounts of hydrogen chloride ("HCl"), dioxin/furan, and mercury. Despite the fact that biomass is an inconsequential source of these HAPs, the proposed rule establishes extremely low limits for these HAPs in emissions from biomass combustion. For mercury, the available methods are not adequate because their reliable detection limits are well above the proposed emission limits. Id. The emission limits for particulate matter ("PM") (as a surrogate for non-mercury metals, and for CO (as a surrogate for non-dioxin organic air toxics), are also far too stringent. The proposed limits for biomass boilers could require facilities to adopt costly new control equipment and result in higher operating costs, which may discourage facilities from using biomass in favor of fossil fuels.

Response: See preamble for discussion of changes to emission limits for PM, CO and Hg. Also see preamble for discussion of cost impact analysis for renewable energy.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 4

Comment: EPA exceeds its CAA authority by attempting to regulate bagasse-fired boilers under §112(d)(2) based on the incorrect presumption that wood combustion is representative of all biomass combustion with regard to §112(c)(6). That legal and factual error is compounded by EPA's use of the same invalid presumption to establish the emission standards applicable to biomass-fired boilers.

The proposed MACT standard states that EPA is regulating all boilers burning biomass. The Proposed Rule, however, relies on very limited testing of wood fuel boilers only. As noted above, wood combustion is not representative of all biomass combustion and bears little similarity to bagasse combustion. This is particularly true with regard to CO control and POM (as 7-PAH) emissions.

Bagasse-fired boilers have been proven to emit extremely small amounts of 7-PAH. According to the ASCL-sponsored stack tests discussed above and as illustrated in Table 3, 7- PAH makes up only 1.3% of controlled POM emissions. In contrast, naphthalene (a very low toxicity polycyclic organic compound) accounts for 84% of POM emissions from bagasse-fired boilers. [See submittal for Table 3.]

Additionally, POM includes naturally-occurring terpenes. One distinct difference between wood and bagasse combustion is that bagasse-fired boilers do not emit terpenes. Terpenes (and an abundance of other precursor compounds from which POM and PAH can be synthesized) are released upon distillation or combustion of wood fuel. Terpenes are also emitted profusely by trees in nature (especially pine and live oak trees), to such an extent that they are considered a significant problem for ozone abatement programs in rural and urban areas. According to ASCL-sponsored stack tests, no terpenes were detected from bagasse combustion. Further, the very slight amount of POM detected was mostly naphthalene, a relatively harmless compound in comparison to the target 7-PAH carcinogens of the Proposed Rule.

Another reason that 7-PAH emissions from bagasse-fired boilers are so low is that bagasse boilers use hydroscrubbers for PM emissions control, and these scrubbers cool flue gas temperatures to well below the high-boiling point (over 212°F) of POM, especially the 7-PAH group, causing condensed PAH to be retained in the scrubber water. The higher flue gas temperature of a wood-fired boiler is far more likely to allow PAH generated in wood combustion to escape to the atmosphere. In fact, the ASCL-sponsored stack tests illustrate the efficiency of 7-PAH removal by hydroscrubbing. [See submittal for Table 4.]

Simply put, there are distinctions between bagasse as a fuel and wood or other biomass. Bagasse has a higher moisture content and a lower heating value when compared to wood. Bagasse produces no terpenes, produces mainly naphthalene as a POM, has a low metals content, and produces very little ash. Bagasse-fired boilers emit virtually no POM, operate for less than 120 days per year, are fully maintained and "tuned-up" during the eight-month offseason, are uniquely designed to primarily burn bagasse, operate at lower temperatures, have high heat release rates, and experience considerable variability in operation during a typical day due to variations in the moisture content of the bagasse.

EPA's decision to establish an emission standard for the universe of biomass-fired boilers based only on emissions data from wood combustion is arbitrary, unreasonable, and makes compliance with the Proposed Rule virtually impossible for most biomass-fired. For these reasons, bagasse-fired boilers should not be regulated under the MACT standards of 112(d)(2).

Response: See preamble for discussion of CO as a surrogate for POM, and the dataset used for the MACT floor analysis. Also see preamble for discussion of legal/applicability issues including POM emissions from area source boilers in the biomass and oil subcategories being regulated under GACT instead of MACT.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1944.1
Comment Excerpt Number: 4

Comment: We believe that the proposed EPA Boiler MACT Rules will be detrimental to biomass and wood renewable energy for both existing and new installations.

The following specification is provided by the Teaford Company, Inc. We are a supplier specializing in biomass fired energy systems based in Alpharetta Georgia. Each energy system design and emission warranty is dependent on the specific fuel being targeted for use.

This specification includes a guarantee for a biomass fired boiler currently being installed and therefore represents a 'new' source technology that is available to manufacturers installing biomass fired energy systems. [See page 139 of submittal for warranty specifications of boilers using 95% particle board dust with 5% natural gas and 100% natural gas.

Response: See preamble for cost impact analysis for renewable energy.

Commenter Name: Matthew Markee
Commenter Affiliation: IN Group Companies
Document Control Number: EPA-HQ-OAR-2006-0790-1965.1
Comment Excerpt Number: 5

Comment: IN believes EPA lacks substantial data to be representative of the thousands of existing boilers and considers neither the emission increases of other pollutants and the significant decrease of energy efficiency that results when operating boilers to fully oxidize all CO to CO_2. EPA currently has the authority to apply GACT or management practices under CAA, section 112(d)(5), and IN believes this approach is much more reasonable for this group of boilers.

Response: See preamble for discussion of the dataset used for the MACT floor analysis and use of MACT instead of GACT.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 5

Comment: The proposed biomass emission limits are exceedingly low because of errors in standard-setting as well as policy choices EPA has made. An example is the "Franken-MACT" approach EPA has adopted for setting the floor limits, and EPA's current failure to date to develop alternative standards under 112 (d)(4).

Response: See preamble for discussion of MACT floor methodologies.

Commenter Name: Michael T. Palko
Commenter Affiliation: Pennsylvania Department of Conservation and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-1895.1
Comment Excerpt Number: 5

Comment: Out of EPA's estimated total population of 10,958 biomass boilers, the Maximum Achievable Control Technology (MACT) CO limits were determined by only 65 boilers (0.6%). The Generally Available Control Technology (GACT) PM limits were determined by only 20 boilers (0.2%). The biomass boilers that achieve the PM standard are not the same boilers that achieve the CO standard. The six biomass boilers in the dataset that are able to meet the proposed GACT standard for PM have an average CO emission of 1,164 ppm, which is more than 11 times higher than the proposed CO limit for new boilers. The eight biomass boilers in the dataset that are able to meet the MACT standard for CO have an average PM emission of 0.23 lbs/mmBtu, which is more than seven times higher than the proposed PM limit. In other words no biomass boiler tested by EPA can meet the proposed standards for PM and CO.

The population of tested boilers also was limited by boiler size. Only data from boilers >10 mmBtu/hr was used to develop PM limits, while only data from boilers >1.6 mmBtu/hr was used

to develop CO limits. Area source boilers range in size from 200,000 btu/hr to >10 mmBtu/hr in size.

No data was included on emissions from biomass fuels other than wood, and the data did not provide specifications on the wood fuel from included boilers. No data were collected from systems burning corn stover or grasses. Such fuels are becoming more common as efforts such as the Biomass Crop Assistance Program are expanded.

Response: See preamble for discussion of achievability of CO limits, dataset used for the MACT floor analysis, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Arnold Schwarzenegger
Commenter Affiliation: Governor of the State of California
Document Control Number: EPA-HQ-OAR-2006-0790-1777.1
Comment Excerpt Number: 5

Comment: BTE facilities required to install an oxidation catalyst to meet the proposed CO emission limit may have space limitations or other engineering constraints which would prevent the installation of the additional control equipment. For example, the temperature regimes at the catalyst placement site may not be high enough for the catalyst to function properly. In this case, additional heat (by co-firing) will be needed to get the exhaust temperature within the required temperature range. This co-firing will result in an increase of NOx and other pollutants and may also trigger NSR in California. ARB recommends U.S. EPA perform a more thorough analysis on the feasibility of existing facilities to meet the proposed standards.

Response: See preamble for discussion of achievability of CO limits.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 6

Comment: Emissions of POM as 7-PAH from Bagasse-Fired Boilers are Insignificant

EPA utilizes 7-PAH as a measurement of POM in the Proposed Rule. EPA stated that it "used this group (referred to as 7-PAH) as a surrogate for the much larger, more complex and diverse mixture of POM." 64 Fed. Reg. 38714 (July 19, 1999). In the Proposed Rule, EPA reiterated this approach, stating that it listed some categories under §112(c)(3) based on their contribution of POM "(as 7-PAH)." 75 Fed. Reg. 31899 (June 4, 2010). Further, EPA calculated POM reduction through its representation "by total emissions of polycyclic aromatic hydrocarbons (7-PAH)." 75 Fed. Reg. 31913 (June 4, 2010), Table 2, Note b.

Bagasse-fired boilers have been proven to emit extremely small amounts of 7-PAH. Although POM was not reported separately in ASCL-sponsored emissions testing, semi-volatile organic emissions were measured and the total emissions of semi-volatile organics were extremely low. 7-PAH emissions, as a subset of the semi-volatile organic emissions, were even lower. A summary of the underlying data on 7-PAH emissions is provided in Table 1. [See submittal for Table 1.] The average 7-PAH emissions were 0.00001 pounds of 7-PAH per ton of bagasse burned.

In 2009, approximately 4,200,000 tons of bagasse were burned in the 71 Louisiana sugar mill boilers. This amounts to a mere 42 pounds per year (0.021 tons per year (TPY)) of 7- PAH for all boilers in the entire State of Louisiana. That total is negligible. Assuming for the sake of demonstration that the total amount is burned in equal amounts per boiler, the resultant 7- PAH emissions would be only approximately one-half pound (0.0003 TPY) of 7-PAH per year per boiler. The Louisiana Department of Environmental Quality (LDEQ) does not require permitting of air emissions below one pound per year (0.0005 TPY). The LDEQ's official policy states: "It is not necessary to list or speciate a pollutant as being emitted by a given emissions unit if it is emitted at a rate of less than 0.0005 TPY." Louisiana Guidance for Air Permitting Actions, February 2008, p. 28.

Response: See preamble for discussion of legal/applicability issues including POM emissions from area source boilers in the biomass and oil subcategories being regulated under GACT instead of MACT.

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 7

Comment: As stated in the NACAA report [Footnote: Reducing Hazardous Air Pollutants from Industrial Boilers: Model Permit Guidance, National Association of Clean Air Agencies (NACAA), June 2008], the average CO emission limitation achieved by the best-performing 12 percent of wood-fired boilers in the NACAA data set is 54 ppm. By applying the calculated variance to this result, NACAA recommended an emission limitation of 80 ppm to 125 ppm. The engineering judgment of the NACAA workgroup was that a larger variance was needed to accommodate unavoidable variations in fuel moisture content. This finding was consistent with the ME DEP study referenced under comment #1 above. Therefore, NACAA recommended a range of 100 ppm to 150 ppm for CO emission limitations for wood-fired boilers regardless of boiler design. These limitations are consistent with those in the proposed NESHAP for area sources with only one category (biomass).

Response: See preamble for discussion of achievability of CO limits and changes made to emissions limits for PM, CO and Hg.

Commenter Name: Matthew Markee
Commenter Affiliation: IN Group Companies
Document Control Number: EPA-HQ-OAR-2006-0790-1965.1
Comment Excerpt Number: 7

Comment: By EPA's own accounting, there are 10,958 potentially affected Area Source Biomass boilers, but only data from 43 units was available for use in setting the limit. By contrast, for the 420 Major Source Biomass boilers, 159 had data that EPA used in setting the Major Source limit. Such a small amount of data for the Area Sources (less than 0.5% of the sources) could not be considered a representative data set, especially since 14 of those units are from school applications and not representative of units across the country. Because the limits are statistically derived, this non-representative data set has produced CO limits for biomass that are 2.5 to 4 times lower than those produced for the Major Source Stoker units (520 ppm vs 193 and 120 ppm @ 3% O2). No scientific nor technical explanation can account for the drastically lower emissions allegedly achieved by Area Sources compared to those reported for Major Sources since these two categories of combustion units generally use the same technologies, and therefore the calculated emissions thresholds from an undersized sample population for Area Sources are not expected to reflect reality.

Response: See preamble for discussion of dataset used in the MACT floor analysis and changes to emission limits for PM, CO and Hg.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 9

Comment: The CO emission limits for existing biomass boilers in the proposed NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters at Area Sources are more stringent than the CO emission limit for existing biomass boilers in the proposed NESHAP for major sources. The CO emission limit for existing biomass boilers in the proposed NESHAP for Area Sources is 160 ppmvd @ 7% O2. On the other hand, the lowest CO emission limits for existing biomass boilers in the proposed major source NESHAP is 250 ppmvd @ 3% O2, which is equivalent to 194 ppmvd @ 7% O2 Area Sources should not be burdened with more stringent emission limits than major sources.

Boilers are not the main contributor to HAP emissions at a major or Area Source in the wood-products industry, and usually do not affect the major source status of the source with respect to the NESHAP regulation.

Response: See preamble for discussion of achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 10

Comment: To meet the proposed rule, our boilers would require extensive modification with new control systems, operational changes for load leveling, changes to fuel supply, expensive over-fire air systems, and/or unproven and expensive add-on controls that are normally not considered technically feasible and have never been used in practice. Even after these modifications, it is uncertain that the boilers would meet the proposed standard. According to boiler combustion experts, a CO emission rate of 160 ppmvd would be difficult to meet for a new boiler originally designed with this optimization in mind. It would be less expensive with more certainty for compliance if we increased HAP emissions and become subject to the limit for major sources.

For example, a Dutch oven type boiler is a relatively old design, developed before CO (or HAP) was an air pollutant issue. A Dutch oven at a major source has an emission limit of approximately 1,000 ppmvd, while a Dutch oven at an Area Source has an emission limit of 160 ppmvd. Because it is highly unlikely that a Dutch oven at an Area Source can reach an emission limit of 160 ppmvd and impossible to convert to another design, they would need to be shut down. Thus, EPA is economically targeting a select portion of the forest product industry. Furthermore, biomass combustion is considered green energy. Shutting these industrial boilers down due to the inability of meeting unfair stringent emission limits, flies in the face of climate change initiatives across the country.

Response: See preamble for discussion of achievability of CO limits, changes made to emission limits for PM, CO and Hg, and cost impact analysis for renewable energy.

Commenter Name: Bill Thomas
Commenter Affiliation: Shuqualak Lumber Company
Document Control Number: EPA-HQ-OAR-2006-0790-1948.1
Comment Excerpt Number: 11

Comment: We do not understand why the CO limits for biomass boilers located at area sources are more stringent tan those those at major sources. Was this an error on EPA's part?

Response: See preamble for discussion of dataset used in the MACT floor analysis and changes to emission limits for PM, CO and Hg.

Commenter Name: Gary Melow

Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 18

Comment: In addition to the cost issues, there are technical concerns regarding the feasibility of these control systems on our existing facilities. While there have been recent permits issued for biomass boilers with catalytic oxidizers, the operating history of this equipment is quite limited. Catalytic oxidation is an add-on control technology that is commonly used in natural gas-fired combined cycle power plants for CO control, but is not typically used in solid fueled power generation systems. Oxidation catalysts have been proposed on a few new biomass power projects (all stoker-grate boilers) and retrofit on several existing stoker units. However, operating history and performance is not well established. Two actual applications of oxidation catalysts to operating biomass boiler were at the Bio-Energy facility in Hopkinton, NH, which operated between 1983 and 2002 and Whitefield Power and Light facility in Whitefield, NH. The oxidation catalyst at Bio-Energy was retrofitted after the plant was initially started up in the 1980's and was unable to demonstrate compliance with its CO permit limit. The catalyst required frequent cleaning and experienced premature replacement. The facility is no longer in operation. At the Whitefield plant, the initial oxidation catalyst retrofit also failed due to particulate plugging of the ceramic-based substrate, but according to Babcock Power Environmental, a new catalyst with metal substrate has been operating since April 2008 with about 80 percent CO oxidation efficiency. There is no long-term operating history on oxidation catalysts necessary to support the reliability and performance of this technology on biomass-fired power plants. Such controls have been proposed and referenced in recent permits for new stoker-based biomass power plants (e.g., Palmer, Montville, Loblolly and Russell, if a spreader stoker option is constructed) in order to meet CO limits equivalent to uncontrolled fluidized bed combustion (FBC) units. There has also been a retrofit on one existing unit in the Northeast. However, the long-term data necessary to determine the efficacy of these technologies is lacking.

Even if oxidation catalysts were considered proven and reliable, there are two issues that can be problematic for operating oxidation catalysts in the startup/shutdown modes. First, the catalyst reactions occur optimally in a temperature window. Under lower temperatures such as those encountered during startup, the catalyst does not operate efficiently, and consequently the mandated emission levels are unlikely to be reached. The catalyst will not perform to specifications until startup is complete and the unit's normal operating temperature has been reached. Alternatively, an auxiliary firing system can be used to raise the gas temperatures to the proper range sooner than normal startup would allow. Second, for catalysts built on a ceramic base, the temperature rise inherent in startup must be carefully controlled to prevent thermal cracking and subsequent catalyst failure.

While catalytic oxidation has been shown to decrease CO emissions, it does not have the same efficiency at reducing POM emissions. This casts even further doubt that the proposed MACT standard for CO will result in any benefit in POM emissions. As indicated above, our permit limits range from an equivalent of 250 to 400 PPM CO (corrected to 7% O2) on a 24-hour basis. While we do not operate very close to the permit limits at all times, there are times during the year where we will operate very close to these permit limits. This is particularly true in the wintertime when wood moisture content is high. We have considerable experience managing CO

with alternative fuels as a supplement to our primary forest-based wood. One example is TDF. Many facilities use this fuel all the time, while other facilities use this fuel some of the time. The addition of this consistently drier fuel has made it easier for facilities using TDF to maintain compliance with permit limits for CO. Ironically, the ability to use such alternative fuels to help control CO emissions is now threatened by the proposed NHSM rule.

Based on years of experience operating with CO CEMs our facilities are not able to comply with the proposed CO emission limits without add-on controls. Combustion systems have already been optimized. As stated previously, it is in our own interest to optimize combustion conditions since this lowers our cost to produce power.

Response: See preamble for discussion of achievability of CO limits and compliance requirements. Also see preamble for discussion of legal/applicability issues including POM emissions from area source boilers in the biomass and oil subcategories being regulated under GACT instead of MACT.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 24

Comment: The MACT Floor Analysis is Based on Inadequate Information.

The CO emission standard is based on data from 14 wood-fired boilers and 50 biomass-fired boilers. 75 Fed. Reg. 31906 (June 4, 2010). None of the boilers uses bagasse as a fuel. EPA estimates that 10,958 biomass boilers exist. 75 Fed. Reg. 31913 (June 4, 2010), Table 3. The number of boilers used to develop the nationwide MACT standard represents only 0.006% of all affected units. To compute the MACT Floor Analysis for CO, EPA utilized a mere twenty-seven data points from eight boilers. Doc. No. EPA-HQ-OAR-2006-0790-0049, App. A1 and A-3.

While §112(d)(3)(A) allows EPA to use data “for which [EPA] has emissions information,” it is abundantly clear that EPA has much more information regarding CO emissions than the limited information it utilized. It has, after all, been collecting information on industrial boilers for years. In 1996, EPA chartered the ICCR advisory committee and the Boiler Work Group to obtain and evaluate information regarding emissions from boilers. See 68 Fed. Reg. 1663 (January 13, 2003).

Further, EPA also stated that no state for which it had an inventory had “an applicable emission limit specifically for ... CO.” 75 Fed. Reg. 31906 (June 4, 2010). All sugar mills in Louisiana have CO emission limits in their Title V permits. This provides additional support for the criticism that the sample size could easily be increased.

Another example of information available to EPA via the ICCR and Boiler Work Group is the assumption that each establishment in each industry sector will be associated with a single boiler.

75 Fed. Reg. 31906 (June 4, 2010). Contrary to this assumption, Louisiana sugar mills operate between 5-8 boilers at each facility. This information was, and is, readily available in each mill's Title V permit and can be obtained from the LDEQ's public records, available online via the agency's free-access Electronic Document Management System (EDMS). A brief search of EDMS would have provided EPA with a plethora of accurate and useful information related to the combustion of bagasse.

As noted earlier, the best CO performers were all relatively small wood-fired boilers whereas the majority of the bagasse-fired boilers operating at Louisiana mills are considerably larger than 150 MMBtu/hour, more than a dozen having a heat input greater than 300 MMBtu/hour. The MACT Floor for thousands of biomass-firing boilers of varying sizes and burning a wide variety of biomass fuels was established on the basis of stack test data from a homogenous group of relatively small boilers burning a dry and relatively consistent fuel.

Response: See preamble for discussion of the dataset used in the MACT floor analysis and achievability of CO limits.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 25

Comment: Setting Emission Standards on the Basis of Stack Test Data is Inappropriate.

Appendix A-3 of the MACT Floor Analysis document lists the names and CO test data used to set MACT floor. Doc. No. EPA-HQ-OAR-2006-0790-0049, App. A-3. It appears that the emissions data from 1-hour compliance runs were used to set the MACT emission standard for CO, rather than continuous emission monitoring system (CEMS) data.

Typical 1-hour compliance runs are conducted when units are running optimally and do not include emissions generated during start-up, shutdown, and malfunction (SSM) periods. The CO emissions generated during SSM periods can be dramatically higher than during steady operating periods. Because the proposed MACT standard incorporates continuous compliance requirements monitoring by a CO CEMS, even the top 12% will no doubt have trouble demonstrating compliance during SSM periods.

The use of 1-hour compliance testing data to set an emission standard for which continuous compliance is required is inappropriate. CEMS data should be used to establish emission standards requiring CEMS compliance monitoring.

Response: See preamble for discussion of CO limits and compliance requirements.

Commenter Name: Bill Thomas
Commenter Affiliation: Shuqualak Lumber Company
Document Control Number: EPA-HQ-OAR-2006-0790-1948.1
Comment Excerpt Number: 8

Comment: In reading the data tables used for the MACT floors, it appears that many of the biomass fired boilers that were included in the top 12% co-fired natural gas. If a standard is being set for biomass-fired boilers, then the dataset should only include those sources firing 100% biomass. This again presents opportunity for the EPA used to be skewed and not representative.

Response: See preamble for discussion of the dataset use for the MACT floor analysis.

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 16

Comment: EPA's own RACT/BACT/LAER Clearinghouse (RBLC) can be used as a general guide to what new biomass boilers can achieve. Existing biomass boilers are not expected to achieve emissions as low as new sources.

There are two permits issued in 2010 for proposed biomass fired power plants with CO limits as follows:

Lindale Renewable Energy, LLC RBLC ID#TX-0533 issued 1/8/2010 for a green wood/construction and demolition wood-fired stoker boiler. CO limit of 0.31 lb/MMBtu on a 30-day rolling average. BACT determination, also MACT 112(g) determination using CO as a surrogate for organic HAPS.

NRG Energy, RBLC ID#CT-0156 issued 4/6/2010 for a 600 MMBtu/hr "clean wood" boiler requiring a CO oxidation catalyst as BACT to achieve an emission limit of 0.1 lb/MMBTU on an 8-hour average (this is equivalent to approximately 100 PPMVD at 7% O2). The oxidation catalyst has an estimated control efficiency of 70%, which back-calculates to an emission rate of 0.33 lb/MMBtu (over 300 PPMVD at 7% O2) without a CO catalyst.

The RBLC does not list any industrial wood boilers (100 to 250 MMBtu) permitted in the last year. There are a couple process heater/dryer type boilers, with the most recent hogged fuel boiler from 2007 at 0.6 lb/MMBtu (which equates to about 600 PPM CO) for Boise Building Solutions, RBLC #LA-0218. Also listed is from 2005 is City of Virginia Laurentian Energy RBLC #MN-0058 at 0.3 lb/MMBtu (about 300 PPMVD CO, 7%). There are no commercial-institutional boilers (<100 MMBtu) in the RBLC database.

Response: See preamble for discussion of achievability of CO limits and the dataset used in the MACT floor analysis.

Commenter Name: Kevin Van De Wege
Commenter Affiliation: Washington House of Representatives
Document Control Number: EPA-HQ-OAR-2006-0790-2164.1
Comment Excerpt Number: 1

Comment: We have strong concerns about the proposed emissions limits for biomass-powered boilers and incinerators, as no current boiler could meet these proposed standards.

Response: See preamble for discussion of achievability of CO limits and changes to emission limits for PM, CO and Hg.

Commenter Name: Melissa Mullarkey
Commenter Affiliation: Recycled Energy Development, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2193.1
Comment Excerpt Number: 1

Comment: On page 31901, the proposed CO limit for existing biomass – 160 ppm at 7% oxygen – is significantly more stringent than the Major Source rule for existing biomass stoker of 560 ppm at 7% oxygen. Since EPA is using CO as a surrogate for POM, an hazardous air pollutant (HAP), it is unduly burdensome to subject the smaller Area Source facilities, those responsible for less than 0.34% of the section 112(c)(6) HAP emissions, to a more stringent CO limit then that for the Major Source facilities (p. 31898). RED suggests the final rule for Area Sources should impose the same CO limit as that imposed on Major Source existing biomass stoker.

Response: See preamble for discussion of the adequacy of CO as a surrogate for POM and achievability of CO limits.

Commenter Name: Tim W. Sonnichsen
Commenter Affiliation: Sonnichsen Engineering, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2139.1
Comment Excerpt Number: 1

Comment: Biomass-fired boilers should not be separately classified by their location in Major or Area Source

Generally, a boiler firing wood or other biomass materials do not significantly contribute to the HAP emissions from a facility. The proposed rule classifies boilers on the basis of their facility's overall HAP's levels. Therefore, boilers who are otherwise identical and fire the same fuels will

be subject to significantly different emission control standards. This makes no practical or technical sense.

Using the EPA's logic, it also makes no sense to impose a more stringent surrogate emission standard to a boiler in an Area Source than to the same boiler in a Major Source. Obviously, the rules have been structured by statisticians and not engineers who are familiar with the boiler equipment involved.

Response: See preamble for discussion of subcategories and the dataset used in the MACT floor analysis.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 1

Comment: EPA's proposed emission standards will impede the beneficial reuse of non-hazardous secondary biomass materials.

EPA's proposed carbon monoxide (CO) emission standard is unnecessarily stringent and will have negative consequences on the beneficial use of secondary biomass materials. The standard would require significant investment and result in increased operating costs for biomass-to-energy plants that already meet state regulation and applicable health-based standards. These plants use forest, agricultural and urban-derived wood residues to produce renewable energy, managing materials that would otherwise be landfilled or open-burned. Existing plants in California meet the State's stringent health-based toxic air emission standards. Take, for example, Covanta Energy Corporation's Oroville, California facility which combusts urban demolition wood and agricultural wood and residues, producing 20 MW of renewable electricity. The plant employs 24 people from the surrounding small communities and contributes $13 million dollars annually to the local economy. Since 1987 the facility (and other biomass-to-energy facilities) has been subject to California's AB 2588 Air Toxics "Hot Spots" Program which requires assessments of the health risks of emissions of hazardous or toxic air pollutants. The AB 2588 program provides for the calculation of the cancer, chronic non-cancer, and acute non-cancer risks due to emissions from any specific facility, based on measurements of the toxic emissions from that facility, using an approved methodology, with the comparison of the results to established thresholds of acceptable risk. This program, a "Health Risk Assessment (HRA)," has been successfully and effectively employed in California for over two decades. Recently, the Butte County Air Quality Management District (BCAQMD) reported the results of its AB 2588 assessment for the Oroville facility, indicating a potential cancer risk of 0.42 in a million and chronic and acute hazard indices of 0.005 and 0.003 respectively. [Footnote: Letter from David J. Lusk, Senior Air Quality Engineer, BCAQMD to Francisco Barriga dated March 12, 2010.] Cancer risks of less than one in a million and hazard indices of less than one are deemed acceptable by the BCAQMD. Risks are also below EPA's acceptable carcinogenic risk threshold range of 1 to 100 in a million. EPA's proposed CO standard would impose unnecessary and

costly emission reduction requirements on biomass-to-energy facilities that currently meet applicable health-based standards.

Response: See the preamble for discussion of achievability of CO limits and cost impact analysis for renewable energy.

Commenter Name: Charlie Cary
Commenter Affiliation: Biomass Combustion Systems, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1990.1
Comment Excerpt Number: 1

Comment: The Federal Government has put together a case for recommending a five to one reduction in CO emissions and an eight to one reduction in particulate emissions over what most States previously required based on extrapolated, limited, data.

Unquestionably, such a dramatic regulatory change would have a devastating impact on this moderate scale wood energy market. What I find particularly disturbing about these proposed regulations is methodology used to develop the emission standards and resulting economic impact analysis are so incredibly limited in scope and flawed.

Response: See preamble for discussion of cost impact analysis for renewable energy.

Commenter Name: Darrell Soyars
Commenter Affiliation: Avista Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-1989.1
Comment Excerpt Number: 1

Comment: Inappropriate Sources Were Used for Setting the MACT CO Emission Limits for Biomass Area Source Boilers. The methodology and sources used in determining the proposed MACT emission limits for CO for area source boilers were described in the EPA document EPA-HQ-OAR-2006-0790-0049.pdf (April 2010 Memorandum from Amanda Singleton, ERG, to Jim Eddinger, EPA). Based on an initial review of some of the sources used as the basis for calculating the biomass fueled biomass boiler MACT CO emission limit, Avista believes that there are a number of sources that should not have been included in the calculations. The MACT CO emission limit for biomass fueled boilers was calculated using emissions data from eight biomass fueled boilers. As discussed below, at least two of these eight boilers (or 25% of all the boilers used) should not have been included in the MACT emission limit calculations.
Simpson Door, WA - Biomass Boiler
The top rated emission source (Rank No. 1 for biomass fuel in Appendix A-1) used for establishing the CO MACT emission limits is a 70-year old Dutch oven boiler at the Simpson Door Co. facility in McCleary, Washington. As described in the Technical Support Document' for the Title V Air Operating Permit (AOP) for this facility [FOOTNOTE: TSD and Statement of

Basis Air Operating Permit Simpson Door Company May 18, 2005. Olympic Region Clean Air Agency, Olympia, WA.]:

The boiler is a natural draft, Dutch oven-type boiler that was installed at the facility in the early 1940s. The original design capacity of the boiler was 1000 to 1200 hp, but has since been de-rated by the current maximum steam pressure rating of 200 psi. However the current maximum available seam production capacity is limited by the current grate area of the boiler to approximately 30,000 lbs/hr. The boiler combusts wood residuals generated on-site. On occasion, Simpson needs to supplement on-site generated fuel with purchased hog fuel. The boiler is equipped with a 236 foot high by 9 foot inside diameter concrete stack. Steam pressure, flow, water temperature and stack temperature are the only boiler performance indicators monitored with instrumentation.

Additionally the TSD states:

Since the boiler does not include in-stack air pollution controls, the only ash captured is the ash that remains in the boiler combustion chamber. The combustion chamber is manually cleaned several times a year. Boiler ash is raked out and disposed of in special enclosed dumpsters. The dumpsters are periodically picked up by the local waste disposal company and hauled away to be land-filled.

Both the Title V permits (AOP) and the Technical Support Document for this emission source can be found at http://www.orcaa.oro/sections/air-operatinq-permits-aoos/.

Section 112 (d) (3) of the Clean Air Act states that the "maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar sources." It is unclear how the Simpson Door biomass boiler, a 70-year old Dutch oven with no emission controls and which has the boiler ash raked out of the combustion chambers several times a year, can be considered as a source that meets the CAA condition of being a "best controlled similar source". As a result, we do not believe that this boiler should be included in calculations for determining a MACT CO emission limit for biomass boilers.

Travis Lumber #2, AK - Biomass Boiler

Another boiler used in calculating the MACT CO emission limit for biomass boilers was the Travis Lumber #2 boiler at the Travis Lumber Company in Mansfield, Arkansas (Appendix A-I, Rank No. 6 for biomass fuel). This boiler is not a biomass fueled boiler it is a biogas fired boiler. As described in the Title V permits for the facility[The Title V permit for this source can be found at: http://www.adeq.state.ar.us/ftproot/Pub/WebDatabases/PermitsOnline/Air/1386-AOP-R4.pdf .]

The powerhouse consists of two biogas fired boilers designed to produce 20,000 pph of 135 psig saturated steam each....Each boiler is close coupled to a biomass gasifier that consumes green sawdust to produce the biogas that fires the boilers. The boilers are equipped with multi-cyclone type dust collectors to control particulate emissions. Flue gas is exhausted through stacks.

In the proposed Area Source Boiler MACT Rule, biogas is listed as one of the fuel types that are included in the definition of a gaseous fuel. This boiler should be classified as using gaseous fuel not biomass fuel, and since gas-fired boilers (any boiler that burns gaseous fuel) are not subject to the proposed rule, this boiler should not be used in the MACT calculations for CO emission limits for biomass boilers.

The Simpson Door and Travis Lumber #2 boilers are sources for which information was readily available. These two sources exemplify the degree to which the EPA appears to have done its due diligence in developing CO emission limits for biomass boilers. Simply identifying a

biomass boiler that has a low emission rate is not a sufficient methodology. The specific sources included for the emission calculations should be thoroughly researched to ensure they are appropriate for inclusion in such a critical calculation.

Response: See preamble for discussion of the dataset used in the MACT floor analysis and subcategories.

Commenter Name: Darrell Soyars
Commenter Affiliation: Avista Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-1989.1
Comment Excerpt Number: 2

Comment: EPA did not Adequately Recognize the Differences in Boiler Design and Capacity When Setting the Proposed CO Emission Limit for Biomass Area Source Boilers
Avista does not believe that the use of a single CO emission limit of 160 ppm at 7% 0, for biomass boilers is appropriate and applicable to all types and sizes of boilers.
We suggest that EPA establish CO emission limits for different categories of boiler types, similar to what was done for the Major Source Boiler Rule. In developing the Major Source Boiler Rule, EPA recognized that different boiler designs will have different combustion and emission characteristics and specified different emission limits for subcategories of boiler designs for each type of fuel. For biomass boilers different CO emission limits were specified for stoker, fluidized bed, suspension burner/Dutch ovens, and fuel cell boilers. These same biomass subcategories of boiler design should also be used for the Area Source Boiler Rule. The universe of boiler types that will be affected by the proposed Area Source Boiler Rule is as large, if not larger than, that affected by the proposed regulation for major sources and should be addressed in the proposed regulation for area sources. The issue of differences in boiler design and how they affect HAP emissions was not adequately investigated in the development of the proposed rule.

Response: See preamble for discussion of subcategories.

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 3

Comment: Most of our members operate boilers burning clean wood biomass, and most biomass boilers burn only biomass. However, EPA has used data from boilers burning significant percentages of other materials, such as natural gas, oil, tire-derived fuel, and undefined sludges in the floor analysis for major source biomass boilers. In fact, the majority of boilers in the major source biomass floor analysis are not burning only biomass. These other materials have different combustion properties and any limits for biomass boilers should be developed using data from

boilers burning only biomass. Multi-fuel boilers should be addressed as appropriate subcategories as needed.

In the development of the area source rule, the Agency has included data from only eight boilers as being representative of the approximately 10,000 biomass boilers located at area sources. Of these eight facilities, four were smaller than the 10 million Btus/hr threshold of applicability for the proposed limits. It is clearly improper to use emissions data from these exempt small boilers as representative of the population of area source boilers.

The area source MACT floor data also includes results that are clearly suspect. For instance, one of the boilers included in the MACT floor analysis for CO for biomass boilers, referred to as source BHS, reports four runs with CO values of 2 ppm to 6 ppm and one run at 379 ppm. It is suspect that biomass can be combusted with CO values in the 2 ppm to 6 ppm range.

Response: See preamble for discussion of the dataset used in the MACT floor anlaysis and subcategories.

Commenter Name: Michael Wagner
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2271
Comment Excerpt Number: 3

Comment: Particulate matter and visible emission limits apply to all biomass (wood) boilers over 1.0 million BTU per hour in Wisconsin. The requirements for boilers at area sources range from 0.30 to 0.60 pound of particulate matter per million BTU and 20 to 40 percent opacity depending on construction date and geographic location. Wisconsin specifies certain additional requirements on small biomass boilers in permits as a matter of policy and these requirements are supported by the wording of state rules. Most companies with small biomass boilers are required to perform a particulate matter emission test approximately once every five years. The test frequency coincides with the current lifespan of both renewable operation permits and state operation permits. Daily monitoring of specified combustion parameters is also required to demonstrate that the company is following good combustion practices. This monitoring is done with portable handheld monitoring equipment through one or more points between the firebox and the control equipment. The monitoring includes measuring the firebox temperature, carbon monoxide concentration, and oxygen concentration for 10 minutes once every 8 hours of boiler operation during normal plant hours. Some facilities are allowed to make two sets of measurements on weekdays and none on weekends because the plant runs one shift per day on weekdays and their boiler control systems are set up to sound an alarm and contact/ page one or more plant employees in the event of an upset. The remaining facilities have personnel on site around the clock so they are able to make three sets of measurements each day. The carbon monoxide limit used in most permits for wood fired boilers in Wisconsin is 600 parts per million corrected to 7 percent oxygen. This limit is close to the 560 part per million limit proposed by U.S. EPA for stoker type biomass boilers at major sources.

My experience working with facilities that have biomass (wood) boilers is that few if any of these facilities would be able to meet the proposed carbon monoxide limits of 160 parts per million for existing boilers and 100 parts per million for new boilers as proposed in draft rule for biomass boilers at area sources. When I do field inspections, I typically see uncorrected carbon monoxide readings between 200 and 350 parts per million with oxygen ooncentrations between 7 and 12 percent. This data equates to carbon monoxide concentrations between 200 and 550 parts per million when corrected to 7 percent oxygen. The claims made by U.S. EPA that most boilers can meet the proposed carbon monoxide limits with a boiler tune up are not realistic. One facility in my area that will likely be affected by the area source boiler rule contacted the manufacturer of their boiler. The manufacturer told the company that it was not physically possible for their boiler to meet the proposed 160 ppm limit for existing area source biomass boilers.

Response: See preamble for discussion of changes made to emissions limits for PM, CO and Hg, compliance requirements, and achievability of CO limits.

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 4

Comment: No data was included on emissions from biomass fuels other than wood, and the data did not provide specifications on the wood fuel from included boilers. No data were collected from systems burning corn stover or grasses. Such fuels are becoming more common as efforts such as the Biomass Crop Assistance Program are expanded.

Response: See preamble for discussion of dataset used for the MACT floor analysis.

Commenter Name: Craig S. Smith
Commenter Affiliation: Biewer Wisconsin Sawmill
Document Control Number: EPA-HQ-OAR-2006-0790-2232
Comment Excerpt Number: 4

Comment: I have a concern regarding the proposed carbon monoxide limit of 160 ppm for existing boilers and 100 parts per million for new boilers in draft rule for biomass boilers at area sources. Currently we have a 600 ppm limit for carbon monoxide corrected to 7% oxygen. I have discussed this proposal with the manufacturer of our boiler and they stated unequivocally that it would not be physically possible to meet the proposed 160 ppm limit for our existing area source biomass boiler. This conflicts with the claims made by the U.S. EPA that most boilers can meet the proposed carbon monoxide limits with some modification.

Response: See preamble for discussion of achievability of CO limits, and changes made to emissions limits for PM, CO and Hg.

Commenter Name: Steven A. Brink
Commenter Affiliation: California Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2026.1
Comment Excerpt Number: 4

Comment: According to Biomass Thermal Energy Council (BTEC), EPA's dataset did not include a single boiler that could meet the emission limits for both Particulate Matter (PM) and Carbon Monoxide (CO), thus the standards are not appropriate. Further, Biomass Thermal Energy Council indicates an absence of EPA data on smaller biomass boilers (<10 MMBtu/hr) and non-woody biomass fuels. Without a wide range of sizes of small boilers and data capture of the utilized biomass fuel types, the sample is not representative to generate a standard(s).

Response: See preamble for discussion of dataset used for the MACT floor analysis, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Elizabeth E. Bass
Commenter Affiliation: Tuolumne County
Document Control Number: EPA-HQ-OAR-2006-0790-2250
Comment Excerpt Number: 4

Comment: Requiring CO standards as a surrogate for organic HAPS is supported. However, similar to the PM requirements, there is concern that the CO limits for biomass boilers of 100 and 160 ppm (@ 7% 02) for new and existing boilers, respectively, may not be achievable based on the Generally Available Control Technology (GACT) applicability. GACT requires EPA to determine what control technologies and management practices are generally available while also considering costs and economic impacts. Based on comments received from one biomass boiler manufacturer, the CO standards would require the use of expensive controls, which would not be feasible under their current cost structures, effectively eliminating the use of their products.

Response: See preamble for discussion of achievability of CO limits, changes made to emission limits for PM, CO and Hg, and cost impact analysis for renewable energy.

Commenter Name: Tim W. Sonnichsen
Commenter Affiliation: Sonnichsen Engineering, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2139.1
Comment Excerpt Number: 4

Comment: Would not a more reasonable CO limit based on actual data be preferred rather than the proposed approach of minimizing CO to the maximum level "achievable"?

An example: The State of Wisconsin has for many years imposed a maximum CO level of 500 ppm on industrial-sized wood-fired boilers operating in its state. It has been determined by the state that this CO emission limit will effectively eliminate formaldehyde and other organic HAP's emissions. Would imposing a lower CO limit effectively reduce these emissions? Evidently not according to the State of Wisconsin.

Therefore, imposing absurdly low CO emission levels would likely have no significant benefit to the public by reducing the exposure to organic HAP's while requiring the boiler owner to install expensive and likely unattainable CO emission control requirements (see below).

Response: See preamble for discussion of achievability of CO limits and cost impact analysis for renewable energy.

Commenter Name: Darrell Soyars
Commenter Affiliation: Avista Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-1989.1
Comment Excerpt Number: 4

Comment: Operators of larger biomass boilers who have been proactive in reducing HAP emissions from their units and reduced the HAP emissions to minor HAP source levels will now be penalized and have to reduce their CO emissions to potentially unattainable levels. Avista does not believe that it is technically and economically feasible for a minor HAP source to reduce the CO emissions from an existing wood waste stoker boiler (greater than 300 MMBtu/hr) from 560 ppm at 3% 02 (435 ppm at 7%02) down to 160 ppm at 7% 02, roughly a 63% reduction.

Response: See preamble for discussion of achievability of CO limits and cost impact analysis for renewable energy.

Commenter Name: John M. Irving
Commenter Affiliation: Burlington Electric Department
Document Control Number: EPA-HQ-OAR-2006-0790-2171.1
Comment Excerpt Number: 4

Comment: The proposed CO standard for non-major sources (160 ppm @ 7% O2) appears to be based on small biomass (MMBtu) units. We know, even under ideal operating conditions, the McNeil Station and other larger utility wood-fired units would not be able to achieve levels as proposed. One reason, at McNeil Station, is fuel variability (including snow/ice comingled in the fuel during the wintertime), which creates periods of poor combustion resulting in temporarily

high CO emissions. The State of Vermont boiler CO operating limit for this unit is 1500 ppm uncorrected.

Response: See preamble for discussion of variability and MACT floor methodologies. Also see preamble for discussion of achievability of CO limits.

Commenter Name: Tim W. Sonnichsen
Commenter Affiliation: Sonnichsen Engineering, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2139.1
Comment Excerpt Number: 5

Comment: The CO Emissions Standards for Biomass and Natural Gas Fired Boilers are Unattainable

The proposed CO emission limit for existing biomass-fired boilers is 160 ppm (corrected to 7% O2). In over thirty years of conducting emission assessments and control programs on biomass-fired boilers, I have rarely witnessed a wood-fired boiler of any size consistently and reliably achieve this emission standard. I consider this to be generally unattainable with the CO emission combustion controls currently available on stoker and cell-fired boilers, even with the installation of advanced overfire air systems.

The basis for the EPA's standard appears to be primarily the limited operating data available from very small "Fuels for Schools" projects. The combustion systems and fuels used on these "boilers" bear little if no resemblance to the large industrial boilers to which the MACT standard will apply.

Response: See preamble for discussion of achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Craig S. Smith
Commenter Affiliation: Biewer Wisconsin Sawmill
Document Control Number: EPA-HQ-OAR-2006-0790-2232
Comment Excerpt Number: 5

Comment: When comparing the proposed carbon monoxide emission limits for major sources to the proposed limits for area sources it seems clear that the U.S. EPA is attempting to hold small facilities (area sources) to more restrictive carbon monoxide emission limits than major sources. I fail to see the justification of such measures particularly in Wisconsin where most of the biomass boilers are located in rural areas with limited population centers. If U.S. EPA is using a group of 30 urban air toxics, which it makes reference to in their proposed rule, as the justification for some of the proposed emission limits, this is proportionally out of balance if the true intent in this proposal is to improve air quality and minimize air pollution.

Response: See preamble for discussion of achievability of CO limits and MACT floor methodologies.

Commenter Name: Darrell Soyars
Commenter Affiliation: Avista Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-1989.1
Comment Excerpt Number: 5

Comment: The Population of Large Biomass Fueled Boilers were not Adequately Considered in Developing the Proposed Regulations. In developing emission limits for the proposed Area Source Boiler Rule the EPA did not include emission data from larger sources that are minor HAP sources. Specifically, for biomass boilers, 250 MMBtu/hr was used as an upper limit for the size of boilers that would be minor HAP sources (EPA document EPA-HQ-OAR-2006-0790-0035.pdf). Boilers with heat input of greater than 250 MMBtu/hr were presumed, in general, to be major HAP sources and not included in the MACT analysis for area sources. Based on our experience, Avista believes that there are numerous biomass fueled boilers with heat inputs of greater than 250 MMBtu/hour that are minor HAP sources that should be included in the area source MACT analysis.

Response: See preamble for discussion of the dataset used in the MACT floor analysis.

Commenter Name: Gailyn Messersmith
Commenter Affiliation: Messersmith Manufacturing, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1949.1
Comment Excerpt Number: 5

Comment: Do not adopt the proposed 100 ppm at 7% 02 for CO and .03 lb/MMBTU for PM limits at this time. For now, set emission limits for biomass boilers at 400 ppm at 7% 02 for CO and 0.25 lb/MMBTU for PM.

Response: See the preamble for discussion of changes to emission limits for PM, CO and Hg.

Commenter Name: Robert E. Cleaves
Commenter Affiliation: Biomass Powe Association
Document Control Number: EPA-HQ-OAR-2006-0790-1992.1
Comment Excerpt Number: 5

Comment: On this point, it is worth noting that the plants selected by EPA are totally unrepresentative of the biomass industry - they assume dry, specialized fuel and as such are not typical for biomass boilers in use today.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 6

Comment: The proposed emission levels from Area Source boilers are more stringent than for larger Major Source boilers. The stoker and Dutch oven/suspension burner boilers are most similar to Area Source biomass boiler types; these have proposed CO emission levels of 560 ppm and 1,010 ppm @ 3% O2, respectively which converts to 434 ppm and 764 ppm @ 7% O2. Therefore it seems unreasonable that smaller boilers would be subject to CO limits that are so much lower when major sources have less stringent CO limits.
In fact the emission standards proposed by EPA for residential outdoor wood boilers are higher than the standard for commercial wood boilers. As a result a sawmill owner who lives adjacent to the sawmill and has an outdoor wood boiler for home heating can emit .32 lbs/mmBtu from the home heating system, but can only emit 0.03 lbs/mmBtu from the commercial boiler running the sawmill kilns next door.

Response: See the preamble for the discussion of subcategories, achievability of CO limits, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Martin Lunde
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 6

Comment: Inconsistency with other established biomass emission limits

Response: See preamble for discussion of changes made to emission limits for PM, CO and Hg.

Commenter Name: Robert E. Cleaves
Commenter Affiliation: Biomass Powe Association
Document Control Number: EPA-HQ-OAR-2006-0790-1992.1
Comment Excerpt Number: 6

Comment: In these CAA rules, we believe EPA should use a method to set emissions standards that are based on what real world best performing units actually can achieve. Unfortunately, the Agency's approach which sets standards pollutant-by-pollutant does not reflect what real world units achieve in practice, despite the fact that EPA has the technical and legal discretion to promulgate standards that are much more reasonable. In addition, EPA should assure that its emissions databases are representative of all units and operating periods, and that its standards encompass the practical capabilities of controls and the variability in operations, fuels, raw materials and emissions performance across the many regulated sectors.

Response: See the preamble for discussion of MACT floor methodologies and the dataset used for the MACT floor analysis.

Commenter Name: Al Hankins, Jr.
Commenter Affiliation: Hankins Lumber Company, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1841.1
Comment Excerpt Number: 7

Comment: We are not understanding why the CO limits for biomass boilers located at area sources are more stringent than those at major sources. Was this an error on EPA's part?

Response: See the preamble for discussion of achievability of CO limits, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 7

Comment: EPA has proposed to establish national emissions standards for carbon monoxide ("CO") (as a surrogate for polycyclic organic matter ("POM") emissions) for biomass-fired boilers, as based on maximum achievable control technology ("MACT"), at 160 ppm at 7% oxygen. For oil-fired boilers, EPA has proposed to set the applicable emissions standard at 2 ppm at 3% oxygen. Achievement of these standards by Ethan Allen is not technically feasible or economically reasonable and will not be achieved by a majority of existing boilers. With respect to emissions of mercury, the agency also has proposed to require biomass- and oil-fired boilers to control emissions through the application of generally available control technology ("GACT"), specifically through the implementation of a boiler tune-up program.1 Ethan Allen cannot fully support the EPA's rulemaking at this time because, among other things, the agency has not collected enough emissions and operational data to enable it to establish responsible CO emissions standards for biomass- and oil-fired areas sources that are reflective of what can reasonably be achieved by industry.

Response: See the preamble for discussion of achievability of CO limits, and the adequacy of CO as a surrogate for POM. Also see the preamble for discussion of the dataset used for the MACT floor analysis, and cost impact analysis for renewable energy.

Commenter Name: Tim W. Sonnichsen
Commenter Affiliation: Sonnichsen Engineering, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2139.1
Comment Excerpt Number: 7

Comment: For both biomass and natural gas-fired boilers, the imposition of these standards will require the installation and maintenance of expensive oxidation catalyst systems. These systems require flue gas temperature conditions that are not available on many industrial sized boilers. Their application on biomass-fired boilers has not been commercially demonstrated. And for what purpose? Are the emissions of organic HAP's truly achieved by such high cost measures?

Response: See the preamble for achievability of CO limits and cost impact analysis for renewable energy. Also see the preamble for changes made to emission limits for PM, CO and Hg.

Commenter Name: Keith A. Craig
Commenter Affiliation: Pennsylvania Hardwoods Development Council
Document Control Number: EPA-HQ-OAR-2006-0790-2017.1
Comment Excerpt Number: 7

Comment: We request that the Environmental Protection Agency revise the proposed Boiler MACT rule to:

Revise its approach for biomass boilers to ensure that these boilers are not penalized because they begin with a cleaner renewable fuel.

Response: See the preamble for discussion of changes to emission limits for PM, CO and Hg. Also see the preamble for discussion of cost impact analysis for renewable energy.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 8

Comment: Further illustrating the dataset's weaknesses are the contrasting proposed limits for Major Source boilers. Four different classifications of biomass boilers (stoker, fluidized bed, suspension burner/dutch oven, and fuel cell) each have a range of permitted HAP emissions and associated allowable CO limits. For Area Source boilers, there is a single biomass class which does not reflect the diversity of Area Source boiler types. The stoker and dutch oven/suspension burner boilers are most similar to Area Source biomass boiler types; these have proposed CO emission levels of 560 ppm and 1,010 ppm @ 3% O2, respectively (converted to 434ppm and 764ppm @ 7% O2). Therefore it seems unreasonable that smaller boilers would be subject to CO limits that are so much lower when major sources are allowed much less stringent CO limits.

Also, the proposed standards are sixteen and five times lower for CO and PM, respectively, than the recently proposed European Regulations for similarly sized boilers and USEPA's residential wood boilers that are within the same size range as small commercial units (See Table 3 of submittal).

EPA's standard is required to be based on the "available" data, but with such gaps in the data set, inconsistencies within EPA's own emission limits, and a divergence from international standards, BTEC believes the proposed limits are unreasonable.

Response: See the preamble for discussion the dataset used for the MACT floor analysis and subcategories.

Commenter Name: Chris V. Isaacson
Commenter Affiliation: Alabama Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2060
Comment Excerpt Number: 8

Comment: EPA makes no effort to show that the limited data that are available are in any way representative of the population of boilers that will be subject to the rule. Using the biomass subcategory as an example, the Agency has failed to characterize the wood fired boilers in the database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect HAP emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size. EPA's failure to investigate whether the available data adequately characterize the boilers that will be subject to the Area Source Rule is arbitrary and capricious.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: John Ledger
Commenter Affiliation: Associated Oregon Industries

Document Control Number: EPA-HQ-OAR-2006-0790-2024.1
Comment Excerpt Number: 8

Comment: EPA has calculated its proposed MACT floors solely on the basis of emission data. EPA utterly ignored the plain mandate of the Clean Air Act by entirely neglecting to determine whether there was emission control equipment in use in each subcategory that could actually achieve those inordinately strict emission limits, a critical and necessary analysis required by the Clean Air Act.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis and MACT floor methodologies.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 10

Comment: Good combustion is the result of the three T's: time, temperature and turbulence. CO emissions from biomass-fired boilers and energy systems will vary due to the wide range in the moisture content of the biomass fuels being fired and the design of the furnace and combustions systems. An increase in the moisture content of the biomass fuel results in a lower adiabatic flame temperature and therefore increased CO. Advances in equipment design, including water-cooled grates that allow for increase pre-heated air temperature, has helped to decrease CO and advanced overfire/secondary air systems provide turbulence and oxygen in strategic areas of the furnace to improve combustion and subsequently reduce CO. The CO emissions from existing facilities routinely vary between 450-700 ppm at 3% oxygen under the best of operating conditions. Interruption in fuel feed can increase CO emissions to levels above 1000 ppm. Even with upgrades to combustion controls and overfire/secondary air systems, there are no guarantees that the proposed CO limit of 160 ppmvd at 7% oxygen would be obtainable for a large population of older boilers due to specific operating requirements and existing combustion system and furnace design limitations.

Response: See the preamble for discussion of achievability of CO limits, changes made to emission limits for PM, CO and Hg, and variability MACT floor methodologies.

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 10

Comment: EPA has erred in its establishment of the area source CO limit for biomass boilers.

Aside from the data issues discussed previously, EPA has failed to follow its own stated protocol in establishing the proposed CO limit for area source biomass boilers. In the April 2010 MACT floor analysis for the area source rule, Appendix B-2 shows the computation of the biomass CO limit and that limit was calculated from the raw data which checked as non-normal, while the log-transformed data checked as normally distributed. In this case, according to EPA's stated protocol, the log-transformed data should have been used and, therefore, the computed CO limit for biomass boilers in the proposed rule is incorrect.

In addition to the mathematical error in the CO limit computation for biomass and the improper use of data from boilers not subject to the limits in the floor data, EPA has failed to understand several other important aspects of biomass boilers in the area source rule. Even if EPA corrects the mathematical error in the computation of the CO limit for biomass boilers, the proposed limits will still be incorrect. As proposed, or even if corrected, the CO limit for biomass boilers is far lower in the area source category than for the major source category. This is contrary to logic, and yet another indication of problems with the data that EPA is using. As explained previously, some of our members are major sources and some are area sources but the boilers that they are using are similar, except that it would be expected that there may be more controls on the boilers at the major sources due to the more stringent air permitting requirements at major sources. Given that the boilers located at the major sources are more likely to already have better controls due to PSD avoidance or other permitting issues, it follows that the best 12% of those boilers at major sources would have lower emissions than a similar population of boilers located at area source facilities. Therefore, it defies logic, and the facts, when EPA sets a CO limit for area source biomass boilers lower than for identical boilers located at major sources.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 11

Comment: In addition to the more stringent CO limit for area source biomass boilers, EPA also proposed much more stringent compliance demonstration requirements for area sources. For example, a biomass boiler with a capacity greater than 100 million Btus/hr located at either a major source or an area source must have a continuous CO monitor for compliance demonstration purposes. However, the area source boiler has a compliance averaging time of only one day while the boiler located at the major source has a 30-day averaging time. Given the fact that many of our members have at least weekly startups and shutdowns of their boilers, even a 30-day averaging time limit cannot be met unless the floor data includes data from units experiencing similar startup and shutdown frequencies, and a 1-day averaging time guarantees facility non-compliance.

If EPA persists in its efforts to set CO limits for biomass boilers at area source facilities, those limits cannot be lower than those for similar boilers at major sources and the Agency should establish similar subcategories in the area source rule. The compliance demonstration requirements should not be more stringent for area sources and should consider the more frequent startups and shutdowns that typically occur at smaller facilities.

Response: See the preamble for discussion of the achievability of CO limits and compliance requirements.

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 12

Comment: It may be difficult, if not impossible for existing biomass systems to come into compliance with the proposed CO levels. As you can see in Tables 4 and 5, currently permitted CO levels are much higher than the proposed EPA rule. [See submittal for Tables 4 and 5.] Most existing biomass combustions systems in the US were permitted with CO levels between 500 and 600 ppm and in some cases no CO level was indicated on the permit. Analysis of the EPA boiler database used to develop the rule shows that the set of boilers that were the best performers for PM had CO levels near 1,164 ppm at 7% O2.

Table 5 provides more detail regarding the existing European standards for small boilers contained in the EN 303-5 standards.

Comparing Table 2 to Table 5 above demonstrates that the proposed EPA standard is significantly lower than current European standards. Significant research and development funding as well as support for biomass energy implementation have resulted in AWC systems that can perform to these standards. The implementation of significantly more rigorous standards in the US without support of technological improvement will have substantial impacts on both the biomass boiler industry and the current and potential users of biomass systems.

Response: See the preamble for discussion of the achievability of CO limits.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 14

Comment: No data was included on emissions from biomass fuels other than wood, and the data did not provide specifications on the wood fuel from included boilers. No data were collected

from systems burning corn stover or grasses. Such fuels are becoming more common as efforts such as the Biomass Crop Assistance Program are expanded.

Response: See the preamble for discussion of the dataset used for the MACT floor anlaysis and subcategories.

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 14

Comment: EPA has not shown that the limited data that are available are representative of the population of boilers that will be subject to the rule. Using the biomass subcategory as an example, the EPA has not characterized wood fired boilers in the database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect HAP emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis and subcategories.

Commenter Name: Steven A. Brink
Commenter Affiliation: California Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2026.1
Comment Excerpt Number: 15

Comment: Four issues confront these EPA Rules:
1. Lack of consideration given to the variability of boilers,
2. Biased selection of data in setting limits,
3. Inappropriate baselines given biomass' inherently low emissions of certain pollutants, and
4. Lack of an alternative compliance approach that avoid controls where health risks are small.

Response: See the preamble for discussion of variability MACT floor methodologies, and the dataset used for the MACT floor analysis.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 15

Comment: Noting the differential between the proposed Area Source and Major Source MACT limits for CO for biomass-fired units, 560 ppm at 3% O2 is the equivalent of approximately 435 ppm at 7% O2. Generally, ABMA would be comfortable meeting the 435 ppm number with a stoker biomass unit. However, the limit for CO for a Major Source for a biomass stoker fired boiler is significantly less stringent than the CO requirements for units permitted as an Area Source, where the proposed CO limits are 100 ppm at 7% O2 for new sources and 160 ppm at 7% O2 for existing sources. To meet these limits, CO catalyst would be required for biomass-fired boilers using stoker combustion technology. [Note: fluidized bed units have a different standard and CFBs can usually meet the limit on CO for several reasons, including the enormous heat sink they have with the bed material, the additional time at temperature for the fuel in the bed, the attrition of the bed material on the fuel particles constantly exposing new surface to the combustion process, and generally good mixing.]

Response: See the preamble for the discussion of changes made to emission limits for PM, CO and Hg. Also see preamble for the achievability of CO limits and subcategories.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 15

Comment: Biomass boiler treatment under the Area Source rule
Comparisons of Table 2 and Table 4 [SEE PDF FOR TABLES] point out some alarming differences between current and proposed permit levels for CO and PM emissions for existing and new area source biomass systems. The proposed rule is six times lower (100 ppm v. 596 ppm) for CO and five times lower (.03 lb vs. .15 lb) for PM than current AP-42 guidance. The proposed rule is also substantially more restrictive than existing European standards as well (Table 5). While modern advanced wood combustion (AWC) system have significantly improved combustion controls and burn much cleaner than existing units, even these systems will have difficulty meeting these standards. The substantial reduction in CO levels is particularly perplexing. Studies in Europe indicate that the relationship between CO and POM reductions are not linear. CO reductions below 600ppm do not yield substantial reductions in POM levels ("European Wood-Heating Technology Survey," New York State Energy Research and Development Agency, April 2010, pg. 3-5.) Additionally, particulate emissions from these AWC systems have proven to be less biologically active than particles emitted from older, less efficient wood combustions systems (Nussbaumer T., Klippel N., Oser M., "Health relevance of aerosols from biomass combustion in comparison to diesel soot indicated by cytotoxity tests," 14th European Biomass Conference, Paris, 2005).
The proposed emission levels from Area Source boilers (Table 2) are more stringent than for larger Major Source boilers (Table 1). The stoker and Dutch oven/suspension burner boilers are most similar to Area Source biomass boiler types; these have proposed CO emission levels of 560 ppm and 1,010 ppm @ 3% O2, respectively which converts to 434 ppm and 764 ppm @ 7% O2. Therefore it seems unreasonable that smaller boilers would be subject to CO limits that are

so much lower when major sources have less stringent CO limits. In fact the emission standards proposed by EPA for residential outdoor wood boilers are higher than the standard for commercial wood boilers. As a result a sawmill owner who lives adjacent to the sawmill and has an outdoor wood boiler for home heating can emit .32 lbs/mmBtu from the home heating system, but can only emit 0.03 lbs/mmBtu from the commercial boiler running the sawmill kilns next door.

Response: See the preamble for discussion of achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 18

Comment: Meeting the CO standard and guaranteeing it are two completely different things. The bottom line is that most manufacturers do not have a good handle on CO emissions because previous standards of 5-600 PPM could be achieved and guaranteed. These old standards were actually an excellent measure of efficient combustion and the random testing which resulted in a recommended five to one reduction in this threshold is nothing short of unfair. After 25 years selling industrial wood fired boilers I will bet that at least 50% of the existing wood fired boilers will not meet the 160 ppm of CO threshold in the current MACT standard. Our systems can operate below 100 PPM but maintaining that efficiency with fuel that varies in moisture content, particle size and density is a different story. Even pellet manufacturers are leery of guaranteeing this standard.

Please take some time to review the data collected by BTEC on the emission impact from this five to one reduction is C0 emissions. Is the marginal benefit really worth the dramatic impact on existing wood fired boilers and the future of wood energy in this Country?

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 20

Comment: It may be difficult, if not impossible for existing biomass systems to come into compliance with the proposed CO levels. As you can see in Tables 4 and 5,[SEE PDF FOR TABLES] currently permitted CO levels are much higher than the proposed EPA rule. Most existing biomass combustions systems in the US were permitted with CO levels between 500 and

600 ppm and in some cases no CO level was indicated on the permit. Analysis of the EPA boiler database used to develop the rule shows that the set of boilers that were the best performers for PM had CO levels near 1,164 ppm at 7% O2. The proposed rule will mean that many existing biomass boilers will have to be taken out of service in three years. Impacts on existing businesses, particularly in the wood products sector may be substantial given the current economic downturn impacts on this industry sector. Table 5 provides more detail regarding the existing European standards for small boilers contained in the EN 303-5 standards.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 21

Comment: Messersmith Manufacturing, Inc. is one of those boiler manufacturers that can meet the proposed CO standard. Three of the boilers listed in the EPA's Table 1 'Best In Class' boilers for CO, namely Burlington High School in Vermont, Council School in Idaho, and Darby School in Montana, are products of Messersmith Manufacturing, Inc. However, given the wide variety of wood fuels and operating conditions, we can not guarantee that all of our systems would meet the proposed CO requirement.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

MACT Floor: Results: Existing Oil

Commenter Name: Norman Bujold
Commenter Affiliation: Cleaver Brooks
Document Control Number: EPA-HQ-OAR-2006-0790-0392.1
Comment Excerpt Number: 4

Comment: CO EMISSIONS, OIL
For (Industrial watertube (IWT) boiler and firetube (FT) boiler) applications the best burner CO emissions that we can guarantee from 25% to 100% firing rate:
30 ppmv for application of less than 50MMBTU/hr
50 ppmv for application between 50 and 180 MMBTU/hr
75 ppmv for application of more than 180MMBTU/hr
Note: Always consider that the guarantees are given for a turndown range thus will not reflect the best possible numbers that can be obtained at a given constant firing rate.

Response: See preamble for discussion of subcategories, achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Arlington Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0396
Comment Excerpt Number: 60

Comment: I want to just switch to the institutional boilers and commercial and institutional boilers. And we're very concerned about that. We have looked at the boilers in cities throughout Connecticut, and the institutional boilers are the –- generally the largest polluters are the electrical power plants; then the second is the trash-to-energy facilities; and then the third are the institutional boilers.

And I'm particularly concerned about some of the boilers like at schools. The boilers at schools tend to be high up on the rank of -– you know, they tend to be Number 4, or Number 5, or Number 6 in the highest polluting sources in the cities in Connecticut.

We're also concerned about the hospitals. The hospital boiler emissions have increased over the 2000s. From 1998 through the year 2008 the emissions from the hospital boilers has increased dramatically, and -- even though they're required to meet BACT standards. And I believe that that's because they're switching from using natural gas to Number 6 fuel oil. There's no -– there is no penalty. The BACT standards for Number 6 fuel oil are obviously much higher and allow many times more emissions than the BACT standards for natural gas.

We believe that there should be -– you know, and obviously if -– as a physician, your body doesn't care what kind of fuel you're using. Well, the issue is how much pollution there is and what the emissions are and how many toxins are in those pollution –- is in that pollution.

So we're very concerned about that, and we believe that there should be some kind of incentive to use the cleanest fuel possible for these facilities and to get them to use at least Number 2 fuel as their back-up fuel.

Response: See preamble for discussion of subcategories and fuel switching.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 2

Comment: The proposed CO emission limit for units in the oil subcategory is 2 ppm and the new unit CO limit is 1 ppm. (Table 1, Items 3 and 6, 75 FR 31932).

These two emission limits are extremely low and may be unachievable, even with add-on control equipment. INVISTA endorses the comments made by the American Forest & Paper Association and Georgia-Pacific on the appropriateness of these limits.

Response: See preamble for discussion of achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: David J. Prior
Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 3

Comment: The CO limit of 1 ppm for oil is far lower than the National Ambient Air Quality Standard for CO of 9 ppm for 8 hours and 35 ppm for one hour. The Underwriters Laboratory requires that CO emissions be less than 400 ppm (for safety) in order to certify an oil burner, a much higher value than proposed in the MACT. CO emissions for a properly operating oil fired system are typically on the order of 50 ppm. To reduce this to <2 ppm will require post combustion control technology which presents significant burden particularly for smaller sized systems.

Response: See preamble for discussion of subcategories, achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Jeff Kleiss
Commenter Affiliation: Weil-McLain
Document Control Number: EPA-HQ-OAR-2006-0790-0581
Comment Excerpt Number: 1

Comment: We do not have CO emission data for all of our commercial oil boilers. Typically, commercial oil boiler combustion is adjusted based on CO_2 and smoke. Carbon monoxide is not typically measured in commercial oil boilers, so the data will be limited. At this point, few comments can be made regarding the impact of this proposal on our specific products.

The proposed emission limits of 1 ppm CO for new boilers and 2 ppm for existing boilers seem like poor choices for the following reasons:
Probably not achievable or measurable – Ambient CO levels are above 5 ppm in many of the areas where commercial oil boilers will be installed. The CO level of air drawn into the burner will start above the allowable limit. (Review background on the development of UL 2034

“Single and Multiple Station Carbon Monoxide Alarms” regarding setting minimum CO levels for carbon monoxide alarms to validate ambient CO levels.)

Inconsistent with requirements for similar products – Proposed emissions for coal fired boilers are 300 ppm CO, and 100 ppm for bio-mass boilers. All nationally recognized certification standards set a 400 ppm maximum for CO emissions. Imposing limitations on oil boilers that are several orders of magnitude more restrictive seems arbitrary.

Unnecessary – Limitations on carbon monoxide emissions are generally based on the assumption that some abnormal circumstance, that requires correction, allows emissions from the boiler to displace breathing air in occupied space. The limitations on maximum CO production allow people time to experience progressively worsening symptoms, identify the threat and respond before becoming incapacitated (at 400 ppm about an hour of symptoms preceed collapse). Concentrations of 50 ppm CO would be expected to cause no symptoms within 4 hours of exposure, much less more serious threats. Single digit limitations make no sense as a safety limit. (Symptom times are based on UL 2034, Figure 38.1)

Response: See preamble for discussion of subcategories, achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Donald R. Schregardus
Commenter Affiliation: Department of the Navy, Department of Defense
Document Control Number: EPA-HQ-OAR-2006-0790-1947.1
Comment Excerpt Number: 3

Comment: DoD identified an inconsistency in the discussion of the basis for CO limits. DoD believes the proposed CO limit of 1 ppmdv @ 3% 02 for all new oil-fired boilers at area sources and 2 ppmdv @ 3% 02 for existing oil-fired boilers rated 10 MMBtu/hr or more at area sources is too restrictive and not achievable on a continuous basis. We also question whether a facility could reliably demonstrate compliance with these limits using the methods proposed by EPA.

EPA states in the preamble at 75 FR 31906, that the determination of the MACT floor for CO emissions from oil-fired area source boilers was based on actual CO emission data available from 68 oil-fired area source boilers responding to the Boiler MACT Information Collection Request and 56 boilers identified with CO permit limits. 15 boilers make up the top 12% of boilers used for the MACT floor. However, we note that the Section 3.3 of MACT Floor Analysis for the Industrial, Commercial, Institutional Boilers National, Emission Standards for Hazardous Air Pollutants — Area Source, April 2010, EPA states that the MACT floor for liquid units at major sources was used as the basis for the floor for area source boilers. The major source rule says the CO limit for existing liquid boilers is based on 116 units (14 in top 12%).

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of subcategories and the dataset used for the MACT floor analysis.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 4

Comment: The proposed CO emission limits for new oil (1 ppmv by volume) and existing oil boilers (2 ppmv by volume) are unreasonable and extremely low. EPA should evaluate the technical feasibility of meeting such limits even after the installation of additional control technology.

Response: See the preamble for discussion of achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Donald R. Schregardus
Commenter Affiliation: Department of the Navy, Department of Defense
Document Control Number: EPA-HQ-OAR-2006-0790-1947.1
Comment Excerpt Number: 4

Comment: We believe the sampling of only 56 boilers associated with area sources may be biased to primarily new boilers yet proposed limits applied to existing boilers. CO emission data gathered appears to be primarily for boilers that have CO emission limits in their CAA permits which tend to be newer units permitted under New Source Review regulations. The data sampling for establishing the MACT floor should ensure it statistically includes an unbiased subset of existing boilers.

The presence of CO in the exhaust gases from combustion sources result principally from incomplete fuel combustion. Several conditions can lead to incomplete combustion, including insufficient oxygen (02); poor fuel/air mixing; cold-wall flame quenching; reduced combustion temperature: decreased combustion gas residence time; and load reduction (i.e., reduced combustion intensity). Various combustion modifications for NOx reduction can produce one or more of these conditions, so optimization of combustion to reduce CO may increase NOx or vice versa, optimization of combustion to reduce NOx may increase CO.

The average emission factor for CO from oil-fired boilers based on EPA's Compilation of Air Pollutant Emission Factors (AP-42) is 5 pounds per 1,000 gallons of fuel oil burned which is equivalent to 42.7 ppmdv @ 3% 02 for No. 6 fuel oil and 45.8 ppmdv @ 3% 0, for distillate fuel oil. This emission factor is rated -A- for excellent, which indicates it was developed only from A-rated test data taken from many randomly chosen facilities in the industry population and that the source category is specific enough so that variability within the source category population

may be minimized. Review of the AP-42 background document for the development of fuel oil external combustion emission factors revealed that CO emissions typically range between 0.1 to 120 kg/103 liters of oil (1 to 10 lb/103 gal oil) (8.5 to 85.5 ppm CO corrected to 3% 02). One should note the range from 8.5 ppm CO to 85.5 ppm CO was based on test data from 58 sources and indicates the lowest value measured in the evaluation of sources for the determination of a CO emission factor was approximately 8.5 ppm CO.
In general, existing oil-fired boilers will not be able to comply with the proposed CO limit without major modifications. While some existing boilers may be able to significantly improve combustion efficiency by installing new, state-of-the-art burner systems, many have inherent design configurations and operating conditions (e.g., insufficient residence time and/or load variations) which would not enable the boiler to meet the proposed limits even with the most sophisticated burner and combustion control system. These boilers would be required to install CO catalyst control systems which may not operate as designed due to the potential for fouling of the catalyst. Most fuel oil, especially No. 6 fuel oil, contains ash which over time will foul a catalyst. reducing its ability to remove CO from the gas stream.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Thomas A. Nyquist
Commenter Affiliation: Princeton University
Document Control Number: EPA-HQ-OAR-2006-0790-1764.1
Comment Excerpt Number: 4

Comment: Princeton requests additional hours for testing, and suggests 120 hours as a reasonable threshold. Princeton also requests clarification that the emission limitations for existing oil units, codified in 40 CFR 63.11201, do not apply when an oil unit is firing gaseous fuels. Consider that a boiler may be permitted to operate on oil as a backup fuel, meeting the definition of "oil unit" because it operates during times other than natural gas curtailment, However, the unit is primarily a gas-fired unit and firing only natural gas for an extended period of time. Based on the current proposal, one could interpret that the CO limitation of 2 ppm @ 3% 02 applies to an oil unit at times even when only natural gas combustion is occurring. As stated in the preamble, the combustion of natural gas does not emit any of the urban HAPs targeted by this regulation. Therefore, Princeton believes that emission limitations for boilers firing natural gas as a primary fuel do not serve any environmental benefit, even if the boiler fits into one of the subcategories with the current proposed rule while combusting backup fuel.

Proposed regulation:
"(a) You must comply with each emission limit specified in Table 1 of this subpart that applies to your boiler."

Princeton proposal:
"(a) You must comply with each emission limit specified in Table 1 of this subpart that applies to your boiler while firing the fuel subject to the emission limit."

Response: See the preamble for discussion of subcategories and changes to emission limits for PM, CO and Hg.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 17

Comment: EPA does not have long term CO CEMS data for oil fired boilers in support of this rule or for the proposed Subpart DDDDD MACT rule. This is a major omission, since liquid fired boilers present additional complexity over load range due to fuel atomization requirements. Lower firing rates decrease velocities through oil atomizers and fuel/atomizing steam or air pressures typically are lower at low firing rates. Fuel atomization as well as fuel/air mixing variations over load contribute to increased CO emissions over the firing rate. Reference the following chart showing O2 and CO measured with a portable analyzer for a watertube boiler retrofit with a new Low NOx Burner installed in 2006 firing low sulfur No. 6 Oil. [See submittal for chart.] The key point is the variation in CO over load for a well tuned boiler as well as the considerably higher CO emission rate than proposed. Recognize there is no reasonable method to reduce CO without negatively impacting unit efficiency (increasing excess air) and even then there is no assurance the proposed limit can ever be reached. In this example, 0% firing rate is for the unit operating at minimum fire condition.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of achievability of CO limits and variability MACT floor methodologies.

Commenter Name: Andrea Grant
Commenter Affiliation: Castle Oil Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1945.1
Comment Excerpt Number: 10

Comment: The fuel oil industry (an industry consisting largely of small and medium businesses) believes that there is inadequate evidence to show that the emission levels achievable by very large boilers used at refineries or manufacturing plants correlate well with those achievable by smaller units used at commercial (e.g. retail shops or apartment houses) and institutional facilities (e.g. small hospitals or nursing homes).

EPA is relying on surrogates such as CO to indicate incomplete combustion and potentially elevated organic hazardous air pollutant emissions. However, currently, the fuel oil industry does not test for CO. Many cities and states require periodic stack testing of carbon dioxide emissions, stack temperature and smoke. These tests are focused on determining boiler efficiency and

incomplete combustion. Thus, there are very little data available on CO to justify it as the appropriate measure for incomplete combustion.

Further, under the proposed rule, a new boiler with a heat input capacity of 10 MMBtus/hr would have to meet a CO standard of 1 ppm. Representative boiler manufacturers have told the industry that they do not test to the proposed compliance levels, do not have the equipment to verify compliance, and do not know if the proposed standards are achievable. However, even assuming that a manufacturer could make such an efficient boiler and certify to such efficiency, compliance in the field is much more difficult to achieve. Readings are affected by boiler size, configuration, flue stack and a number of other factors. With a standard of 1 ppm, compliance is likely to be impossible. EPA seems to be relying too heavily on the analyses performed on very large boilers either for the Area Source rule or for the Major Source rule to establish the proposed standards. The proposed standards do not appear to be reasonable for or achievable by smaller boilers. This likelihood supports the need for additional testing, review and analysis.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Gary Rubenstein
Commenter Affiliation: Kauai Island Utility Cooperative, KIUC
Document Control Number: EPA-HQ-OAR-2006-0790-2028.1
Comment Excerpt Number: 14

Comment: EPA acknowledged in the RICE MACT rulemaking that there are uncertainties regarding diesel health risk. We believe the health risk from oil-fired area source boilers is even more uncertain and must be better established before these boilers are subjected to MACT requirements.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of MACT floor methodologies.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 21

Comment: We provide the comments of CleaverBrooks, a supplier of oil fired boilers, filed for the major source rule as well as specifications for two boilers that represent technology installed before and after 1990 in Appendix 5. We believe the information from Cleaverbrooks further emphasizes the un-achievability of the liquid fired new and existing source proposals in this standard.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO, Hg.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 25

Comment: For liquid-fired boilers at area sources, actual CO emission data was available from 68 boilers responding to the Boiler MACT Information Collection Request (ICR). Information on State permits limiting CO emissions from liquid-fired area source boilers were obtained on 56 boilers. No State for which data was available had an applicable emission limit regulation specifically for POM or CO. To determine MACT for POM, using CO as a surrogate, EPA used the CO emission data and permit limits from the 124 liquid-fired boilers for which they had data or permit limit information. EPA simply ranked the 124 liquid-fired boilers, determined the top 12% (15), and calculated MACT based on the average CO emissions from those 15 boilers.

Only statistical variability within the data set was addressed. It is unclear how the disparity between emissions data (actual emissions over a three hour period on one fuel at one operating condition) and permit limits (maximum emissions on any fuel at any operating condition, often as a yearly average) were factored into this calculation. Nothing in the record demonstrates that these 124 data points are representative of the 168,000 liquid-fired boilers EPA estimates are in the source category. In fact it is hard to imagine how they could be.

Response: See the preamble for discussion of achievability of CO limits, the dataset used for the MACT floor analysis and CO as a surrogate for POM. Also see the preamble for changes made to emission limits for PM, CO and Hg.

Commenter Name: Kevin F. Biernacki
Commenter Affiliation: Veolia Energy North America
Document Control Number: EPA-HQ-OAR-2006-0790-2273
Comment Excerpt Number: 1

Comment: The proposed CO emissions limit of 2 ppmvdc for existing oil fired boilers is unattainable for numerous boilers operated by Veolia Energy North America. Within the proposed rule summary the following statements are made:

“For existing oil-fired area source boilers, we found no add-on control technology being used.” and “Actual CO emission data were available from 68 oil-fired area source boilers responding to the Boiler MACT ICR. State permits limiting CO emissions from oil-fired area source boilers were obtained on 56 oil-fired area source boilers.

The top 12 percent is made up of 15 boilers. The average CO level of the top 12 percent is 1 ppm at 3 percent oxygen. Based on the test runs from these 15 best performing units, the 99 percent UPL level is 2 ppm at 3 percent oxygen. Therefore, the MACT floor level is 2 ppm CO at 3 percent oxygen."

Certain boilers we maintain will not be able to satisfy the proposed limits and would require significant capital improvements in an attempt to improve CO emissions levels. Some boilers we operate currently have air permit limits of 200 ppmvdc. We find the proposed CO emission limits for oil fired boilers to be excessively low as they are 1% of our current permit Massachusetts NOx RACT (310 CMR 7.19) emission limits.

We would like to see data analyses performed based upon boiler size range (i.e. 10 – 100 mmbtu/hr, 100 – 250 mmbtu/hr and boilers greater than 250 mmbtu/hr) to justify proposed CO emission limits. For technical reasons, we do not believe a CO emissions limit less than 10 ppmvdc is justifiable for technical monitoring reasons. For these reasons, we would suggest a tiered CO emissions limit based upon boiler size (e.g. CO emission limit for existing units of 10 ppmvdc for boilers 10-100 mmbtu/hr, a CO emissions limit for existing units of 25 ppmvdc for boilers 100-250 mmbtu/hr and a CO emissions limit for existing units of 50 ppmvdc for boilers >250 mmbtu/hr). Importantly, as you reduce boiler CO emissions, under certain circumstances NOx emissions will increase. For this reason, we suggest that EPA further explore and discuss the relationships between CO and NO. This issue is more pressing given the fact that many states have non-attainment zones for ozone NAAQS, and NOx is an ozone precursor.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of CO limits and work practice standards for units with heat input capacity less than 10 MM Btu/hr.

Commenter Name: David Suess
Commenter Affiliation: DSG Solutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1977.1
Comment Excerpt Number: 1

Comment: The proposed CO emissions limit of 2 ppmvdc for existing oil fired boilers is unattainable for numerous boilers operated by our clients. Within the proposed rule summary the following statements are made:

"For existing oil-fired area source boilers, we found no add-on control technology being used." And "Actual CO emission data were available from 68 oil-fired area source boilers responding to the Boiler MACT ICR. State permits limiting CO emissions from oil-fired area source boilers were obtained on 56 oil-fired area source boilers. The top 12 percent is made up of 15 boilers. The average CO level of the top 12 percent is 1 ppm at 3 percent oxygen. Based on the test runs from these 15 best performing units, the 99 percent UPL level is 2 ppm at 3 percent oxygen. Therefore, the MACT floor level is 2 ppm CO at 3 percent oxygen."

If EPA is under the assumption that the 2 ppmvdc will not require significant capital improvements that may include add-on controls on older boilers subject to this rule that assumption is false. Certain boilers that our clients maintain will not be able to satisfy the proposed limits and would require significant capital improvements in an attempt to improve CO emissions levels. Numerous of these boilers currently have their most restrictive air permit limits for CO of 200 ppmvdc. We find the proposed CO emission limits for oil fired boilers to be excessively low as they are 1% of current permit Massachusetts NOx RACT (310 CMR 7.19) emission limits.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of dataset used for the MACT floor analysis.

Commenter Name: Kevin F. Biernacki
Commenter Affiliation: Veolia Energy North America
Document Control Number: EPA-HQ-OAR-2006-0790-2273
Comment Excerpt Number: 2

Comment: Considering the proposed CO oil firing emission limits apply to oil firing boilers greater than 10 mmbtu/hr we do not believe that the analysis performed to develop the proposed CO oil firing emission limits is either adequate to develop a limit for boilers of any size greater than 10 mmbtu/hr or represents fuel oil fired boilers operated by Veolia Energy North America. We believe there should be separate and more thorough analyses performed by EPA to discern boilers between 10 – 100 mmbtu/hr, 100 – 250 mmbtu/hr and boilers greater than 250 mmbtu/hr.

Response: See the preamble for discussion of subcategories and changes made to emission limits for PM, CO and Hg.

Commenter Name: David Suess
Commenter Affiliation: DSG Solutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1977.1
Comment Excerpt Number: 2

Comment: Considering the proposed CO oil firing emission limits apply to oil firing boilers greater than 10 mmbtu/hr we do not believe that the analysis performed to develop the proposed CO oil firing emission limits is either adequate to develop a limit for boilers of any size greater than 10 mmbtu/hr or represents fuel oil fired boilers operated by numerous of our clients. We believe there should be separate and more thorough analyses performed by EPA to discern boilers between 10 – 100 mmbtu/hr, 100 – 250 mmbtu/hr and boilers greater than 250 mmbtu/hr. By analyzing test run data from 15 boilers to determine an emissions limit that is meant to apply at all times for any oil firing area source boiler > 10 mmbtu/hr is not adequate.

We would like to see data analyses performed based upon boiler size range (i.e. 10 – 100 mmbtu/hr, 100 – 250 mmbtu/hr and boilers greater than 250 mmbtu/hr) to justify proposed CO emission limits. For technical reasons, described below in Concern #2 we do not believe a CO emissions limit less than 10 ppmvdc is justifiable for technical monitoring reasons. For these reasons, we would suggest a tiered CO emissions limit based upon boiler size (e.g. CO emission limit for existing units of 10 ppmvdc for boilers 10-100 mmbtu/hr, a CO emissions limit for existing units of 25 ppmvdc for boilers 100-250 mmbtu/hr and a CO emissions limit for existing units of 50 ppmvdc for boilers >250 mmbtu/hr).

Response: See the preamble for discussion of the dataset used in the MACT floor analysis and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of work practice standards for units with heat input capacity less than 10 MMBtu/hr.

Commenter Name: Kevin F. Biernacki
Commenter Affiliation: Veolia Energy North America
Document Control Number: EPA-HQ-OAR-2006-0790-2273
Comment Excerpt Number: 4

Comment: The proposed CO oil firing emission limits for new/existing sources are 1 ppmvdc and 2 ppmvdc, respectively and boilers greater than 100 mmbtu/hr would be required to install CO CEMS according to 40 CFR 60 PS-4A. The allowed error for CO according to the 40 CFR 60 relative accuracy test is a 5 ppm difference between the reference method and facility CO CEMS. Considering the reference method can only quality assure data to within 5 ppm, the proposed CO limits are indistinguishable from zero. It would be difficult to show compliance with a permit limit set below the allowable deviation in the reference test method.

Considering the limitation with the current EPA reference method (40 CFR 60 PS-4A) we request that the CO standard be set to nothing lower than 10 ppmvdc, which is twice the allowed error of the required relative accuracy test within 40 CFR 60 PS-4A.

Response: See the preamble for discussion of compliance requirements and changes made to emission limits for PM, CO and Hg.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1944.1
Comment Excerpt Number: 5

Comment: [See pages 147 and 148 of submittal for chart showing emissions data for #6 oil boiler built before 1990 and after 1990.]

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg.

Commenter Name: John C. deRuyter
Commenter Affiliation: DuPont
Document Control Number: EPA-HQ-OAR-2006-0790-1964.1
Comment Excerpt Number: 6

Comment: DuPont is especially concerned with the oil fired boiler CO limit, which we believe to be generally unattainable with conventional modern burner technology. Application of CO catalysts to oil fired boilers to reduce CO from 100 ppm or less to 1 or 2 ppm is an illogical and unjustified result of a rulemaking that should be based on what is actually achieved in practice from similar oil fired boilers. The resultant proposed rule CO requirement is especially problematic when there is no evidence that HAP emissions are truly reduced below 100 ppm CO. We do support the area source rule approach that the CO limit is not applicable below 50% of rated capacity, and believe that should also be applied to the Major Source rule (Subpart DDDDD) CO limit.

EPA does not have long term CO CEMS data for oil fired boilers in support of this rule or for the proposed Subpart DDDDD MACT rule. This is a major omission, since liquid fired boilers present additional complexity over load range due to fuel atomization requirements. Lower firing rates decrease velocities through oil atomizers and fuel/atomizing steam or air pressures typically are lower at low firing rates. Fuel atomization as well as fuel/air mixing variations over load contribute to increased CO emissions over the firing rate. Reference the following chart showing O2 and CO measured with a portable analyzer for a watertube boiler firing low sulfur No.6 Oil that was retrofit with a new Low NOx Burner in 2006. The key point is the variation in CO over load for a well tuned boiler as well as the considerably higher CO emission rate than proposed, with increasing trend at both high and low loads. Recognize there is no reasonable method to reduce CO without negatively impacting unit efficiency (in many cases increasing excess air), and even then there is no assurance the proposed limit can ever be reached.

Response: See the preamble for discussion of changes to emission limits for PM, CO and Hg. Also see the preamble for discussion of compliance requirements, achievability of CO limits and CO limits affect on NOx emissions.

Commenter Name: John C. deRuyter
Commenter Affiliation: DuPont
Document Control Number: EPA-HQ-OAR-2006-0790-1964.1
Comment Excerpt Number: 7

Comment: If CO limits are imposed in the final rule, for those units which are not required to use CO CEMS, DuPont recommends that the CO limit be based on the average of 3 test runs using M10 with the boiler operating between 80-100% of rated heat input, with appropriate

latitude to account for the diverse population of boilers, burners, atomization systems, and applications. As such, the basis for the standard would also change from the current daily average basis for those units. As proposed, units without CO CEMS would appear to need to conduct a 24 hour M10 emission test in order to determine compliance, which appears at odds with at least 1-hour sampling time for each test run stated in §63.11212(d).

EPA should re-evaluate its proposed CO limits for oil fired boilers to ensure they represent what is generally achievable by the population of boilers. If boilers with low NOx limits are forced to meet CO limits of 2 ppm, an oxidation catalyst could be required, which is a very costly control option that may oxidize CO but not organic HAP, depending on the temperature of the gas stream at the location of the catalyst, which will necessarily vary with boiler firing rate.

Response: See the preamble for discussion of compliance requirements and changes to emission limits for PM, CO and Hg.

Commenter Name: David Suess
Commenter Affiliation: DSG Solutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1977.1
Comment Excerpt Number: 7

Comment: Work more closely with industry to develop more representative oil firing CO emission limits so that no add-on controls or major capital improvements would be required due to the implementation of this regulation as stated within this regulation's background documentation.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg.

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 8

Comment: NAACA recommended a range of 3 to 10 ppm for CO emissions from oil-fired boilers in their model rule. NAACA states that this limit "accommodates the NOx/CO tradeoff concerns and to recognize the difference in expected performance of oil-fired boilers compared to solid-fuel fired boilers". NHDES has concerns over the proposed area and major source boiler regulations' CO emission limit for oil-fired boilers which is set at 1 and 2 ppm. These concerns center around measurability and accuracy issues surrounding the testing of a boiler for that low an emission standard as well as the impact a CO emission limit of that level would have on NOx emissions from the boiler. NHDES suggests that EPA set the emission limitation for CO

emissions from new oil-fired boiler at 10 ppm (@3% 02) which is consistent with the NAACA recommendations.

Response: See the preamble or discussion of changes to emission limits for PM, CO and Hg.

Commenter Name: Barry Christensen
Commenter Affiliation: Occidental Chemical Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2227.1
Comment Excerpt Number: 7

Comment: The proposed carbon monoxide standard for oil fired units is not achievable over the range of operating conditions. EPA must consider real world variability for small boilers during all operating conditions. Load swings which are common for backup boilers require operating at less than 50% of capacity. The proposed CO limit of 2 ppm for existing boilers and 1 ppm for new boilers does not consider these temporary emission swings of several hundred ppm encountered by most boilers. Also, some low NOx burners required in certain ozone non-attainment areas require balancing low NOx with higher CO values. Work practice standards, including operating the boiler according to the manufacturer's recommendations to ensure good combustion along with periodic tune-ups, is the most practical method of regulation during low load periods.

Response: See the preamble for discussion of changes to emission limits for PM, CO and Hg. Also see the preamble for discussion of CO limits and NOx.

Commenter Name: Frank A. Stanonik
Commenter Affiliation: Air-Conditioning, Heating, and Refrigeration Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2156.1
Comment Excerpt Number: 1

Comment: The proposed particulate matter and carbon monoxide limits for new boilers are not reasonable for oil boilers with input of several hundred thousand or even a few million Btu/h. It is not technically feasible to design these smaller boilers to emit only 1 ppm of CO at the boiler flue outlet.

Response: See the preamble for discussion of changes to emission limits for PM, CO and Hg. Also see preamble for discussion of achievability of CO limits.

Commenter Name: David M. Kiser
Commenter Affiliation: International Paper Company
Document Control Number: EPA-HQ-OAR-2006-0790-1924.1

Comment Excerpt Number: 2

Comment: The proposed limit of 1 ppm CO for new oil fired units and 2 ppm for existing oil fired units is an unachievable compliance emission limit. Based on emission performance data provided by one of our boiler manufacturers, CO levels (corrected to 3% O2) for a 250 HP (10.46 MMBtu per hour) and 500 HP (20.9 MMBtu per hour) boiler are estimated at 95 ppm while firing #6 oil [see submission for details]. As stated in AF&PA's comments, "EPA should revise the CO limit for liquid boilers to more accurately reflect what boiler and burner manufacturers currently guarantee, as this would be a more appropriate approach for setting a GACT limit and would not require unproven and costly controls such as a CO catalyst". International Paper fully agrees with this statement by AF&PA.

Response: See the preamble for discussion of changes to emission limits for PM, CO and Hg.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 2

Comment: If the CO limits are finalized at 2 ppm for liquid fuel boilers, we believe that a new low NOx burner will not be sufficient for all area source boilers to reach that limit. EPA should revise the CO limit for liquid boilers to more accurately reflect what boiler and burner manufacturers currently guarantee not only for new boilers, but also for retrofit to the myriad existing boiler designs, as this would be a more appropriate approach for setting a GACT limit and would not require costly controls such as a CO catalyst.

Response: See the preamble for discussion of changes to emission limits for PM, CO and Hg. Also see preamble for discussion of GACT standards and work practice standards.

Commenter Name: Robert G. Hedden
Commenter Affiliation: Oilheat Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2249
Comment Excerpt Number: 4

Comment: One of OMA's leading members, R.W. Beckett, is a manufacturer of residential and light commercial pressure atomized oil burners serving the North American market as the leading supplier of oil burners up to 4.2 MMBtu/h. Beckett regularly tests burner applications in a variety of boiler products in their laboratories and makes regular determinations of carbon monoxide (CO) emissions for these applications under a variety of operating conditions.
The testing for CO emissions that Beckett does is to verify the safe operation of the burner (and not as a surrogate for hazardous air pollutants, or HAP's). For this purpose, the maximum acceptable concentration in flue gasses under typical operating conditions is 50 ppm. For light

commercial burners (i.e., those firing between 0.4 and 4.0 MMBtu/h), they typically see levels below 10 ppm, and the mean level of CO in flue gas (dry) is 4.5 ppm (based on 185 test records since 2006), with a maximum of 44 ppm. Based on this testing, there is no evidence that any OMA Members can meet an absolute maximum level of 1 ppm, even on current equipment.

Response: See preamble for discussion of changes to emission limits for PM, CO and Hg. Also see preamble for discussion of achievability of CO limits.

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 4

Comment: EPA should eliminate the carbon monoxide emission limit altogether for fuel oil boilers due to both the very low corresponding boiler and site-wide HAP emissions. Alternatively, the rules could provide for a 10% capacity factor exemption for fuel oil use as a backup to natural gas, removing the proposed restriction to limiting use of fuel oil just during natural gas curtailments in order to maintain an exemption as a natural gas boiler.

Response: See preamble for discussion of combination boilers, limited use units and exemptions.

Commenter Name: Jim Pettiford
Commenter Affiliation: Fulton Thermal Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2192.1
Comment Excerpt Number: 4

Comment: The proposed rule for CO emissions would include a standard of just 2 ppm for existing, oil?fired boilers that are larger than 10 MMBTU per hour capacity. We would suggest the same 50 ppm CO emission limit for such existing boilers as indicated above for new boilers.

Response: See preamble for discussion of changes to emission limits for PM, CO and Hg. Also see preamble for discussion of the achievability of CO limits.

Commenter Name: Scott Davis
Commenter Affiliation: Arizona Public Service Company
Document Control Number: EPA-HQ-OAR-2006-0790-2233.1
Comment Excerpt Number: 5

Comment: APS believes that auxiliary boilers that operate infrequently but more than 100 hours should have the option of either installing and operating CEMS or performing annual source testing. This is consistent with New Source Performance Standards (NSPS) for similar sources and APS believes this if more representative of GACT for oil fired boilers that operate infrequently.

Response: See the preamble for discussion of limits use units and compliance requirements.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 6

Comment: EPA's data set for establishing a MACT standard for CO emissions from oil-fired units is inadequate. Out of an estimated 168,000 oil-fired units that will be affected under the Proposed Area Source Rule, EPA's MACT floor evaluation was based on emissions data from only 68 units, and permit limit information for 56 others. ABMA is concerned that this data set is too limited, in light of the many types of boiler design and operating scenarios which may affect CO emissions.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of the dataset used for the MACT floor analysis and the achievability of CO limits.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 8

Comment: EPA has proposed to establish national emissions standards for carbon monoxide ("CO") (as a surrogate for polycyclic organic matter ("POM") emissions) for biomass-fired boilers, as based on maximum achievable control technology ("MACT"), at 160 ppm at 7% oxygen. For oil-fired boilers, EPA has proposed to set the applicable emissions standard at 2 ppm at 3% oxygen. Achievement of these standards by Ethan Allen is not technically feasible or economically reasonable and will not be achieved by a majority of existing boilers. With respect to emissions of mercury, the agency also has proposed to require biomass- and oil-fired boilers to control emissions through the application of generally available control technology ("GACT"), specifically through the implementation of a boiler tune-up program.1 Ethan Allen cannot fully support the EPA's rulemaking at this time because, among other things, the agency has not collected enough emissions and operational data to enable it to establish responsible CO emissions standards for biomass- and oil-fired areas sources that are reflective of what can reasonably be achieved by industry.

Response: See preamble for discussion of CO as a surrogate for POM, achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 8

Comment: The proposed CO emissions limitations for oil-fired boilers are unachievable and thus do not meet the requirements of §112(d)(2) of the CAA. These CO limits have not been demonstrated to be achievable using analytical methods that have adequate accuracy in the low ppm range to be reliable. Furthermore, it has not been demonstrated that these levels are achievable, even by the units in the database, for periods other than during some 3 hour performance tests, or while meeting other applicable limits, or at operating conditions other than performance test conditions. The MACT Floor Analysis indicates one boiler used to establish the floor had non-detect values for all three one-hour test runs.

Response: See preamble for discussion of changes to emission limits for PM, CO and Hg. Also see preamble for discussion of the achievability of CO limits and the dataset used for the MACT floor analysis.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 8

Comment: ABMA believes that the Proposed Area Source Rule CO limits of 2 ppmvd at 3% oxygen for existing (large) oil-fired boilers and 1 ppmvd at 3% oxygen are not achievable using good combustion practices. As noted above, minimizing CO in the combustion system is inconsistent with minimizing NOx emissions. Fuel staging and FGR technologies aim to lower the overall temperature of the flame, making it longer and wider. By contrast, minimization of CO requires the flame to be more concentrated to the center of the furnace. While burner companies are generally able to balance NOx and CO minimization goals by a combination of fuel staging and turbulence, a CO limit of 1 ppm cannot be achieved on this basis. This is especially true at low firing rate (i.e. <25%), because excess air cannot be regulated tightly at these firing rates. Excess air at low loads may “chill” the flame, causing incomplete combustion and increased CO emissions. For a CO limit to be achieved using GCP while firing oil, ABMA offers the following recommendation based on manufacturer guarantees of performance :

For boilers firing both fuel oil and natural gas: a CO limit of 50 ppm.

Response: See preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of CO limits and their impact on NOx emissions.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 14

Comment: Some boilers only produce measurable CO emissions when they are experiencing load variations. The testing that is being used to establish the CO limits was all conducted at steady load. A boiler may have small CO emissions at steady load, but significant emissions as the load varies. As such, the CO data used to establish the floor may not be representative of normal boiler operation and a low CO limit may not be achievable by even top performers at all times.

As mentioned above, Coen Company, the leading supplier of burners for gas- and liquid-fired boilers, offers a CO emissions guarantee for liquid-fired boilers of 100 ppmvd (@ 3% O2), for loads ranging from 25% to 100%. The Coen emissions guarantees are not valid below 25% load. This is due to the higher levels of excess air at low loads that result from the minimum airflow levels required by NFPA.

EPA Method 10 was reviewed to assess the potential accuracy of the CO emissions data that were included in the floor calculation. If the primary purpose of the testing were to measure CO emissions for compliance purposes, one would expect that a diligent stack tester, seeing minimal CO emissions, might settle on a span of 50 ppm CO for the actual compliance test, the data from which would then have an absolute accuracy of +/- 1ppm (50ppm * 2%). If the span gas is higher than 50 ppm, the expected accuracy would be greater than +/- 1ppm. That level of accuracy is very different from the appearance of the data that is presented in the area source floor memo, where CO values are reported out to 3 significant figures at levels sometimes less than 1 ppm. This is a misrepresentation of the accuracy of the test method.

It is inappropriate to set CO limits that must be met at all times on 3-run stack tests that were likely conducted near full load conditions and at steady state operation. This method of establishing a standard does not take into account the variability of CO emissions over operating loads. Even EPA acknowledges this fact in the Boiler MACT preamble at 75 FR 32021: “We believe that single short term stack test data (typically a few hours) are probably not indicative of long term emissions performance, and so are not the best indicators of performance over time.” If EPA is going to require CO CEMS as the compliance method, they should CO CEMS data to set the standard.

EPA should re-evaluate its proposed CO limits for liquid-fired units to ensure they represent what is generally achievable by the population of liquid-fired units. If units with low NOx limits are forced to meet CO limits of 2 ppm, an oxidation catalyst could be required, which is a very

costly control option and may oxidize CO but not organic HAP, depending on the temperature of the gas stream at the location of the catalyst.

Response: See preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of achievability of CO limits, CO limits impact on NOx emissions, compliance requirements and the dataset used for the MACT floor analysis.

Commenter Name: Thompas P. Balf
Commenter Affiliation: Campus Cortium for Environmental Excellence
Document Control Number: EPA-HQ-OAR-2006-0790-1657.1
Comment Excerpt Number: 16

Comment: The proposed CO limits for oil firing boilers are 1 ppmvdc for new boilers and 2ppmvdc for existing boilers. For boilers>100mmBTU/hr, a 40 CFR CEMS must be installed (per 63.11223(e)) to continuously monitor CO according to 40 CFR 60 Performance Specification 4A. This method allows a 5ppm difference between the reference method and facility CEMS during the Relative Accuracy test. Considering that the reference method can only quality assure data to within 5ppm, the proposed CO limits are indistinguishable from zero. How can a permit limit, under this proposal, be set BELOW the allowable deviation in the reference test method? How could this be enforceable?

Considering the limitation with the current EPA reference methods and typical CO emissions monitoring equipment, we request that the CO standard be set to nothing lower than 10 ppmvdc, which is twice the allowed error of the required relative accuracy test.

Please address whether EPA is working on an updated CO monitoring regulation for low emission limits in parallel with the development of this regulation.

Response: See preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of achievability of CO limits, compliance requirements and the dataset used for the MACT floor analysis.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 21

Comment: Information Provided By Boiler Suppliers Demonstrates That EPA's Proposed Numerical Limits Are Not Attainable.
Input was requested from the leading supplier of burners for gas- and liquid-fired boiler applications to determine what CO emission guarantees would be provided for their installations. For liquid-fired applications, the supplier offers a CO emissions guarantee of 100 ppmvd (@ 3%

O2), for loads ranging from 25% to 100%. The supplier emissions guarantees are not valid below 25% load. This is due to the higher levels of excess air at low loads that result from inherently less effective fuel/air mixing at lower burner velocities, thus requiring higher excess air operation, and the minimum airflow levels required by the National Fire Protection Act for multiple burner boilers. In addition, the supplier noted that CO emissions during a cold startup would be significant due to the reduced temperatures of the boiler heat recovery surfaces. Under these conditions, unburned fuel that comes into contact with the cold surfaces will be quenched and smolder (instead of combusting completely), and will form significant amounts of CO. The supplier noted that CO emissions during a cold startup could average several hundred ppm for the first hour or more. Other sources confirm the numbers provided by the leading supplier.

A boiler manufacturer has indicated that CO emission limits of 30 to 75 ppmv are appropriate, depending on boiler size. [EPA-HQ-OAR-2006-0790-0392.1]
The Texas Commission on Environmental Quality's presumptive BACT for boilers greater than 40 MMBtu/hr is 50 ppmvd at 3% O2.
[http://www.tceq.state.tx.us/assets/public/permitting/air/Guidance/NewSourceReview/bact/bact_boilheatfurn.pdf] A review of EPA's RACT/BACT/LAER Clearinghouse database for oil-fired boilers less than 100 MMBtu/hr indicates a 100 ppm CO BACT limit is appropriate.[http://cfpub.epa.gov/rblc/index.cfm?action=Search.BasicSearch&lang=eg]. If levels of 2 ppm are not being guaranteed by boiler and burner manufacturers or being required by states as BACT in PSD analyses, then it is not appropriate to require 2 ppm CO as a GACT limit in this rule. EPA should re-evaluate the CO limit being proposed as GACT and set the limit based on levels recommended by states and manufacturers (e.g., 100 ppm).

Response: See preamble for discussion of changes made to emission limits for PM, CO and Hg. Also see preamble for discussion of achievability of CO limits and variability MACT floor methodologies.

MACT Floor: Results: New Units

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 20

Comment: EPA relied on a flawed methodology in calculating the CO standard for new sources. Specifically, EPA calculated the new source CO standard to be much higher than the existing source MACT floor, so EPA used the existing unit limit.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.

See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Renee Lesjak Bashel
Commenter Affiliation: Small Business Environmental Assistance Programs, SBEAP
Document Control Number: EPA-HQ-OAR-2006-0790-2195.1
Comment Excerpt Number: 2

Comment: Recommendation: Limits in Table 1 for new units should apply only to those with 10 MMBTU/hr heat input capacity or higher.

New units burning coal, biomass, or oil are required to meet emission limits for all size units according to Table 1 of this rule. Units that produce very little pollution will be required to have stack tests, control devices, etc. Per EPA's analysis of existing small units, this would be cost prohibitive for small businesses. Practical reduction of emissions through the use of biennial tune-ups of the unit, but not requiring specific emission limits, should be sufficient for any small unit, new or old.

Response: See the preamble for a discussion of where EPA determined work practice standards were appropriate and cost impacts.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 24

Comment: We support EPA's proposal to develop emission standards for all new facilities. Based on our research and experience, we know that new boilers can be built with stacks that are appropriate for testing under EPA Methods 29, 10, and 5. We would not support EPA allowing an exemption for new units built with small stacks. If a facility were built with a small stack, temporary stack extensions could be built for testing. Furthermore, EPA's assumption that a new stack will be built for each new boiler runs counter to current state information that includes several instances in which new small gas-fired commercial boilers have been connected to existing stacks.

Response: See response to comment EPA-HQ-OAR-2006-0790-2195.1, excerpt 3 for limits for new units smaller than 10 MMBTU/hr.
See preamble for discussion of exemptions.

Commenter Name: John Huber
Commenter Affiliation: National Oilheat Research Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1831.1
Comment Excerpt Number: 17

Comment: Relationship of New Source and Existing Source. EPA establishes a very high standard of performance for new sources versus existing sources. In particular the requirements would lead to extensive testing and monitoring requirements for new sources. NORA believes that EPA should clarify that the replacement of a boiler with a similar sized boiler is not a new source. As previously indicated there are several hundred thousand of the small boilers at commercial or institutional facilities. Typically, a boiler has a lifespan of 20 to 25 years, and is most often replaced to improve the technology in the burner, or to have a more efficient unit. In other cases, the boiler must be replaced due to seals failing, and thus the boiler may actually leak.

It is NORA's opinion that such replacements do not create a new source. Essentially, such a replacement is merely an exchange of one piece of equipment with another, and the emissions from the unit will generally fall off by a significant factor when the boiler is replaced with a more efficient model. Thus, a boiler replacement will generally lead to a reduction in emissions. It should also be noted that a policy that will result in more extensive paperwork and testing may discourage or delay replacements. Such a result would adversely affect reductions in pollution.

Response: See preamble for discussion of GACT standards including work practice and tune-ups.

Commenter Name: Christopher S. Colman
Commenter Affiliation: Hess Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2168.1
Comment Excerpt Number: 1

Comment: Hess is concerned about the application of restrictive new source standards to new or reconstructed boilers, because we believe that (i) it will discourage customers from upgrading older, less efficient equipment and (ii) a distinction between new and existing sources is not required for area sources under the Clear Air Act.

Response: Please see the response to DCN: EPA-HQ-OAR-2006-0790-1831.1, Excerpt Number 17 for a response to this comment.

MACT Floor: Results: New Coal

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 15

Comment: EPA admits that its mercury and CO floors for new coal-fired units do not reflect the emission level achieved by the single best performing source. 75 Fed. Reg. at 31908-31909. The agency states that its floor approach – and in particular its statistical inflation of the test results to account for variability – resulted in UPLs that were higher than the floor for existing sources. Id. Thus, EPA's floor approach for new sources led twice to an impossible conclusion: that the emission level for the single best source was worse than the average emission level achieved by the best twelve percent. Rather than admitting the obvious fact that its floor approach was flawed and developing a different approach capable of satisfying the Clean Air Act, however, EPA simply set its new source floor at the level of its existing source floor. Id.

Notably, EPA does not claim that the existing source floor is an accurate estimate of the single best source's performance or provide any record evidence to support such a conclusion. Because EPA's existing source floor does not even purport to reflect the emission level achieved by the single best performing source, EPA's decision to set the new source floor at that level is unlawful. It bears emphasis that the D.C. Circuit already has held repeatedly that EPA must demonstrate with substantial evidence, and not merely assert, that its floors accurately reflect the emission levels achieved by the relevant best performing sources. Further, the D.C. Circuit has made clear that if EPA's floor approach does not yield accurate estimates of the relevant sources' performance, the agency must develop a different approach that does so.

That EPA's floor approach yields impossible results further confirms that it is deeply flawed. EPA's failure to recognize these flaws and develop a rational floor approach that does not grossly over-compensate for variability – thus yielding floors that do not reflect the relevant best sources' emission levels – is both unlawful and arbitrary. EPA's attempt to brush this glaring flaw under the rug by simply setting a floor that has no demonstrated relation to the relevant best sources' emission levels exacerbates that unlawfulness and, in light of the D.C. Circuit's repeated holdings on this subject, borders on contumacious.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Robert H. Colby and G. Vinson Hellwig

Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 33

Comment: EPA's proposed rule would set a MACT standard of 3.00 x10-6 lb/MMBtu for mercury emissions from new and existing coal-fired boilers with a heat capacity greater than 10 MMBtu/hr. This proposed standard was increased by approximately 20 percent in the rounding process and thus should be reduced to 2.50 x10-6 lb/MMBtu, in accordance with the comments outlined above, but is within a reasonable range of that limit and is otherwise feasible. The CO limit for coal-fired boilers appears to be an artifact of the limited number of test results employed in the MACT floor analysis and does not reflect a MACT level of performance for these units.

Response: See preamble for discussion of load variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 19

Comment: EPA's proposed standards for new sources are not appropriate for many of the same reasons discussed elsewhere in these comments and in CIBO's comments on the Proposed Boiler MACT Rule. [See DCN: 2006-0790-1783.2 for Boiler MACT comments.] EPA has failed to consider fuel variability over time and has not shown that the proposed limits can be achieved in practice over all expected conditions. This is an important omission resulting in the currently unreasonable proposed floors. EPA must consider coal quality variability and consider geographical limitations of the coal supply in establishing the floors for area sources. These considerations will ensure that EPA does not restrict new boilers to a coal sourced in a specific location.

Response: See response to comment EPA-HQ-OAR-2006-0790-1982.1, excerpt 15 for appropriateness of proposed floor methodology and new standards for coal-fired units.

See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.

See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

MACT Floor: Results: New Biomass

Commenter Name: Charles Niebling
Commenter Affiliation: New England Wood Pellet
Document Control Number: EPA-HQ-OAR-2006-0790-0836
Comment Excerpt Number: 12

Comment: NEWP is confident that its proposed alternative standards and requirements achieve a common-sense balance between significantly reducing emissions from new biomass boilers as well as fostering a strong renewable biomass thermal sector. EPA's dataset illustrates that no boiler can meet the two key emission factors; therefore NEWP suggests calculating the average CO of the six boilers with the lowest PM emissions and calculating the average PM of the eight boilers with the lowest CO to determine the minimum emissions limits. Based on this approach, the initial and interim recommended limits and practices include:
CO – 1,164ppm at 7% O, for all boilers (Method 10);
PM - 0.23 lbs/MMBtu, for all boilers (Method 5);
These recommendations are a starting point for reducing HAPs and other emissions; EPA must gather more inclusive, accurate data on biomass fuels, sizes, and technologies before moving forward on more restrictive limits. NEWP recognizes that as an industry, it is a partner in improving air quality and environmental sustainability of energy, and so the organization advocates a ratcheting down of data driven emissions limits over a sensible time period. Such a path could involve biennial reduction goals beginning with the above limits, and then decreasing in a tiered approach based on the data generated from boilers tested in compliance with the new Area Source Boiler Rule, with a goal of allowing the marketplace to develop financially feasible emissions control options.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Charles Niebling
Commenter Affiliation: New England Wood Pellet
Document Control Number: EPA-HQ-OAR-2006-0790-0836
Comment Excerpt Number: 1

Comment: EPA data reveals no systems overlap in CO and PM categories.

Out of EPA's estimated total population of 10,958 biomass boilers, the Maximum Achievable Control Technology (MACT) CO and PM limits were determined by only 65 boilers (0.6%) and 20 boilers (0.2%), respectively. The biomass boilers that achieve the PM standard are not the same boilers that achieve the CO standard. The six biomass boilers in the dataset that are able to meet the Generally Achievable Control Technology (GACT) standard for PM have an average CO emission of 1,164 ppm, which is more than 11 times higher than the proposed CO limit for new boilers. The eight biomass boilers in the dataset that are able to meet the MACT standard for CO have an average PM emission of 0.23 lbs/MMBtu, which is more than seven times higher than the permitted PM limit [See submittal for Tables 1 and 2 showing "Best in Class" Boiler data].
Using EPA's own data set, it can be clearly observed that there is no biomass boiler tested that can achieve the proposed levels for both PM and CO. For example, the best performing biomass unit for CO is at Simpson Door in Washington State; it is a 34.5 MMBtu/hr boiler installed 90 years ago and has a 9' diameter and 236' high stack. It seems extremely likely that this "best in class" emission result is largely due to dilution in the large stack and not due to system design that would ever be replicated in a new boiler. To require new biomass boilers to meet standards that no single biomass boiler has ever achieved in testing is unreasonable.

Response: See the preamble for discussion of the dataset use for the MACT floor analysis and changes made to emission limits for PM, CO and Hg.

Commenter Name: Richard Bellefleur
Commenter Affiliation: Wellons FEI, Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1300.1
Comment Excerpt Number: 1

Comment: CO values below 100 ppm have been achieved in the past by Wellons equipment but they were achieved with a Wellons technician supervising the operation of the system coupled with optimal fuel conditions. The truth behind wood fired combustion chambers is that we are not always dealing with a normalised and homogenous fuel such as oil or natural gas. Changes in fuel density, particle size and moisture content will change the operating conditions of the boiler. Although a well trained operator can tune the energy system in order to compensate for these changes, guaranteeing CO values below 100 ppm year round on a consistent basis would be very challenging if not to say impossible to achieve. This is especially true for the small systems targeted by the area source rules. When analysing the data in order to determine these limits the EPA must be careful to distinguish what is achievable through optimum conditions and what the system will actually produce throughout the year during normal operation. In our opinion an average CO level of 300 ppm would be more reasonable and would give some margin for the fuel variability and operating conditions mentioned above.

There are different means of controlling particulate matter in the gas stream of a wood fired boiler. The most simple and basic of these is to use a Multiple cyclone in order to take the particulate out of the gas stream trough the use of centrifugal force. This method is very cost effective and eliminates approximately 75% of the particulate in the gas stream. This piece of

equipment alone will not be sufficient to reach the new proposed limits. An Electrostatic Precipitator or a bag house has to be added to the energy system in order to bring the particulate even further down. Adding these types of filtering equipment will add significant cost to the projects. In most cases, especially in smaller applications, it can greatly compromise project economics thus hindering North American efforts to transition from fossil fuels to greener heating alternatives. A limit of 0.25 lbs/MMBTU would be more reasonable and achievable with the multiple cyclone units alone, especially when dealing with area source sized projects with limited funding.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Florian Meindlhumer
Commenter Affiliation: Froling
Document Control Number: EPA-HQ-OAR-2006-0790-1860.1
Comment Excerpt Number: 1

Comment: Fröling is one of the market leaders for biomass boiler technology in Europe. We currently manufacture over ten different product types in sizes ranging from 30,000 Btu to 3.4 MM Btu. Many of our products use Lambda control even on a residential scale. Commitment to innovative design and control ensures that our products are the cleanest and most efficient available. Our North American importer and distributor, Tarm USA, Inc. has kept us abreast of the commercial/industrial/institutional boiler rules that EPA has proposed. We provide the following comments about the proposed rule at the request of Tarm USA, Inc.
It is our experience that our products will often meet the proposed limit of 100 parts per million Carbon Monoxide in laboratory tests during compulsory type certification procedures. However, none of our current production models could meet that limit consistently in the field. There are variables such as wood moisture content, alternations of heat demand below designated minimum without installation of sufficient heat storage capacity, atmospheric conditions, maintenance, chimney draft, that influence CO beyond our control and beyond your proposed limit. We comply with all European emission limits including new more stringent limits for boilers under 30 MM Btu. Despite our success meeting emissions requirements in all member states of European Union, we do not expect to comply with your proposed CO limits.
We have also given due consideration to your particulate emissions proposals. It is our finding that advanced control technologies such as electrostatic precipitators (ESP) that would enable our particulate emissions results to be consistently below .03 lbs per MM Btu are only economically viable on boilers larger than 7 MM Btu. Major components of ESP, especially high voltage transformer, minimum distances and dimensions of ionizer and precipitators as well as equipment for collection and removal of filter residues strongly limit the possibilities of downsizing ESP units. So required space as well as capital costs for ESP units usually overrun the boiler itself.

Currently, Switzerland (observer but not member of European Union) is the only market that is using ESPs on boilers from 2 MM Btu which cannot hold the limit of .06 lbs per MM Btu as well as for boilers from .24 to 2 MM Btu exceeding the limit of .30 lbs per MM Btu.

Response: See preamble for discussion of cost impacts analysis for renewable energy.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 23

Comment: Referring to the material attached in Appendix 5 to these comments, two manufacturers of Biomass fired boilers would only guarantee levels, depending on the design and fuel specifics, of between 250 to 400 PPM on new wood (biomass) boilers. The Teaford Company, a supplier specializing in biomass fired energy systems based in Alpharetta Georgia, provided a specification for a boiler currently being installed, with a CO warranty of 400 PPM. Each energy system design and its accompanying guarantee is dependent on the specific fuel being targeted for use, so specifications will vary. However, since this specification is for a biomass fired boiler currently being installed it therefore represents a 'new' source technology that is available to manufacturers installing biomass fired energy systems. It is notably higher than both the proposed existing and new source limits for this area source rule. This specification provides strong evidence to our points about the un-achievability of these limits.

Response: See the preamble for discussion of achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Jon Strimling
Commenter Affiliation: American Biomass Company
Document Control Number: EPA-HQ-OAR-2006-0790-1904.1
Comment Excerpt Number: 1

Comment: The data set provided as "available technology" and details about boiler sizes, biomass fuel types, and the health effect estimates is so incomplete as to be misleading.

The simple fact that no boiler in the selected dataset could meet the PM and CO emissions limits points to the unreasonableness of the standard and its potential catastrophic impact on our industry.
EPA must gather more inclusive, accurate data on biomass fuels, sizes, and technologies before moving forward on more restrictive limits. By a point of comparison to the well developed and environmentally rigorous proposed European boiler standards, the proposed EPA standards are sixteen and five times lower for CO and PM, respectively, for similarly sized boilers.
We agree with BTEC's recommended initial minimum performance standards of Carbon Monoxide (CO) – 1,164ppm (@ 7% O2) and Particulate Matter (PM) - 0.23 lbs/MMBtu for all boilers, with reductions thereafter driven by data collected during the first two years of the rule's implementation

Response: See the preamble for discussion of subcategories, the dataset used for the MACT floor analysis, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Chris Mello
Commenter Affiliation: Alaska Energy Authority
Document Control Number: EPA-HQ-OAR-2006-0790-1653.1
Comment Excerpt Number: 6

Comment: For small biomass boilers with a heat capacity less than 10 million Btu per hour, the emission limit that has been known and manufacturers have been working toward was .32 lbs of particulates per 1 million BTU's delivered. The new proposed rules state the limit as .03 lbs of particulates per 1 million BTU's delivered...less than 1/10 of the most recent limit (only in effect for about a year). Dirty outdoor wood boilers emit between 3 to 6 lbs of particulates per 1 million BTU's delivered; thus the present .32 limit is already 1/10 to 1/20th of older outdoor units.

The 100 PPM limit on CO is a new requirement. All units must be retested and new test equipment purchased (the most common CO lab instrument for testing that is NIST rated costs $16,000 base plus ancillary equipment).

There are no known small or medium sized wood units that can presently meet the .03 limit, and to date, bag house filtration unit followed by ESP have not succeeded in reducing the emissions down to the .03 level.

Only the larger chip fed boilers can meet the CO limit.

There is not specific size separation between residential/small commercial and larger boilers. If there is no separation, a farmer who heats a machine shed would fall under the large commercial arena and have to do annual stack testing, essentially making smaller wood installations not viable.

If this proposal goes through as written, it will effectively eliminate all small/medium sized wood heating equipment; only very large chip operations will meet the regulations.

Response: See preamble for discussion of cost impacts analysis for renewable energy.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: David J. Prior
Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 10

Comment: EPA should set technology forcing standards for biomass that greatly improve the conventional technology but retain biomass as a viable alternative heating fuel. For biomass-fired boilers less than or equal to 2 million Btu/h, EPA should consider setting the PM emission rate at 0.09 lb/mmBtu and the CO at 400 ppm (equal to the UL testing limit for oil-fired units). This will promote the higher-efficiency staged-combustion design and is a large improvement in fine particle emissions over the conventional stoker-type biomass technologies.

Response: See preamble for discussion of MACT floor methodologies and the dataset used for MACT floor analysis.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Philip K. Hopke
Commenter Affiliation: Clarkson University
Document Control Number: EPA-HQ-OAR-2006-0790-2211.1
Comment Excerpt Number: 1

Comment: I am commenting specifically on the proposal relative to the emissions from burning woody biofuels in new systems. We have made a series of measurements on the emissions arising from high efficiency, low emissions, European-designed wood pellet and chip boilers. A detailed report of our work is appended to these comments so that you will have the advantage of our results prior to our submitting them for publication in appropriate peer-reviewed journals. [See submittal for report.]

These high efficiency systems have not yet significantly penetrated the US market, but have been widely used in Europe. I am writing to suggest that rather than mandating additional end of the pipe technology, it will be more efficient to set appropriately stringent requirements on the combustion efficiency and reduction in emissions that can be attained with better combustion technologies. As can be seen in the attached report, conventional systems that were tested at sites in New England have significantly higher emissions and lower overall efficiency. Even if combusting wood from sustainable forestry, it is best to utilize the energy content of that wood with maximal efficiency and lower emissions of CO 2 for the same heating capability.

Our work also suggests that assumptions made in this rule-making do not necessarily apply to these new high efficiency combustors. The Federal Register notice says: "For organic HAP, we selected CO as a surrogate for organic compounds, including POM, emitted from the various fuels burned in boilers. The presence of CO is an indicator of incomplete combustion. A high level of CO in emissions is an indicator of incomplete combustion and, thus, a potential indication of elevated organic HAP emissions." Below is Figure 10 from the report in which it can be seen that there was no observable correlation between the sum of the 7 POMs and emitted CO. [See submittal for Figure 10.] Thus, CO may be an unreliable indicator of HAPs emissions. For most of our measurements, CO values were less than 200 ppm per MMBTU. The high value we observed with the largest boiler was due to non-steady-state operation during the measurements. We anticipate additional measurements during the upcoming heating season will produce values comparable to those we observed with the smaller boiler.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg, achievability of CO limits, and the adequacy of CO as a surrogate for POM.

Commenter Name: George M. Israel
Commenter Affiliation: Georgia Chamber of Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-1996.1
Comment Excerpt Number: 2

Comment: Boiler manufacturers have expressed serious concerns as to whether certain types of new biomass-fueled boilers will even be able to meet the new standards.

Response: See preamble for discussion of the achievability of CO limits.

Commenter Name: Thomas D. Emero
Commenter Affiliation: Beaver Wood Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2166.1
Comment Excerpt Number: 2

Comment: EPA's proposed carbon monoxide limit of 100 ppmdv @ 7% O2 as a surrogate of organic HAPs will be a difficult limit to meet on a continuous basis given the heterogeneous nature of biomass, which in BWE's particular applications ranges from whole tree chips to clean sawmill wood waste. Factor in seasonal and local climate conditions, and biomass combustion can present challenges in continuously maintaining CO levels at such low levels. It is interesting to note that the proposed CO limit for major sources of HAPs is 560 ppmdv. BWE respectfully requests EPA re-consider the proposed limit of 100 ppmdv and perhaps align it with the 560 ppmdv limit proposed under EPA-HQ-OAR-2002-0058.

Response: See preamble for discussion of the achievability of CO limits, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 2

Comment: We think the data relied on for the MACT floor for new biomass boilers are not representative of this scale and type of boiler.
We think that the suggested emission limits for both fine particulates and CO as a surrogate for HAP's do not reflect the technological feasibility of the combustion systems or available air pollution control devices for these new biomass boilers as a single class.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis, achievability of CO limits, and changes made to emission limits for PM, CO and Hg.

Commenter Name: W. Allan Cagnoli
Commenter Affiliation: Hearth, Patio, and Barbecue Association
Document Control Number: EPA-HQ-OAR-2006-0790-1900.1
Comment Excerpt Number: 2

Comment: EPA's proposal as to existing units below 10 mmBtu/hr satisfies the rationality and achievability requirements of section 112(d). This is not so for EPA's proposal to set numerical standards of 100 ppm and 0.03 lb/mmBtu for CO and PM respectively for new area source biomass boilers below 10 mmBtu. It is especially not so for units below 1 mmBtu/hr. Basically, all the reasons for exempting the corresponding existing units are reasons also for exempting new ones. There is no basis for thinking that the CO and PM data EPA has are representative of emissions from boilers below 10 mmBtu/hr, especially those below 1 mmBtu/hr, and some basis for thinking the data are not. Moreover, there is a strong basis for thinking that the 100 ppm and 0.03 lb/mmBtu limits are technologically and economically infeasible. Certainly, EPA's data show that no single unit under 10 mmBtu could comply with both standards at the same time.

Finally, the imposition of the proposed limits would have catastrophic consequences for the marketing of biomass boilers under 10 mmBtu/hr, especially units under 1 mmBtu/hr.

HPBA respectively urges EPA to apply a work practice standard (tune-ups) to new area source biomass boilers with design capacity less than 10 mmBtu/hr, as it proposes to do for comparable existing boilers. Numerical standards for such new boilers, much less the proposed standards of 100 ppm and 0.03 lb/mmBtu for CO and PM respectively, are indefensible. The requirements for rationality and achievability which underpin section 112(d) cannot be satisfied on the basis of the current record.

Response: See the preamble for discussion of changes made to the emission limits for PM, CO and Hg.

Commenter Name: Don Kaiser
Commenter Affiliation: Pellet Fuels Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2231
Comment Excerpt Number: 3

Comment: The most striking feature of EPA's proposal to set a CO standard of 100 ppm and a PM standard of 0.03 lb/mmBtu for new area source biomass boilers with design capacity of less than 10 mmBtu/hr is that it is guesswork. The facts in the record behind the proposal are far too inadequate to provide a rational basis for those standards. The standards are technically and legally indefensible under the MACT and GACT logic of section 112(d). In addition, the standards would have a catastrophic impact on the market for such boilers, a consequence that EPA has not attempted to justify. A work practice standard consisting of tune-ups is the only practical path for regulating HAP emissions from such small boilers.

Response: See the preamble for discussion of boilers with heat input capacity less than 10 MMBtu. Also see the preamble for discussion of changes made to the emission limits for PM, CO and Hg.

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 5

Comment: Comparisons point out some alarming differences between current and proposed permit levels for CO and PM emissions for existing and new area source biomass systems. The proposed rule is six times lower (100 ppm v. 596 ppm) for CO and five times lower (.03 lb vs. .15 lb) for PM than current AP-42 guidance. The proposed rule is also substantially more restrictive than existing European standards as well (Table 5) [See submittal for Table 5.]. While modern advanced wood combustion (AWC) system have significantly improved combustion

controls and burn much cleaner than existing units, even these systems will have difficulty meeting these standards. The substantial reduction in CO levels is particularly perplexing. Studies in Europe indicate that the relationship between CO and POM reductions are not linear. CO reductions below 600ppm do not yield substantial reductions in POM levels ("European Wood-Heating Technology Survey," New York State Energy Research and Development Agency, April 2010, pg. 3-5.) Additionally, particulate emissions from these AWC systems have proven to be less biologically active than particles emitted from older, less efficient wood combustions systems (Nussbaumer T., Klippel N., Oser M., "Health relevance of aerosols from biomass combustion in comparison to diesel soot indicated by cytotoxity tests," 14th European Biomass Conference, Paris, 2005).

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg, achievability of CO limits, and the adequacy of CO as a surrogate for POM.

Commenter Name: W. Allan Cagnoli
Commenter Affiliation: Hearth, Patio, and Barbecue Association
Document Control Number: EPA-HQ-OAR-2006-0790-1900.1
Comment Excerpt Number: 5

Comment: The most striking feature of EPA's proposal to set a CO standard of 100 ppm and a PM standard of 0.03 lb/mmBtu for new area source biomass boilers with design capacity of less than 10 mmBtu/hr is that it is guesswork. The facts in the record behind the proposal are far too inadequate to provide a rational basis for those standards. The standards are technically and legally indefensible under the MACT and GACT logic of section 112(d). In addition, the standards would have a catastrophic impact on the market for such boilers, a consequence that EPA has not attempted to justify. A work practice standard consisting of tune-ups is the only practical path for regulating HAP emissions from such small boilers.

First, the TSD reveals that, while CO emissions "fluctuate according to the design of the combustion chamber", "there is not enough emission data available to further subcategorize according to combustor design." According to the author of the TSD, "we are unable to identify the distribution of combustor designs at area source boilers" generally, and consequently "the boiler combustor design was not a factor in developing the subcategories for the MACT floor [for area source boilers]." [TSD, at unnumbered page 4.] Because the combustion design of area source biomass boilers, including especially biomass boilers with design capacity less than 10 mmBtu/hr, varies widely, this immense gap in EPA's knowledge means that EPA has no way to manage the risk that units of a particular combustion design would drive EPA's MACT "floor" determination to such stringent levels as to foreclose the use of other fundamental designs, however economically valuable those other designs might be. The classic example is emissions data from gas-fired boilers driving the MACT/GACT emission standards for coal-fired boilers, an obviously unacceptable dynamic. One way to manage that risk is further subcategorization, a technique EPA used in its parallel proposal for major source biomass boilers and heaters, where it established four biomass subcategories: stokers, fluidized bed, suspension burners/Dutch ovens, and fuel cells. 75 Fed. Reg. 32006, 32066, Table 1. But, as acknowledged by EPA, that

sort of targeting is impossible for area source biomass boilers given the present record. Without the ability to subcategorize among biomass boilers, EPA has no rational basis for setting numerical standards at all, especially for biomass boilers below 10 mmBtu, as to which EPA has practically no CO data. Indeed, for biomass boilers below 1 mmBtu, EPA has no CO data whatsoever, yet the fundamental designs of such boilers are very different from larger boilers.

Response: See the preamble for discussion of subcategories and changes to emission limits for PM, CO and Hg. Also see the preamble for discussion of the dataset used for the MACT floor analysis and the cost impact analysis for renewable energy.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 6

Comment: Using EPA's own data set, it can be clearly observed that there is no biomass boiler tested that can achieve the proposed levels for both PM and CO. For example, the best performing biomass unit for CO is at Simpson Door in Washington State; it is a 34.5 MMBtu/hr boiler installed 90 years ago and has a 9' diameter and 236' high stack. It seems extremely likely that this "best in class" emission result is largely due to dilution in the large stack and not due to system design that would ever be replicated in a new boiler. To require new biomass boilers to meet standards that no single biomass boiler has ever achieved in testing is unreasonable.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis. Also see the preamble for discussion of achievability of CO limits, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Don Kaiser
Commenter Affiliation: Pellet Fuels Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2231
Comment Excerpt Number: 7

Comment: The Artificial Combination of the Proposed CO and PM Standards for New Area Source Biomass Boilers, Including Those under 10 mmBtu/hr, Fails to Satisfy The CAA's Requirements for Rationality and Achieyability Because the Record Fails to Show How Any New Boiler of That Sort Could Comply with Both Standards at the Same Time.

EPA derived the CO standard for new area source biomass boilers from emissions data taken from one set of such boilers, and the corresponding PM standard from emissions data from an entirely different set. Remarkably, EPA proposed to apply both standards to any new area source biomass boiler, even though there is nothing in the record to indicate that such a boiler could comply with both at the same time. As described at length above, section 112(d) not only

requires EPA to have a rational factual basis for its decisions, it also requires the Agency to include affirmatively in the record a minimal demonstration that the units within the subcategory generally have some technologically feasible, demonstrated means of complying with each emissions standard.

Of course, the record is devoid of such a demonstration, but that is understandable because it would be impossible to make. At high levels, PM and CO emissions from biomass boilers are positively correlated, and both can be reduced by ensuring good combustion in the firebox. However, achieving an ultra-low CO level of 100 ppm (one one-hundredth of the CO emissions typical for biomass boilers, i.e., 10,000 ppm) requires injection of large amounts of excess air.[The alternative of a CO catalyst is not practical long-term because of the poisoning of the catalyst bed by the metallic salts in biomass (especially, wood-burning) boiler flue gas, and catalyst deactivation. For example, catalyst beds on new EPA-certified wood stoves are generally inactive within one to two years time.] It is the combination of high temperature and long residence time for flue gas in the biomass boiler's firebox that ensures burnout of most PM. Increasing excess air in order to lower CO levels reduces residence time and thus increases PM emissions,[High levels of excess air also reduce boiler efficiency and require more fuel consumption, and hence emissions, per unit of heat output.] making the two pollutants inversely correlated. Thus, it is imperative that any regulation addressing CO and PM emissions consider the two in tandem. Otherwise the resulting limits will be unrealistic and impossible to achieve, contrary to the rationality and achievability requirements of section 112(d).

Response: See the preamble for discussion of the achievability of CO limits and work practices for units with heat input capacity less than 10 MMBtu/hr. Also see the preamble for discussion of changes to emission limits for PM, CO and Hg.

Commenter Name: Harry Dresser, Jr.
Commenter Affiliation: Maine Energy Systems
Document Control Number: EPA-HQ-OAR-2006-0790-1060.1
Comment Excerpt Number: 4

Comment: Draw heavily from the Europeans' standards when considering biomass segments. They have both great experience with the technology and a passion for clean environments.
MESys recommends particulate emissions standards for pellet boilers of <1MMBTU/hr be set at a maximum of 0.05lb/MMBTU as measured in certi? ed independent testing laboratories. For those same boilers, MESys recommends average CO emission levels of <300 ppm as measured in certi? ed testing laboratories.
Ensure that the standards for "outdoor wood boilers" are consistent with those for "indoor boilers."
If creating acceptable levels of emission is the goal, the location of the boiler is inconsequential.

Response: See the preamble for discussion of subcategories and changes to emission limits for PM, CO and Hg.

Commenter Name: David Dungate and Scott Nichols
Commenter Affiliation: ACT Bioenergy and Tarm USA
Document Control Number: EPA-HQ-OAR-2006-0790-1472.1
Comment Excerpt Number: 2

Comment: ACT Bioenergy and Tarm USA, Inc. have reviewed the set of boiler testing data that was used to set the MACT standard for CO and the GACT standard for PM. The Area Source Performance Rule covers a huge range of boiler types and sizes; however, there was no data at all for systems under 1.6 MMBtu/h. By generalizing biomass boiler design and performance, EPA has neglected to quantify emissions and cost data properly for biomass boilers under 2 MM Btu. Had EPA used an emissions data set of biomass boilers under 2 MM Btu it would have had a significantly larger data set of boilers The set would have included "home-made"biomass boilers built for use in workshops, outdoor wood boilers (OWB), and old oil or gas boilers converted for use with wood chip and/or pellet burners. These types of boilers are numerous and in many cases have poor emissions and efficiency characteristics. The EPA inventory of outdoor wood boilers alone indicates an installed population of over 155,000 units1. While these units are predominantly installed in residential applications, if only 1% of these units were used for commercial applications, EPA would need to consider 1550 more biomass boilers, or more than ten times the units in its current area source inventory for biomass boilers. Instead, it is apparent this entire segment of the area source inventory has been omitted from review, but would have a significant impact on average emissions data for boilers under 2 MM Btu. We understand that the Clean Air Act requires EPA to include any commercial, industrial, or institutional biomass boiler within a certain size class in the Area Source Performance Rule. This proposed rule has caught some technologies in its dragnet while simultaneously eliminating other technologies arbitrarily. We object 1 OWB 2008 Population Estimates, Excel spreadsheet, Gill Wood, EPA email 7/16/2010 to this arbitrary application of the law to biomass boilers less than 2 MM Btu. As an illustration of the unreasonableness of the proposed standard for commercial boilers, the new voluntary "white tag"standard for PM emissions residential outdoor wood boilers is 0.3 lbs/MMBtu which is more than ten times higher than the proposed emission standards for commercial boilers and furthermore there is no CO standard for the residential wood boilers. It is unreasonable that a farmer can install a boiler in his farmhouse; but the same boiler could not be installed in the barn.

We request that the EPA consider revising the Boiler Rule to include a sub-categorization for boilers less than 2 MMBtu/h output and to develop emission standards for those boilers based on boilers in the same size range, not extrapolating emission data from much larger boilers. We believe that the European EN-303-5 Standards for Solid fuel combustion are a good guide to what emission levels are reasonable. The recently proposed European EN303- 5 Standards set CO emission limits that are more than 15 times higher and PM emissions that are five times higher than the Proposed EPA standard. Several boilers manufactured in the U.S. (including ACT Bioenergy's) are designed to easily comply with the new EN303-5 standard but would struggle to meet the new EPA emission limits.

In addition, we believe the cost of annual emission testing is an unreasonable cost to expect a small boiler owner to pay; and that instead of an annual emissions test, a required annual boiler tune-up would be a much more cost effective way to ensure boilers continue to operate at peak performance.

Therefore we suggest that the EPA harmonize the emission requirements for biomass boilers <2 MMBtu/h with the European EN303-5 Standards which are standards for PM @ 0.15 lbs/ MMBu and CO @ 1617 ppm @7% Oxygen. These standards are stricter than the residential voluntary "white tag"standards for wood boilers, but achievable by advanced boiler designs. Furthermore we suggest that instead of annual boiler testing, boiler owners should be required to demonstrate compliance with the emission standards in an independently certified test and then be able to install the "certified" boiler in any location burning the same fuel.

Response: See the preamble for discussion of work practice standards for boilers with heat input capacity less than 10 MMBtu/hr. Also see preamble for discussion of changes to emission limits for PM, CO and Hg.

Commenter Name: R. Wade Mosby
Commenter Affiliation: The Collins Companies
Document Control Number: EPA-HQ-OAR-2006-0790-1461.1
Comment Excerpt Number: 2

Comment: To put the proposed EPA standards in perspective, CO and PM limits proposed for area source biomass boilers are not achievable by the most current boiler designs in existence; our boilers would fail the standard.

Response: See preamble for discussion of achievability of CO limits and changes to emission limits for PM, CO and Hg.

Commenter Name: Jack H. Britt
Commenter Affiliation: Jack H. Britt Consulting
Document Control Number: EPA-HQ-OAR-2006-0790-1832
Comment Excerpt Number: 1

Comment: I believe the proposed limits on air pollutants for low capacity (<10 MM Btu/h) biomass boilers are unattainable with existing technology and if adopted will severely limit use of biomass heating in public facilities such as schools and hospitals in rural areas that would benefit most from their deployment. The amount of emissions from such facilities are negligible relative to amount from larger co-generation facilities or commercial-scale facilities.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.

Commenter Name: David Schutz and John Ussery
Commenter Affiliation: Northern New Mexico College
Document Control Number: EPA-HQ-OAR-2006-0790-1834.1
Comment Excerpt Number: 1

Comment: According to the introduction to the proposed regulation for National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers [EPA–HQ–OAR–2006–0790; FRL–9148–3] RIN 2060–AM44 as published in the Federal Register June 4, 2010, environmental regulations should "provide for the use of generally available control technologies or management practices ('GACT') by such sources to reduce emissions of hazardous air pollutants using methods, practices and techniques which are commercially available and appropriate for application by the sources in the category considering economic impacts and the technical capabilities of the firms to operate and maintain the emissions control systems." However, the proposed standards equate small cordwood fired boilers generating less than 2 million BTUs per hour with large commercial boilers and raise the bar for emissions to a level that can not be met by any available system of that size, including those considered to be state of the art high efficiency- low emission wood fired boilers.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of achievability limits and where EPA determined work practice standards were appropriate.

Commenter Name: David Schutz and John Ussery
Commenter Affiliation: Northern New Mexico College
Document Control Number: EPA-HQ-OAR-2006-0790-1834.1
Comment Excerpt Number: 5

Comment: The high efficiency low emission Garn boilers being planned for the El Rito campus have combustion efficiencies of 97% and a thermal efficiency of over 80%. They are designed to burn clean and require a minimum of maintenance. Although they meet or exceed the standards set by ASTM, they miss the standards presently proposed by the EPA.
The EPA has presented a draft standard that if applied could prohibit the expansion of the use of biomass boilers. Testimony provided by the Biomass Thermal Energy Council attests that there are currently NO available systems that meet the draft requirements for both carbon monoxide and of particulates.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Steven Jarvis
Commenter Affiliation: Missouri Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-1477.1
Comment Excerpt Number: 7

Comment: Out of EPA's estimated total population of 10,958 biomass boilers subject to the Area Source Rule, the MACT limits for CO emissions were determined from only 65 boilers (0.6%) and the GACT limits for PM emissions were determined from only 20 boilers (0.2%). In addition, the biomass boilers that achieve the PM standard are not the same boilers that achieve the CO standard. The six biomass boilers tested that are able to meet the proposed GACT standard for PM have an average CO emission of 1,164 ppm @ 7% O2. The eight biomass boilers tested that are able to meet the MACT standard for CO have an average PM emission of 0.23 lbs/mmBtu. Since no biomass boiler tested by EPA can meet the proposed standards for both PM and CO, the Biomass Thermal Energy Council (BTEC) recommends that the CO limit be raised to 1,164 ppm and the PM limit be raised to 0.23 lbs/mmBtu.
MFPA requests that the EPA, if numeric emission limits are deemed necessary, discard the current data that is not statistically representative of the population of biomass boilers subject to the proposed rules, and collect new data from a representative sample of biomass boilers by size, type of biomass fuel used (bark, green wood, dry wood, etc.), type of boiler design and load pattern.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Douglas J. Fulle
Commenter Affiliation: Oglethorpe Power Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1798.1
Comment Excerpt Number: 10

Comment: In addition, EPA has not demonstrated that the emissions information for biomass boilers is representative of the entire population of affected units. The biomass data are derived from only two sources -the Fuels for Schools program and area source boiler information that was submitted as part of major source industrial boiler MACT Information Collection Request. Nothing in the record explains how many area source biomass boilers exist, how the boilers for which EPA has emissions information compare with the population at large (e.g., we do not know how the size of the boilers for which EPA has emissions information compares with the size of the entire boiler population), and how the proposed standards reasonably relate or are reasonably representative of the much wider population of boilers that will be subject to the rule.

In short, the record does not support that the emissions data from the boilers used to set the standard reasonably reflects the characteristics of the vast majority of the boilers for which EPA did not obtain emissions data.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis. Also see the preamble for discussion of work practice standards for boilers with an input heat capacity less than 10 MMBtu/hr.

Commenter Name: Steven Jarvis
Commenter Affiliation: Missouri Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-1477.1
Comment Excerpt Number: 6

Comment: MFPA noted some alarming differences between current and proposed permit levels for CO and PM emissions for existing and new Area Source Biomass Boiler systems. The proposed rule for new boilers is six times lower (100 ppm v. 596 ppm) for CO and five times lower (0.03 lb vs. 0.15 lb) for PM than EPA's current AP-42 guidance. Incredibly, the proposed emission levels from Area Source Biomass Boilers are more stringent than for larger Major Source Boilers and are also substantially more restrictive than existing European standards. [Footnote 3: Euro EN 303-5 Emissions Limit for CO is 1220 ppm (EPA proposed 160 ppm for existing, 100 ppm for new) and 0.15lb/mmBtu for PM (EPA proposed 0.03lb/mmBtu)] In the absence of strict emissions limits, current biomass boilers have PM emissions levels below current AP-42 data for general available control technology (GACT) and equal to or below Europe's strictest policies.
MFPA requests that the EPA apply GACT standards that consist of only best management practices (like initial inspection and annual "tune-ups") rather than numeric emission limitations for Area Source Biomass Boilers.

Response: See response to comment EPA-HQ-OAR-2006-0790-1914.1, excerpt 6 for discussion of unachievable CO limits for new biomass units.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Chris Mello
Commenter Affiliation: Alaska Energy Authority
Document Control Number: EPA-HQ-OAR-2006-0790-1653.1

Comment Excerpt Number: 7

Comment: There are no known units, large or small, that can meet both limits (CO and particulates) at the same time.
If the current boilers are unable to meet the new standards, costly emissions control equipment will significantly increase the initial costs of the boilers and further increase the operational/maintenance costs. In all likelihood, these significant costs will halt the development of small biomass projects in rural Alaska.

Health Implications

National studies are clear that biomass emissions impacts health. It is also clear that rural Alaskans suffer disproportionately from poor lung health. We cannot exclude a contribution of biomass emissions to these health impacts. However, we must be vigilant that EPA does not cause undue hardship for rural Alaska communities. The economic development and jobs creation from biomass heating systems will be stymied by the increased cost for the installation and operations of biomass systems under the new emissions regulations. To ask too much at too high of a cost may create unintended consequences, with communities forced to continue to import high cost petroleum fuels for heating and lose the jobs creation opportunity offered by locally harvested biomass.

Response: See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability, claims that CO limits promote inefficiency and increase NOx emissions, and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 7

Comment: EPA's database shows that few, if any, real units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. Had EPA investigated the consequences of using a pollutant by pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: See preamble for discussion of the dataset used for the MACT floor analysis and MACT floor methodologies. Also see the preamble for discussion of the achievability of CO limits.

Commenter Name: Jon Bolling
Commenter Affiliation: Prince of Wales Community Advisor Council
Document Control Number: EPA-HQ-OAR-2006-0790-1935.1
Comment Excerpt Number: 4

Comment: The majority of boilers purchased for use in rural Alaska are Garn cordwood boilers and Messersmith and Chipteck chip boilers. The typical Garn boilers cost approximately $25,000 and the typical chip boilers are estimated at $250,000. Conversations with these manufacturers have apparently raised concerns about the ability to meet the .03 LB/MMBTU particulate limit and the 100 ppmv/daily average CO limit.

Response: See the preamble for the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Michael T. Palko
Commenter Affiliation: Pennsylvania Department of Conservation and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-1895.1
Comment Excerpt Number: 10

Comment: We recommend initial minimum performance standards of Carbon Monoxide (CO) – 1,164ppm (@ 7% O2) and Particulate Matter (PM) - 0.23 lbs/MMBtu for all boilers, with reductions thereafter based on data collected during the first two years of the Rule's implementation.

Response: See the preamble for discussion of changes made to emission limits for PM, CO and Hg.

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 8

Comment: EPA's database shows that very few units are best performers for more than one pollutant. For example, the best performing plants used for calculating the new source PM and CO standards for biomass shared no common units. As a result, the record demonstrates that the proposed standards reflect the performance of exceedingly few actual sources. Thus, even if EPA

had investigated the consequences of using a pollutant-by-pollutant approach, it could not have reasonably concluded that the proposed standards reflect the performance of actual sources.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: W. Allan Cagnoli
Commenter Affiliation: Hearth, Patio, and Barbecue Association
Document Control Number: EPA-HQ-OAR-2006-0790-1900.1
Comment Excerpt Number: 9

Comment: EPA derived the CO standard for new area source biomass boilers from emissions data taken from one set of such boilers, and the corresponding PM standard from emissions data from an entirely different set. [See generally TDS. See BTEC Comments, at 2.]Remarkably, EPA proposed to apply both standards to any new area source biomass boiler, even though the record shows that not a single one of the biomass boilers for which EPA had data could comply with both the CO and PM limits at the same time.

As described at length above, section 112(d) not only requires EPA to have a rational factual basis for its decisions, it also requires the Agency to include affirmatively in the record a minimal demonstration that the units within the subcategory generally have some technologically feasible, demonstrated means of complying with each emissions standard.

Here, the record is devoid of such a demonstration, but that is understandable because it would be impossible to make. At high levels, PM and CO emissions from biomass boilers are positively correlated, and both can be reduced by ensuring good combustion in the firebox. However, achieving an ultra-low CO level of 100 ppm (one one-hundredth of the CO emissions typical for biomass boilers, i.e., 10,000 ppm) requires injection of large amounts of excess air. [The alternative of a CO catalyst is not practical long-term because of the poisoning of the catalyst bed by the metallic salts in biomass (especially, wood-burning) boiler flue gas, and catalyst deactivation. For example, catalyst beds on new EPA-certified wood stoves are generally inactive within one to two years time.] It is the combination of high temperature and long residence time for flue gas in the biomass boiler's firebox that ensures burnout of most PM. Increasing excess air in order to lower CO levels reduces residence time and thus increases PM emissions, [High levels of excess air also reduce boiler efficiency and require more fuel consumption, and hence emissions, per unit of heat output.] making the two pollutants inversely correlated. Thus, it is imperative that any regulation addressing CO and PM emissions consider the two in tandem. Otherwise the resulting limits will be unrealistic and impossible to achieve, contrary to the rationality and achievability requirements of section 112(d).

Response: See preamble for discussion of changes to emission limits for PM, CO, and Hg. See preamble for discussion of achievability of CO limits and the dataset used for the MACT floor analysis.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 9

Comment: Further illustrating the dataset's weaknesses are the contrasting proposed limits for Major Source boilers. Four different classifications of biomass boilers (stoker, fluidized bed, suspension burner/dutch oven, and fuel cell) each have a range of permitted HAP emissions and associated allowable CO limits. For Area Source boilers, there is a single biomass class which does not reflect the diversity of Area Source boiler types. The stoker and dutch oven/suspension burner boilers are most similar to Area Source biomass boiler types; these have proposed CO emission levels of 560 ppm and 1,010 ppm @ 3% O2, respectively (converted to 434ppm and 764ppm @ 7% O2). Therefore it seems unreasonable that smaller boilers would be subject to CO limits that are so much lower when major sources are allowed much less stringent CO limits.

Also, the proposed standards are sixteen and five times lower for CO and PM, respectively, than the recently proposed European Regulations for similarly sized boilers and USEPA's residential wood boilers that are within the same size range as small commercial units (See Table 3 of submittal).

EPA's standard is required to be based on the "available" data, but with such gaps in the data set, inconsistencies within EPA's own emission limits, and a divergence from international standards, BTEC believes the proposed limits are unreasonable.

Response: See the preamble for discussion of subcategories and work practice standards for boilers with input heat capacity less than 100 MMBtu/hr. Also see the preamble for discussion of changes made to emission limits for PM, CO and Hg, and the dataset used for the MACT floor analysis.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 11

Comment: In the past decade, CO permit limits have decreased. In order to achieve these lower CO limits, new units are designed with (1) larger furnaces which result in increased retention time; (2) increased grate areas which result in lower upward furnace velocity; (3) advanced water-cooled grate designs which enable higher combustion air temperatures for improved combustion of high moisture content biomass fuels; and (4) advanced overfire/secondary air systems which reduce the formation of CO and NOx. Therefore, the proposed CO value of 100 ppmvd at 7% oxygen for new biomass-fired units may be obtainable for a limited range of biomass fuels and combustion systems, but in most cases, an oxidizing catalyst will be required.

ABMA is aware of CO reduction catalysts installed on at least two (2) biomass facilities. The results have been reported to be successful. However, these particular units both fire a consistent chipped wood and bark fuel with moisture contents between 45-50%, <3% ash with low percentages of alkali constituents in the ash and uniform fuel particle size distribution sizing on an annual basis. Also, because they serve electrical generating facilities, boiler operations are relative stable and steam flow does not fluctuate. It is unknown how these facilities would perform given the fluctuations in operating conditions that are inherent with most industrial boilers.

Response: See preamble for discussion of load variability.
See "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" for discussion of fuel variability.
See preamble for discussion of MACT floor methodologies, the dataset used for MACT floor analysis, use of major source data, and inadequacy of data.
See the preamble for discussion of changes to emission limits for PM, CO, and Hg.
See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Martin Lunde
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 13

Comment: The 100 PPM limit on C0 is a new requirement. Study the C0 issue and document actual performance for a period of 3 years to understand what is realistically possible.

Response: See the preamble for discussion of the achievability of CO limits and changes to emission limits for PM, CO and Hg.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 16

Comment: Comparisons of Table 2 and Table 4 [SEE PDF FOR TABLES] point out some alarming differences between current and proposed permit levels for CO and PM emissions for existing and new area source biomass systems. The proposed rule is six times lower (100 ppm v. 596 ppm) for CO and five times lower (.03 lb vs. .15 lb) for PM than current AP-42 guidance.

The proposed rule is also substantially more restrictive than existing European standards as well (Table 5). While modern advanced wood combustion (AWC) system have significantly improved combustion controls and burn much cleaner than existing units, even these systems will have difficulty meeting these standards. The substantial reduction in CO levels is particularly perplexing. Studies in Europe indicate that the relationship between CO and POM reductions are not linear. CO reductions below 600ppm do not yield substantial reductions in POM levels ("European Wood-Heating
Technology Survey," New York State Energy Research and Development Agency, April 2010, pg. 3-5.) Additionally, particulate emissions from these AWC systems have proven to be less biologically active than particles emitted from older, less efficient wood combustions systems (Nussbaumer T., Klippel N., Oser M., "Health relevance of aerosols from biomass combustion in comparison to diesel soot indicated by cytotoxity tests," 14th European Biomass Conference, Paris, 2005).
The proposed emission levels from Area Source boilers (Table 2) are more stringent than for larger Major Source boilers (Table 1). The stoker and Dutch oven/suspension burner boilers are most similar to Area Source biomass boiler types; these have proposed CO emission levels of 560 ppm and 1,010 ppm @ 3% O2, respectively which converts to 434 ppm and 764 ppm @ 7% O2. Therefore it seems unreasonable that smaller boilers would be subject to CO limits that are so much lower when major sources have less stringent CO limits. In fact the emission standards proposed by EPA for residential outdoor wood boilers are higher than the standard for commercial wood boilers. As a result a sawmill owner who lives adjacent to the sawmill and has an outdoor wood boiler for home heating can emit .32 lbs/mmBtu from the home heating system, but can only emit 0.03 lbs/mmBtu from the commercial boiler running the sawmill kilns next door.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg. See the preamble for discussion of CO limits' achievability and adequacy as a surrogate for POM. See preamble for discussion of subcategories.

Commenter Name: Thompas P. Balf
Commenter Affiliation: Campus Cortium for Environmental Excellence
Document Control Number: EPA-HQ-OAR-2006-0790-1657.1
Comment Excerpt Number: 17

Comment: A number of our members are looking at burning solid biomass fuels where there is great interest and they have been encouraged – by regulators, state policy officials and granting agencies – to pursue biomass as a fuel. This regulation, if implemented, would stifle innovation.

We believe the Agency should further research emerging "clean technology" vis a vis solid biomass fuels and draft language that offers flexible performance based standards that will enable new biomass fueled boilers to come on line.

Response: See the preamble for discussion of the cost impact analysis for renewable energy.

Commenter Name: Barry Bernstein
Commenter Affiliation: Better World Energy, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2275
Comment Excerpt Number: 1

Comment: The New England states currently have a CO limit in the range of 150 — 500+ ppm and PM limit from 0.1 to 0.3 MMBTu . Each state also has a set floor ranging from 2.5 - 10 MMB'ru net output , with systems s under the floor not needing an air quality permit. The Messersmith systems has met the 150 ppm limit for CO., and the PM limit of 0.25 lbs/MMBTu with the use of a multi cyclone.. Our customers in the
northeast primarily burn a green hardwood chip with a moisture content of 35 -- 45%.
In order to meet.1 lbs/MMBTu it is necessary to use a bag house or an ESP.. A number of our newer installations will utilize an ESP, which will be our first field experience with this technology/.The two installations with bag houses are on our larger systems of 8 and 12 MMBTu net output. ITowever, they arc at institutional settings that have a high level of trained staff to operate larger facilities. We are told that the ESP will require less operating attention than a bag house and thus more suitable to facilities which have a varied range of maintenance level staff. Messersmith has also taken advantage of installing higher stacks, usually in the 60' to 75' range, based on modeling, to allow for better air dispursal of fine particulates. Over the past 30 years Messersmith Manufacturing Inc. has always, as a family owned business, supported upgrading their system's efficiency and worked to lessen their environmental impact by changes in combustor, operational and program design.. At the same, time they have also strived to maintain appropriate technology with an ease of operation and reliability, so the people operating their systems feel comfortable in maintaining them.

The new finalized EPA regulations should have a floor of 4 MMBTu net input, and all boilers under this floor should be required to meet PM 0.25 lbs/MMBTu and a CO of 150 ppm.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 2

Comment: This letter is to clarify that although it is possible for various wood boilers to achieve the 100 PPM CO emission limit with a well tuned boiler and optimal fuel and operating conditions, we feel that as manufacturers, the only way to achieve those limits for annual testing would be under strict operating conditions and technical oversight that will be cost prohibitive; and guaranteeing consistent achievement of the exceptionally low CO limit would be extremely

risky for companies due to the variability of site conditions, fuel condition, weather and other factors influencing on-site testing. Furthermore, the addition of an electro-static precipitator (ESP) will add a significant extra cost-starting at $60,000 equipment cost for a smaller boiler and increasing to hundreds of thousands of dollars as the boiler size approaches 10 MMBtu/h. This again will destroy the financial viability of biomass boiler projects.

Response: See the preamble for discussion of work practice standards for boilers with input heat capacity less than 10 MMBtu/hr. Also see the preamble for discussion of the cost impact analysis for renewable energy.

Commenter Name: Barry Bernstein
Commenter Affiliation: Better World Energy, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2275
Comment Excerpt Number: 2

Comment: The new finalized EPA biomass regulations should begin with an initial minimum performance standard of 150 ppm CO and 0.25 lbs/MMBTu PM, with reductions thereafter based on data collected during the first two years of the rules implications.

Response: Also see the preamble for discussion of changes made to emission limits for PM, CO and Hg.

Commenter Name: Gailyn Messersmith
Commenter Affiliation: Messersmith Manufacturing, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1949.1
Comment Excerpt Number: 2

Comment: None of the boilers used to determine the CO limits are in the group used to determine the PM limits and vice-versa. In short, none of the boilers used were best of class for both CO and PM, thus the conclusions drawn are faulty.

Response: Also see the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Per Carlsson
Commenter Affiliation: ABioNova
Document Control Number: EPA-HQ-OAR-2006-0790-2147.1
Comment Excerpt Number: 2

Comment: EPA's data set is incomplete and inaccurate regarding available technologies, boiler sizes. Moreover the fact that no boiler in the dataset can meet the dual emission limits of PM and CO shows the proposed standards are unreasonable.

The biomass boilers that achieve the PM standard are not the same boilers that achieve the CO standard. The six biomass boilers in the dataset that are able to meet the Generally Achievable Control Technology (GACT) standard for PM have an average CO emission of 1,164 ppm, which is more than 11 times higher than the proposed CO limit for new boilers. The eight biomass boilers in the dataset that are able to meet the MACT standard for CO have an average PM emission of 0.23 lbs/MMBtu, which is more than seven times higher than the permitted PM limit. Using EPA's own data set, it can be clearly observed that there is no biomass boiler tested that can achieve the proposed levels for both PM and CO.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis. Also see the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Martin Lunde
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 3

Comment: GARN WHS equipment couples batch burn, horizontal gasifying technology with integrated thermal energy storage; thus yielding efficient clean burning wood equipment. Since 1985 in-house lab testing has been used to develop cleaner burning and more efficient equipment. This year considerable money was invested in erecting a new dilution tunnel to more accurately test to existing EPA Phase II particulate criteria. Presently, there is no EPA C0 limit; however, C0 was measured during test burns last summer. To date, in house testing data utilizing 1 year dried oak cordwood yielded the following. All testing was executed in strict accordance with ASTM E2515 and ASTM E2618.
Best reproducible particulate levels are .25 to .30 lbs of particulate per million BTU's delivered (7 to 8 times the proposed limit).

Impossible to maintain 100 PPM of C0; have only hit a low of 152 PPM once in multiple 3 to 4 hour batch burn tests; varies a lot.

Real overall efficiencies are running about 82% based on the lower heating value (LHV). I believe that with sufficient funding, CFD analysis and specific testing this can be increased to around 90 % based on the LHV over the next 2 to 3 years.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Charlie Cary
Commenter Affiliation: Biomass Combustion Systems, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1990.1
Comment Excerpt Number: 3

Comment: The data set is flawed. There are currently NO wood fired boilers which can meet the proposed standards. The standards were based on picking the best boilers for CO and the best of others for particulates from a remarkably small (16 boiler) database. All boilers (except one) selected for their CO emissions were considerably smaller than those selected for their particulate emissions. EPA was charged with creating standards based on the top 12% of all wood fired boilers, not the top 1% for CO and the top 1% of particulate emissions which was the methodology adopted. I understand there is limited data but extrapolating to this extent just is not fair or based on good science.

A representative dataset of existing biomass boilers would include units in a variety of markets which would show significantly higher emissions. Without these boilers included in the dataset, and without a diversity of biomass fuel types, the data is biased towards the subset of the very best performing boilers and is not a representative sample of the actual biomass boiler population.

Response: See the preamble for discussion of the dataset used for the MACT floor analysis and MACT floor methodologies.

Commenter Name: Per Carlsson
Commenter Affiliation: Scandinavian Cleantech Export Association
Document Control Number: EPA-HQ-OAR-2006-0790-2202.1
Comment Excerpt Number: 4

Comment: The fact that no boiler in the dataset can meet the dual emission limits of PM and CO shows the proposed standards are unreasonable. The biomass boilers that achieve the PM standard are not the same boilers that achieve the CO standard. The six biomass boilers in the dataset that are able to meet the Generally Achievable Control Technology (GACT) standard for PM have an average CO emission of 1,164 ppm, which is more than 11 times higher than the proposed CO limit for new boilers. The eight biomass boilers in the dataset that are able to meet the MACT standard for CO have an average PM emission of 0.23 lbs/MMBtu, which is more than seven times higher than the permitted PM limit. Using EPA's own data set, it can be clearly observed that there is no biomass boiler tested that can achieve the proposed levels for both PM and CO.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Martin Lunde
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 4

Comment: EPA data revels no systems overlap in C0 and PM categories

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Steven A. Brink
Commenter Affiliation: California Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2026.1
Comment Excerpt Number: 5

Comment: Biomass Thermal Energy Council also points out that the proposed standards for CO and PM are sixteen and five times lower, respectively, than recent proposed European Regulations in the same boiler size ranges. This is an indicator that the EPA proposed standards are far more stringent than necessary, and perhaps unachievable with current technology, and would lead to prohibitive compliance costs.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Don Kaiser
Commenter Affiliation: Pellet Fuels Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2231
Comment Excerpt Number: 6

Comment: EPA's research report on outdoor wood-burning furnaces, which are small boilers, reported CO levels ranging from 7,800 ppmv to 24,400 ppmv (0.78% to 2.44%) in carefully controlled Method 5 tests. .[Valenti, J. and Clayton, R., Emissions from Outdoor Wood-Burning Residential Hot Water Furnaces, Table 4-3a, at 26 (EPA-600/R-98-017).] The average CO emissions of 14,400 ppmv are two to three orders of magnitude higher than the CO emissions from the eight wood-chip boilers EPA used in their MACT analysis, illustrating that the data set EPA used does not represent small boilers and the resulting CO MACT limit of 100 ppmv, which is two orders of magnitude lower than existing small boiler emission rates, is not achievable in this small size boiler. The eight boilers EPA used for the CO MACT analysis are all larger than 1 mmBtu/hr heat input in size and include industrial boilers up to 115 mmBtu/hr [see BTEC Comments, at 2].

A recent review article on PM emissions from wood-burning small boilers presents results from 56 EPA Method 5G tests done on eight different boilers. It documented PM emissions in the range of 0.5 to 3.0 lb/mmBtu and averaging 1.44 lb/mmBtu.[Guldberg, P., "Outdoor Wood Boilers — New Emission Test Data and Future Trends," presented at the EPA 16th Annual International Inventory Conference, Raleigh, NC, May 2007, page 4.]

Those existing emissions are two to three orders of magnitude higher than the PM emissions from the six wood-chip boilers (which have ESP controls) that EPA used in their GACT analysis, illustrating that the data set EPA used does not represent small boilers. This comparison also reveals that the proposed PM GACT limit of 0.03 lb/mmBtu, which is two orders of magnitude lower than existing small boiler emission rates, is not achievable in this small size boiler. There are no ESP or fabric-filter systems for small boilers, nor any other commercially-available PM control method, that achieves the PM collection efficiency demanded by the proposed GACT limit. The six boilers EPA used for the PM GACT analysis are all larger than 10 mmBtu/hour (75 Fed. Reg. at 31909), all equipped with ESP systems, and two of them are in fact utility-sized boilers at or above 500 mmBtu/hour.

EPA proposed that existing biomass boilers below 10 mmBtu/hour in size should not be subject to a numerical emission standard and the associated compliance testing and monitoring because "testing and monitoring alone would have a significant adverse economic impact on these facilities," as high as 19 percent of business gross revenues, according to EPA. Since the annual costs of emissions testing and the amortized capital cost and maintenance of a CEM are fixed costs for a boiler regardless of size, it is obvious that such costs as a percentage of any measure such as firm revenues or boiler capital cost, would be much higher on average for small boilers than for the wider class of boilers below 10 mmBtu/hour in size. Even so, EPA makes the contradictory claim that new units "have the added flexibility of including compliance costs into their design and planning" while admitting such "planning" may simply involve fuel switching to natural gas in order to avoid the rule's requirements. See 75 Fed. Reg. at 31909. While a company would have the ability to plan in advance, that would make little or no difference because the cost of testing and monitoring would be extremely high relative to revenues or new boiler cost. Moreover, EPA lacks authority to set a numerical standard that is generally unachievable for a given design.

In sum, the present record does not provide EPA with a rational basis for setting any numerical limit for CO or PM for area source biomass boilers with design capacity under 10 mmBtu/hr. Instead, since tune-ups are the only form of effective control discernible in the record for such boilers, EPA must set at most a work practice standard requiring tune-ups for them.

Response: See the preamble for discussion of work practice standards for boilers with heat input capacity less than 10 MMBtu/hr. Also see the preamble for discussion of changes made to emission limits for PM, CO and Hg.

Commenter Name: Martin Lunde

Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 19

Comment: There are no known units, large or small, that can meet both limits (C0 and articulates) at the same time.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

MACT Floor: Results: New Oil

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 15

Comment: Establishing CO limits of 1 ppm from oil fired combustion is simply silly and does not leave any room for NOx control by multi-stage low NOx burners and the like. This is a case of algebra run-a-muck and lacks common sense.

Response: See the preamble for discussion of changes to emission limits for PM, CO, and Hg. See the preamble for discussion of CO limits' achievability, claims that limits promote inefficiency and increase NOx emissions and adequacy as a surrogate for POM.

Commenter Name: Michael Bradley
Commenter Affiliation: The Clean Energy Group
Document Control Number: EPA-HQ-OAR-2006-0790-1689.1
Comment Excerpt Number: 2

Comment: Vendors appear unwilling to offer commercial guarantees for the proposed CO emission levels for new liquid-fired boilers. While some vendors may be able to guarantee low CO emission levels at specific load points, such as at or near full load, if the boiler is operated at any other load, CO emissions may spike above the guaranteed level mainly based on the fact that most low emission boilers are tuned for lower NOx levels, thus increasing the likelihood of CO emission spikes. A typical low-emission boiler guaranteed for 9 ppm NOx will be guaranteed for 50 ppm CO, with the potential of spiking to 150 ppm CO at less than 25 percent load. If EPA maintains the continuous compliance requirement, we recommend limits be set no lower than would be guaranteed.

Response: See the preamble for discussion of changes to emission limits for PM, CO, and Hg. See the preamble for discussion of CO limits' achievability, claims that limits promote inefficiency and increase NOx emissions and adequacy as a surrogate for POM.
See the preamble for a discussion of where EPA determined work practice standards were appropriate.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 5

Comment: The proposed CO emission limits for new oil (1 ppmv by volume) and existing oil boilers (2 ppmv by volume) are unreasonable and extremely low. EPA should evaluate the technical feasibility of meeting such limits even after the installation of additional control technology.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 3

Comment: The proposed CO emission limit for units in the oil subcategory is 2 ppm and the new unit CO limit is 1 ppm. (Table 1, Items 3 and 6, 75 FR 31932).

These two emission limits are extremely low and may be unachievable, even with add-on control equipment. INVISTA endorses the comments made by the American Forest & Paper Association and Georgia-Pacific on the appropriateness of these limits.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 3

Comment: For oil boilers, EPA's proposed limit of 1 part per million (ppm) CO for new oil boilers falls below reference test method variability. Additionally, the 1 ppm limit would likely require use of CO continuous emission monitoring systems (CEMS) for all oil units.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of compliance requirements.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 5

Comment: In addition, NESCAUM believes that EPA's database reflects steady state operation and does not account for CO emission increases during periods of startup and shutdown. NESCAUM therefore suggests that EPA set this emission limit at 10 ppm (@ 3% O2) to reflect variations in operations and test method detection limits.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of SSM periods.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 22

Comment: We provide the comments of CleaverBrooks, a supplier of oil fired boilers, filed for the major source rule as well as specifications for two boilers that represent technology installed before and after 1990 in Appendix 5. We believe the information from Cleaverbrooks further emphasizes the un-achievability of the liquid fired new and existing source proposals in this standard

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of the dataset used in the MACT floor analysis.

Commenter Name: Jim Pettiford
Commenter Affiliation: Fulton Thermal Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2192.1

Comment Excerpt Number: 3

Comment: The proposed MACT standards for oil?fired boilers are not justified through representative government or industry data and should be modified to reflect up?to?date scientific knowledge. For new boilers of all sizes, no matter how small, the proposed rule would establish a particulate matter (PM) emission limit of 0.03 lb/MMBTU and a carbon monoxide (CO) emission limit of 1 ppm corrected to a 3% O2 level in the flue gas.
We believe that the proposed PM standard of 0.03 lb/MMBTU is readily achievable since PM emission levels are primarily (over 90 percent) a function of sulfur content in heating oil, as documented by recent testing at Brookhaven National Laboratory. Standard no. 2 heating oil (with a sulfur content of about 2000 ppm) generally results in PM emissions in the range of 0.005 lb/MMBTU, well below the proposed standard. Low and ultra?low sulfur heating oils generally result in even lower PM emission levels. Only high sulfur, no. 6 residual oil would be expected to face challenges in meeting the 0.03 lb/MMBTU PM emission standard.
The proposed rule would include, a standard of just 1 ppm CO for new, oil?fired boilers for commercial, industrial and institutional applications. The proposed 1 ppm CO limit is unduly restrictive in that it would be exceedingly difficult, even with state?of?the?art combustion technology, to achieve and maintain such low level during long?term boiler operation.

Furthermore, it is well known in the industry that unburned hydrocarbons, including polycyclic aromatic hydrocarbon (PAH) emissions, are essentially eliminated at much higher CO levels. We therefore strongly encourage USEPA to consider a revised CO emission limit that is at least 50 ppm to enable compliance by well?tuned boilers while avoiding the release of PAH emissions.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of the dataset used in the MACT floor analysis.

Commenter Name: David M. Kiser
Commenter Affiliation: International Paper Company
Document Control Number: EPA-HQ-OAR-2006-0790-1924.1
Comment Excerpt Number: 3

Comment: The proposed limit of 1 ppm CO for new oil fired units and 2 ppm for existing oil fired units is an unachievable compliance emission limit. Based on emission performance data provided by one of our boiler manufacturers, CO levels (corrected to 3% O2) for a 250 HP (10.46 MMBtu per hour) and 500 HP (20.9 MMBtu per hour) boiler are estimated at 95 ppm while firing #6 oil [see submission for details]. As stated in AF&PA's comments, "EPA should revise the CO limit for liquid boilers to more accurately reflect what boiler and burner manufacturers currently guarantee, as this would be a more appropriate approach for setting a GACT limit and would not require unproven and costly controls such as a CO catalyst". International Paper fully agrees with this statement by AF&PA.

Response: See the preamble for discussion of the achievability of CO limits and changes made to emission limits for PM, CO and Hg.

Commenter Name: Frank A. Stanonik
Commenter Affiliation: Air-Conditioning, Heating, and Refrigeration Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2156.1
Comment Excerpt Number: 4

Comment: The proposal also does not recognize that lower input (i.e. <10,000,000 Btu/h) oil boilers are packaged boilers which are subject to federal minimum efficiency regulations. Those efficiency regulations directly influence the emissions of the combustion process but this proposal does not appear to have recognized this fact.

Response: See the preamble for discussion of subcategories, the achievability of CO limits, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Christopher S. Colman
Commenter Affiliation: Hess Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2168.1
Comment Excerpt Number: 5

Comment: Larger Area Source boilers should be subject only to a work practice standard.

Response: See the preamble for discussion of where the EPA determined work practice standards were appropriate.

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 5

Comment: EPA should eliminate the carbon monoxide emission limit altogether for fuel oil boilers due to both the very low corresponding boiler and site-wide HAP emissions. Alternatively, the rules could provide for a 10% capacity factor exemption for fuel oil use as a backup to natural gas, removing the proposed restriction to limiting use of fuel oil just during natural gas curtailments in order to maintain an exemption as a natural gas boiler.

Response: See the preamble for discussion of subcategories, the achievability of CO limits, and changes made to emission limits for PM, CO and Hg.

Commenter Name: Thompas P. Balf
Commenter Affiliation: Campus Cortium for Environmental Excellence
Document Control Number: EPA-HQ-OAR-2006-0790-1657.1
Comment Excerpt Number: 19

Comment: The proposed CO limits for oil firing boilers are 1 ppmvdc for new boilers and 2ppmvdc for existing boilers. For boilers>100mmBTU/hr, a 40 CFR CEMS must be installed (per 63.11223(e)) to continuously monitor CO according to 40 CFR 60 Performance Specification 4A. This method allows a 5ppm difference between the reference method and facility CEMS during the Relative Accuracy test. Considering that the reference method can only quality assure data to within 5ppm, the proposed CO limits are indistinguishable from zero. How can a permit limit, under this proposal, be set BELOW the allowable deviation in the reference test method? How could this be enforceable?

Considering the limitation with the current EPA reference methods and typical CO emissions monitoring equipment, we request that the CO standard be set to nothing lower than 10 ppmvdc, which is twice the allowed error of the required relative accuracy test.

Please address whether EPA is working on an updated CO monitoring regulation for low emission limits in parallel with the development of this regulation.

Response: See the preamble for discussion of subcategories, the achievability of CO limits, and changes made to emission limits for PM, CO and Hg. Also see the preamble for discussion of the dataset used for the MACT floor analysis.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 38

Comment: We do not believe that the 1 ppm CO limit for new oil-fired boilers is generally achievable. Additionally, it is not a limit that burner manufacturers will guarantee, nor is it consistent with what states require as BACT. EPA should re-evaluate the proposed new source CO limits for oil-fired boilers and revise accordingly to ensure that they are generally achievable.

Response: See the preamble for discussion of subcategories, the achievability of CO limits, and changes made to emission limits for PM, CO and Hg.

Alternative MACT Floor

Alternative MACT Floor for Hg at Biomass/Oil: Rationale

Commenter Name: Michael Hutcheson
Commenter Affiliation: Ameren Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2012.1
Comment Excerpt Number: 4

Comment: US EPA requests comment on whether MACT based requirements for mercury emissions from biomass and oil fired area source boilers is appropriate. A review of the Hg data from oil fired boilers in the emissions database indicates that, in general, Hg emissions from oil fired units are at or below method detection limits and almost always below the practical quantification limits for the Hg stack test methods. This is a technological limitation on the ability of sources to detect Hg in the stack exhaust reliably. Consequently, US EPA should instead proceed with promulgating work practice standards for these sources instead.

Response: See the preamble for final determinations for the mercury standard.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 6

Comment: EPA should not adopt the alternative MACT-Based standards for mercury and should evaluate the impact of the Area Source Boiler MACT (as proposed) will have on landfill capacity and emissions.

Response: See the preamble for final determinations for the mercury standard.

Alternative MACT Floor for Hg at Biomass/Oil: Results: Existing Biomass

Commenter Name: Gregg Tomberlin
Commenter Affiliation: Novo Energy, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-0834.1
Comment Excerpt Number: 5

Comment: I would also add that the emissions of hydrochloric acid and mercury are small for biomass combustion facilities and are not substantial sources of HAPs. The new limits take into account data that is influenced by “non-detects” which skews the results in a manner that is unwarranted.

Response: See the preamble for final determinations for the mercury standard.

Commenter Name: Cheryl Johncox
Commenter Affiliation: Minneapolis Neighbors for Clean Air
Document Control Number: EPA-HQ-OAR-2006-0790-1971
Comment Excerpt Number: 4

Comment: Given the increase in biomass power capacity that is now occurring, EPA should at a minimum require the same emissions limits for biomass area sources as it does for coal, and further to be truly projective should consider "beyond the floor" requirements. Due to the emissions of mercury from biomass boilers, including those that burn so-called "clean woody biomass" – wood that is actually impregnated with mercury that was released into the atmosphere by burning coal the last 100 years in the U.S. – there is no scientific, economic, or social justification for exempting biomass boilers from mercury regulations. Area source biomass boilers should particularly not be exempt from emissions limits on mercury if the boilers are producing commercial electricity that is being qualified as "renewable electricity" under state renewable portfolio standards.

Response: See the preamble for final determinations for the mercury standard.

Commenter Name: John M. Irving
Commenter Affiliation: Burlington Electric Department
Document Control Number: EPA-HQ-OAR-2006-0790-2171.1
Comment Excerpt Number: 6

Comment: How can the EPA conscionably establish any mercury emission limit based on emission data from a sample size of only 2 biomass area source boilers?

Response: See the preamble for final determinations for the mercury standard.

Commenter Name: Troy Runge
Commenter Affiliation: Wisconsin Bioenergy Initiative
Document Control Number: EPA-HQ-OAR-2006-0790-2245
Comment Excerpt Number: 5

Comment: Even for woody biomass fuels, there is not sufficient data to know whether control technologies exist that are capable of reducing mercury emissions to the level required by the new rule.

Response: See the preamble for final determinations for the mercury standard.

Commenter Name: Trent A. Dougherty
Commenter Affiliation: Ohio Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1922.1
Comment Excerpt Number: 6

Comment: Concerning biomass power application of this rule, MACT should be applied to fully protect human and environmental health. While admittedly the contribution of mercury from biomass plants is much smaller than from coal plants, [See submittal for details.] those numbers do not reflect the increased number of biomass facilities online in the recent years, and the explosion of biomass and biomass co-firing proposals that are set to be constructed and/or put online during this decade. As cited in the comments on this rule by OEC colleague group Buckeye Forest Council, biomass generation could double the existing capacity for electric generation by adding 5830 MW or more. Current estimates for pending applications in Ohio range from 1200-1600 MW, varying depending on permit amendments and new applications. Combined permits for Florida and Georgia are roughly an additional 1200 MW.1 With the significant number of proposed biomass boilers due to come on line, it is important that these facilities be regulated at in a matter that is as stringent as coal-fired boilers. This is not the case as proposed in the current draft. It is essential that the MACT levels currently proposed by the EPA be extended to include biomass boilers of all sizes.

Response: See the preamble for final determinations for the mercury standard.

Alternative MACT Floor for Hg at Biomass/Oil: Results: Existing Oil

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 41

Comment: EPA solicits comment on MACT-based requirements for mercury emitted from biomass-fired and liquid-fired area source boilers in the event comment and further analysis of the inventory demonstrates such regulation is necessary to fulfill the 90 percent requirement under CAA section 112(c)(6) or is otherwise appropriate.

The preamble reports that there is no available emission data, State regulations, or State permits regarding mercury emissions from liquid-fired area source boilers. They therefore propose, under this alternative, to use mercury emission data on from major source liquid-fired boilers and "Since major source liquid-fired boilers are similar in design and controls as compared to area source liquid-fired boilers, to apply the major source MACT limit of 4 lb/TBTU (0.000004

lb/MMBtu) to existing liquid-fired area source boilers and 0.3 lb/TBTU (0.0000003 lb/MMBtu) to new liquid-fired area source boilers.
EPA is incorrect that major source MACT conclusions apply to area source liquid-fired boilers. Major source MACT is based on data from large liquid-fired boilers and process heaters and that data is not representative of the small boilers and hot water heaters typical for area sources. As we discuss in our comments on the major source proposal, it is not even clear that the mercury data for major sources is representative of boilers at major sources. [See DCN: EPA-HQ-OAR-2002-0058-2960.1 for comments]

Area sources typically do not have the technical or economic flexibility to pick and chose fuels or to burn heavier fuels, but must use locally available, highly refined fuels. Major sources on the other hand often can bring in selected fuels from far off locations and can fire heavier, less refined fuels. Thus, information on liquid fuels used at major sources does not reflect the fuels obtained locally by area sources.

Response: See the preamble for final determinations for the mercury standard.

Rationale for GACT

GACT: Rationale: New Unit

Commenter Name: Norman Bujold
Commenter Affiliation: Cleaver Brooks
Document Control Number: EPA-HQ-OAR-2006-0790-0392.1
Comment Excerpt Number: 6

Comment: PM EMISSIONS, OIL
For (Industrial watertube boiler(IWT) boiler(FT and firetube), the best burner PM emissions that we can guarantee from 25% to 100% firing rate:
For low sulfur #2 oil with less than 0.0015% S; 0.01% Ash; 1% Asphaltene (all in mass %), total PM of 0.023 to 0.03 lb/MMBTU .
For typical #6 oil with less than 0.5% S; 0.6% Ash; 7% Asphaltene (all in mass %), total PM of 0.08 to 0.1 lb/MMBTU.
Note: Always consider that the guarantees are given for a turndown range thus will not reflect the best possible numbers that can be obtained at a given constant firing rate.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Frances M. Prescott

Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2282
Comment Excerpt Number: 1

Comment: BIOMASS PLANTS ARE ARTIFICALLY AVOIDING THE "MAJOR SOURCE" DESIGNATION Our community, like others across the nation, is targeted for a "biomass energy plant" which has been carefully designed to come in just under the
trigger point to be considered a "major source" subject to MACT standards. The plant in our community is proposed for an area within two miles of schools, homes, playfield, and a hospital. The company has filed for a permit, estimating emissions will be less than 1% below the maximum allowed for certain regulated pollutants, thereby avoiding the necessity to prepare an Environmental Impact Statement or build to MACT standards.
In our case, the plant design has never been built in the USA. All emissions estimates are based on computer models. The company projections call for burning "clean woody biomass" and are basing their numbers on wood only, in spite of the reality that forest biomass in our area is loaded with needles and leaves, a potential source of volatile emissions. We believe that the emissions estimated by the Company are unrealistic and that the actual emission levels will exceed the "major source" trigger levels.
To protect public health, it is essential that biomass energy plants be built to MACT standards. As long as this decision is contingent on variable factors, the Industry will continue to design plants which produce maximum pollution with minimum regulation.
Communities like ours are frustrated that new facilities are being built which do not even utilize the Maximum Achievable Control Technologies to protect public health.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Thomas D. Emero
Commenter Affiliation: Beaver Wood Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2166.1
Comment Excerpt Number: 1

Comment: BWE supports the stringent PM limit of 0.03 lb PM/MMBtu for new biomass units as a surrogate for non-mercury metals to control mercury emissions and other hazardous air pollutants based on EPA's determination as to what constitutes the generally available control technology or management practices.

Response: EPA thanks the commenter for their input.

Commenter Name: Craig S. Smith
Commenter Affiliation: Biewer Wisconsin Sawmill
Document Control Number: EPA-HQ-OAR-2006-0790-2232
Comment Excerpt Number: 2

Comment: The proposed NESHAP includes an emission limit of .03 pounds/MMBTU of heat input for new biomass boilers of any size. This is concerning because there are very limited air pollution control devices available that would allow a biomass (wood) fired boiler to meet this stringent emission limit of .03 pounds per MMBTU. We currently operate a pollution control device called a milticyclone. This is commonly used on boilers of our size to control particulate emissions. We had one of the best results from this device on our last stack test with a result of .24 pounds of MMBTU and our permit has an emission limit of .50 pounds of MMBTU. For us to achieve an emission limit of .03 pounds/MMBTU we would have to invest in an electrostatic precipitator which would cost somewhere between $800,000.00 - $1,000,000.00 to have it installed and would not include any costs to operate and maintain it over time.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Michael Wagner
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2271
Comment Excerpt Number: 2

Comment: The preamble of the proposed rule indicates that U.S. EPA used the emission limits in Subpart Dc as a guide in establishing some of the particulate matter emission limits in the proposed rule. I do not see any connection or correlation between the two sets of limits. For example, Subpart Dc sets a particulate matter emission limit of 0.10 or 0.30 pound per million BTU of heat input for wood fired boilers from 30 to 100 million BTU per hour depending on the annual capacity factor for wood fuel, but the proposed NESHAP includes an emission limit of 0.03 pound per million BTU of heat input for new biomass boilers of any size.
There are limited options available with regard to air pollution control devices that would allow a biomass(wood) boiler to meet a particulate matter emission limit of 0.03 pound per million BTU. The universal control device currently used on biomass (wood) fired boilers at area sources in Wisconsin is a multi-cyclone. Most of these boilers have had a least one particulate matter emission test in recent years. The average for a three run testing event has ranged from 0.12 to 0.47 pound of particulate matter per million BTU of heat input with the majority of results between 0.22 and 0.38 pound per million BTU. For reference purposes, most area source biomass (wood) boilers in Wisconsin have an applicable particulate matter emission limit of 0.50 pound per million BTU of heat input. The proposed rule does not include particulate matter emission limits for existing biomass boilers, but these existing boilers will eventually need to be replaced as they reach the end of their useful lives. The control options for new biomass boilers are essentially limited to either an electrostatic precipitator or a multi-cyclone/ fabric filter combination. Many people in the forest products industry do not like fabric filters because of concerns about a spark getting into the device and burning up the bags. This leaves an electrostatic precipitator as the most likely control device option to meet the proposed particulate matter emission limit on new biomass boilers. The capital costs and annual operating costs involved with installing and operating an electrostatic precipitator on most biomass (wood) boilers at area sources in Wisconsin are far beyond what the affected companies could afford.

The typical area source in Wisconsin with a biomass (wood) boiler is located in a small town, burns wood waste generated on site, employs fewer than 30 people, and would not be able to continue operating if they had to meet the proposed 0.03 pound per million BTU particulate matter emission limit.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Bruce Lisle
Commenter Affiliation: Biofuel Boiler Technologies
Document Control Number: EPA-HQ-OAR-2006-0790-1981.1
Comment Excerpt Number: 4

Comment: We urge the EPA to carry the 10 MBTU/hr exemption for existing biomass units over to new units. NSPS Subpart Dc provides strong precedent for doing that. EPA may take costs and other factors, such as furthering non-air quality policy goals.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 19

Comment: GACT for Non-Mercury Metallic HAPs Is Unwarranted for Bagasse-Fired Boilers.

The Proposed Rule would require all “new” biomass-fired boilers, including bagasse-fired boilers, to limit PM emissions to 0.3 pounds per MMBtu input (approximately 0.21 pounds per ton of bagasse burned). EPA selected PM as a surrogate for the seven non-mercury metallic urban HAPs being regulated pursuant to §112(c)(3) of the CAA. 75 Fed. Reg. 31900 (June 4, 2010).

Again, EPA has inappropriately used emissions data from wood-fired boilers to set a standard applicable to the entire universe of biomass fuels. EPA states that “area source boilers fired by coal, oil, and wood” will be subject to the HAP emission standards established pursuant to §112(c)(3). 75 Fed. Reg. 31900 (June 4, 2010) (emphasis added). EPA then overreaches by regulating all biomass-fired boilers as wood-fired.

As demonstrated earlier in these comments, wood combustion emissions are not representative of bagasse combustion emissions.

Bagasse Combustion Contributes Minimal Non-Mercury Metallic HAPs.

The metals emitted from bagasse boilers originate in the fibrous stalks of the sugarcane plant. When cane is milled, much of these metals are washed away. The bagasse that results from milling contains the remaining metals, including any HAP metals. When bagasse is burned in boilers, bagasse ash is extracted from the furnace. The ash that escapes from the furnace, called uncontrolled fly ash, contains whatever portion of the metallic HAPs that bagasse boilers could possibly emit. As previously noted, more than 90% of the combustion capacity (on a MMBtu basis) are boilers equipped with hydroscrubbers, which reduce fly ash (PM) emissions by at least 90 percent.

According to AP-42, uncontrolled PM emissions from bagasse-fired boilers are 15.6 pounds per ton of bagasse burned, and 1.4 pounds per ton of bagasse burned when emissions are controlled by wet scrubbing. Although AP-42 does not further speciate the PM constituents, an estimate of the urban HAP emissions from bagasse combustion has been calculated based on the concentration of each non-mercury metallic HAP in the fly ash from bagasse combustion at Louisiana sugar mills.

The ASCL obtained detailed information on HAP emissions from bagasse-fired boilers in Louisiana during its participation in the sugar industry's response to EPA's ICCR. This included information on analysis for HAP metals in five fly ash samples collected from Louisiana bagasse-fired boilers. As illustrated in Table 9, [See submittal for Table 9.] the urban HAP metals potentially emitted from all Louisiana sugar mills are minimal at 2.82 tons per year. These estimates are based on the assumption that fly ash constitutes 100% of bagasse-fired boiler PM emissions, and on the overly conservative assumption that 100% of the bagasse produced in Louisiana would be burned.

Non-mercury metallic HAP emissions of all Louisiana's existing bagasse boilers are so slight (less than 2.82 tons per year) that no environmental or health hazard exists, and no measurable reduction in HAP metal emissions can be achieved by imposition of GACT rules on these area source bagasse-fired boilers.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 20

Comment: EPA's Use of NSPS Subpart Dc to Regulate Bagasse Combustion is an Abuse of Discretion.

As correctly noted in the preamble to the Proposed Rule, new boilers with a heat input capacity of 10 MMBtu/hour or greater would also be subject to either NSPS subpart Db or Dc. 75 Fed. Reg. 31909 (June 4, 2010). EPA then "determined that the PM limits in the NSPS could be used to establish the PM GACT emission limit for area source boilers." Id. The application of the

NSPS emission standard to bagasse-fired boilers is inappropriate as those standards do not account for the significant differences between wood and bagasse.

While a new bagasse-fired boiler would be an "affected source" under NSPS subpart Db or Dc, NSPS regulations do not include PM or opacity emission standards applicable to bagasse combustion. Subparts Db and Dc only contain PM and opacity standards for affected facilities that combust coal, oil, wood, a mixture of these fuels, or a mixture of these fuels with any other fuels. 40 CFR 60.43b and 60.43c. Wood is defined in both subparts as, "wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including but not limited to sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues." 40 CFR 60.41b and 60.41c.

Bagasse is not regulated as a wood under the NSPS standards in either subpart Db or Dc. Thus, the subpart Db and Dc emission standards do not apply. Emissions of PM from bagasse-fired boilers were never evaluated under subpart Db and Dc. EPA arbitrarily imposes these standards on bagasse and other non-wood biomass-fired boilers without any evaluation or basis. As a result, these standards should not be imposed under NESHAP subpart JJJJJJ.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: James L. Kavanaugh
Commenter Affiliation: Missouri Department of Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2251
Comment Excerpt Number: 5

Comment: EPA developed the proposed particulate matter (PM) emission limit to reflect generally available control technology (GACT) for arsenic, beryllium, cadmium, lead, chromium, manganese, nickel, ethylene dichloride, and polychlorinated biphenyls (PCB). The proposed GACT PM emission level of 0.03 pounds per one million Btus is based on the New Source Performance Standard, Subpart Dc, for new area source boilers. Yet in the same proposal, the EPA developed the proposed emission limits to reflect the application of MACT for mercury and polycyclic organ matter (POM) emissions. It is puzzling to see EPA establish GACT for these Hazardous Air Pollutants (HAPs), but not MACT as it did for mercury and POM, because four (arsenic, beryllium, chromium, and
nickel) are known or likely human carcinogens, two (lead and manganese) are neurotoxins, and the other three (cadmium, ethylene dichloride, and PCB) are probably human carcinogens. If EPA found it appropriate to establish MACT for mercury, a neurotoxin, and POM, a probably human carcinogen, then EPA should have found it appropriate to establish MACT, instead of GACT, for these other HAPs. The CAA specifies that MACT for new boilers shall not be less stringent than the emission control that the best-controlled similar source achieves in practice. To fulfill the intent of the CAA, EPA should re-examine the PM emission data of the 82 area source boilers it has, identify the emission control of the best-controlled similar source, and establish that emission control as MACT for new area source boilers' PM emission limit.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 7

Comment: EPA specifically states that “we propose to regulate biomass-fired... boilers under GACT” due to concerns surrounding the costs of control technologies to small entities. However, in order to meet the proposed PM emissions limits, new biomass boilers are required to install either electrostatic precipitators or fabric filters. The cost of these technologies per unit of boiler output is greater for smaller boilers. Therefore, there are basic economic reasons why smaller biomass boilers cannot employ the same control technologies as larger boilers. Despite this, in establishing GACT limits for boilers 10 mmBtu/hr or less in size, the EPA states that, all PM test data were taken from boilers “greater than 10 mmBtu/h in size.” In other words while filters may be GACT for boilers greater than 10 mmbtu/hr, filters are not GACT for boilers less than 10 mmbtu/hr.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: W. Allan Cagnoli
Commenter Affiliation: Hearth, Patio, and Barbecue Association
Document Control Number: EPA-HQ-OAR-2006-0790-1900.1
Comment Excerpt Number: 7

Comment: EPA expressly acknowledges in its TSD that: "All of the boilers [for which EPA had emissions data] were greater than 10 million Btu per hour in size."[TSD, at unnumbered page 12.] In light of EPA’s further express acknowledgement that it has no inventory of the combustion designs of area source biomass boilers generally, much less biomass boilers under 10 mmBtu/hr, EPA lacks a rational basis for extending the NSPS precedent of 0.03 to such small biomass boilers. Indeed, the relevant NSPS (Subpart Dc) itself exempts all boilers below 10 mmBtu/hr, even after undergoing a formal update "review" in the 2005-06 timeframe. [See, e.g., 71 Fed. Reg. 9866 (Feb. 27, 2006).] Thus, since EPA bases its selection of the 0.03 limit largely on the existence of Subpart Dc, rationality calls for EPA to likewise exempt new biomass boilers below 10 mmBtu/hr from the GACT standard for PM.]

In any event, EPA cannot possibly have data showing that it is reasonably cost-effective, a key criterion in a GACT analysis, to control a biomass boiler under 10 mmBtu/hr to the level of 0.03 lb/mmBtu. As EPA’s record shows already (see above), the cost of the necessary add-on control equipment would be comparable to, or exceed, that of the boiler installation itself. It would be a violation of common sense to apply a FF system to a biomass boiler under 10 mmBtu/hr, especially one under 1 mmBtu/hr.

Biomass boilers below 1 mmBtu/hr (hereinafter, "Very Small Boilers") provide a prime illustration of the irrationality of setting for all biomass boilers a benchmark derived from emission data from only a few biomass boilers, absent data showing that the few are representative of the whole.

Very Small Boilers, which are typically used in small businesses, are significantly different in design, fueling and emissions from the biomass boilers EPA examined in the TSD. Very Small Boilers are often manually-fueled with cordwood, whereas the boilers EPA examined are all automatically fueled with wood chips or small-size wood waste. The batch loading of Very Small Boilers with stick wood produces a much more complex combustion process in which firebox conditions, fuel chemistry and geometry, and combustion reactions are all changing significantly with time through the burn cycle. This produces much higher CO and PM emissions per unit of heat input than the larger boilers EPA considered.

For example, EPA's research report on outdoor wood-burning furnaces, which are Very Small Boilers, reported CO levels ranging from 7,800 ppmv to 24,400 ppmv (0.78% to 2.44%) in carefully controlled Method 5 tests. [Valenti, J. and Clayton, R., Emissions from Outdoor Wood-Burning Residential Hot Water Furnaces, Table 4-3a, at 26 (EPA-600/R-98-017).]The average CO emissions of 14,400 ppmv are two to three orders of magnitude higher than the CO emissions from the eight wood-chip boilers EPA used in their MACT analysis, illustrating that the data set EPA used does not represent Very Small Boilers and the resulting CO MACT limit of 100 ppmv, which is two orders of magnitude lower than existing Very Small Boiler emission rates, is not achievable in this small size, manually-fueled boiler. The eight boilers EPA used for the CO MACT analysis are all much larger than 1 mmBtu/hour in size and include industrial boilers up to 115 mmBtu/hr heat input.[See BTEC Comments, at 2.]

A recent review article on PM emissions from wood-burning Very Small Boilers presents results from 56 EPA Method 5G tests done on eight different boilers. It documented PM emissions in the range of 0.5 to 3.0 lb/mmBtu and averaging 1.44 lb/mmBtu. [Guldberg, P., "Outdoor Wood Boilers — New Emission Test Data and Future Trends," presented at the EPA 16th Annual International Inventory Conference, Raleigh, NC, May 2007, page 4.] Those existing emissions are two to three orders of magnitude higher than the PM emissions from the six wood-chip boilers (which have ESP controls) that EPA used in their GACT analysis, illustrating that the data set EPA used does not represent Very Small Boilers. This comparison also reveals that the proposed PM GACT limit of 0.03 lb/mmBtu, which is two orders of magnitude lower than existing Very Small Boiler emission rates, is not achievable in this small size, manually-fueled boiler. There are no ESP or fabric-filter systems for Very Small Boilers, nor any other commercially-available PM control method, that achieves the PM collection efficiency demanded by the proposed GACT limit The six boilers EPA used for the PM GACT analysis are all larger than 10 mmBtu/hour (75 Fed. Reg. at 31909), all equipped with ESP systems, and two of them are in fact utility-sized boilers at or above 500 mmBtu/hour. Post-combustion PM control is not effective or affordable for hand-loaded boilers whose installation costs for the boiler itself are often less than $20,000.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Robert G. Hedden
Commenter Affiliation: Oilheat Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2249
Comment Excerpt Number: 8

Comment: This rule has already defined what constitutes generally available control technologies/work practices for existing boilers. We encourage EPA to apply the same existing source GACT to new and reconstructed boilers.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 8

Comment: The emission limits and testing procedures proposed for new biomass boilers under 10 mmBtu/hr impose onerous capital and annual costs on potential project owners. These owners are typically schools, small businesses, hospitals, and other institutions in rural areas without access to natural gas as a fuel. Thus, this proposed rule will disproportionately impact the ability of entities in rural and potentially economically depressed areas to move from fuel oil or propane to a renewable and lower cost fuel.

EPA recognized this economic impact in the preamble to the proposed rule. On pages 55-56 of the preamble EPA states that "...Based on this analysis, pursuant to CAA section 112(h), EPA is proposing that it is not feasible to enforce emission standards for area source boilers having a heat input capacity of less than 10 mmBtu/hr because of the technological and economic limitations described above. Thus, a work practice, as discussed below, is being proposed to limit the emissions of mercury and CO (as a surrogate for POM) for existing area source boilers having a heat input capacity of less than 10 MMBTU/h. We are specifically requesting comment on whether a threshold higher than 10 mmBtu/hr meets the technical and economic limitations as specified in section 112(h).

The limits imposed for PM do not reflect GACT for units under10 mmBtu/hr and potentially for units up to 30 mmBtu/hr. By EPA's own admission on Pages 55-56, the testing and monitoring costs alone are not implementable for existing boilers under 10 mmBtu/hr. The costs for new boilers would be little different than those for existing boilers, and thus the same conclusion should be drawn.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 9

Comment: EPA does not cite significant test data that are applicable to area source units and specifically states that no data from units under 10 mmBtu/hr were available with regard to PM emissions. On page 72, EPA refers to the NSPS CFR 60 subparts Db and Dc. They state it covers to all units over 10mmbtu/hr input. However, the only discussion in this reference refers to units over 8.7 megawatts or 30mmBTU/hr. Also, the reference it indicates that the 0.03 lb/mmBtu of PM is for coal and oil, or a combination of these fuels and wood. A wood fired unit burning over 30% wood has a limit described is 0.1 lb/mmbtu for PMmmBtu.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Michael Wagner
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2271
Comment Excerpt Number: 11

Comment: Relax the proposed particulate matter emission limits so that these limits are more in line with the
limits in the NSPS for small industrial, commercial, and institutional steam generating units.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Steven W. Koehn
Commenter Affiliation: National Association of State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-2220.1
Comment Excerpt Number: 11

Comment: Comparisons with existing emissions limits

While EPA was unable to access data on smaller US boilers, much data as well as information on emissions regulations are available from many European countries and the European Union. Europe, which has traditionally implemented stricter environmental standards than the US, has employed widespread advanced wood combustion (AWC) technologies for decades. Emissions data is also available in the AP-42 database. This database is maintained by EPA and is currently used by state air quality permitting agencies as a basis for decisions on the adequacy of boiler

emissions controls. Table 4 compares the emissions limits from the draft area source rule to current limits from Europe and from the AP-42 database. [See submittal for Table 4.]

In the absence of strict emissions limits, current biomass installations have PM emissions levels below current AP-42 data for general available control technology (GACT) and equal to or below Europe's strictest policies. Europe utilizes a tiered system for environmental labeling of biomass systems. Rather than impose strict emissions limits on systems, the European approach is to provide financial incentives for the purchase of higher tier systems.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Martin Lunde
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 12

Comment: I suggest that any biomass heating system with an input of 5 million BTUH or less be considered a small unit and not subject to the same standards as larger units. Limit particulates for small units to the present EPA limit of .32 lbs/million BTU's delivered. The particulate limit could drop to .20 lbs/million BTU's delivered after a period of 3 to 5 years to allow time for manufacturers to redesign, test and certify new product as well as adjust their manufacturing.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Martin Lunde
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 21

Comment: The proposed particulate limit alone is 1/10 of the existing EPA limit which has been in place for only 2 years for hydronic equipment. I have worked in this field for 30 years and reducing emissions 90% within 3 years is unrealistic.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Craig S. Smith
Commenter Affiliation: Biewer Wisconsin Sawmill
Document Control Number: EPA-HQ-OAR-2006-0790-2232
Comment Excerpt Number: 3

Comment: For us to achieve an emission limit of .03 pounds/MMBTU we would have to invest in an electrostatic precipitator which would cost somewhere between $800,000.00 - $1,000,000.00 to have it installed and would not include any costs to operate and maintain it over time. With the current economic condition of our economy coupled with the downturn in our industry, it would not be feasible for us to make such an investment at this time were we forced to do so.

Response: See the Preamble for the response on standards based on GACT.

GACT: Rationale: Existing Unit

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 9

Comment: As an additional support to control of HAP metal emissions all boilers existing and new should be required to demonstrate compliance with some particulate standard. In my opinion GACT standards are not adequate for existing boiler particulate control.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Michael J. Hagenbarth
Commenter Affiliation: RockTenn
Document Control Number: EPA-HQ-OAR-2006-0790-1473.1
Comment Excerpt Number: 2

Comment: In situations where the use of GACT is authorized (as it is here), § 112(d)(5) on its face authorizes EPA to establish "standards or requirements .... which provide for the use of generally available control technologies or management practices." (Emphasis added). In other words, when setting standards based on GACT, EPA is expressly authorized to establish work practices instead of emissions limitations. There is no need under the express terms of § 112(d)(5) for EPA to make a showing under § 112(h) in order to set work practice standards. This interpretation is supported by the legislative history of § 112 [Footnote: See, S. Rep. No. 101-228, 101st Cong. 1st sess. 171-172 (GACT is to encompass "methods, practices and techniques which are commercially available and appropriate for application by the sources in the category ...."),] and is reflected in numerous existing GACT standards.' [Footnote: 7 See, e.g., 72 FR 16636, 16639 et seq. (Apr. 4, 2007) (describing methods of determining GACT for 7 area source categories)]

For purposes of the industrial boiler area source rule, EPA has ample justification to establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury because mercury is a fuel dependent HAP and "[fuel usage can be reduced by improving the combustion efficiency of the boiler."8 Similarly, EPA asserts that, "A boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multiclones but would also reduce emissions of organic HAP."9 Thus, a requirement for affected boilers to be periodically tuned up is amply justified.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Russ Mull
Commenter Affiliation: Shasta County Air Quality Management Distric
Document Control Number: EPA-HQ-OAR-2006-0790-1167
Comment Excerpt Number: 5

Comment: The CO emission limit in this Rule for biomass boilers is clearly not workable. A MACT standard for area sources such as this CO limit is not called for in the Clear Air Act. The Clean Air Act Section 112 (d) (5) allows for an Alternative Standard for Area Sources, "the Administrator may, in lieu of the authorities provided in paragraph (2) and subsection (f)1, elect to promulgate standards or requirements applicable to sources in such categories or subcategories which provide for the use of generally available control technologies or management practices by such sources to reduce emissions of hazardous air pollutants." Clearly, Congress envisioned a situation exactly like the biomass fueled power plant area sources that have been located specifically near various fuel sources (forest residuals, mill residuals, agricultural residue, or other biomass) to effectively manage them with Generally Available Control Technology (GACT). The preamble clearly states that the Agency proposes to regulate biomass-fired boilers and oil-fired boilers under GACT2 yet the proposal is for a MACT emission limit on CO. The proposed GACT, of a boiler tune-up program, is sufficient to meet the requirements of the Clean Air Act and will add an additional margin of emission reduction to assure insignificant hazardous air pollutant emissions from both new and existing area biomass boiler sources. The CO MACT standard for new and existing biomass boilers should be removed.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Steven Jarvis
Commenter Affiliation: Missouri Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-1477.1
Comment Excerpt Number: 5

Comment: Area Source Biomass Boilers will be required to employ maximum achievable control technology (MACT) for controlling carbon monoxide (CO) emissions and generally

available control technology (GACT) for mercury (Hg) and particulate matter (PM). It should be made clear in the rule that mercury emissions from biomass boilers using unadulterated "clean" wood fuel are not a problem, since trees do not store significant amounts of mercury.
MFPA requests that if the EPA deems it necessary to regulate Area Source Biomass Boilers under Clean Air Act (CAA) section 116, GACT standards should be used instead of MACT standards.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 28

Comment: EPA'S PROPOSED STANDARDS UNDER § 112(d)(5) ARE UNLAWFUL AND ARBITRARY.
Existing area source boilers emit vast quantities of non-mercury metallic HAPs, including more than 354 tons per year of lead, more than 241 tons per year of chromium, and more than 188 tons per year of arsenic. Fuel Switching Memo at 3. They also emit more than 100,000 tons per year of filterable particulate matter, and more than 11,000 tons per year of hydrogen chloride. Id. at 4. Notwithstanding these emissions, and despite its listing of area source boilers as a source of the most dangerous urban hazardous air pollution, EPA does not propose any emission standards for existing area source boilers under § 112(d)(5) other than those the agency concedes it is required to propose under § 112(c)(6). The agency claims that its boiler tune up program might "potentially" reduce metallic HAP emissions by ten percent. 75 Fed. Reg. at 31908.
EPA states that it is proposing GACT standards for the hazardous air pollutant emission from area source boilers other than mercury and POM, "[a]s provided by § 112(d)(5)." 75 Fed. Reg. at 31908. Although § 112(d)(5) does authorize EPA to issue GACT standards in lieu of MACT standards, the agency's decision to do so is subject to familiar administrative law requirements. To be non-arbitrary, it must — at a minimum — be supported by a rational explanation. EPA has provided no explanation whatsoever for its apparent decision to issue GACT standards instead of MACT standards and, for this reason alone, its decision is arbitrary and capricious. More fundamentally, although Congress enacted § 112(d)(5) to allow EPA to set less stringent GACT standards in lieu of MACT standards in some circumstances, it did not intend § 112(d)(5) to authorize the agency to effectively exempt listed categories of area sources from having to clean up their toxic emissions. By treating § 112(d)(5) as though it were an exemption provision, EPA violates the Clean Air Act and frustrates Congress' intent to protect the public from the very real dangers that air toxic emissions from area sources present.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 29

Comment: The only standard that EPA does propose under § 112(d)(5), its PM standard for new sources, fails to satisfy § 112(d)(5). First, EPA does not set any standards at all for the scores of thousands of existing area source boilers that, by the agency's own account, emit more than 18,000 tons per year of non mercury metallic HAPs – including hundreds of tons per year of lead chromium, and arsenic – that could be substantially reduced through an effective PM standard. The record shows that many area source boilers already are using fabric filters (FFs) or electrostatic precipitators (ESPs), two technologies that are effective in reducing metallic HAP. MACT Floor Memo at App. D-3. Further, EPA itself admits in discussing new source GACT standards that these technologies are "generally available and cost effective for new area source boilers." 75 Fed. Reg. at 31909. Yet EPA does not even consider setting GACT standards for existing sources, far less provide any reason to believe that these technologies are not also generally available for existing source boilers based on these technologies. EPA does not even claim that FFs or ESPs would not be cost-effective for existing source boilers, far less provide any reasoned basis for such a conclusion. The agency's rejection of standards for existing area source boilers based on FF or ESPs is unlawful given that these technologies are in fact generally available. EPA's failure to set such standards is also arbitrary given EPA's complete failure to explain why technologies that are already in widespread use by area source boilers are not generally available technologies for these sources.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Renee Lesjak Bashel
Commenter Affiliation: Small Business Environmental Assistance Programs, SBEAP
Document Control Number: EPA-HQ-OAR-2006-0790-2195.1
Comment Excerpt Number: 4

Comment: Recommendation: For consistency, make the following changes for area sources: (1) all
requirements for units less than 100 MMBTU/hr should be based on GACT instead of MACT when
applied to area sources.

Many small operations have oversized heating units for a variety of reasons. Often they purchased them
secondhand to save money. For some, production levels may have called for the higher capacity at one
time, but efficiencies gained or reduced production no longer require the same levels. In either case,

for small to medium size units it is more reasonable to apply GACT as opposed to MACT.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 23

Comment: We believe the Agency should have based the liquid-fired boiler requirements on GACT, which we believe is the same tune-up requirement that EPA concluded was GACT for other organic HAPs, and recommend that they finalize the rule on that basis in order to minimize the negative impacts of the proposal on the economy and the environment.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Jeffery S. Hannapel
Commenter Affiliation: National Association for Surface Finishing
Document Control Number: EPA-HQ-OAR-2006-0790-1840.1
Comment Excerpt Number: 3

Comment: Where the use of GACT is authorized for area source categories EPA may establish "standards or requirements . . . which provide for the use of generally available control technologies or management practices." EPA is, therefore, expressly authorized to establish work practices instead of emissions limitations, and is allowed to set work practice standards without further justification. This interpretation is also supported by the legislative history of section 112 of the CAA (see submittal for footnote1) and by EPA's history of establishing work practices as GACT standards for numerous area source categories.(see submittal for footnote2)

For the Boiler GACT rule, EPA has ample justification to establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury because mercury is a fuel dependent HAP and "[f]uel usage can be reduced by improving the combustion efficiency of the boiler." 75 Fed.Reg. at 31906. Similarly, EPA asserts that "[a] boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multi-clones, but would also reduce emissions of organic HAP." Id. at 31908. Thus, a tune-up requirement for affected area source boilers is sufficiently justified.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 5

Comment: In situations where the use of GACT is authorized (as is here), § 112(d)(5) on its face authorizes EPA to establish "standards or requirements…which provide for the use of generally available control technologies or management practices." (Emphasis added). In other words, when setting standards based on GACT, EPA is expressly authorized to establish work practices instead of emissions limitations. There is no need under the express terms of § 112(d)(5) for EPA to make a showing under § 112(h) in order to set work practice standards. This interpretation is supported by the legislative history of § 1122 and is reflected in numerous existing GACT standards.3

For purposes of the industrial boiler Area Source rule, EPA has ample justification to establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury, as mercury is a fuel dependent HAP and "[f]uel usage can be reduced by improving the combustion efficiency of the boiler."4 Similarly, EPA asserts that, "a boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multiclones but would also reduce emissions of organic HAP."5 Thus, a requirement for affected boilers to be periodically tuned up is amply justified.

Columbia encourages EPA to consider that the rule should allow facilities to avoid installing controls and or requiring major modifications. Conducting boiler tune-ups as proposed for the smaller boilers (less than 10 MMBTU/hr) is reasonable rather than the proposed numeric emissions limitations.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 4

Comment: The GACT standard for area source boilers should consist of work practices rather than numeric emissions limitations.

In situations where the use of GACT is authorized (as it is here), Section 112(d)(5) on its face authorizes EPA to establish "standards or requirements .... which provide for the use of generally available control technologies or management practices." (Emphasis added). In other words, when setting standards based on GACT, EPA is expressly authorized to establish work practices instead of emissions limitations. There is no need under the express terms of Section 112(d)(5)

for EPA to make a showing under Section 112(h) in order to set work practice standards. This interpretation is supported by the legislative history of Section 112 [Footnot: See, S. Rep. No. 101-228, 101st Cong. 1st sess. 171-172 (GACT is to encompass "methods, practices and techniques which are commercially available and appropriate for application by the sources in the category ....")] and is reflected in numerous existing GACT standards. [Footnote: See, e.g., 72 FR 16639 et seq. (Apr. 4, 2007) (describing methods of determining GACT for 7 area source categories).]

For purposes of the area source boiler rule, EPA has ample justification to establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury because mercury is a fuel dependent HAP and "[f]uel usage can be reduced by improving the combustion efficiency of the boiler." (75 FR 31906). Similarly, EPA asserts that, "A boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multiclones but would also reduce emissions of organic HAP." (75 FR 31908). Thus, a requirement for affected boilers to be periodically tuned up is amply justified.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: John Donahue
Commenter Affiliation: Sappi Fine Paper North America
Document Control Number: EPA-HQ-OAR-2006-0790-2210.1
Comment Excerpt Number: 5

Comment: In situations where the use of GACT is authorized (as it is here), § 112(d)(5) on its face authorizes EPA to establish "standards or requirements .... which provide for the use of generally available control technologies or management practices." (Emphasis added). In other words, when setting standards based on GACT, EPA is expressly authorized to establish work practices instead of emissions limitations. There is no need under the express terms of § 112(d)(5) for EPA to make a showing under § 112(h) in order to set work practice standards. This interpretation is supported by the legislative history of§ 112 [See, S. Rep. No. 101-228, 101st Cong. 1st sess. 171-172 (GACT is to encompass "methods, practices and techniques which are commercially available and appropriate for application by the sources in the category ....")] and is reflected in numerous existing GACT standards [See, e.g., 72 FR 16636, 16639 et seq. (Apr. 4, 2007) (describing methods of determining GACT for 7 area source categories)].
For purposes of the industrial boiler area source rule, EPA has ample justification to establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury because mercury is a fuel dependent HAP and "[f]uel usage can be reduced by improving the combustion efficiency of the boiler." [75 FR 31906] Similarly, EPA asserts that, "A boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multiclones but would also reduce emissions of organic HAP." [75 FR 31908] Thus, a requirement for affected boilers to be periodically tuned up is amply justified.

Response: See the Preamble for the response on standards based on GACT.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 11

Comment: CAA §112(d)(5) authorizes EPA in most cases to set standards for area sources using "generally available control technologies or management practices" (i.e., "GACT") rather than"MACT." Section 112(d)(5) establishes a special rule for area source standards. It provides, "With respect to categories and subcategories of area sources listed pursuant to [§112(c)], the Administrator may, in lieu of the authorities provided in [§112(d)] ... elect to promulgate standards or requirements applicable to sources in such categories or subcategories which provide for the use of generally available control technologies or management practices by such sources." In other words, EPA may establish "GACT" standards for area sources rather than "MACT" standards under §112(d).
EPA takes the position in the proposal that it cannot use GACT to regulate HAP emissions from area source categories that are subject to §112(c)(6). This position suffers from two fundamental flaws. The first problem is that it ignores the language in §112(d)(5) that defines the scope of the agency's authority to use GACT. Section 112(d)(5) expressly states that EPA is authorized to use GACT "[w]ith respect to categories and subcategories of area sources listed pursuant to [112(c)]." The CAA provides only two ways for EPA to list an area source category for purposes of regulating HAP emissions from the category under §112
Section 112(c)(3) – which is aptly entitled "Area Sources" – provides that EPA "shall list" area source categories "which the Administrator finds presents a threat of adverse effects to human health or the environment ... warranting regulation under this section. Section 112(c)(6) similarly authorizes EPA to "list categories and subcategories of sources" – including area sources – as necessary to meet the specified aggregate control requirement for the seven listed HAPs. Since all area source categories – including those listed under §112(c)(6) – are listed "pursuant to §112(c)," EPA has authority under the express terms of §112(d)(5) to use GACT in regulating area source categories listed and regulated under to §112(c)(6).

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 12

Comment: The second fundamental problem with EPA's position is that it ignores the language in §112(d)(5) authorizing EPA to use the GACT method "in lieu of" the §112(d)(2) MACT procedure. EPA itself has observed that the term "in lieu of" is commonly understood to mean

"in place the of" and, thus, has previously correctly concluded that, "CAA section 112(d)(5) authorizes EPA to promulgate standards under CAA section 112(d)(5) that provide for the use of generally available control technologies or management practices (GACT), instead of issuing MACT standards pursuant to CAA section 112(d)(2) and (d)(3)" [73 Fed. Reg. 1916,1920-1921 (Jan. 10, 2008)] In short, the statute plainly says that the requirement to set a standard under §112(d)(2) can be satisfied by using the alternative GACT procedure specified in §112(d)(5). As a result, setting GACT under §112(d)(5) meets the §112(c)(6) requirement to regulate under §112(d)(2).

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 20

Comment: GACT is the right choice where it has been proposed.

SOCMA supports EPA's decision to propose a tune-up requirement as GACT for emissions of (i) non-Hg urban metal HAP from all existing units, (ii) non-POM organics from all existing units, and (iii) Hg from existing oil and biomass-fired units. CAA Section 112(d)(5) gives EPA the authority to set GACT rather than MACT standards for area sources (except as just discussed) and EPA has wisely done so where it had that discretion.

The agency has estimated that there are approximately 183,000 existing coal, oil or biomass-fired area source boilers at 92,000 facilities across the country, with the vast majority of them (168,000) being oil-fired. The bulk of these boilers are located at small sources, and the costs of compliance with MACT limits would be very high, and possibly prohibitive, for many of them. In the preamble to the rule, EPA acknowledges this reality, writing: "Consistent with the legislative history, we can consider costs and economic impacts in determining GACT, which is particularly important when developing regulations for source categories that may have many small businesses such as these [emphasis added]." Approximately 70% of SOCMA's members are small businesses. These units thus represent a classic case of where GACT, rather than MACT, standards are appropriate.

Response: See the Preamble for the response on standards based on GACT.

GACT: Results: New Unit

Commenter Name: James P. Brooks
Commenter Affiliation: Maine Department of Environmental Protection

Document Control Number: EPA-HQ-OAR-2006-0790-1915.1
Comment Excerpt Number: 4

Comment: We also recommend that EPA establish a particulate emission standard of 0.08 lb/MMBtu for new biomass boilers with a requirement for manufacturer certification of units instead of post-install emission testing. The Maine DEP believes that the costs of emission testing for units of this size are unreasonable for the emission reductions that might be achieved by instituting emission standards and monitoring requirements. EPA's proposed emission limits for area sources are derived from a very limited data set that has resulted in inappropriately low proposed standards. We have worked with several schools and the Department of Conservation to identify new units that would be able to achieve compliance. No vendors have been able to guarantee compliance with the proposed CO standard, but several units are available that could reliably achieve compliance with a PM standard of 0.08 lb/MMBtu. We are submitting accompanying comments from several small boiler manufacturers.

Response: The EPA agrees with the commenter that small boilers should have separate standards, and all new and existing boilers < 10 mmBtu/hr do not have applicable emission limits in the final rule. See the Preamble for further discussion on PM GACT.

Commenter Name: Bruce Lisle
Commenter Affiliation: Biofuel Boiler Technologies
Document Control Number: EPA-HQ-OAR-2006-0790-1981.1
Comment Excerpt Number: 1

Comment: There is not enough or any data in regards to boiler installations and their emissions for units sized 10MBTU/hr and less. This market place is very diverse and if the emissions are significant, they are regulated by the states. It is incorrect to lump all biomass fired boilers together under one numeric based rule. Grouping biomass particulate emissions with oil burners is just wrong, and unrepresentative of what is in the marketplace. 0.03 lb/MBTU for particulate emissions is ten times greater than what is currently being regulated in the residential biomass energy market.

Response: The EPA agrees that biomass boilers with heat input capacity less than 10 mmBtu/hr should have separate standards, and as such are exempt from all emission limits for the final rule.

Commenter Name: Douglas J. Fulle
Commenter Affiliation: Oglethorpe Power Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1798.1
Comment Excerpt Number: 7

Comment: EPA should establish GACT work practice standards for CO emissions from new biomass boilers instead of numeric MACT emissions limits.

We believe that EPA has ample authority and justification to establish work practice standards for CO/POM emissions from new biomass boilers -such as a periodic tune-up instead of a MACT emissions limitations. First, while EPA asserts that it must regulate POM emissions from area source biomass boilers to satisfy § 112(c)(6), there is nothing in the record that supports this conclusion. Back in 1998 when EPA first established the list of source categories that needed to be regulated to satisfy § 112(c)(6), EPA declined to draw final conclusions as to whether area source categories need to be regulated. Instead, the Agency concluded that it "will determine whether specific regulation of the area source component of a source category is appropriate, or necessary to meet the 90 percent goal, based on more source category-specific data collected as part of the regulatory process." 63 Fed. Reg. 17838, 17842 (Apr. 10, 1998). Because EPA failed to conduct this further analysis for the industrial boiler area source category, its proposal to regulate POM emissions in order to satisfy § 112(c)(6) is unfounded.

Second, contrary to EPA's assertion, even if POM emissions from this source category must be regulated to satisfy § 112(c)(6), EPA retains authority to establish GACT standards instead of MACT emissions limitations. Section 112(d)(S) expressly states that EPA may adopt GACT "in lieu of' standards under § 112(d)(2). So, even though § 112(c)(6) requires emissions to be regulated under § 112(d)(2), this requirement does not override the express authority for GACT to be imposed in the place of a § 112(d)(2) standard.

In sum, EPA has not established that a MACT standard for CO/POM is needed to meet the 90% control requirement of § 112(c)(6). And, even if CO/POM emissions from this source category needed to be regulated to meet § 112(d)(6), EPA retains authority to adopt a GACT work practice instead of a MACT emissions limitation.

Response: See the Preamble for the response to using MACT versus GACT.

Commenter Name: Philip K. Hopke
Commenter Affiliation: Clarkson University
Document Control Number: EPA-HQ-OAR-2006-0790-2211.1
Comment Excerpt Number: 2

Comment: I am commenting specifically on the proposal relative to the emissions from burning woody biofuels in new systems. We have made a series of measurements on the emissions arising from high efficiency, low emissions, European-designed wood pellet and chip boilers. A detailed report of our work is appended to these comments so that you will have the advantage of our results prior to our submitting them for publication in appropriate peer-reviewed journals.

These high efficiency systems have not yet significantly penetrated the US market, but have been widely used in Europe. I am writing to suggest that rather than mandating additional end of the pipe technology, it will be more efficient to set appropriately stringent requirements on the combustion efficiency and reduction in emissions that can be attained with better combustion technologies. As can be seen in the attached report, conventional systems that were tested at sites

in New England have significantly higher emissions and lower overall efficiency. Even if combusting wood from sustainable forestry, it is best to utilize the energy content of that wood with maximal efficiency and lower emissions of CO 2 for the same heating capability.

If we want to reduce CO 2 emissions and move toward renewable woody biofuels, the imposition of the PM limit of 0.03 pounds per MMBTU will prove to be a significant obstacle particularly for small commercial scale systems. Although we have shown that additional control technologies will likely result in a further reduction in PM emissions, the additional costs accruing to the controls will push operators toward natural gas to avoid the need for additional technology. Given our results of 0.06 pounds per MMBTU in boilers that are not fully state-of-the-art, a small increase in the proposed emission limit in the FR notice would permit the best of the European designs to operate without additional controls, expand the use of this important renewable fuel, and support considerable economic growth in this sector. [See submittal for full report evaluating performance of wood combustion system.]

Response: Please see the preamble for discussion of emission limits set for new biomass units. PM limit for biomass units between 10 and 30 lb/MMBtu is 0.069 lb/MMBtu.

Other - GACT Analysis/Rationale

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 3

Comment: The imposition of GACT standards are always preferred to the imposition of MACT standards for area sources, because GACT standards are less likely to force small sources out-of business and cost jobs, because they are more flexible than MACT standards and thus better fit small operations, and because they significantly reduce the burdens imposed. It is therefore appropriate that EPA has opted to maximize the imposition of GACT requirements in this proposal.

Response: EPA thanks the commenter for their input.

Beyond-the-Floor Analysis

General Comments on Beyond-the-Floor Analysis

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 24

Comment: Because the Clean Air Act unambiguously requires the maximum achievable degree of reduction through the full range of potential emission measures, EPA's failure to consider measures other than an energy assessment is unlawful and arbitrary. In particular, EPA's failure to consider beyond-the-floor standards reflecting the use of cleaner fuels and the deployment of pollution control technology is unlawful and arbitrary given that such measures would undisputedly achieve further reductions in area source boilers' emissions of mercury and POM.

EPA provides no explanation for failing to consider the use of cleaner fuels as a beyondthe-floor measure. Notably, however, the agency acknowledges that switching from a variety of different fuels to natural gas would yield significant reductions in emissions. For example, the agency indicates that switching coal-fired boilers to natural gas would reduce those boilers' mercury emissions by almost two tons per year and would reduce their emissions of CO (EPA's surrogate for POM) by 16 tons per year. EPA, Development of Fuel Switching Costs and Emission Reductions for Industrial, Commercial, and Institutional Boilers for the National Emission Standards for Hazardous Air Pollutants – Area Source (April 2010) ("Fuel Switching Memo") at 4. Further, although EPA claims that it does not have to set § 112(d)(2) standards for hazardous air pollutants other than mercury and POM, switching coal-fired boilers to natural gas would also reduce emissions of non-mercury metallic hazardous air pollutants by more than sixty-five tons per year. Id. at 3. EPA concedes that switching fuels is technically feasible, and does not claim anywhere in the record that it is not economically achievable. Although the proposal claims (in a portion of the preamble added entirely by OMB) that fuel switching "was not an appropriate control technology for purposes of determining the MACT floor level of control," 75 Fed. Reg. at 31905 (emphasis added), the agency does not reject it as a beyond the floor measure and does not claim that it is not achievable in any respect.

Response: EPA determined that fuel switching was not an appropriate control technology based on the overall effect of fuel switching on HAP emissions and the technical and design considerations. EPA's rationale was included in the preamble to the proposed June 2010 rule. Other beyond the floor level control was evaluated, but each was determined to be too costly.

See preamble for response to comments on the beyond the floor analysis.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 26

Comment: EPA's Beyond The Floor Approach For New Sources Is Unlawful And Arbitrary. EPA's beyond the floor analysis for new sources consists of a cursory statement that "[n]o technologies or other HAP emission reduction approaches were identified that would achieve mercury or POM reduction greater than the new source floor for each of the subcategories." 75 Fed. Reg. at 31909. That claim goes beyond the normal range of arbitrary EPA action and flirts with outright defiance of the Clean Air Act and Congress.

EPA is well aware that boilers can reduce their emissions by burning cleaner fuel. EPA's floors reflect either the existing source standard (for coal-fired boilers) or the alleged performance of the best units (for oil-fired and biomass-fired units). Coal-fired, oil-fired, and biomass-fired units all could achieve substantial reductions in the hazardous air pollutant emissions by using a cleaner fuel such as natural gas. Indeed, EPA itself has documented this point, showing that existing boilers could achieve vast pollution reductions by switching to natural gas. Fuel Switching Memo at 3-4. Given that, the agency can scarcely claim that switching to cleaner fuels is an unidentified means of reducing emissions. Thus, EPA's claim that no emission reduction approaches for reducing emissions beyond the floor levels has even been "identified" is plainly false. EPA's failures to set standards reflecting the reductions that could be achieved through the use of cleaner fuels, to provide a rational basis for refusing to set such standards, and even to consider such standards render its rule unlawful and arbitrary.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1982.1, Comment Excerpt Number: 24

Commenter Name: Trent A. Dougherty
Commenter Affiliation: Ohio Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1922.1
Comment Excerpt Number: 5

Comment: The proposed rule also establishes a number of "beyond-the-floor" efficiency measures such as boiler tune-ups and energy efficiency assessments and improvements. The proposed input-based standards fail to credit a facility for implementing such measures. Output-based standards would give facilities the opportunity to use "beyond-the-floor" measures to be in compliance with the new emissions rules. This change would encourage greater energy efficiency and serve to further reduce overall emissions.

Traditional factories release massive amounts of waste heat and steam through stacks as they operate. Along with this heat and steam, a number of harmful pollutants often are emitted as well. This wasted heat and steam is energy. On average, about two thirds of the energy utilized in factories goes straight out the factory stack into the atmosphere, while only a third of the energy used runs the factory and makes the product. Combined heat and power (CHP) projects offer a unique opportunity to provide low-cost power to industrial customers, reduce Ohio's greenhouse gas emissions, and limit the amount of health threatening HAPs emissions as well. Accordingly, an output-based methodology is critically important to encourage CHP. CHP projects produce thermal energy as well as electric power using less fuel than would be combusted in the separate

generation of thermal energy and electric power. Input-based emissions regulations fail to credit CHP systems for their greater efficiency, reducing the incentive for CHP to be installed and used throughout U.S. industry. We encourage the EPA to develop a reasonable methodology for addressing CHP units that recognizes the dual outputs of a CHP system, and thus their contributions to emissions reductions and increased efficiency.

Several U.S. states have adopted output-based emissions regulations for distributed generation, including CHP. Through the EPA's CHP Partnership, the EPA has encouraged the states to adopt such an approach. Including an output-based compliance in this proposed boiler rule would reinforce the EPA's stated position that output-based emissions regulations recognize efficiency improvements as pollution prevention measures.

Response: See the discussion of MACT floor methodologies - statistical approach, in the preamble for a response to alternate emission limit formats

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Commenter Name: Anna K. Chittum
Commenter Affiliation: American Council for an Energy-Efficient Economy
Document Control Number: EPA-HQ-OAR-2006-0790-2189.1
Comment Excerpt Number: 7

Comment: This proposed rule also establishes a number of "beyond-the-floor" efficiency measures such as boiler tune-ups and energy efficiency assessments and improvements. The proposed input-based standards fail to credit a facility for implementing such measures. Output-based standards would give facilities the opportunity to use "beyond-the-floor" measures to be in compliance with the new emissions rules. This change would encourage greater energy efficiency and serve to further reduce overall emissions.

Response: See the discussion of MACT floor methodologies - statistical approach, in the preamble for a response to alternate emission limit formats

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Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 16

Comment: EPA should use its authority under the law to go beyond-the-floor in instances where derived floors do not reflect "maximum degree in reduction of emissions" required by Section 112(d)(2) and can also set more stringent standards consistent with the residual risk and five-year review processes. In fact, with its limited emissions database and statistical tools EPA should anticipate that some calculated floor values will seem higher than is ultimately achievable. This is result of these limitations. In such cases EPA should rely on its beyond-the-floor evaluation to set the standards.

Response: EPA has determined that the final rule meets the requirements of the CAA. Residual health risks from these sources after the NESHAP emission limits have been implemented will be addressed in eight years under the 112(f) residual risk program.

Commenter Name: Regina Hopper
Commenter Affiliation: America's Natural Gas Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1998.1
Comment Excerpt Number: 6

Comment: In setting beyond-the-floor limitations, the Act explicitly directs EPA to consider emissions reduction measures such as fuel switching. The EPA Administrator must determine if additional measures—the beyond-the-floor limitations—are needed to achieve maximum reduction of HAP emissions. [Footnote: 42 U.S.C. 7412(d)(2)] The Act specifically names "substitution of materials" and "process changes" as pollution reduction measures for consideration in this determination. [Footnote: 42 U.S.C. 7412(d)(2)(A); see also Sierra Club v. EPA, 353 F.3d 976, 988 (D.C. Cir. 2004) (same).] EPA has recognized that fuel switching is appropriate for consideration when setting beyond-the-floor standards. [Footnote: See, e.g., 64 Fed. Reg. 31898, 31917 (Portland Cement Manufacturing Industry).]

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1982.1, Comment Excerpt Number: 24

Beyond the Floor: Feasibility: CO/Organic HAP Controls

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 2

Comment: Grate boilers generally can't achieve the 160 ppm level. Most biomass boilers are grate boilers. I have experience with two grate boilers using catalysts. The flue gas exiting the boilers is increased about 50 degrees F to light off the catalyst and approximately 40% control of CO is achieved to reach an outlet level of 200 ppm CO. There is no evidence that controlling 40% of the stack CO emissions has any impact of emissions of VOC or other combustible organic compounds. My observation is that while the catalyst oxidizes some of the CO there is no evidence that the catalyst breaks down more complex organic molecules.

Response: The proposed rule and final rule do not require a specific control technology to meet the CO emission limits. An owner/operator can choose any control technique as long as they can meet the emission limit requirements of the rule.

Commenter Name: Norman Bujold
Commenter Affiliation: Cleaver Brooks
Document Control Number: EPA-HQ-OAR-2006-0790-0392.1
Comment Excerpt Number: 10

Comment: BOILER OUTLET FLUE GAS TEMPERATURE FOR CO/VOC CATALYST CONSIDERATIONS
In the following table you will find typical boiler outlet temperature at 25% MCR and 100% MCR. The outlet temperature has a direct influence on the catalyst performance and should be considered for overall CO/VOC emission reduction considerations. [See submittal for table giving outlet temperatures for industrial watertube and firetube boilers.]

For optimum catalyst performance, gas temperatures are required to be in 450 F to 650 F range. Depending on type of boiler and firing rate, gas temperature leaving the boiler will be significantly lower. Changes to boiler design will be required to raise outlet temperature. This change will result in lowering boiler efficiency by up to 5%, increasing fuel consumption.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1897.1, Comment Excerpt Number: 9.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1944.1
Comment Excerpt Number: 3

Comment: Detroit does have experience with units operating at or below 100 ppm, without post combustion CO control, However the fuel has been <35% Moisture. Higher moisture biomass fuels would likely require owners to install a CO Catalyst. Detroit is aware of two (2) existing units that have CO catalyst installed. They require clean flue gas (Avoid poisoning media) and flue gas temperature at or near 400ºF to be effective. Both facilities are IPP's and installed the CO Catalyst to insure compliance in the lucrative renewable energy credit (REC) market. The manufacture/supplier has publicly indicated 50-75% reduction in CO with the system.

Response: The proposed rule and final rule do not require a specific control technology to meet the CO emission limits. An owner/operator can choose any control technique as long as they can meet the emission limit requirements of the rule.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 26

Comment: In section IV B, EPA gives its rational for requiring oxidation catalyst by stating that CO can be controlled using good combustion control or using an oxidation catalyst. See 75 Fed. Reg. 32018. While it agrees that good combustion control can limit CO emissions, Duke Energy points out that it cannot completely eliminate CO emissions during all phases of operation such as SU/SD, and during load changes. As has been previously discussed, CO emissions during these periods have not been adequately considered in the setting of the MACT floor. Duke Energy also points out that while there is some experience with oxidation catalysts on gas fired units, there is not significant experience to demonstrate that oxidation catalysts have been successfully applied to solid fuel fired units.

Response: The proposed rule and final rule do not require a specific control technology to meet the CO emission limits. An owner/operator can choose any control technique as long as they can meet the emission limit requirements of the rule.

See preamble for response to comments on the startup/shutdown/malfunction.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 9

Comment: Operation of oxidation catalyst for CO control would be subject to several design constraints. As an initial matter, oxidation catalyst performs optimally at temperatures of 600ºF and above. Small boilers operating at turndown ratios may not be able to meet these temperatures. In particular, package boilers operating at low pressure and low load may experience low flue gas temperatures.[See submittal for reference 1 showing outlet flare gas temps.] While an increase in volume and pressure drop may compensate for lower temperature, capital costs and operating expenses may increase. For example, a typical boiler producing 80,000 pounds of saturated steam is assumed to use a fan (at sea level) that moves 18,000 cfm at 14 inches of water column, and its energy consumption is 39.4 kw. The addition of a CO oxidation catalyst will add an estimated 2 inches water column to the draft losses of the system. This figure is based on typical design criteria, plus the need to compensate for low flue gas temperature. To the extent that the air moving equipment is capable of overcoming the added draft losses, the static pressure increase would result in a new energy usage of 45 kw, or 14% increase. Other costs associated with the use of oxidation catalyst include the need for a near perfect flow distribution, which require flow straightening material or large amounts of catalyst material. The formation of sulfates is also a concern, because they may bond to the substrate of the oxidizing catalyst and create a potential for a sulfuric plume of SO3, which may condense to form sulfuric acid. Further, in some field erected units, the installation of oxidation catalyst can

reduce boiler heat exchange surface for lack of an adequate “window” for placement. Based on all of the above, oxidation catalysts may present technical and economic constraints that were not adequately evaluated by EPA. Further, even at optimal temperatures, use of an oxidation catalyst may not be sufficient to meet a 1 or 2 ppmvd emission level for CO. As an alternative, ABMA recommends a CO limit in the 5 ppm range where oxidation catalyst is used at optimal flue gas temperatures (>600ºF).

Response: The proposed rule and final rule do not require a specific control technology to meet the CO emission limits. An owner/operator can choose any control technique as long as they can meet the emission limit requirements of the rule.

It should be noted that the final rule requires area source boilers with a designed heat input capacity of less than 10 MMBtu/h to limit CO with a tune-up.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 12

Comment: In the past decade, CO permit limits have decreased. In order to achieve these lower CO limits, new units are designed with (1) larger furnaces which result in increased retention time; (2) increased grate areas which result in lower upward furnace velocity; (3) advanced water-cooled grate designs which enable higher combustion air temperatures for improved combustion of high moisture content biomass fuels; and (4) advanced overfire/secondary air systems which reduce the formation of CO and NOx. Therefore, the proposed CO value of 100 ppmvd at 7% oxygen for new biomass-fired units may be obtainable for a limited range of biomass fuels and combustion systems, but in most cases, an oxidizing catalyst will be required. ABMA is aware of CO reduction catalysts installed on at least two (2) biomass facilities. The results have been reported to be successful. However, these particular units both fire a consistent chipped wood and bark fuel with moisture contents between 45-50%, <3% ash with low percentages of alkali constituents in the ash and uniform fuel particle size distribution sizing on an annual basis. Also, because they serve electrical generating facilities, boiler operations are relative stable and steam flow does not fluctuate. It is unknown how these facilities would perform given the fluctuations in operating conditions that are inherent with most industrial boilers.

For an area source where a CO catalyst is required, there is an additional issue EPA should consider. If the NOx emission limit requirement (not regulated under proposed MACT) is such that selective non-catalytic reduction (“SNCR”) is required, then the nitrogen in the ammonia slip will be oxidized at the CO catalyst into NOx. This means that the SNCR needs to be sized to reduce NOx at the boiler outlet to a value lower than the permitted requirement with low ammonia slip. Essentially, 1 ppm of ammonia will make an additional ppm of NOx at the stack if it passes over a CO catalyst. Therefore, NOx at the boiler outlet must be low enough so that the new NOx made at the CO catalyst from the oxidation of the ammonia will not exceed the overall

NOx emission requirement. To make this system work requires very close coordination between the boiler designer and the SNCR supplier. If the requirements for NOx control and CO control cannot be balanced as outlined in the foregoing, then SCR may be required even if the NOx requirement is not too difficult. This may be an unintended and possibly very costly consequence of the proposed Area Source rule. There is more than one way to integrate a SCR catalyst into an area source boiler system. Typically the CO catalyst comes first followed by a SCR if both systems are required. However, to meet the proposed Area Source requirements one other strategy that may be useful is to put a limited quantity of SCR catalyst before the CO catalyst with the express purpose of using up the ammonia in the flue gas. With this system, one will obtain an additional reduction in NOx, as well. Again, however, if the ammonia slip required to reduce the NOx is too high, a full SCR will be required after the CO catalyst. It is therefore ABMA's contention that the Area Source CO requirement for biomass boilers with stoker combustion technology is difficult with which to comply, definitely costly, and, in our experience, unfounded in good industry practice.

Response: The final rule does not require area source biomass boilers to install reduction catalyst system. Biomass boilers shall limit CO with either a tune-up or an energy assessment.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 14

Comment: For an area source where a CO catalyst is required, there is an additional issue EPA should consider. If the NOx emission limit requirement (not regulated under proposed MACT) is such that selective non-catalytic reduction ("SNCR") is required, then the nitrogen in the ammonia slip will be oxidized at the CO catalyst into NOx. This means that the SNCR needs to be sized to reduce NOx at the boiler outlet to a value lower than the permitted requirement with low ammonia slip. Essentially, 1 ppm of ammonia will make an additional ppm of NOx at the stack if it passes over a CO catalyst. Therefore, NOx at the boiler outlet must be low enough so that the new NOx made at the CO catalyst from the oxidation of the ammonia will not exceed the overall NOx emission requirement. To make this system work requires very close coordination between the boiler designer and the SNCR supplier. If the requirements for NOx control and CO control cannot be balanced as outlined in the foregoing, then SCR may be required even if the NOx requirement is not too difficult. This may be an unintended and possibly very costly consequence of the proposed Area Source rule. There is more than one way to integrate a SCR catalyst into an area source boiler system. Typically the CO catalyst comes first followed by a SCR if both systems are required. However, to meet the proposed Area Source requirements one other strategy that may be useful is to put a limited quantity of SCR catalyst before the CO catalyst with the express purpose of using up the ammonia in the flue gas. With this system, one will obtain an additional reduction in NOx, as well. Again, however, if the ammonia slip required to reduce the NOx is too high, a full SCR will be required after the CO catalyst. It is therefore ABMA's contention that the Area Source CO requirement for biomass boilers with

stoker combustion technology is difficult with which to comply, definitely costly, and, in our experience, unfounded in good industry practice.

Response: The final rule requires area source biomass boilers to limit CO with either a tune-up or an energy assessment. An owner/operator can choose any control technique as long as they can meet the emission limit requirements of the rule.

Beyond the Floor: Feasibility: Hg Controls

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 25

Comment: EPA also provides no explanation for rejecting control technologies that would reduce mercury and POM including fabric filters, activated carbon injection, and wet scrubbers. As EPA is well aware, many existing boilers already use fabric filters and this technology reduces mercury emissions. Yet EPA provides no reason for failing to set standards based on the application of fabric filters. Further, although EPA does not indicate whether any existing boilers are using activated carbon injection (ACI) or wet scrubbers – and does not appear to have made any serious effort to find out if they do – it is well known that both of these technologies reduce mercury as well. Yet EPA does not even discuss beyond-the-floor standards based on the use of ACI or wet scrubbers, far less provide a rational basis for refusing to set such standards. EPA admits that oxidation catalysts reduce emissions of CO, id. at 4, and organic HAP, but neither discusses beyond-the-floor standards based on oxidation catalysts nor provides a rational basis for refusing to do so.

Response: The proposed rule and final rule do not require a specific control technology to meet the standards. An owner/operator can choose any control technique as long as they can meet the emission limit requirements of the rule.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 27

Comment: EPA is also aware that new sources could achieve additional reductions through the use of control equipment that was not used by the units on which the floors were based. For example, mercury reductions could be achieved through the use of fabric filters, ACI, and wet

scrubbers, and CO emissions could be achieved through the use of catalytic oxidizers. EPA's failures to set beyond the floor standards reflecting the use of these control technologies, to provide a rational basis for refusing the set such standards, and even to consider such standards render its rule unlawful and arbitrary.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1982.1, Comment Excerpt Number: 25.

Commenter Name: Marshall D. Moore
Commenter Affiliation: Chemture Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1927.3
Comment Excerpt Number: 1

Comment: Bromine-enhanced Mercury Abatement from Combustion Flue Gases – Recent Industrial Applications and Laboratory Research*

[All Figures in this section (Figures 1 - 15) can be seen in the submittal.]

Introduction

The new process of bromine enhanced mercury abatement [1] was discovered by Vosteen and Pohontsch in 2000 [2] and studied in more detail by Kanefke and Nolte in 2001/2002 [3, 4] and since then constantly applied industrially at the Hazardous Waste Combustors (HWC) of BIS, Figure 1. Since August 2004 the new process is constantly applied, too, at two Stationary Fluidised Bed Combustors (SFBC) for the mono-combustion of municipal sewage sludge of Emschergenossenschaft, Essen/Bottrop (Germany) [5]. The two SFCB plants in Bottrop, each equipped with heat recovery boiler, ESP and two-staged scrubber (acidic and neutral), primarily used the expensive NaClO2 as oxidising agent injected at the scrubber entrance, but did now change over to aqueous sodium bromide injected into the hot SFBC free board. Changing over to this comparatively cheap and easy-to-handle oxidising agent has cut down the operating costs of both plants considerably.

In-plant Research

BAYER Industry Services GmbH & Co oHG operates at its German sites Leverkusen, Dormagen and Uerdingen four rotary kiln units for hazardous waste incineration. Two of them are located at the BAYER waste management centre in Leverkusen-Bürrig. The four units have a similar, BAYER-typical design as shown in Figure 1. Since 2000 extensive mercury-related in-plant research [2 to 4] has been carried out at the Leverkusen HWC kilns. Results on adsorption and oxidation (eluation) of mercury at the tail-end SCR-DENOX-catalyst bed have already been published in detail [6].
During almost all test runs the flue gas was spiked more or less with mercury, either continuously (up to 20,000 µg/Nm3, dry) or discontinuously (up to some 200,000 µg/Nm3, dry): Mercury in form of an aqueous HgCl2 solution was injected continuously at the head of the

rotary kiln or at the top of the post-combustion chamber; at the high combustion temperatures, all HgCl2 added is directly converted into Hgmet. On the other hand, metallic mercury as such was injected “discontinuously” via the oven inspection port near to the bottom of the post-combustion chamber; this was achieved by throwing in small plastic bottles filled with mercury (“Hg bombs” of 5 g to 340 g Hgmet every 5 minutes), Figure 2.

Gaseous mercury was continuously measured by different CEMs (continuously measuring emission control monitors) installed at different places (details see [6], there Figure 2, showing four measuring points in front of and behind the tail-end SCR as well as in front of and behind the catalyst beds inside), e.g. a) in the scrubbed flue gas behind the Condensation Electrostatic Precipitator (CESP) and b) in front of the tail-end SCRDENOX catalyst-bed, c) behind the tail-end SCR-DENOX catalyst-bed and d) in the clean gas behind the tail-end SCR-DENOX. At these measuring points from time to time CEMs were measuring simultaneously for mercury speciation, i.e. they were working in parallel either without reductive gas pre-treatment (no reduction of Hg2+ for measurement of Hgmet only) or with reductive gas pre-treatment (reduction of all Hg2+ to Hgmet for measurement of Hgtotal), followed by a Hgmet-monitor (based on cold vapour AAS), see Figure 3. The official Hgtotal emission control at the stack was equipped with a SCEM (semi-continuous measuring emission control monitor) working with reductive gas pre-treatment by SnCl2 and applying gold amalgamation.

As described in [1], bromine was added by co-combustion of bromine-rich (and chlorine-rich) wastes (normal HWC working conditions) or by injection of diluted HBr or aqueous NaBr (exceptional HWC working conditions). During co-combustion of highly halogenated wastes controlled sulphur-addition in the form of granulated sulphur was applied as described in [9] (see also [2], [7] and [8]).

Applying Br/Hg mass ratios > 300 complete mercury oxidation was achieved, i.e. all mercury in the boiler exit flue gas was converted in its watersoluble ionic form Hg2+ (100 % Hgion, 0 % Hgmet), mainly as HgBr2 and some HgCl2; therefore in the existing multistage scrubbing system excellent mercury removal (abatement efficiency ~ > 99.8 %) was realised, Figure 4.

Test runs at the HWC plants of BIS in Leverkusen-Bürrig and later at a PC-fired wet bottom boiler of BAYER AG in Uerdingen (as shown in Figure 1 3) have been demonstrating that bromine is much more effective in Hg-oxidation than chlorine - under high Cltotal-loads as in waste incineration at least > 25 times more and up to > 100 times more under low Cltotal-loads as in coal combustion [1], [10], Figure 5.

Thermodynamics and Kinetics

Chlorine-based mercury oxidation is governed by four simultaneous global reactions, Figure 6. For kinetical reasons only the direct mercury oxidation by Cl2 has to be considered (Hg + Cl2 -> HgCl2), while the so-called indirect mercury oxidation (Hg + 2 HCl + 0.5 O2 -> HgCl2 + H_2O) is staying irrelevant. This important fact has been demonstrated by a fascinating “in-plant experiment”, Figure 7 and Figure 8. The boiler raw gas was containing about 20,000 mg HCl/Nm3 dry, while the artificial oscillations of the SO2 concentration were induced by corresponding oscillations of sulphur addition to the rotary kiln [2], [10]. Figure 7 is showing the

resulting concurrent oscillations of the Hgmet-concentrations in the scrubbed flue gas behind the CESP as well as in front of the tail-end SCR-DENOX – after dilution by mixing with the scrubbed flue gases of the neighbouring HWC plant. In Figure 7 it becomes (indirectly) visible that SO2 is consuming Cl2 with the consequence that Cl2 is lacking for mercury chlorination: Hgmet is going up or down when SO2 is going up or down respectively.

Figure 8 is showing the resulting countercurrent oscillations of the Hgtotal (mainly oxidised) concentration behind the SCR-DENOX catalyst bed as well as behind the heat exchanger at the SCR-DENOX exit. This - at first sight astonishing - behaviour is (indirectly) showing the fact that those four global reactions, governing already the mercury oxidation in the boiler raw gas (containing e.g. a certain fly ash metal oxide inventory as catalysts), are also governing the mercury oxidation in a SCR-DENOX catalyst bed, see remarks further down.

For modelling of mercury oxidation in waste incineration boilers as well as in power station boilers, it is necessary to combine equilibrium thermodynamics (Gibbs free enthalpy minimisation) of those four homogeneous (uncatalysed) or heterogeneously catalysed global reactions with an adequate modelling of the corresponding chemical kinetics. This has been achieved for mercury chlorination following the so-called “stop temperature method of Vosteen”, which for in-plant experiments is giving way to realistic results [5]. Above its individual stop temperature, any reaction is running in its equilibrium, below its stop temperature the reaction is not going on anymore (“frozen”). Thus, the simplifying modelling (“only global reactions considered”) is still fairly realistic (“halo-genes and SO2 sufficiently considered”) and complex; not only linearly independent reactions as e.g. the chlorine Deacon reaction and the chlorine Griffin reaction are taken into account, but linearly dependent reactions, too (as the direct SO2/SO3 conversion).

Free chlorine is needed for direct mercury chlorination, Figure 6. At high temperatures the equilibrium of the chlorine Deacon reaction is lying mainly on the left side (much HCl, little Cl2). With decreasing flue gas temperature during boiler passage, this reaction should produce more and more Cl2 until its stop temperature is reached, which was evaluated to be 680 °C, [5].

Below this temperature until the boiler exit, the chlorine Griffin reaction is consuming more and more of the intermediately formed Cl2, depending on the SO2 concentration, which itself is influenced by the direct SO2/SO3 conversion, having been kinetically stopped already at a considerably higher stop temperature of 900 °C.

The stop temperature of the direct mercury chlorination itself was evaluated to be 580 °C in the studied HWC plants and 480 °C respectively in the studied PC-fired wet bottom boiler.

Bromine-based mercury oxidation is governed by a similar, but not exactly corresponding set of global reactions, Figure 9. Even at higher temperatures the bromine Deacon reaction is lying far more at the side of free bromine, i.e. the bromine Deacon reaction is producing comparatively much more free halogens (Br2) than the chlorine Deacon reaction is producing Cl2. The next completely different step is the Griffin reaction. In contrast to chlorine, the bromine Griffin reaction is thermodynamically not favoured, at least at temperatures > 100 °C, because the Gibbs free reaction enthalpy of the bromine Griffin reaction is strongly positive, within the whole

boiler temperature range. Therefore, SO_2 is not consuming Br_2 during boiler passage or during passage of a high dust SCR-DENOX catalyst bed. There is a further difference to be considered: While Cl_2 is almost insoluble in water and its solubility is even decreasing with growing content of halogenides, Br_2 is easily soluble in water, especially in the presence of halogenides. At temperatures below 100 °C the so-called bromine Bunsen reaction will be going on (consumption of free bromine by SO_2 under formation of 2 HBr and H_2SO_4), Figure 9.

In the stationary estate of a SCR-DENOX both Hgmet-adsorption and chemically enhanced Hg^{2+}-desorption are in a dynamic equilibrium.

Instationary mercury oxidation in a SCR-DENOX was already studied in [2] and published in [6]: Hgmet-peaks entering the SCR-catalyst bed are not “answered” by corresponding peaks at the SCR-exit: Mercury is leaving the SCR catalyst bed as oxidised mercury Hgion only and at low, exponentially decreasing concentrations. Thus, mercury oxidation in any SCR-DENOX catalyst bed has to be interpreted as a superposition of Hgmet-adsorption and of chemically enhanced Hg^{2+}-desorption (eluation). The mercury fluxes as well as the momentary mercury load of the catalyst bed will be permanently adjusted corresponding to the changing flue gas concentrations of mercury species and of reactive compounds as SO_2, Cl_2 or Br_2.

Since our in-plant research started in 2000, it soon became known – under high chlorine loads in the raw gas – that SO_2 peaks are inhibiting mercury elution out of a tail-end SCR-DENOX, while Cl_2 peaks are enhancing mercury elution [2]. This fact becomes also (indirectly) visible in Figure 8, showing those artificially induced oscillations of the SO_2 concentration in the boiler raw gas inducing countercurrent oscillations of the Hgtotal concentration (mainly oxidised mercury) in the effluent flue gas behind the SCR: Higher SO_2 concentrations in the boiler raw gas are inducing better Cl_2 chemisorption in the alkaline scrubber (reducing residual hypochlorides), thus diminishing traces of Cl_2 in the scrubbed flue gas and therefore diminishing also the mercury eluation out of the SCR catalyst bed.

Low-cost Technology

The bromine enhanced mercury abatement is a low-cost technology, with respect to the amount of bromine necessary for complete mercury oxidation (Br/Hg > some 300 kg/kg) as well with respect to low installation costs. This may be illustrated by Figures 10 and 11 from those test runs at the two SCCB-plants of Emschergenossenschaft in Bottrop. Figure 10 is showing two (alternatively used) plastic tanks (1000 ~) for diluted sodium bromide solution and three small membrane pumps to pump the solution to three dual fluid spaying nozzles, installed in the lower SFBC freeboard region as shown in Figure 11.

Achievable Mercury Removal Efficiencies

Even in flue gases of very high SO_2 concentration a complete mercury bromination is easily attained by adding small amounts of bromine into the combustion chamber. Thus, the achievable mercury removal efficiency can be > 90 %, provided that the wet or dry gas cleaning system downstream is well designed and well operated, Figure 12.

To minimise the bromine need, good distribution and mixing of the bromine compound with the flue gas is necessary.

Polychlorinated and Polybrominated Dibenzodioxins and – furans

Denovo-synthesis of polychlorinated and polybrominated dioxins and furans (PCDD/F and PBDD/F) were investigated at both SFBC plants in Bottrop and shown to be irrelevant. The measurements were done during bromide addition. The PCDD/F were lying with 0.001 to 0.003 ng TEQ (Nato/CCMS)/Nm3 dry well below 0.1 ng TEQ/Nm3 dry as limiting value of the 17. BImSchV (German emission control act). The corresponding values of PBDD/F were lying with 0.0003 ng TEQ/Nm3 dry near to the detection limit.

Dry Mercury Adsorption on Carbonaceous and Non-carbonaceous Sorbents

It has been demonstrated by in plant experiments [3], [4] (Figure 14) and by laboratory tests [11], that bromine addition into the combustion chamber increases mercury adsorption at carbonaceous sorbents. The adsorption is enhanced by “internal bromination” of unburned fly ash carbon (UBC) or of injected normal powdered activated carbon (PAC), and specific non-carbonaceous sorbents of high porosity, too.

The adsorption of brominated mercury at ESP fly ashes with relatively high UBC contents was especially studied in 2002 during the test runs at a 100 MWtherm coal-fired wet bottom boiler of BAYER AG in Uerdingen, Figure 13. It was demonstrated [4] that the injection of only small amounts of bromine into the combustion chamber (as e.g. hydrogen bromide or as sodium bromide) was sufficient for complete mercury bromination and intensifying the mercury adsorption at the ESP fly ash by the factor 2.5 to 3 in case of high loss on ignition (LOI), Figure 14.

Similar effects on mercury adsorption at the ESP fly ash were observed in December 2003 during the afore mentioned test runs at the SFBC plants of Emschergenossenschaft in Bottrop.

Mercury Oxidation in SCR-DENOX Plants

During those test runs in 2002 at the PC-fired boiler shown in Figure 13, continuous mercury measurements were carried out in front of and behind the wet flue gas desulphurisation (FGD) as well as behind one of the tail-end DENOX SCRs, i.e. at the stack. These measurements revealed – for the first time, as far as we know – that already tiny amounts of HBr/Br2 (well below some 1 mg/Nm3 dry) are drastically accelerating mercury oxidation in a SCR catalyst bed, as visible by accelerated mercury elution out of the tail-end SCR-DENOX under high boiler bromide load, Figure 15.

The chlorine Deacon equilibrium under low Cltotal concentration as in tail-end SCRDENOXs is lying at the side of HCl, see “HCl excursions behind tail-end SCRDENOX” as observed and explained in [7]. In contrast to chlorine, the bromine Deacon equilibrium is under these conditions lying at the side of Br2, even in case of very low Brtotal concentrations, as already

shown by Wieland [8]. Thus, from HBr in the SCR free bromine is formed oxidising the adsorbed metallic mercury and promoting the elution of adsorbed HgBr2.

Laboratory Research on Bromine Enhanced Mercury Abatement

In early 2002 mercury-related research work was started at the Institute for Environmental Engineering at the Martin-Luther-University Halle-Wittenberg (Campus Merseburg) by Professor Köser. The start-up of this research work was possible with financial support of BAYER Industry Services GmbH & Co. oHG. The post-graduate work coached by Professor Köser and Professor Vosteen is mainly centred around bromine-enhanced mercury abatement and all its aspects in wet and dry flue gas cleaning.
In 2004 other companies such as E.ON Engineering (Professor Gutberlet) were joining in.
Since 2002 the mercury research group has built quite a lot of test rigs as listed below:
— flue gas chemistry (test rig with high temperature reactor),
— wet flue gas cleaning: mercury complexation by halogenides (test rig),
— wet flue gas cleaning: red-ox-potential and pH, pCl or pBr (test rig),
— dry flue gas cleaning: adsorption at different sorbents (test rig),
— mercury retention and mercury oxidation in tail-end SCR-DENOX (test rig),
— mercury oxidation in high temperature SCR-DENOX (test rig),
— CEM and SCEM artefacts caused by free halogens (test rig); development of a dry mercury converter working at low temperature.

Of considerable interest are new insights into mercury complexation in FGD scrubbers by bromides and their inherent protection against mercury reduction.

Some of the running laboratory research on wet and/or dry mercury abatement was concerned with artifacts in the continuous measuring of total mercury by CEMs or SCEMs with wet or dry gas pre-treatment; a proprietary method to eliminate such artifacts as caused by free halogens was developed and established.

Demonstration Test Runs in the USA

Vosteen Consulting GmbH has been granting an exclusive license to ALSTOM ECS (Environmental Control Systems), Knoxville/TN, for joint exploitation and commercialisation of this technology in North America. ADFA-ES in co-operation with Alstom ECS and others have conducted demonstration test runs under the US-DOE contract No. DE-FC26-03NT41986 at three different sites burning power river basin (PRB) coals, i.e. in the Holcomb Station in Kansas equipped with spray drying absorption and bag filter as air pollution control, in the Laramie River Station U3 equipped with spray drying absorption and ESP and in the Meramec Station U2 equipped with ESP only [13].

In July 2005 Vosteen Consulting GmbH has given a research licence to the Energy and Power Research Institute, Palo Alto (US EPRI) for demonstration test runs under US patent 6,878,358 at various coal-fired power station boilers of different dry and wet flue gas cleaning design. First short time test runs started in July 2005 to compare mercury chlorination and bromination; in November 2005 a long time demonstration test run under the US-DOE contract No. DE-FC26-

03FT41991 ("Large-scale Mercury Control Technology Testing for Lignite-fired Utilities – Oxidation Systems for Wet FGD") applying bromide addition to the coal feed at a 800 MWel unit (TXU's Monticello Steam Electric Station Unit 3) has been run successfully [14]; the evaluation of this test run is still in progress.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1927.1, Comment Excerpt Number: 1.

Commenter Name: Marshall D. Moore
Commenter Affiliation: Chemture Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1927.1
Comment Excerpt Number: 1

Comment: Chemtura is providing the EPA with information regarding the use of calcium bromide as a cost-effective means of reducing mercury emissions from coal-fired combustion sources. Calcium bromide has been demonstrated to effectively oxidize elemental mercury so that it can be better controlled by traditional air pollution control devices (e.g., fabric filters; electrostatic precipitators; flue gas desulfurization units; etc).

Chemtura's comments consist of a White Paper prepared by Chemtura that summarizes the calcium bromide technology and some additional papers that discuss calcium bromide technologies as well as activated carbon injection and other mercury control options. Chemtura includes the following for your consideration:

Chemtura White Paper on Calcium Bromide Technology for Mercury Reductions (August 2010)

Bromine-enhanced Mercury Abatement from Combustion Flue Gases –Recent Industrial Applications and Laboratory Research, Vosteen, et.al. (2006)

Southern Company Evaluates Novel, Cost-Effective Mercury Control Technologies, EPRI Success Story (2009)

In addition to the attached papers, we encourage the EPA to consider the benefits of calcium bromide reported by NESCAUM in section 1.3.1 of "Technologies for Control and Measurement of Mercury Emissions from Coal-Fired Power Plants in the United States: A 2010 Status Report" available on-line at: http://www.nescaum.org/topics/mercury

Chemtura appreciates the EPA's consideration of these comments and this technology. We ask that EPA consider calcium bromide addition in establishing mercury emissions limitations as part of this rulemaking to the extent appropriate under the Clean Air Act.

Response: The EPA had determined that calcium bromide has not been effectively demonstrated for industrial, commercial, and institutional boilers and process heaters. The commenters submittals were all specific to utility-scale boilers.

Commenter Name: Marshall D. Moore
Commenter Affiliation: Chemture Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1927.4
Comment Excerpt Number: 1

Comment: Chemtura Corporation is providing this White Paper to the EPA for consideration of possible control measures for reducing mercury emissions. We believe it is important that, in addition to traditional air pollution control (APC) technologies, EPA consider the use of additives, such as calcium bromide, to enhance the reduction of mercury emissions by traditional technologies in a cost-effective manner. We provide this White Paper to demonstrate the enhanced mercury reduction achieved from the use of calcium bromide and to provide data from sources that have implemented the calcium bromide mercury reduction technology.

Control of Mercury Emissions with APC Devices
Coal-fired power plants account for about 50% of the anthropogenic mercury in the United States.4 Mercury concentrations in coal range from 0.04 to 0.19 ppm depending on the type of coal and where it is mined. Coal contains a number of other impurities which influence how it burns, the type and amount of pollutants released, and the type of abatement equipment required to control its emissions. Among the pollutants found in the flue gas are unburned carbon, fly ash, sulfur oxides (SO_x), nitrogen oxides (NOx) and particulate matter.
The coal-fired power industry is composed of over 1300 boiler operations. To reduce the emission of pollutants from these boilers, air pollution control (APC) devices , such as electrostatic precipitators (ESP), flue gas desulfurization units (FGD), and selective catalytic reduction (SCR) units have been added to power plants to control SO_x, NOx and particulate matter over the past 30 years. These APC devices can also help to remove mercury from the flue gas stream. Of the 1300 plus boilers in the United States, 37% use an ESP as their primary APC device. The remaining 63% of the boilers use one of ten different types of APC configurations5. The coal type and source, the boiler configuration and operation, and the APC configurations all contribute to the complexity of choosing a mercury-specific control technology.

Improvement of Abatement of Mercury Emissions via Oxidation with Bromine Compounds

Mercury is released when coal is burned and takes three forms in the flue gas: elemental, oxidized, and particulate. Oxidized and particulate mercury can be controlled by abatement equipment designed for other pollutants such as ESP or FGD units. However, elemental mercury is gaseous at combustion temperatures and is difficult to capture. Therefore, chemical additives have been developed to oxidize the elemental mercury in the flue gas, converting it to a form which can be captured by current abatement equipment.

Calcium bromide (CaBr2) is one of the chemical additives that has been developed as a mercury-specific control technology. When used in combination with a number of APC configurations,

$CaBr_2$ is effective in reducing total mercury emissions by oxidizing elemental mercury that is then captured by the abatement equipment. The percent reduction of mercury emissions from several APC configurations are shown in Table 1. [See submittal for Table 1.]

The baseline data indicates the percentage of mercury removed by the APC configuration without any mercury specific control technology. The mercury removed by these APC configurations is oxidized or particulate mercury. With the addition of calcium bromide the percentage of mercury removed increases with each abatement configuration. The increased removal of mercury indicates that calcium bromide effectively oxidizes previously uncaptured elemental mercury, which is then collected by the APC devices. In addition, these results highlight the ability of calcium bromide to improve mercury removal from the flue gas across a variety of abatement configurations.

Sorbents, such as activated carbon (AC), are another mercury-specific control technology which has been successful in reducing mercury in flue gas streams. Table 2 shows a number of abatement configurations where calcium bromide has been used in combination with activated carbon. [See submittal for Table 2.] The data indicate that the addition of calcium bromide improves the effectiveness of activated carbon in removing mercury.

In some APC configurations, such as electrostatic precipitators or fabric filters, the combination of calcium bromide and activated carbon to enhance mercury removal may allow plants to achieve the necessary reductions without the need for changes to existing control devices. For example, in older or smaller plants the APC units may be undersized to handle the increased particulate loading of activated carbon injection that would be needed to achieve a high level of mercury removal. In these plants, the addition of calcium bromide to promote the oxidation of elemental mercury can reduce the level of activated carbon needed. In many cases this would allow the plant to use existing equipment minimizing the cost to achieve reduced mercury emissions.
In 14 full-scale coal-fired power plant tests using calcium bromide to oxidize elemental mercury, greater than 90% of the mercury was oxidized with the addition of 25 to 300 ppm bromide by weight of coal. In a plant trial with an SCR in the abatement configuration, 90% mercury oxidation was achieved with <20 ppm bromide.16

In October 2009, the Government Accounting Office (GAO) published a report evaluating the effectiveness of sorbent injection systems for reducing mercury emissions from 25 fossil fuel-fired electric utility steam generating units (EGUs) from 14 coal-fired power plants.17 The GAO Report reviewed data from these plants as well as data from the Department of Energy's comprehensive mercury control technology test program. The GAO Report concluded that these plants achieved mercury emissions reductions of about 90 percent. Sorbents that were chemically enhanced with halogens such as chlorine or bromine, which helped to convert mercury from an elemental form into an oxidized form, allowed the EGUs to achieve higher levels of mercury reduction across all coal types.

Bromine & Calcium Bromide

The Energy Information Administration reported that in 2008, 1019 million short tons of coal were consumed in the United States by EGUs18. Of the coal used by EGUs about 45% was low rank coal and would require a mercury-specific control technology to achieve the proposed reductions in mercury emissions.19 Using the 25 to 300 ppm range of bromide by weight of coal15, the bromine demand would be from 5,700 short tons on the low end to 69,000 short tons on the high end per year to treat this amount of coal per year.

Elemental bromine and calcium bromide are readily available via a well developed commercial supply chain in the United States. In addition to mercury emissions abatement, bromine and calcium bromide are currently used as water treatment chemicals, oil drilling chemicals, flame retardant chemicals, and fine chemical production. The primary supply source within the United States is the Smackover formation in South Arkansas. With estimated reserves of eleven million tons of bromine, and an annual production capacity estimated at 226,000 tons, the U.S. supply is both stable and economical.20

Economic Considerations

The Department of Energy's National Energy Technology Laboratory estimated the capital cost for CaBr2 operation at a 500 megawatt plant to be $780,000. NETL estimated the cost per pound of mercury removed to be from $2800 (SCR) to $7000 (CS-ESP / wet FGD) for low rank coal on a 20-year level cost basis. The cost did not include any by-product impact because the use of calcium bromide does not affect the sale of fly ash.21

The data presented above demonstrates that calcium bromide can be used to enhance the reduction of mercury emissions with most existing APC systems. Calcium bromide is versatile enough that it can be added to the pulverized coal, injected into the boiler, or into the flue gas stream. The equipment to introduce calcium bromide requires moderate capital investment and has low impact on overall operating costs. Because the addition of calcium bromide is not harmful to boilers, adds minimal variable cost, and does not negatively affect the use of fly ash for sale to the concrete industry as a cement replacement, it has minimal impact on operating costs.22

Mercury Emissions Control Regulations

Regulations governing the abatement of mercury emissions are under development in several jurisdictions. These include state-level regulations in the United States, proposed new rules by the EPA, and preparation of a legally binding agreement on mercury by the United Nations Environment Programme. Actions by EPA include proposed new rules to establish emission standards for specific categories of sources. The EPA is in the process of promulgating NESHAPs for ICI boilers, EGUs and Portland cement plants, all of which are anticipated to include emissions limits on mercury. As part of these rulemaking efforts, the EPA will be considering emissions data from control technologies for the specific types of emission sources. To the extent appropriate, we suggest that the EPA consider calcium bromide technology in establishing theses NESHAPs.

Conclusion

The effectiveness of bromine and bromide compounds to enhance the removal of mercury emissions from coal-fired power plants has been well documented. As regulatory agencies evaluate the effectiveness of emissions abatement systems, the current or potential future use of calcium bromide and other bromine-based additive technologies should be considered in setting emissions limits and providing guidance on effective control technologies. We believe that the use of calcium bromide and other bromine-based additive technologies provide highly cost-effective controls for mercury emissions such that this technology should prove to be useful for regulated entities as they implement mercury reduction strategies at individual emissions units.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1927.1, Comment Excerpt Number: 1.

Beyond the Floor: Pollution Prevention

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 2

Comment: The HAP emissions in this sector are generated by the combustion of fuel by affected units. Accordingly, such emissions can be expected to be reduced if those units improve their fuel efficiency. Since MACT standards include operational standards that "reduce the volume of... such pollutants through process changes...or other modifications...," EPA has the authority to establish a "beyond the floor" requirement for a one-time energy assessment that would identify opportunities for sources to voluntarily reduce their own operating costs, while decreasing emissions of HAPs regulated under section 112, criteria pollutants (such as SO2, NOx and PM2.5) and greenhouse gases.

Response: We agree with the commenters and have retained the energy assessment requirement in the final rule.

Commenter Name: Lisa Beal
Commenter Affiliation: Interstate Natural Gas Association of America
Document Control Number: EPA-HQ-OAR-2006-0790-1919.1
Comment Excerpt Number: 3

Comment: INGAA opposes the energy assessment requirement under a §112 NESHAP rule. At most, this audit should apply to large boilers and not facilities, and should not obligate operators to implement or modify equipment based on audit recommendations.

INGAA is concerned with the requirement for existing units to conduct an energy assessment, and believes that this is an inappropriate requirement for a hazardous air pollutant standard under CAA §112(d).

INGAA strongly recommends removing this requirement from the rule. At most, if an energy assessment is required, it should: (1) be limited to the affected boiler and not extend to the entire facility; (2) only apply to larger units or facilities, such as individual boilers larger than 100 MMBtu/hr or cumulative facility boiler capacity of more than 250 MMBtu/hr; and (3) include streamlined criteria in Table 3 to eliminate Energy Star criteria and allow in-house experts to perform an audit and prepare an energy audit report.

INGAA concerns with the energy assessment requirement include:

An energy audit is inappropriate for a NESHAP standard required under CAA §112(d);

Gas transmission operations include energy efficiency (i.e., fuel use) as an inherent part of facility and system operations. Programs are currently in place to optimize equipment efficiency and reduce fuel use;

Gas transmissions operations typically include only very small boilers but other equipment can trigger major source status and thus rule applicability. Boiler related energy usage at a facility will typically be relatively trivial and is often further trivialized by seasonal use.

It is inappropriate to extend the energy assessment to other transmission or storage facility equipment, but this is not clearly precluded. At a minimum, program elements and objectives, including actionable items, need to be defined and the resource implications need to be quantified.

Response: EPA disagrees with commenters that state that EPA does not have the authority to require an energy assessment. An energy assessment is an appropriate beyond-the-floor control technology because it is one of the measures identified in CAA section 112(d)(2). CAA section 112(d)(2) states that "Emission standards promulgated ... and applicable to new or existing sources ... is achievable ... through application of measures, processes, methods, systems or techniques including, but not limited to measures which –

(A) reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications,
. . .
(D) are design, equipment, work practice, or operational standards (including requirements for operator training or certification) as provided in subsection (h), or
(E) are a combination of the above."

The purpose of an energy assessment is to identify energy conservation measures (such as, process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use. Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP, emissions. Thus, an energy assessment, in

combination with the MACT emission limits will result in the maximum degree of reduction in emissions as required by CAA section 112(d)(2).

In addition, for area sources, under section 112(d)(5), we may elect to promulgate requirements which provide for the use of generally available control technologies or management practices (GACT). Since energy assessment has been performed at many facilities, we considered the requirement to conduct an energy assessment as a GACT management practice.

The final rule has been revised to clarify that the energy assessment applies only to area source facilities with large boilers, covers only the boiler and the systems using the boiler energy, doesn't obligate operators to implement or modify equipment based on the assessment recommendations, and allows in-house experts to perform and prepare an energy assessment report.

Commenter Name: Donald R. Schregardus
Commenter Affiliation: Department of the Navy, Department of Defense
Document Control Number: EPA-HQ-OAR-2006-0790-1947.1
Comment Excerpt Number: 7

Comment: The agency has not adequately explained its authority to direct the completion of energy assessment or audit for the sources covered by this rule as a "work practice" standard under the provisions of 42 U.S.C. §7412(d)(2) and (h) [CAA §112(d)(2) and (h)].

As the DC Circuit Court of Appeals noted in Sierra Club v. EPA, 479 F.3d 875 (D.C. Circ., 2007), use of work practice standards is only permissible as a standard when the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations.". [Sierra Club, id. 475 F.3d at 875, 884-885.] The use of a work practice as proposed by the Agency for a "beyond the floor technology" as described appears inconsistent with the requirements of the statute and the interpretation issued by the DC Circuit of Appeals in Sierra Club. The Agency has used this provision to explain for area sources that the use of the tune up is the floor, so the additional prescription of an audit by the Agency under CAA §112(h) appears excessive, given the requirements Congress established for use of CAA §112(h) as described above.

EPA should eliminate the requirement for the audit, or provide an explanation as to how the conducting of an audit constitutes a standard that is permissible, since the agency has already determined that the tune up is the best practice and is being used under CAA §112(h) as the standard. Delete the proposed 40 CFR §63.11215 if such justification is not provided.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council

Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 23

Comment: EPA's Beyond The Floor Approach For Existing Sources Is Unlawful And Arbitrary.
Clean Air Act § 112(d)(2) directs EPA to set standards requiring the "maximum" degree of reduction that is achievable in the listed hazardous air pollutants through "measures which-
(A) reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications,
(B) enclose systems of processes to eliminate emissions,
(C) collect, capture or treat such pollutants when released from a process, stack, storage or fugitive emissions point,
(D) are design, equipment, work practice, or operational standards, including requirements for operator training or certification) as provided in subsection (h) of this section, o
(E) are a combination of the above.
42 U.S.C. § 7412(d)(2). Choosing to effectively ignore this mandate, EPA considers only one pollution reduction measure in its beyond-the-floor (BTF) analysis under § 112(d)(2), an "energy assessment." 75 Fed. Reg. at 31907. Specifically, EPA proposes requiring source operators to "examine" potential savings from energy efficiency improvements, pollution prevention, and productivity improvement." Id. Regardless of the results of that examination for any given source, EPA does not propose to require the adoption of any energy efficiency, pollution prevention or productivity improvements, nor does the agency propose emission standards reflecting any such improvements.

Response: In the boiler area source rule, the energy assessment is considered both a GACT management practice and a beyond-the-floor standard. In both cases, costs needs to be considered. As stated in the proposal, there was insufficient information to determine if requiring implementation of cost-effective measures is economically feasible. In the proposal, we requested comment on this point. We did not receive during the public comment period any information to determine economic feasibility. Therefore, we have not revised the final rule to require implementation of the findings of the energy assessment.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 53

Comment: Section 112 requires EPA to establish "emission standards" for each listed source category and subcategory (§ 112(c)(2); 42 U.S.C. § 7412(c)(2)). By definition, the identification of energy saving measures is not an emission standard. In addition, were the efficiency measures actually to be undertaken, reduced demand for the output of a regulated source is not an "emission control" technology to limit emissions from the regulated source (§ 112(c)(2); 42 U.S.C. § 7412(d)(3)). If this were so, the text of § 112 would provide no limiting principle for EPA's authority.

EPA finds justification for the energy assessment by defining it as a beyond-the-floor control technology in CAA § 112(d)(2):

Emission standards promulgated…and applicable to new or existing sources…is achievable…through application of measures, processes, methods, systems or techniques including but not limited to measures which…reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications.

75 FR 31907 (citing 42 USC § 7412(d)(2)). EPA posits that "process changes, substitution of materials or other modifications" encompasses "energy assessments." However, when the statute refers to "process changes, substitution of materials or other modifications" it can only be referring to the source "to which such emission standard applies." § 112(d)(2). And it can only apply to methods to achieve the emission standards.

Yet EPA's proposal extends well beyond reduction of emissions by "sources" and seeks to compel regulated entities to investigate, monitor and report activity at units unregulated by the CAA. The proposal requires sources to consider, inter alia, the "operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints . . .;" "major energy consuming systems;" "available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage . . .;" and " major energy conservation measures." 75 FR 32014. As defined in the rule, the energy assessment would require "a thorough examination" of a site far beyond the § 112 affected source: "Energy assessment means an in-depth assessment of a facility to identify immediate and long-term opportunities to save energy, focusing on the steam and process heating systems which involves a thorough examination of potential savings from energy efficiency improvements, waste minimization and pollution prevention, and productivity improvement." 75 FR 32064. EPA must limit regulatory requirements to methods that will reduce HAP emissions by the regulated combustion unit itself and not to other systems, energy using systems or process areas. EPA goes beyond its authority by imposing requirements beyond the combustion unit, even covering systems not directly associated with combustion units.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 4

Comment: Consistent with the concerns INVISTA has about the energy assessment requirement under the Boiler MACT, INVISTA believes the comments made by the American Forest & Paper Association and Georgia-Pacific on the appropriateness and legal footing for energy assessments are applicable and should be made on this proposed requirement as well.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Britt S. Fleming
Commenter Affiliation: Auto Goup
Document Control Number: EPA-HQ-OAR-2006-0790-1916.1
Comment Excerpt Number: 6

Comment: This "energy assessment" is defined as an "in-depth energy study identifying all energy conservation measures appropriate for a facility given its operating parameters."[75 Fed. Reg. 32,027.] This proposal is well beyond the scope of EPA's authority under CAA section 112(d) and, is arbitrary because EPA fails to demonstrate any link between the performance of an "energy assessment" and a reduction of HAPs.
According to the preamble discussion, EPA would require all owners or operators of major source facilities having boilers and process heaters to submit documentation that an energy assessment was performed, by qualified personnel, and the cost-effect energy conservations measures identified.[75 Fed. Reg. 32,014.] EPA proposes a number of procedures for the energy assessment, which include not only visual inspection of the boiler system itself (i.e., the regulated source) but also an extensive assessment of the "major energy consuming systems" (i.e., unregulated sources and non-sources at the facility), including a review of "available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage."[See id. at 32,014.] The rule also would require the submission of a "comprehensive report" and "facility energy management program." Under the proposed scheme outlined in the proposal, regulated entities would be required to have a third party examine not only the regulated source itself, but also the facility at which the source is located, without any limiting parameters whatsoever. This is an unauthorized overreach by the agency in that EPA is attempting to impose energy efficiency requirements on operations unrelated to the source regulated by section 112.

Section 112 limits EPA's authority to regulating major and area sources of HAPs, and authorizes EPA to promulgate regulations "establishing emission standards for each category and subcategory of major sources and area sources of hazardous air pollutants."[CAA § 112(d)(1); 42 U.S.C. § 7412(d)(1).] Thus, EPA's authority under CAA section 112 is to establish MACT standards for industrial, commercial and institutional boilers and process heaters. By its own terms, the proposed rule covers "affected sources" defined as all existing and new boilers and process heaters located at major sources. The "affected source" regulated by the proposed MACT is the specified emission unit—boiler or process heater—not the major source location of the emission unit.[A major source is a "stationary source ... that emits or has the potential to emit" some threshold amount of HAP, and area sources are "any stationary source of [HAP] that is not a major source." 42 U.S.C. §§ 7412(a)(1) and (2). A stationary source is any "building, structure, facility, or installation that emits or may emit any air pollutant." 42 U.S.C. § 7412(d); 42 U.S.C. § 7411(a)(3).] This is consistent with the long-established understanding of the term "affected source" as it relates to the "major source" where the affected source is located.

However, EPA's proposed energy assessment requirement extends well beyond regulation of "sources" and compels regulated entities to investigate, monitor and report activity at facilities unregulated by section 112 or even by the CAA. The proposal requires sources to consider, among other things: operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints; major energy consuming systems; available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage; and major energy conservation measures. EPA's authority under the statute is limited to setting emission limits for energy systems as defined in the rule and does not extend to the other areas in the facility that its proposed assessment clearly contemplates. What EPA requires goes far beyond the "affected source," and covers systems not directly associated with combustion units.

As noted by other commenters, the practical effect of the proposal is that, under the guise of reducing HAP emissions from boilers, universities trying to comply with EPA's proposed energy assessment requirement would have to conduct broad reviews of campus building design and operation to seek ways to reduce energy use. Paper mills would have to look at pulp production and processing and paper manufacturing. According to EPA's proposal, the beyond-the-floor MACT standard is applicable not to the boiler at the university, but to the university itself; not to the boiler at the paper mill, but the paper mill itself. These are not "affected sources" under the proposal, but rather, facilities at which "affected sources" are located. EPA is not entitled to read into the statute a roving mandate to review any and all possible units, systems, or opportunities to reduce energy consumption.

EPA justifies the energy assessment as an appropriate beyond-the-floor control technology because CAA section 112(d)(2) states that

Emission standards promulgated ... and applicable to new or existing sources ... is achievable ... through application of measures, processes, methods, systems or techniques including but not limited to measures which...reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications.

EPA posits that this last phrase regarding "process changes, substitution of materials or other modifications" encompasses "energy assessments." However, when the statute refers to "process changes, substitution of materials or other modifications," the statute can only be referring to the source "to which such emission standard applies." The scope of EPA's proposal, however, extends well beyond regulation of "sources" and seeks to compel regulated entities to investigate, monitor, and report activity at facilities unregulated by CAA section 112.

The extent to which EPA's proposal strays from the statutory scheme of section 112 is clear from EPA's stated rationale for the energy assessment (which is also factually incorrect, as discussed below). EPA states that "[t]he purpose of an energy assessment is to identify energy conservation measures (such as, process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use. Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP emissions." EPA does not and cannot demonstrate that conducting an energy assessment will actually reduce HAP emissions. Similarly, EPA does not and cannot demonstrate that even implementing the findings of an energy assessment, assuming EPA were to require implementation, will reduce

HAP emissions. EPA admits as much in the proposal, offering unsubstantiated projections of possible reductions as support:

If a facility implemented the cost-effective energy conservation measures identified in the energy assessment, it would potentially result in greater HAP reduction than achieved by a boiler tune-up alone and potentially reducing HAP emissions (HCl, mercury, non-mercury metals, and VOC) by an additional 820 to 1,640 tons per year.

It is not at all clear from the proposed rule whether EPA is contemplating forcing "cost-effective energy conservation measures" or merely requiring regulated facilities to evaluate energy use. The proposed rule indicates that EPA is considering whether to require implementation of cost-effective measures and is requesting information on whether requiring such implementation is "economically feasible." The rule as currently drafted, however, requires merely the submission of a "comprehensive report" and "facility energy management program," neither of which appear to require concrete action by the regulated entity. It is unclear what EPA will do with the report, if anything; in any event, EPA has not identified any statutory authority for it to compel regulated facilities to implement any identified measures. Given all of these uncertainties, the proposed energy assessment is arbitrary because EPA has failed to demonstrate a connection between the energy assessment and reduction of the regulated HAPs.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Britt S. Fleming
Commenter Affiliation: Auto Goup
Document Control Number: EPA-HQ-OAR-2006-0790-1916.1
Comment Excerpt Number: 7

Comment: Even regarding the presumption of emission reductions itself, the proposal is inconsistent at best. In some sections, the proposal accurately points out that if efficiency measures are implemented, fuel use is reduced, HAP emissions may be reduced and energy-related savings are realized. Yet, in other sections, the proposal inaccurately asserts that the energy assessment in-and-of-itself will lead to emission reductions.

Response: EPA thanks the commenter for his comment and will correct the inconsistency in the final rule. However, we believe that a facility would implement findings that would result in cost savings whether or not the rule required implementation.

Commenter Name: Robert L. Garfield
Commenter Affiliation: Food Industry Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1835.1
Comment Excerpt Number: 8

Comment: In addition, EPA has overreached in crafting the proposed work practices and "beyond the floor" requirements. The energy assessment and management work practice requirements are too broad, too intrusive, and exceed the scope of EPA's authority for CAA MACT rules. EPA should more narrowly tailor these requirements.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 20

Comment: NESCAUM is fully supportive of EPA's efforts to require that facilities conduct energy assessments in order to identify cost-effective energy conservation measures on the boilers' energy consuming systems. NESCAUM believes that this assessment should be required for all sources larger than 1 mmBtu/hr. In this effort to go beyond the floor on this issue, EPA will not only reduce emissions of all HAPs but will also take strides to reduce carbon emissions from this source category.

Response: EPA thanks the commenter for its support.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 50

Comment: Although identified as a "beyond the floor" option for Hg and POM, the requirement is not limited to potential sources of these pollutants or to the boilers that are the only affected sources under this proposal. The Agency has failed to demonstrate that they have a legal basis under §112 of the CAA for imposing a broad energy audit requirement on areas sources. The following table identifies the claims made about this requirement in the proposal preamble and our comments on each claim. [See submittal for table]

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Michael A. Livermore
Commenter Affiliation: Institute for Policy Integrity New York University School of Law
Document Control Number: EPA-HQ-OAR-2006-0790-1899.1
Comment Excerpt Number: 4

Comment: Section 112(d)(2) requires emissions standards to reflect "the maximum degree of reductions in emissions. . . that the Administrator, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable." The stringency of EPA's beyond-the-floor regulations therefore depends on the definition of "achievable." Statutory structure and legal precedent suggest that EPA has authority to define "achievable" in light of costs and benefits.

In the past, EPA has interpreted Section 112(d)(2) not to require consideration of the full range of benefits from curtailing HAP emissions. In Sierra Club v. EPA (2004), the D.C. Circuit accepted that interpretation, finding that the phrase "non-air quality health and environmental impact" did not require consideration of the negative social effects from the deposition of HAP emissions. [Footnote: 353 F.3d 976, 990 (D.C. Cir. 2004). Instead, "non-air quality health and environmental impacts" meant any negative social effects caused by industry compliance with potential regulation, not those effects caused by the original pollution.] But EPA's past interpretations do not preclude rethinking the appropriate definition of "achievable." The Sierra Club decision was largely based on deference to an agency interpretation of an ambiguous term. Under the Supreme Court doctrine established by Chevron v. NRDC, courts will uphold any reasonable agency interpretation of an ambiguous term, regardless of whether it is the "best" or "most reasonable" interpretation. [Footnote: Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837, 843-844 (1984).] So long as the reinterpretation is neither arbitrary nor capricious, it is perfectly acceptable for EPA to issue another reasonable interpretation of Section 112(d)(2) [Footnote: See Nat'l Cable & Telecomm. Assoc. v. Brand X Internet Services, 545 U.S. 967 (2005) (explaining that Chevron review applies to agency changes of legal interpretations, quoting Chevron, 467 U.S. at 865-66); id. at 981-82 (Rehnquist, J., concurrent in part, dissent in part) (explaining that changes in administration are legitimate grounds for changing agency interpretations).] —for example, one that balances costs and benefits.

The Court in Sierra Club also believed that the Clean Air Act's statutory structure indicated that Section 112(d) required technology-based instead of risk-based regulations, but that framework is not inconsistent with defining "achievable" in light of costs and benefits. Specifically, Sierra Club found:

[T]here is no apparent reason to suppose that Congress would have required immediate consideration of health and environmental impacts caused by, say, deposition of HAPs, while postponing consideration of the more direct health and environmental impacts caused by emission of HAPs into the air until the second stage of standard promulgation under the CAA. As discussed, the 1990 Amendments established a two-phase approach to promulgating emission standards. The first phase—at issue in this case—requires a technology-based approach. [CAA § 112(d).] The second phase occurs eight years later and involves a risk-based approach. [CAA § 112(f)(2)(A)]("Emissions standards promulgated under this subsection shall provide an ample margin of safety to protect public health. . ."). That risk-based analysis requires EPA to consider, inter alia, public health and adverse environmental effects—precisely what Sierra Club contends EPA must consider now with respect to non-air quality impacts. Sierra Club's interpretation would collapse the technology-based/risk-based distinction at the heart of the Act, undermining the central purpose of the 1990 Amendments—to facilitate the near-term implementation of emission standards through technology-based solutions. In doing so, that interpretation would

reintroduce the very problem Congress sought to exorcize—that the pursuit of the perfect (risk-based standards) had defeated timely achievement of the good (technology-based standards). EPA's reading of the statute is reasonable. [Footnote: 353 F.3d at 990.]

First, the distinction between requiring the consideration of "direct health and environmental impacts" and allowing their consideration should be emphasized. Section 112(f) requires the consideration of these impacts, but Section 112(d)(2) certainly allows them. Recently, in Entergy v. Riverkeeper, the Supreme Court affirmed that just because a statute does not require analysis of costs or benefits does not necessarily mean an agency cannot perform cost-benefit analysis. [Footnote: 129 S.Ct. 1498, 1509 (2009).] Second, Entergy more generally supports the proposition that broad statutory language allows EPA to weigh the social costs and benefits of regulation unless doing so is directly contrary to the statute. The text of Section 112(d) explicitly requires the consideration of costs, [Footnote: Additionally, it should be noted that "non-air quality health and environmental impacts" are societal costs and are not experienced by the parties themselves.] and no language in Section 112(d) prohibits the consideration of benefits. To the contrary, Section 112(d)(4) indicates that EPA is allowed to consider benefits: if a pollutant has an established health threshold, such that additional emissions reductions will not deliver additional health benefits, EPA may consider that benefits threshold when determining which standards are the "maximum….achievable" required under Section 112(d)(2) [Footnote: CAA § 112(d)(4) ("With respect to pollutants for which a health threshold has been established, the Administrator may consider such threshold level, with an ample margin of safety, when establishing emission standards under this subsection.").] consideration of benefits when defining "achievable" in certain contexts, and so does not prohibit consideration of benefits. Given the broad statutory language, the lack of a prohibition, and the overall purpose of the statute—"to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population" [Footnote: 42 U.S.C. § 7401(b)(1).] —EPA has authority to interpret Section 112(d) to allow the consideration of costs and benefits.

Finally, some consideration of costs and benefits under Section 112(d) will not disrupt the structural distinctions found by the Court in Sierra Club. Section 112(f) remains a different, risk-based provision, in particular because its language on public health standards almost certainly excludes consideration of costs, under Whitman v. American Trucking Association. The operative language of Section 112(f) is:

Emission standards promulgated under this subsection shall provide an ample margin of safety to protect public health. . .unless the Administrator determines that a more stringent standard is necessary to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect. [Footnote: CAA § 112(f)(2)(A).]

Obviously, this subsection requires consideration of costs when determining whether a more stringent environment-based standard is required, but it does not require consideration of costs in determining the standard based on public health. In American Trucking, the Supreme Court ruled that Section 109 of the CAA (with language similar to Section 112(f)'s public health-based standard) [Footnote: Compare CAA § 109(b)(1) ("National primary ambient air quality standards, prescribed under subsection (a) of this section shall be ambient air quality standards the attainment and maintenance of which in the judgment of the Administrator, based on such

criteria and allowing an adequate margin of safety, are requisite to protect the public health.”).] precluded the consideration of costs. [Footnote: 531 U.S. 457 (2001).] More generally, American Trucking stands for the proposition that, depending on statutory context unique to certain sections of the CAA, neglecting to require the consideration of costs—as in the first part of Section 112(f)—may be tantamount to prohibiting the consideration of costs. [Footnote: In Entergy v. Riverkeeper, this more general proposition is explained: “In American Trucking, we held that the text of
§ 109 of the Clean Air Act, ‘interpreted in its statutory and historical context. . .unambiguously bars cost considerations’ in setting air quality standards under that provision. The relevant ‘statutory context’ included other provisions in the Clean Air Act that expressly authorized consideration of costs, whereas § 109 did not.” Entergy, 129 S.Ct. at 1508 (citation omitted).]

The interpretation described above would maintain a four-part structure when applying Section 112(d) and Section 112(f) together. Section 112(d)(3) mandates a technology-based floor. Section 112(d)(2) gives EPA discretion to go beyond this floor, to achieve the “maximum degree of reduction. . .achievable” in light of costs and benefits. Section 112(f)(2)(A) then has two parts: first, a health-based standard where EPA is prohibited from considering costs; and second, an environmental risk-based standard where EPA must consider costs to determine whether to go beyond the health-based standard. This interpretation preserves Sierra Club’s distinction between the two stages of the standard-setting process.

The D.C. Circuit’s other concern in Sierra Club was the timely promulgation of standards under Section 112(d). EPA should already have all the data it needs to reconsider whether additional or different beyond-the-floor standards would better maximize net social benefits. This change should not appreciably disturb the 2013 timeline for requiring compliance with the new standards.

In addition, EPA may be foregoing significant net benefits for every year after 2013 by under-regulating. Surely it would be worth a small delay to ensure that this does not happen.

To conclude, EPA has legal authority to reinterpret the language of Section 112(d) to allow the consideration of costs and benefits when selecting the maximum emissions reduction achievable. As shown in the next section, given administration-wide policy, EPA should exercise that authority to maximize net social benefits under Section 112(d).

Administration Policy Requires EPA to Pursue Welfare-Maximizing Regulations

Given the rationales for public regulation of private entities and the directives of Executive Order 12,866, EPA should interpret Section 112(d) to allow the agency to set all emissions standards that maximize net social welfare.

Typically, entities will not voluntarily reduce their own HAP emissions because they do not pay the full costs of those emissions. Air pollution is a classic “negative externality”: the harmful effects of pollution are mostly felt by members of the public who cannot directly influence the production of that pollution. Basic micro-economics holds that when an entity does not pay for an effect it produces, its optimal behavior will not take that effect into consideration. In the status

quo, major and area sources of HAP do not pay for the full effect of their emissions. [Footnote: Some entities that will be regulated under the rule may currently pay for emissions which are correlated with the emission of HAP (e.g., sulfur dioxide). While this may encourage some reductions in HAP, it will not necessarily lead to the optimal amount of reductions.] Because there are positive costs (both health effects and environmental effects) from the emission of HAP and regulated entities are not paying for these costs, these entities are currently "over-producing" HAP emissions.

The existence of a negative externality does not necessarily dictate that all HAP emissions must be eliminated. Rather, society should be willing to pay for any change which produces higher benefits than costs. The costs of regulating HAP emissions will be passed from individual sources to society as a whole in a variety of ways: consumers may face higher prices as the cost of production rises; business owners and investors may lose income as regulated entities lose profits; government entities that operate regulated boilers may have to increase taxes or decrease their expenditures in other areas. A wide variety of benefits will counteract these costs, including decreased mortality from lower particulate matter emissions. If the benefits of the proposed rule are higher than the costs, society as a whole is better off.

The goal of maximizing net benefits is enshrined in administration-wide policy under Executive Order 12,866. The Order directs federal agencies to "assess all costs and benefits of available regulatory alternatives" in deciding how to regulate, and then "select those approaches that maximize net benefits. . . unless a statute requires another regulatory approach." [Footnote: Exec. Order No. 12,866 §1, 58 Fed. Reg. 51,735 (1993).] Since, as demonstrate above, EPA has statutory authority to consider net benefits under Section 112(d), the directives of Executive Order 12,866 apply.

More Stringent Standards Are Likely Required to Maximize Net Benefits

If more stringent standards did not increase social welfare, EPA would be justified in solely using the "MACT floor" emission standards, as determined by Section 112(d)(3). But the figures presented in the EPA's regulatory impact analysis ("RIA") indicate that this may not be the case.

High ratios of benefits to costs may indicate under-regulation. Figure 1 shows a graphical depiction of the marginal costs and benefits of a hypothetical optimized regulation, where the stringency of the regulation has been set to equalize marginal costs and marginal benefits. [See submittal for Figure 1.] Area A (the area underneath the marginal cost curve) represents the total social costs of the regulation. The combination of Areas A, B, and C (the total area underneath the marginal benefit curve) represents the total social benefits of the regulation. In this simple linear example, this gives a ratio of 3:1 for total benefits to total costs.

By contrast, Figure 2 shows a graphical depiction of the marginal costs and benefits of a hypothetical scenario of under-regulation, where marginal costs have been set well below marginal benefits. [See submittal for Figure 2.] Area D (the area underneath the marginal cost curve) represents the total social costs of the regulation. The combination of Areas D, E, and F (the total area underneath the marginal benefit curve) represents the total social benefits of the regulation. In this example, the ratio of total benefits to total costs is 7:1.

These twin examples show how under-regulation leads to a higher ratio of total benefits to total costs.
Table 1 shows the costs and benefits of the Major Source Proposal and Area Source Proposal at a discount rate of 7%. [See submittal for table 1] [Footnote: Note that choosing the higher discount rate minimizes the ratio in this case.]

Given the range of benefit estimates, the ratio of benefits to costs is between 5 and 13 for the Major Source Proposal and between 1.8 and 4.4 for the Area Source Proposal. As demonstrated by the simple example above, this may indicate that the agency is under-regulating in at least the Major Source Proposal. The RIA also excludes many highly significant benefits categories that the agency did not have the time or analytical ability to quantify. [Footnote: For example, the RIA concentrates on the health effects related to particulate matter reductions, and "[t]he benefits from reducing hazardous air pollutants have not been monetized in this analysis, including reducing 370,000 tons of carbon monoxide, 37,000 tons of HCl, 1,000 tons of HF, 8.3 tons of mercury, 3,400 tons of other metals, and 1,200 grams of dioxins/furans each year." RESEARCH TRIANGLE INSTITUTE, RTI PROJECT NUMBER 0209897.004.074, REGULATORY IMPACT ANALYSIS: NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL BOILERS AND PROCESS HEATERS at 6-1 (Draft Report, Prepared for EPA, Apr. 2010) [hereinafter RIA].] This means that the true benefit-to-cost ratios are almost certainly higher than those indicated by the table.

While the RIA indicates that there are no additional benefits from regulating major sources with heat input capacity under 10 MMBtu/hr,, [Footnote: For example, the RIA concentrates on the health effects related to particulate matter reductions, and "[t]he benefits from reducing hazardous air pollutants have not been monetized in this analysis, including reducing 370,000 tons of carbon monoxide, 37,000 tons of HCl, 1,000 tons of HF, 8.3 tons of mercury, 3,400 tons of other metals, and 1,200 grams of dioxins/furans each year." RESEARCH TRIANGLE INSTITUTE, RTI PROJECT NUMBER 0209897.004.074, REGULATORY IMPACT ANALYSIS: NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL BOILERS AND PROCESS HEATERS at 6-1 (Draft Report, Prepared for EPA, Apr. 2010) [hereinafter RIA] at 6-31.] this does not show that the costs of additional emissions standards on sources with heat input capacity over 10 MMBtu/hr are higher than the benefits. EPA should analyze whether alternative regulatory structures—in light of all quantified and unquantified benefits—would better maximize net benefits.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Michael A. Livermore
Commenter Affiliation: Institute for Policy Integrity New York University School of Law

Document Control Number: EPA-HQ-OAR-2006-0790-1899.1
Comment Excerpt Number: 6

Comment: EPA is currently proposing a one-time energy assessment for certain existing boilers. Mandatory energy assessments can be justifiable to correct market failures, and that justification can extend beyond a one-time energy audit for existing boilers only. Audits should be periodically repeated and should also apply, at appropriate times, to new boilers. More importantly, regulated entities should be required to implement any cost-effective energy conservation measures identified.

Energy Efficiency Mandates are Necessary to Correct Market Failures

Ample evidence shows that businesses do not always take advantage of all cost-effective investments at their facilities. For example, a McKinsey & Company report from 2007 discovered many un-adopted greenhouse gas reduction measures that would have a negative marginal cost for private actors. [Footnote: MCKINSEY & COMPANY, REDUCING U.S. GREENHOUSE GAS EMISSIONS: HOW MUCH AT WHAT COST? (2007), available at http://www.mckinsey.com/clientservice/sustainability/pdf/US_ghg_final_report.pdf.] Many of the measures identified in that report were available to the same the industrial and commercial sectors covered by EPA's Major Source and Area Source Proposals. EPA notes that the Department of Energy has done energy assessments and discovered that some facilities can reduce energy use by 10 to 15 percent. [Footnote: 75 Fed. Reg. at 32,026.]

The requirement of an energy assessment partially solves this problem. While somewhat controversial, Professor Michael Porter and others have argued that certain types of regulations can have negative costs, by forcing firms to rethink their production processes. [Footnote: See David Popp, Richard G. Newell & Adam B. Jaffe, Energy, the Environment, and Technological Change (NBER Working Paper No. 14832, Apr. 2009); Michael E. Porter & Claas van der Linde, Towards a New Conception of the Environment-Competitiveness Relationship, 4 J. ECON. PERSPECTIVES 97, 99 (1995).] In this case, the energy assessment requirement will provide each regulated entity with information it did not have before. New and better information can help overcome organizational inertia by giving evidence of cost-savings. A mandatory energy assessment, rather than a voluntary program, can be justified due to persistent barriers to the voluntary pursuit of energy efficiency—lack of information, lack of attention and salience, prioritization, and so forth.

The energy assessment requirement is a cost-benefit justified regulation even if implementation of identified conservation measures is not mandatory. Armed with better information and focused attention thanks to an energy audit, regulated sources will be better able to take advantage of opportunities with significant private financial benefits, not to mention the environmental and health benefits from cutting energy use and associated pollution. While it is possible that some assessments may not lead to identifying of efficient energy efficient projects at some sources, there is sufficient evidence of general under-adoption of energy efficient technologies in the relevant sectors that substantial cost-savings can be achieved through the assessment requirement.

Response: EPA thanks the commenter for his support.

Commenter Name: Anna K. Chittum
Commenter Affiliation: American Council for an Energy-Efficient Economy
Document Control Number: EPA-HQ-OAR-2006-0790-2189.1
Comment Excerpt Number: 1

Comment: ACEEE praises EPA for recognizing the role energy efficiency can play in the reduction of hazardous air pollutants (HAPs). Encouraging industrial facilities to go "beyond the floor" is an effective way to capture energy efficiency savings and reduce emissions of HAPs as well as greenhouse gases. Energy efficiency offers industrial facilities a control mechanism for pollutants that is in some cases more beneficial than "end-of-pipe" controls, because ancillary benefits of energy efficiency and reduced fuel costs accrue to the facility implementing energy efficiency.

Response: EPA thanks the commenter for their support.

Commenter Name: Jay C. Moon
Commenter Affiliation: Mississippi Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2000
Comment Excerpt Number: 5

Comment: EPA has overreached in crafting the proposed work practices and "beyond the floor" requirements. The energy assessment and management work practice requirements are too broad, too intrusive, and exceed the scope of EPA's authority for CAA MACT rules. EPA should more narrowly tailor these requirements.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Thomas D. Emero
Commenter Affiliation: Beaver Wood Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2166.1
Comment Excerpt Number: 4

Comment: In addition to the proposed CO limit, BWE believes the proposed requirement for a onetime energy assessment presents another regulatory burden with no benefit to our facilities. Does the EPA believe such a requirement to assess cost effective energy conservation measures on a state of the art boiler by an outside consultant will yield an environmental benefit that our design engineers might have overlooked? Please reconsider such a requirement as it is our

business to run our boilers in the most efficient manner possible as energy inefficiency represents potential lost revenue.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Michael A. Zapkin
Commenter Affiliation: Eastman Kodak Company
Document Control Number: EPA-HQ-OAR-2006-0790-2170.1
Comment Excerpt Number: 7

Comment: Energy Conservation Requirements will neither add value over companies' existing energy conservation programs nor are these requirements authorized by the CAA.

Kodak strongly supports energy efficiency efforts. Energy conservation is a high priority for both environmental and cost reasons. However, these energy assessment requirements in the proposed rule will add certification requirements, rigidity, and costs that distract from the creative nature of the existing effective energy conservation programs. Kodak has reduced energy consumption by 43% from 2002-2009 through existing programs. In addition to the lack of added value over existing programs, Kodak believes that the requirements go beyond the authority that EPA has under the provisions of 112 for regulations of boilers.

EPA justifies this action as a Beyond the Floor standard for HAP control. In its justification EPA has failed to note that most industrial sites already have energy efficiency programs in place and act to implement cost effective energy projects. Kodak's Eastman Gelatine facility has a very successful program that has resulted in a 47% reduction in energy consumption from 2004-2009. The program is run by well-qualified individuals, who have no energy conservation certification, but have a detailed knowledge of energy conservation and team leadership dynamics. These individuals work with teams in each operating area to identify changes to operations, equipment, or timing to save energy.

Because facilities typically have an energy conservation program, the predicted HAP emission reductions and cost savings projected from the requirement are already being realized. Through implementation of EPA's program, facilities will be required to spend time and resources to completely overhaul their programs and increase recordkeeping to comply with a standard, freezing the programs in time. Kodak's current program has been evolving for over 20 years and will continue to evolve as needed, which creates a more effective program than trying to comply with mandatory requirements. Saving money and reducing emissions is adequate motivation to establish high quality programs.

Not only will the expected HAP reductions not occur due to the proposed energy conservation program, because little additional improvement, if any, will occur. To promulgate "Beyond the Floor" requirements, the CAA requires EPA to justify the requirements based on cost-benefit analysis. However, EPA fails to provide any real cost-benefit justification as required to set a "beyond the floor" requirement, stating "Since there was insufficient information to determine if

requiring implementation of cost-effective measures were economically feasible, we are seeking comment on this point." This failure to justify these requirements makes them invalid.

The optimum operating condition for energy efficiency will require facilities to perform at levels that are not optimum for emissions of other pollutants. Tuning of boilers is important and routinely conducted, but it is done to minimize emissions of traditional combustion pollutants such as NOx and CO, not just to optimize energy efficiency. Maximum energy efficiency occurs at a lower oxygen concentration than minimum air emissions. If facilities were required to maximize boiler efficiency, emissions of these pollutants will increase.

For the reasons outlined above, Kodak believes that EPA has exceeded its authority and should not mandate these assessments.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3. In addition, the final rule allows for a facility to submit documentation for a previously conducted energy assessment to satisgy this requirement.

Commenter Name: Lewis F. Gossett
Commenter Affiliation: South Carolina Manufacturers Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-2196.1
Comment Excerpt Number: 10

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use.". While this is true, it will do little to reduce HAP emission for the area source boiler. The affected industry, except where limited by permitted production rates, will most likely use the energy savings to increase production.

Response: We agree that is a possibility but the increase production would be at lower emissions on a per production unit basis.

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 15

Comment: The proposed rule includes beyond-the-floor, precedent-setting energy assessment and ongoing energy management requirements that apply well beyond this source category. We believe requiring energy audits and implementation of energy conservation measures exceeds the authority granted EPA by the Clean Air Act to regulate HAP emissions.

Response: S See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 25

Comment: The proposed energy assessment would require an "in-depth energy study identifying all energy conservation measures appropriate for a facility given its operating parameters." 75 FR at 32026. Thus, that measure just mandates an evaluation of the facility's processes to "identify energy conservation measures ... that can be implemented to reduce the facility energy demand...." 75 FR at 32026 (emphasis added). That one-time identification of possible emission reductions and process changes will not "limit the quantity, rate or concentration of emissions of air pollutants," much less "on a continuous basis." Nor is the proposed energy assessment a "design, equipment, work practice or operation standard." As such, it falls beyond the defined concept of an "emission standard."

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 41

Comment: EPA has proposed, as a "beyond the floor" measure, to require an owner or operator of a boiler to conduct an energy assessment/audit of the entire facility where the boiler is located. This requirement overreaches EPA's statutory mandate to regulate "sources" pursuant to Section 112 of the Clean Air Act.

Section 112(d) of the Clean Air Act is focused entirely on regulation of "sources," not on "facilities." It requires EPA to set emissions standards that are "applicable to new or existing sources" 112(d)(2). Thus, it reaches no further than the specific "sources." The "sources" at issue in this rulemaking are existing, new and reconstructed boilers and process heaters. See 75 Fed. Reg. 32049, 32063-64 (Proposed 63.7490 and 63.7575). The "affected source" regulated by this NESHAP is the specified emission unit – boilers and process heaters – not the entire plant which includes the location of the emission unit. A major source is a "stationary source...that emits or has the potential to emit" some threshold amount of HAP, and area sources are "any stationary source of [HAP] that is not a major source." 42 U.S.C. 7412(a)(1) and (2). A stationary source is any "building, structure, facility, or installation that emits or may emit any air pollutant." 42 U.S.C. 7412(d)' 42 U.S.C. 7411(a)(3). This is consistent with the long-established understanding of the term "affected source" as it relates to the "major source" where the affected source is

located. See preamble to rule establishing the General Provisions for all NESHAPs, 59 Fed. Reg. 12,408, 12,412-13 (1994)

Limiting the regulation to the affected source is also consistent with Congress's general statutory scheme, under which EPA is to publish a list of "all categories and subcategories of major sources and area sources" of the listed HAP. 112(c)(1). EPA's published list of source categories groups every conceivable type of industrial process and process unit into a category, each of which is regulated by its own NESHAP, each published as a separate Subpart to 40 C.F.R. Part 63. Therefore, any 112 source other than the boiler and process heater affected units for this NESHAP would be covered separately by another NESHAP. The statutory scheme does not assign duplicative source category regulations for the same unit.

By its own terms, the proposed rule provision for the energy assessment will reach far beyond the regulated source (boilers or process heaters) to impact the entire facility. The proposed regulation defines an "energy assessment" to be "an in-depth energy study identifying all energy conservation measures appropriate for a facility given its operating parameters. 75 Fed. Reg. 32064 (proposed 63.7575). Further, the energy assessment extends far beyond boilers or process heaters to the entire facility.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 42

Comment: EPA states that the energy assessment must be made on the "boiler system," which EPA defines as "the boiler and associated components, such as, the feedwater system, the combustion air system, the fuel system (including burners), blowdown system, combustion control system, and energy consuming systems." 75 Fed. Reg. 32063. Assuming arguendo that an energy assessment is properly an emission standard under section 112, it is an emission standard that is applicable to the entire facility, not just a source within a facility. Congress clearly did not intend for the Clean Air Act MACT regulations focused on clearly delineated "sources" to dictate measures regarding and changes to the operation of machinery and processes throughout an entire facility.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 43

Comment: EPA has exceeded its statutory authority, as an energy assessment is not an "emission standard... applicable to ... [a] source".

Section 112 requires EPA to establish "emission standards" for each listed source category and subcategory. 112(c)(2); 42 U.S.C. 7412(c)(2). By definition, the identification of energy saving measures is not an emission standard. In addition, were the efficiency measures actually to be undertaken, reduced demand for the output of a regulated source is not an "emission control" technology to limit emissions from the regulated source. 112(c)(2); 42 U.S.C. 7412(d)(3) If this were so, the text of 112 would provide no limiting principle for EPA's authority.

EPA finds justification for the energy assessment by defining it as a beyond-the-floor control technology in CAA section 112(d)(2):

Emission standards promulgated...and applicable to new or existing sources...is achievable...through application of measures, processes, methods, systems or techniques including but not limited to measures which...reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications.

75 Fed. Reg. 32,026 (citing 42 U.S.C. 7412(d)(2)). EPA posits that "process changes, substitution of materials or other modifications" encompasses "energy assessments."

EPA's reliance on that statutory language is misplaced, as when the statute refers to "process changes, substitution of materials or other modifications" it can only be referring to the specific source. In language that EPA omitted from the preamble's justification, the statute makes clear that the beyond the floor emissions standards are ones that "applicable to new or existing sources" and are "achievable for new or existing sources in the category or subcategory to which such emission standard applies." 42 U.S.C. 7412(d)(2). Thus, EPA's statutory authority is only to mandate emission standards that are "process changes, substitution of materials or other modifications" to the source itself, not to all of the energy using components of an entire facility.

EPA has developed MACT standards that permit sources to elect to comply with pollution prevention alternatives in lieu of standards for some units and under certain circumstances. See, e.g., Pharmaceuticals Production MACT, 40 C.F.R. Part 63, Subpart GGG; National Emission Standards for Hazardous Air Pollutants for Source Categories: Pharmaceuticals Production; Final Rule, 63 Fed. Reg. 50280 (Sept. 21, 1998)(Pharma MACT). These do not, however, establish analogous precedent for the action EPA proposes in this MACT. The provisions of the Pharma MACT, for example, are a compliance alternative to compliance with the MACT standard. Here, EPA defines this as a beyond the floor MACT standard, making it not only mandatory, but also conveying the notion that sources can and must achieve by its greater stringency than the floor, greater emission reductions. In addition, the Pharma compliance alternative relates directly to the reduction of the regulated pollutants from the same four regulated source types as those regulated by the MACT standard. Here, no such direct correlation can be made, and the assessment covers unregulated, non-emitting elements of the company's operation beyond the regulated boiler and process heater.

EPA must limit regulatory requirements to methods that will reduce HAP emissions by the regulated combustion unit itself and not to other systems, energy using systems or process areas. EPA goes beyond its authority by imposing requirements beyond the combustion unit, even covering systems not directly associated with combustion units.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 44

Comment: The assessment is arbitrary because it lacks a relationship to HAP reduction, and EPA provides no record basis demonstrating such a relationship.

EPA states that "[t]he purpose of an energy assessment is to identify energy conservation measures (such as, process changes or other modifications to the facility") that can be implemented to reduce the facility energy demand which would result in reduced fuel use. Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP emissions." 75 Fed. Reg. 32,026. The problem with this assertion is that in many cases it is simply not true.

The simple comparison of two boilers – one using coal and one co-firing coal and bark – demonstrates EPA's misdirection on this issue. In this example, an energy efficiency audit would show that a boiler using only coal is more efficient than a boiler using bark and coal. However, a boiler using only coal would have increased emissions.

Reduced energy does not necessarily mean reduced pollutant emissions, even if it means reduced HAP emissions from the boiler. To offer but one specific countervailing example: periodic operation of solid fuel boilers in a highly turned down mode is common among many industrial sectors, as an efficient way to manage manufacturing process energy needs. For example, industrial process boilers in the wood products industry supply steam according to the immediate demand from processes for which they are operated. These boilers operate at widely varying load levels, depending on, among other things, the amount of steam the process equipment is demanding at the time. During high turndown periods the actual HAP emission load should be lower since the total fuel load is reduced from the normal operation. Conversely, however, high CO emissions are a common occurrence to all solid fuel boilers during high turndown operation due to a combination of well-known combustion fundamentals. It is impossible to avoid these countervailing effects. EPA has recognized boiler, or burner, turndown ratio as a factor affecting performance in several contexts. See, EPA, Final Technical Support Document for HWC MACT Standards, Vol. IV, p. 3.6 (July 1999); EPA Region 6 Center for Combustion Science and Engineering, Hazardous Waste Combustion Unit Permitting Manual, Component 1 How to Review a Test Burn Plan, p. D-5.5 (Tetra Tech Jan. 1998).

In addition to a turndown resulting in increased non-HAP emissions from the boiler, in other scenarios, reduced energy could result in increased HAP emissions from other non-combustion processes. In fact, in this proposal, EPA acknowledges that categorical assertions regarding energy-pollutant emissions relationships are not accurate, when it notes that "[i]mprovement in energy efficiency results in decreased fuel use which results in a corresponding decrease in missions (both HAP and non-HAP) from the combustion unit, but not necessarily a decrease in emissions of all HAP emitted." 75 Fed. Reg. 32,026.

EPA does not and cannot demonstrate that conducting an energy assessment will actually reduce HAP emissions. Similarly, EPA does not and cannot demonstrate that even implementing the findings of an energy assessment, assuming EPA were to require implementation (which it does not have the authority to do), will reduce HAP reductions.

Notwithstanding no demonstrated correlation between yet-unidentified energy saving measures and projected possible HAP reduction, and no proposal to require their implementation, EPA offers this flawed syllogism: an energy assessment identifies ways to reduce fuel use; reduced fuel use will reduce pollutant emissions; therefore an energy assessment will reduce HAP emissions consistent with 112(d)(2). 75 Fed. Reg. 32026. The proposal irrationally concludes that an energy assessment will contribute to achieving the maximum HAP emission reduction. 75 Fed. Reg. 32026. In fact, an unimplemented energy assessment will not reduce fuel use, will not reduce HAP emissions, and even if implemented, will not reduce HAP emissions consistent with 112(d)(2).

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 69

Comment: The Assessment Is Arbitrary Because It Lacks A Relationship To HAP Reduction, And EPA Provides No Demonstration Of Such A Relationship. As already noted above, EPA states that "[t]he purpose of an energy assessment is to identify energy conservation measures (such as, process changes or other modifications to the facility") that can be implemented to reduce the facility energy demand which would result in reduced fuel use. Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP emissions." Id. at 31907. The problem with this assertion is that in many cases it is not true.

The simple comparison of two boilers - one using coal and one co-firing coal and bark - demonstrates EPA's misdirection on this issue. In this example, an energy efficiency audit would show that a boiler using only coal is more efficient than a boiler using bark and coal. However, a boiler using only coal would have increased HAP emissions.

Reduced energy does not necessarily mean reduced pollutant emissions, even if it means reduced HAP emissions from the boiler. To offer one countervailing example: periodic operation of solid and liquid fuel boilers in a highly turned down mode is common among many industrial sectors, as an efficient way to manage manufacturing process energy needs and maintain steam reliability. For example, industrial boilers supply steam according to the immediate demand from processes for which they are operated. These boilers operate at widely varying load levels, depending on, among other things, the amount of steam the process equipment is demanding at the time. During high turndown periods the actual HAP emission load should be lower since the total fuel load is reduced from the normal operation. Conversely, however, high CO emissions are a common occurrence to all solid and liquid fuel boilers during high turndown operation due to a combination of well-known combustion fundamentals. It is impossible to avoid these countervailing effects. EPA has recognized boiler, or burner, turndown ratio as a factor affecting performance in several contexts. See, EPA, Final Technical Support Document for HWC MACT Standards, Vol. IV, p. 3.6 (July 1999); EPA Region 6 Center for Combustion Science and Engineering, Hazardous Waste Combustion Unit Permitting Manual, Component 1 How to Review a Test Burn Plan, p. D-5.5 (Tetra Tech Jan. 1998).

In addition to a turndown resulting in increased non-HAP emissions from the boiler, in other scenarios, reduced energy could result in increased HAP emissions from other non-combustion processes. In fact, in this proposal, EPA acknowledges that categorical assertions regarding energy-pollutant emissions relationships are not accurate, when it notes that "[i]mprovement in energy efficiency results in decreased fuel use which results in a corresponding decrease in missions (both HAP and non-HAP) from the boiler, but not necessarily all those present." 75 Fed. Reg. 31907.

Linking energy assessments to finite HAP limits implies that the Energy Intensity (EI) of the processes served by the boiler is a static quantity and that the incremental improvement brought about by the implementation of opportunities discovered by the energy assessments would therefore incrementally reduce HAPs emissions. This could not be more incorrect. The EI of a facility depends on many constantly changing factors, including environmental conditions, raw material quality, product output, and others. Further, facilities may have hundreds of different products that are produced in ever-changing combinations. These products may have individual EIs that are orders of magnitude different. Thus product mix only further complicates the already dynamic nature of a facility EI. Further, a specific energy improvement opportunity may only affect the production of one specific product or may only apply during certain environmental conditions, and thus its effect would be affected by the same dynamic factors as the overall EI.

EPA has not proposed this concept in any other NESHAP for any other regulated sector, nor should it. Boilers provide a single product—heat—to a tremendous number of consumers in hundreds of different contexts. The product consumed is often in some proximity to the boiler itself, which makes it conceptually appealing for EPA to imagine the efficacy of the "energy assessment." But certainly EPA would never impose such a requirement on other sectors regulated under 112, because the irrationality of the proposal would be highlighted. For example, we doubt that EPA would propose that entities owning surfacing coating facilities for metal furniture (40 C.F.R. 60.310 et seq.) review their "demand" for such surface coating. EPA has promulgated MACT standards for five different sources common to the phosphate fertilizer

industry (40 C.F.R. Subpart T through Subpart X) but would never demand that the phosphate fertilizer industry identify a "more efficient" phosphate fertilizer. Yet less demand for surface coating for metal furniture, and less demand for the chemicals produced by sources regulated under Subparts T through X, would according to EPA's logic reduce the demand for the products produced by sources regulated under 112, thereby limiting inputs and reducing HAP outputs. EPA has arbitrarily picked one product out of the thousands produced by sources regulated under 112 and demanded that regulated entities identify ways to make less of it.

EPA does not and cannot demonstrate that conducting an energy assessment will actually reduce HAP emissions. Similarly, EPA does not and cannot demonstrate that even implementing the findings of an energy assessment, assuming EPA were to require implementation, will reduce HAP reductions. EPA admits as much in the proposal, offering unsubstantiated projections of possible reductions as support:

If a facility elected to implement the cost-effective energy conservation measures identified in the energy assessment, it would potentially result in greater mercury and POM reduction than achieved by a boiler tune-up alone.

75 Fed. Reg. at 31907 (emphasis added).

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 77

Comment: The Energy Assessment Is Presented As Both A Beyond The Floor Requirement And A Work Practice Standard. The proposed rule refers to the energy assessment requirements as a beyond-the-floor control technology and a "work practice standard, emission reduction measure, and management practice." In the proposed rule EPA states that "we believe that an energy assessment is an appropriate beyond-the-floor control technology because it is one of the measures identified in CAA section 112(d)(2)." But in Table 2, EPA proposes "work practice standards, emission reduction measures, and management practices" requirements, which include doing an energy assessment. In the preamble, EPA has described, though not properly justified, energy assessments as a beyond-the-floor option, meaning a control option more stringent than the MACT floor that could achieve greater emissions reductions. On the other hand, EPA seems to rely on 112(h)'s authority to establish the energy assessments as work practices, as an alternative to an emission standard when it is not feasible to prescribe or enforce an emission standard. Lastly, though not mentioned by EPA in the proposed rule, we note that 112(d)(5) allows EPA to establish "management practices" for area sources in lieu of requiring MACT or GACT standards. We are unclear which section of the CAA EPA is relying on in its proposal to require energy assessments and EPA needs to clarify this issue.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1919.1, Excerpt Number 3.

Beyond the Floor: Energy Audit/Assessment – General

Commenter Name: David Meierhenry
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-0414.1
Comment Excerpt Number: 6

Comment: Additional clarification is needed concerning the scope of an energy assessment. The first paragraph under V.D(1)(b) of the preamble, states, "An energy assessment…is an in-depth energy study identifying all energy conservation measures…" This statement sounds like the assessment is to assess everything including electricity use. A few sentences further, however, the preamble states, "Improvement in energy efficiency results in decrease fuel use which results in…decrease in emissions…" This statement sounds like the assessment is only for the boiler(s). The definition of energy assessment in 63.11237 indicates the assessment should be "…focusing on the steam and process heating systems…" It does not, however, say the assessment should be focusing solely on the steam and process heating systems. Clarification is needed. Preferably, only the boiler and directly related systems will be assessed because, for example, while switching to compact fluorescent bulbs is a valid energy conservation target, it will do nothing to decrease boiler fuel use or emissions.

Response: We agree with the commenter and have added further clarification of the scope of the energy assessment to the final rule.

Commenter Name: Norman Bujold
Commenter Affiliation: Cleaver Brooks
Document Control Number: EPA-HQ-OAR-2006-0790-0392.1
Comment Excerpt Number: 8

Comment: With regards to scope, we feel energy assessment is too broad and it should be revised to read: Boiler system means the boiler and directly associated components, such as feedwater system, combustion air system, fuel system including burners, blowdown system, combustion control system and heat recovery of the combustion flue gas. The publication of a standard procedure would insure uniform and comparable results for all plant energy assessments.

Response: We agree and have revised the scope to be the boiler system (defined in the final rule) and the energy use system (those systems using the energy from the affected boiler).

Commenter Name: Michael J. Hagenbarth
Commenter Affiliation: RockTenn
Document Control Number: EPA-HQ-OAR-2006-0790-1473.1
Comment Excerpt Number: 11

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use." 75 Fed. Reg. at 31907. The Agency asserts that, "Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP, emissions." Id. This work practice requirement is an "above the floor" measure that EPA argues is justified in light of the emissions reductions and cost savings that can be realized by identifying and implementing energy efficiency projects.

This proposed requirement is beyond EPA's authority and should not be included in the final rule. To begin, EPA is only authorized under § 112 to regulate "sources" of HAPs. For example, § 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards" (emphasis added). More particularly, § 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications"; however, this authority is limited in § 112(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs. Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."

In addition, EPA proposes in § 63.11194 to define the affected source under this rule to include only "industrial, commercial, and institutional boilers." EPA further proposes to define the terms "industrial boiler," "commercial boiler," and "institutional boiler" to include only boilers and not other parts of the facilities to which the boilers belong. 75 Fed. Reg. at 31931 (proposed § 63.11237). By the very terms of the proposed rule, the affected source category only includes boilers. Thus, the proposed energy assessment requirement is not supportable because it would apply to equipment that is not part of the source category being regulated.

Response: EPA disagrees with commenters that state that EPA does not have the authority to require an energy assessment. An energy assessment is an appropriate beyond-the-floor control technology because it is one of the measures identified in CAA section 112(d)(2). CAA section 112(d)(2) states that "Emission standards promulgated ... and applicable to new or existing sources ... is achievable ... through application of measures, processes, methods, systems or techniques including, but not limited to measures which –

(B) reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications,

. . .

(F) are design, equipment, work practice, or operational standards (including requirements for operator training or certification) as provided in subsection (h), or

(G) are a combination of the above."

The purpose of an energy assessment is to identify energy conservation measures (such as, process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use. Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP, emissions. Thus, an energy assessment, in combination with the MACT emission limits will result in the maximum degree of reduction in emissions as required by CAA section 112(d)(2).

In addition, for area sources, under section 112(d)(5), we may elect to promulgate requirements which provide for the use of generally available control technologies or management practices (GACT). Since energy assessment has been performed at many facilities, we considered the requirement to conduct an energy assessment as a GACT management practice.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 54

Comment: Moreover, EPA improperly identifies the energy assessment as a beyond-the-floor standard. This is not consistent with the text of the CAA, which as EPA explains, requires it to consider control options that are "more stringent" than the MACT floor. 75 FR 31905. An energy assessment does not purport to limit emissions, nor impose more stringent standards than the MACT floor.

EPA has developed MACT standards that allow sources to elect to comply with pollution prevention alternatives in lieu of standards for some units and under certain circumstances. See, e.g., Pharmaceuticals Production MACT, 40 CFR Part 63, Subpart GGG; National Emission Standards for Hazardous Air Pollutants for Source Categories: Pharmaceuticals Production; Final Rule, 63 FR 50280 (Sept. 21, 1998) (Pharma MACT). These do not, however, establish analogous precedent for the action EPA proposes in this MACT. The provisions of the Pharma MACT, for example, are a compliance alternative to compliance with the MACT standard. Here, EPA defines this as a beyond-the-floor MACT standard, making it not only mandatory, but also grounding it in the notion that sources can and must achieve by its greater stringency than the floor, greater emission reductions. In addition, the Pharma MACT compliance alternative relates directly to the reduction of the regulated pollutants from the same four regulated source types as those regulated by the MACT standard. Here, no such direct correlation can be made, and the assessment covers unregulated, non-emitting elements of the company’s operation beyond the regulated boiler.

In another section of the Proposed Rule, EPA identifies the energy assessment as a work practice standard, including it in Table 2, entitled "Work Practice Standards." 75 FR 31932. Authority to

require work practice standards derives from § 112(h), and EPA does not provide any legal justification for the energy assessment as a work practice. Its inclusion in Table 2 appears to be in error, but in any event, EPA lacks statutory authority to require the assessment as proposed under any provision of the CAA.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11. Also, for area source facilities, EPA has the authority under section 112(k) to set management practices, as GACT, which is the case for area source facilities having a biomass-fired or oil-fired boiler with input capacity of 10 million Btu per hour or greater.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 57

Comment: EPA does not and cannot demonstrate that conducting an energy assessment will actually reduce HAP emissions. Similarly, EPA does not and cannot demonstrate that even implementing the findings of an energy assessment, assuming EPA were to require implementation, will reduce HAP reductions. EPA admits as much in the proposal, offering unsubstantiated projections of possible reductions as support:

If a facility elected to implement the cost-effective energy conservation measures identified in the energy assessment, it would potentially result in greater mercury and POM reduction than achieved by a boiler tune-up alone. 75 FR 31907 (emphasis added).

Notwithstanding no demonstrated correlation between yet-unidentified energy saving measures and projected possible HAP reduction, and no proposal to require their implementation, EPA offers this flawed syllogism: an energy assessment identifies ways to reduce fuel use; reduced fuel use will reduce pollutant emissions; therefore an energy assessment will reduce HAP emissions consistent with § 112(d)(2). 75 FR 31907. The proposal irrationally concludes that an energy assessment will contribute to achieving the maximum HAP emission reduction. 75 FR 31907. In fact, an unimplemented energy assessment will not reduce fuel use, will not reduce HAP emissions, and even if implemented, will not reduce HAP emissions consistent with § 112(d)(2).

Response: See response for DCN EPA-HQ-OAR-2006-0790-1973.1, Excerpt Number 11.

Commenter Name: Lisa Beal
Commenter Affiliation: Interstate Natural Gas Association of America
Document Control Number: EPA-HQ-OAR-2006-0790-1919.1
Comment Excerpt Number: 4

Comment: Without thorough peer review and development of consensus standards within a regulatory context, it is inappropriate to integrate programmatic material developed for the voluntary Energy Star program into a mandatory framework where its applicability may be extended beyond reasonable bounds (e.g., criteria may be primarily based on processes and applications for other sectors).

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Thomas A. Nyquist
Commenter Affiliation: Princeton University
Document Control Number: EPA-HQ-OAR-2006-0790-1764.1
Comment Excerpt Number: 5

Comment: Finally, Princeton, like many facilities, voluntarily conducts energy assessments and is currently working on the completion of energy projects with a viable payback period. Princeton believes that an assessment complete on or after January 1, 2008 should satisfy the requirements of this regulation.

Proposed regulation:
"11201 (b) You must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 of this subpart that applies to your boiler."

Princeton proposal:
"11201 (b) You must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 of this subpart that applies to your boiler. An energy assessment completed on or after January 1, 2008 that meets the requirements in Table 2 shall satisfy the energy assessment portion of this requirement."

Response: We agree with the commenter that an energy assessment recently conducted should satisfy the requirement and have added this clarification in the final rule.

Commenter Name: Michael Bradley
Commenter Affiliation: The Clean Energy Group
Document Control Number: EPA-HQ-OAR-2006-0790-1689.1
Comment Excerpt Number: 5

Comment: As noted in several previous comment letters to EPA, the Clean Energy Group agrees that promoting efficiency is a key emissions reduction strategy across a wide variety of pollutants, including HAPs. However, the Clean Energy Group requests that EPA clarify that the process for and scope of the energy assessment/audit is limited to the boiler unit and associated

systems and controls, and does not include an in-depth assessment of the entire facility and unrelated systems. The regulatory definition as well as the process description included in the preamble may open the door to a facility-wide assessment, which does not seem to be EPA's intention and would be inappropriate.
The regulatory definition of "energy assessment" is proposed as "an in-depth assessment of a facility to identify immediate and long-term opportunities to save energy, focusing on the steam and process heating systems which involves a thorough examination of potential savings from energy efficiency improvements, waste minimization and pollution prevention, and productivity improvement." The preamble's energy assessment steps include "[c]onduct a visual inspection of the boiler system and [e]stablish operating characteristics of the facility."

The following example of an oil-fired boiler at a nuclear facility illustrates the necessity of targeting the assessment to the boiler unit and associated systems and controls. Applying the energy assessment requirement to the boiler unit and associated systems and controls may yield cost-effective efficiency measures, the implementation of which could reduce HAP emissions. However, applying the requirement to the entire facility and unrelated systems would be complicated, time-consuming, and would likely involve equipment outside EPA's NESHAP jurisdiction (such as at nuclear facilities). Therefore, the Clean Energy Group proposes that the assessment be defined as "an in-depth assessment of a boiler system (boiler unit and associated components) to identify immediate and long-term opportunities to save energy…"
Separately, the Clean Energy Group recommends including the option to certify internal annual or continuous efficiency monitoring programs as equivalent to the energy assessments proposed in this rule if they offer similar or greater opportunities to identify potential efficiency gains to ensure this provision does not displace more intensive or regular assessments that may already occur.

Response: We agree and have revised the scope to be the boiler system (defined in the final rule) and the energy use system (those systems using the energy from the affected boiler).

Commenter Name: Susan Eckerly
Commenter Affiliation: National Federation of Independent Business, NFIB
Document Control Number: EPA-HQ-OAR-2006-0790-1631.1
Comment Excerpt Number: 6

Comment: It is also unclear whether area source facilities will have to prepare and maintain written, formal energy management programs. Written programs would add to the paperwork burden significantly.

EPA's proposal requires a one-time energy assessment to be performed by an outside consultant: Never before has such a requirement been added to a MACT standard. This work practice requirement is an excessive measure that EPA argues is justified in light of the emissions reductions and cost savings that can be realized by identifying and implementing energy efficiency projects. This proposed requirement is beyond EPA's authority and should not be included in the final rule.

Section 112(d) of the Clean Air Act permits EPA to regulate sources of hazardous air pollutants (HAPs). Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds its limited authority to regulate only HAP sources.

Response: In the area source final rule, the energy assessment does not contain the requirement to review or develop a facility energy management program.

Commenter Name: Lisa Beal
Commenter Affiliation: Interstate Natural Gas Association of America
Document Control Number: EPA-HQ-OAR-2006-0790-1919.1
Comment Excerpt Number: 6

Comment: Implications for addressing "recommendations" from the audit are not clear and ill-informed recommendations from auditors lacking gas transmission experience could present significant issues for operators and possible conflicts with other operational, safety, or regulatory requirements;

Response: In the final rule, there is no requirement that the findings of the energy assessment be implemented.

Commenter Name: Donald R. Schregardus
Commenter Affiliation: Department of the Navy, Department of Defense
Document Control Number: EPA-HQ-OAR-2006-0790-1947.1
Comment Excerpt Number: 8

Comment: The requirement for energy assessments in the proposed ICI Boiler area source rule is duplicative for government-owned facilities that have had an energy and water evaluation in accordance with §432(f)(3) of the Energy Independence and Security Act (EISA) of 2007.

The actions required of government agencies and facilities by §432 of the EISA of 2007 fully satisfy the intent of EPA in requiring an energy assessment for boilers subject to the ICI Boiler MAC l standards. This section requires all federal agencies to identify feasible energy use reduction projects and report progress in implementing those they pursue. §432 requires that federal agencies:
- Investigate energy reduction projects at facility energy plants and associated buildings and activities.
Evaluate their facility's energy use, including central utility plants and distribution systems and other energy intensive operations.
- Complete, for each calendar year, a comprehensive energy and water evaluation for

approximately 25 percent of the facilities of each agency's central utility plants distribution systems and other energy intensive operations in a manner that ensures that an evaluation of each such facility is completed at least once every 4 years.
Each facilities energy manager may implement any project identified that is life-cycle cost effective.
* Each facility shall use the web-based tracking system that EISA of 2007 requires the agency to implement to certify compliance with the requirements fora energy and water evaluations
o implementation of identified energy and water measures
o follow-up on implemented measures
* This web-based tracking system is available to all federal agencies
In addition to these measures, §433 of the EISA of 2007 sets progressively higher standards for fossil fuel use reductions for new and reconstructed federal buildings. -The buildings shall be designed so that the fossil fuel-generated energy consumption of the buildings is reduced, as compared with such energy consumption by a similar building in fiscal year 2003 (as measured by Commercial Buildings Energy Consumption Survey or Residential Energy Consumption Survey data from the Energy Information Agency), by the percentage specified in the Table Fiscal Year Percentage Reduction found shown in the submittal.

Allow federal facilities which have had a -comprehensive energy and water evaluation" in accordance with §432 (f)(3) of the EISA of 2007 be considered to have completed the energy assessment required by the proposed NESHAP.

Response: We agree and have added in the final rule the provision that an energy assessment completed on or after January 1, 2008 that meets the requirements in Table 2 satisfies the energy assessment portion of this requirement.

Commenter Name: Lisa Beal
Commenter Affiliation: Interstate Natural Gas Association of America
Document Control Number: EPA-HQ-OAR-2006-0790-1919.1
Comment Excerpt Number: 8

Comment: INGAA is very concerned with these requirements and implementation requirements are unclear. For example, the preamble indicates that the assessment applies to "the boiler system" [75 FR 32006], but the implication is that this audit can encompass the entire facility. If the audit is extended to the facility, the burden for this requirement, which could be triggered by a single small boiler, could be excessive. Operator requirements and timing associated with implementing recommendations is unclear – and causes unnecessary ambiguity. While well intentioned, INGAA recommends that efficiency audits and operations and maintenance practices relied on in natural gas transmission and storage systems remain unencumbered by unnecessary regulatory requirements that are "out of place" within this proposed rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Donald R. Schregardus
Commenter Affiliation: Department of the Navy, Department of Defense
Document Control Number: EPA-HQ-OAR-2006-0790-1947.1
Comment Excerpt Number: 10

Comment: We believe the listed requirements for the energy assessment are vague and should be clarified.

The requirements of the energy assessment, as listed in Table 2 of the proposed rule, are unclear as to the scope of the equipment or 'source' to be included in the assessment. The requirements variously refer to 'boiler system,' facility and 'energy consuming system.' A facility could interpret these requirements to cover not only the boilers regulated by the rule but also the distribution systems and even all buildings that use the steam generated by the boilers. The scope of the required assessment will directly impact the costs involved in conducting it.
Clarify the scope of the energy assessment proposed in the rule and ensure the cost estimates are consistent with the scope.

Response: We agree and have clarified the scope of the energy assessment in the final rule. See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Douglas J. Fulle
Commenter Affiliation: Oglethorpe Power Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1798.1
Comment Excerpt Number: 12

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use." 75 Fed. Reg. at 31907. The Agency asserts that, "Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP, emissions." Id. This work practice requirement is an "above the floor" measure that EPA argues is justified in light of the emissions reductions and cost savings that can be realized by identifying and implementing energy efficiency projects.

This proposed requirement is beyond EPA's authority and should not be included in the final rule. To begin, EPA is only authorized under § 112 to regulate "sources" of HAPs. For example, § 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards." (emphasis added). More particularly, § 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs 1 through process changes, substitution of materials or other modifications"; however, this authority is limited in § I 12(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs. Because the proposed energy

assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Douglas J. Fulle
Commenter Affiliation: Oglethorpe Power Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1798.1
Comment Excerpt Number: 13

Comment: EPA proposes in § 63.11194 to define the affected source under this rule to include only "industrial, commercial, and institutional boilers." EPA further proposes to define the terms "industrial boiler," "commercial boiler," and "institutional boiler" to include only boilers and not other parts of the facilities to which the boilers belong. 75 Fed. Reg. at 31931 (proposed § 63.11237). By the very terms of the proposed rule, the affected source category only includes boilers. Thus, the proposed energy assessment requirement is not supportable because it would apply to equipment that is not part of the source category being regulated.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 19

Comment: Table 2 of the proposed rule contains the following requirements for the Energy Assessment:

(1) a visual inspection of the boiler system,
(2) establish operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints,
(3) identify major energy consuming systems,
(4) a review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage,
(5) a list of major energy conservation measures,
(6) the energy savings potential of the energy conservation measures identified, and
(7) a comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.

Dow recognizes the value of an energy assessment and has performed several with the DOE Save Energy Now program. The vast benefit of that analysis is in focusing on the boiler steam plant and related systems. Energy utilization within industrial facilities can become very

complex and highly integrated. Such integration is necessary in today's highly competitive environment. It often can present one of the few advantages a company has against domestic or foreign competitors.

As such, the energy assessment should not focus on consuming systems but should focus on a steam plant and associated steam system. An assessment including steam production capabilities, profiles, and operating rates would encompass a sufficient envelope to identify energy reduction opportunities.

Dow proposes the following change to paragraph (3) of Table 2 of subpart JJJJJJ:

(c) (original) identify major energy consuming systems.
(c) (proposed) identify major energy producing systems and profile.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 20

Comment: Energy performance of facilities strongly depends on equipment configuration, equipment performance, and fuels fired. If these parameters do not change from the time an energy assessment was conducted to the time the Initial Compliance energy assessment report is submitted, the report would be representative of an accurate depiction of the facility.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1947.1, Excerpt Number 8.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 21

Comment: A Steam or Process Heating Energy Assessment Conducted Under DOE's Save Energy Now Program Should Be An Acceptable Energy Assessment Required by this Proposed Rule.

Section 63.11237 provides the following definition:

Energy assessment means an in-depth assessment of a facility to identify immediate and long-term opportunities to save energy, focusing on the steam and process heating systems which

involves a thorough examination of potential savings from energy efficiency improvements, waste minimization and pollution prevention, and productivity improvement.

The Department of Energy (DOE) performs Save Energy Now energy assessments under their Industrial Technologies Program. These assessments have been conducted for a wide range of industries such as glass, metals, textiles, steel, forest products, and chemicals. These assessments are conducted by Qualified Specialists trained in best practice assessments using analysis software tools to identify efficiency improvement systems. The Save Energy Now assessment identifies short and long term opportunities to save energy, focuses on steam and process heating systems and conducts an in-depth analysis of savings opportunities - all of which minimize waste and improve productivity. These attributes are aligned with the referenced definition. The DOE Save Energy Now steam and process heating assessments should be acceptable for fulfilling the requirements of an energy assessment defined for this proposed rule. Thus, Dow comments that the definition of "Energy Assessment" should be expanded as follows:

Energy assessment means an in-depth assessment of a facility to identify immediate and long-term opportunities to save energy, focusing on the steam and process heating systems which involves a thorough examination of potential savings from energy efficiency improvements, waste minimization and pollution prevention, and productivity improvement. (Add following sentence) This definition includes the Save Energy Now steam or process heating assessments administered by the Department of Energy (DOE) Industrial Technologies Program.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1947.1, Excerpt Number 8.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 52

Comment: EPA's authority under § 112 is to establish NESHAPs for combustion units at area sources. By its own terms, the rule covers "affected sources" defined as all existing and new ICI boilers and process heaters located at area sources. The "affected source" regulated by this NESHAP is the specified emission unit – boilers– not the area source location of the emission unit. This is consistent with the long-established understanding of the term "affected source" as it relates to the "major source" where the affected source is located. See preamble to rule establishing the General Provisions for all NESHAPs, 59 FR 12408, 12412-13 (March 16, 1994) (General Provisions).

Limiting the regulation to the affected source is also consistent with Congress's general statutory scheme, under which EPA is to publish a list of "all categories and subcategories of major sources and area sources" of the listed HAP (§ 112(c)(1)). EPA's published list of source categories groups every conceivable type of industrial process and process unit into a category, each of which is regulated by its own NESHAP, each published as a separate Subpart to 40 CFR Part 63. Therefore, any § 112 source other than the boiler and process heater affected units for

this NESHAP is covered separately by another NESHAP. The statutory scheme does not assign duplicative source category regulations for the same unit.

Since 1992, the sources to be regulated relevant to this rule have been "industrial boilers" and "commercial/institutional boilers." 57 FR 31591. In this rule, EPA defines each of these sources. An industrial boiler is "a boiler used in manufacturing, processing, mining, and refining or any other industry to provide steam, hot water, and/or electricity." A commercial/institutional boiler is "a boiler used in commercial establishments or institutional establishments such as medical centers, research centers, institutions of higher education, hotels, and laundries to provide electricity, steam, and/or hot water." 75 FR 31931.

However, EPA's proposal extends well beyond regulation of "sources" and compels regulated entities to investigate, monitor and report activity at facilities unregulated by § 112 or even by the CAA. EPA proposes to require the assessment be made "on the boiler and the facility." 75 FR 31901. "Facility" is a term not defined in the proposed rule, however, by its context it is clear that EPA means the assessment to cover elements are not part of the affected § 112 emission unit – the boiler. This is evident from how EPA formulates the requirement in another section of the proposal:

For owners or operators of existing area source facilities having a boiler with a heat input capacity of 10 MMBtu/h or greater and subject to this rule, we are proposing that you submit to the delegated authority or EPA, as appropriate, documentation that the energy assessment was performed and the cost-effective energy conservation measures identified.

75 FR 31902. EPA views its authority to cover anything at the facility where an affected source is located. The source category, however, is the area source boiler, not the facility.

The proposal further requires sources to consider, inter alia, the "operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints . . .;" "major energy consuming systems;" "available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage . . .;" and to identify " major energy conservation measures." 75 FR 32014. EPA's authority is limited to setting emission limits for the affected combustion unit and does not extend to non-§ 112 sources, nor to the "facility." What EPA requires goes far beyond its authority.

The practical effect of the proposal is that, under the guise of reducing HAP emissions from boilers, area sources, many of these small entities, will have to conduct broad reviews of building design and operations to seek ways to reduce energy use. The assessment is applicable not to the boiler at the entity, but to the entity itself. The entity is not an "affected source" but rather a facility at which emission sources are located. EPA is not entitled to read into the statute a roving mandate to review any possible unit, system, or opportunity to reduce energy consumption. Weatherization of a building may indeed reduce the demand for heat, but buildings are not subject to § 112.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 55

Comment: EPA states that "[t]he purpose of an energy assessment is to identify energy conservation measures (such as, process changes or other modifications to the facility") that can be implemented to reduce the facility energy demand which would result in reduced fuel use. Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP emissions." 75 FR 31907. The problem with this assertion is that in many cases it is simply not true.

The simple comparison of two boilers – one using coal and one co-firing coal and bark – demonstrates EPA's misdirection on this issue. In this example, an energy efficiency audit would show that a boiler using only coal is more efficient than a boiler using bark and coal. However, a boiler using only coal would have increased emissions.

Reduced energy does not necessarily mean reduced pollutant emissions, even if it means reduced HAP emissions from the boiler. To offer but one specific countervailing example: periodic operation of solid fuel boilers in a highly turned down mode is common among many industrial sectors, as an efficient way to manage manufacturing process energy needs. For example, industrial process boilers in the wood products industry supply steam according to the immediate demand from processes for which they are operated. These boilers operate at widely varying load levels, depending on, among other things, the amount of steam the process equipment is demanding at the time. During high turndown periods the actual HAP emission load should be lower since the total fuel load is reduced from the normal operation. Conversely, however, high CO emissions are a common occurrence to all solid fuel boilers during high turndown operation due to a combination of well-known combustion fundamentals. It is impossible to avoid these countervailing effects. EPA has recognized boiler, or burner, turndown ratio as a factor affecting performance in several contexts. [Footnote: See, EPA, Final Technical Support Document for HWC MACT Standards, Vol. IV, p. 3.6 (July 1999); EPA Region 6 Center for Combustion Science and Engineering, Hazardous Waste Combustion Unit Permitting Manual, Component 1 How to Review a Test Burn Plan, p. D-5.5 (Tetra Tech Jan. 1998).]

Response: As noted, while we do not know the precise reductions that will occur at individual sources, the record indicates that energy assessments reduce fuel consumption and that parties will implement recommendations from an auditor that they believe are prudent. Therefore, the requirement to perform an energy assessment can both be enforced and will result in emission reductions.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1

Comment Excerpt Number: 56

Comment: In addition to a turndown resulting in increased non-HAP emissions from the boiler, in other scenarios, reduced energy could result in increased HAP emissions from other non-combustion processes. In fact, in this proposal, EPA acknowledges that categorical assertions regarding

Teeing energy assessments (EAs) to finite HAP limits implies that the Energy Intensity (EI) of the processes served by the ICI boiler is a static quantity and that the incremental improvement brought about by the implementation of opportunities discovered by the EAs would therefore incrementally reduce HAP emissions. This could not possibly be more incorrect. The EI of a facility depends on many constantly changing factors, including environmental conditions, raw material quality, product output, and others. Further, facilities may have hundreds of different products that are produced in ever-changing combinations. These products may have individual EIs that are one, two, three, or more orders of magnitude different. Thus product mix only further complicates the already dynamic nature of a facility EI. Further, a specific energy improvement opportunity may only affect the production of one specific product or may only apply during certain environmental conditions, and thus its effect would be affected by the same dynamic factors as the overall EI.

EPA has not proposed this concept in any other MACT standard for any other regulated sector, nor should it. Boilers provide a single product—heat—to a tremendous number of consumers in hundreds of different contexts. The product consumed is often in some proximity to the boiler itself, which makes it conceptually appealing for EPA to imagine the efficacy of the "energy assessment." But certainly EPA would never impose such a requirement on other sectors regulated under § 112, because the absurdity of the proposal would be highlighted. For example, we doubt that EPA would ever propose that entities owning surfacing coating facilities for metal furniture (40 CFR § 60.310 et seq.) review their "demand" for such surface coating. EPA has promulgated MACT standards for five different sources common to the phosphate fertilizer industry (40 CFR Subpart T through Subpart X) but would never demand that the phosphate fertilizer industry identify a "more efficient" phosphate fertilizer. Yet less demand for surface coating for metal furniture, and less demand for the chemicals produced by sources regulated under Subparts T through X, would according to EPA's logic reduce the demand for the products produced by sources regulated under section 112, thereby limiting inputs and thereby reducing HAPs. EPA has arbitrarily picked one product out of the thousands produced by sources regulated under § 112 and demanded that regulated entities identify ways to make less of it.

Response: We disagree with the comment that the energy assessment is imposing a requirement to limit production of a product (steam) or an input (fuel). The purpose of the energy assessment is to identify energy conservation measures (within the boiler system and the systems using the boiler energy). If these identified measures are implemented, the result would be a more efficient system and thus less fuel would be combusted and less emission would be emitted. We consider an energy assessment to be pollution prevention.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 60

Comment: If EPA Decides to Require an Energy Assessment, Several Features Should Be Amended, and Cost and Other Beyond-the-Floor Impacts Should Be Analyzed, Which Will Require Notice and Comment.

The assessment should be expressly limited to HAP reductions at the combustion unit of the affected area source, consistent with § 112.

EPA should eliminate its proposed definition of a "boiler system." EPA should further limit the scope of energy assessments to "boiler(s)" as currently defined. It is implicitly understood that a boiler as the affected unit includes the directly associated components relative to fuel feed, heat transfer and recovery, and emissions control systems, since they all in coordinated fashion result in the emissions being controlled.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 63

Comment: A requirement that an energy assessment be conducted for energy systems served by all combustion units that are affected sources would require evaluation of confidential processes and systems. Since these evaluations and resulting information do not reflect the control of HAP emissions, EPA has no authority to require that sources provide this information. Even if EPA were to expressly indicate that such data provided does not constitute emissions data, and may therefore be protected from dissemination as confidential business information (CBI), this approach still does not resolve EPA's lack of authority to compel its submission in the first instance. In addition, CBI protections are not absolutely protective of sensitive data, as they are discretionary and always subject to evaluation and reevaluation by EPA.

Although current CAA CBI regulations permit a source to designate information provided to EPA as CBI, the type of information EPA proposes to compel companies to report here is, by legal definition, CBI. 40 CFR § 2.301(e) (allowing information to be designated as trade secret, proprietary or company confidential). Therefore, EPA should not permit competitors to force reporting entities to defend the nature of this data in an agency CBI proceeding. Whether such information constitutes CBI should not be assessed on a case-by-case basis. Instead, it should be given categorical protection because the entire class of information EPA is seeking here constitutes CBI, it is not emissions data and its collection is outside EPA's § 112 authority. If energy assessments are required, this CBI issue can be partly avoided by not requiring

submission of energy assessments, but only have them available at the facility for inspection by EPA or the regulatory authority.

Response: In the final rule, the energy assessment is not required to be submitted to EPA or the permitting agency. The final rule requires that the permitting agency be notified that the energy assessment has been conducted according to the requirement in the final rule. The facility is required to keep records that the work practices and management practices were complied with.

Commenter Name: Sharene Shealey
Commenter Affiliation: RRI Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1839.1
Comment Excerpt Number: 2

Comment: EPA lacks authority to require a one time facility-wide Energy Assessment as required in §63.11215. Under CAA §112(h)(1), the authority of EPA is limited to, "...design, equipment, work practice, or operational standard, or combination thereof, which in the Administrator's judgment is consistent with the provisions of subsection (d) or (f) of this section." The requirement to perform a one time energy assessment of all energy consuming systems at the facility does not meet this threshold. There is no action required in the proposed rule that would correlate the energy assessment of an entire facility to the emissions of an individual unit. We do not believe the requirement to perform an energy assessment will lead to EPA's stated goal of improving combustion efficiency, and particularly in the context of a power plant, performing this on a facility-wide basis will be a very costly and resource intense endeavor. This requirement must be removed from the final rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 5

Comment: The text of the requirement (Table 2, Item 2, subparagraphs 2, 3, and 4) reference the entire facility's energy system. This rule's applicability is limited to specific emission units, namely boilers and process heaters. The inclusion of language extending the applicability of this energy assessment to the entire facility would add significant effort and costs to the completion of this requirement. This extends the applicability of this regulation considerably beyond the defined scope provided throughout the regulation. As such, INVISTA recommends that Table 2, Item 2 be deleted in its entirety. If not eliminated EPA should significantly revise the text of Table 2, Item 2 to clearly limit this assessment to the affected emission unit and not the entire facility.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 6

Comment: Table 2, Item 2, Subitem 7 requires "a comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments." This report will be providing information on energy systems that may be considered Confidential Business Information (CBI) as this can be used to derive significant portions of a facility's cost basis to produce a product.

Energy inputs (e.g., quantity of steam, quantity of other energy consumed, etc.) for the manufacture of goods can be used by competitors to calculate a site's "cost to produce" a good. The report will also identify energy conservation measures with associated energy improvements, which could represent a competitive advantage for each facility. Such in-depth knowledge is considered Confidential Business Information. Under current regulation, such detailed information often meets the criteria to substantiate confidentiality claims under 40 CFR 2.208. Submittal of this information, even with the protections under 40 CFR 2.203(b), places it at risk of discovery by competitors.
Additionally, submittal of this information is not necessary for the effective implementation of this regulation. EPA appears to be interested in the results of the assessment and implementation of the action items. EPA should allow the sites to retain the report on-site for EPA and other agency review. These assessments will still be available to the agencies, but, will ensure that the Confidential Business Information contained in these assessments cannot be acquired by competitors.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 63.

Commenter Name: Renee Lesjak Bashel
Commenter Affiliation: Small Business Environmental Assistance Programs, SBEAP
Document Control Number: EPA-HQ-OAR-2006-0790-2195.1
Comment Excerpt Number: 6

Comment: Recommendation: Eliminate the need for a one-time energy assessment and composition of a comprehensive report for units below 100 MMBTU/hr.

The requirement of the performance of a one-time energy assessment and composition of a comprehensive report, without the delegation of any kind of enforcement authority, are nothing more than academic exercises. It is costly as well as time consuming, with little demonstrated environmental benefit for smaller operations. Because 100 MMBTU/hr is already used as a

threshold for applying more stringent requirements in this rule, this would be a reasonable threshold for limiting the need for an energy assessment. In a setting where units of this size are necessary for plant or process heat, it is more likely to be of a size that the operation can afford and will see real improvements from performing such an assessment.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: James P. Brooks
Commenter Affiliation: Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1915.1
Comment Excerpt Number: 7

Comment: We also recommend that a one-time energy audit be required for all boilers, and that owners and operators be required to implement measures with payback periods of two years or less.

Response: As stated in the proposal, since there was insufficient information to determine if requiring implementation of cost-effective measures were economically feasible, we requested comment on this point. We did not receive during the public comment period any information to determine economic feasibility.

Commenter Name: Jeffery S. Hannapel
Commenter Affiliation: National Association for Surface Finishing
Document Control Number: EPA-HQ-OAR-2006-0790-1840.1
Comment Excerpt Number: 9

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use." 75 Fed. Reg. at 31907. The Agency asserts that, "[r]educed fuel use will result in a corresponding reduction in HAP, and non-HAP, emissions." Id. This work practice requirement is an "above the floor" measure that EPA argues is justified in light of the emissions reductions and cost savings that can be realized by identifying and implementing energy efficiency projects.

This proposed requirement is beyond EPA's CAA authority and should not be included in the final rule. To begin, EPA is only authorized to regulate "sources" of HAPs. EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing … standards." More particularly, EPA may establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications." CAA §112(d)(2)(A). This authority is, however, limited to setting standards regulating "sources in the category or subcategory to which such emission

standard applies." The term, "source," unambiguously means something that actually emits HAPs. Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."

In addition, EPA defines the affected source under this rule to include only "industrial, commercial, and institutional boilers." EPA further proposes to define the terms, "industrial boiler," "commercial boiler," and "institutional boiler," to include only boilers and not other parts of the facilities to which the boilers belong. 75 Fed. Reg. at 31931 (proposed 40 CFR § 63.11237). By the very terms of the proposed rule, the affected source category only includes boilers. The proposed energy assessment requirement is not supportable because it would apply to equipment that is not part of the source category being regulated.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Britt S. Fleming
Commenter Affiliation: Auto Goup
Document Control Number: EPA-HQ-OAR-2006-0790-1916.1
Comment Excerpt Number: 9

Comment: From a practical standpoint, the proposed energy assessment requirement is wholly unnecessary given that most companies are constantly looking at ways to improve energy efficiency and lower utility costs. In addition, companies are often involved in state and federal programs to promote more efficient operating and manufacturing practices. Any regulatory requirements that mandate companies to re-engineer their manufacturing systems will place a significant burden on an already weak economy and could force some companies into bankruptcy through direct costs or reduced competitiveness.

For these reasons, EPA must delete the proposed energy assessment requirement from §§ 63.7530(e) and 63.7550(g) and from Table 3 in the final rule.

Response: The final rule has not been revised to require implementation of the findings of the energy assessment.

Commenter Name: Stephen E. Woock
Commenter Affiliation: Weyerhaeuser Company
Document Control Number: EPA-HQ-OAR-2006-0790-1984.1
Comment Excerpt Number: 11

Comment: EPA proposes an "above the floor" requirement, but which it would implement — incongruous as a work practice, to require facilities to conduct energy assessments. EPA's

concept is in general, that by identifying cost-effective energy conservation measures, HAP emissions would be reduced if some of the measures are implemented .
Weyerhaeuser stridently opposes this proposed provision. While under the right circumstances there may be some merit to the general concept of conducting energy assessments to identify ways to reduce energy use and thereby reduce HAP emissions, EPA's proposal misses the mark Our reasons for opposing the requirement have nothing to do with energy assessments per se. Conducting assessments of thermal energy system efficiency and identifying opportunities for improvements is a good idea. We engage in energy assessments as a routine and project specific matter, having a long history of conducting and revisiting many such efforts at most, if not all, of our mills. Some of these are done with our own highly experienced energy and process experts, and others in connection with the U.S. DOE. Weyerhaeuser is involved in several governmental, voluntary energy activities and programs and our senior management recently signed a U.S. DOE Save Energy Now LEADER pledge for our pulp and paper operations and our iLevel wood products business.

Our concerns are primarily with the obvious inefficient redundancy of a differently structured non-voluntary process potentially disrupting our internal program just described, and EPA's efforts to mandate a "facility" assessment as part of the requirement which goes clearly beyond the scope of this regulation (i.e., the affected sources subject to the MACT rule) to include the entire facility. We also have concern with the likely difficulty of containing highly confidential business information given the scope of EPA's proposal and the public structure of EPA's reporting requirements and Title V permit requirements for any such air rule, and with EPA's focus on process and preference for third party involvement such as certified "experts" who may have a credential but not the appropriate process experience. Based on our own energy experts' experience and knowledge we also note that EPA has significantly underestimated the potential costs of the assessments the Agency describes. We refer EPA to the AWC and CIBO comments which cover our concerns in more detail and which provide legal and policy rationales explaining why EPA should abandon this provision.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11, DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8, and DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 63.

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 12

Comment: The proposed rule would require all existing affected units to conduct a onetime "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use." 75 Fed. Reg. at 31907. The Agency asserts that, "Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP, emissions." Id. This work practice requirement is an "above the floor" measure that EPA argues

is justified in light of the emissions reductions and cost savings that can be realized by identifying and implementing energy efficiency projects.

This proposed requirement is beyond EPA's authority and should not be included in the final rule. To begin, EPA is only authorized under § 112 to regulate "sources" of HAPs. For example, § 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards" (emphasis added). More particularly, § 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications"; however, this authority is limited in § 112(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs. Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 13

Comment: EPA proposes in § 63.11194 to define the affected source under this rule to include only "industrial, commercial, and institutional boilers." EPA further proposes to define the terms "industrial boiler," "commercial boiler," and "institutional boiler" to include only boilers and not other parts of the facilities to which the boilers belong. 75 Fed. Reg. at 31931 (proposed § 63.11237). By the very terms of the proposed rule, the affected source category only includes boilers. Thus, the proposed energy assessment requirement is not supportable because it would apply to equipment that is not part of the source category being regulated.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 21

Comment: NESCAUM also suggests that EPA include in this rulemaking guidance on the following issues:
* Specific requirements for who should conduct the energy assessment and minimum standards for an acceptable energy assessment. For instance, EPA could require a facility to conduct a fully

implemented assessment as detailed in EPA's Energy Star Facility Assessment Program, or does EPA intend an assessment to include only combustion efficiency testing and a boiler tune-up to meet the standard? NESCAUM recommends that EPA develop minimum standards and areas that must be addressed to meet this requirement.
* Clear language on what must be covered in the energy assessment, including whether the assessment should cover the entire facility or only any unit that affects the boiler. EPA should also clarify if the assessment should examine improvements in facility energy efficiency, boiler energy efficiency, or thermal boiler combustion efficiency.
Requirements for facilities to respond to the energy assessment. For example, NESCAUM suggests that EPA require facilities to implement steps for improvements identified in the energy assessment within a three-year period for any activities that require an investment of less than 3% of gross receipts and have a positive return on investment.

Response: We have clarified in the final rule the definition of an energy assessment, the scope of the assessment, and who can conduct the assessment.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 47

Comment: Tune-up is defined in proposed §63.11237 as "Tune-up means adjustments made to a boiler in accordance with procedures supplied by the manufacturer (or an approved specialist) to optimize the combustion efficiency." However, §63.11222(b) specifies what the tune-up work practices must include and that does not match the proposed definition. Nor does the specified work practice optimize combustion efficiency as the definition requires. The proposed definition should be deleted or changed to match the requirements of §63.11222(b).

The definition of energy assessment in the proposal is "an in-depth assessment of a facility to identify immediate and long-term opportunities to save energy, focusing on the steam and process heating systems which involves a thorough examination of potential savings from energy efficiency improvements, waste minimization and pollution prevention, and productivity improvement." This definition suggests that the assessment must look at waste minimization, pollution prevention and productivity improvements, regardless of whether they impact energy usage. That certainly does not comport with the preamble discussion of this work practice or the cost and burden analysis. If the energy assessment requirement is finalized, this definition should be revised by putting as period after "energy efficiency improvements".

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Matthew Todd and David Friedman

Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 48

Comment: This definition of energy assessment seems to require an audit of all energy sources and consumers, not just steam and hot water generators and consumers. Since this rulemaking only deals with boilers at area sources, there is no justification or legal basis for requiring reviews of other combustion sources at the site, energy consumers or electricity use. Furthermore, the phrase "focusing on steam and process heating systems" adds confusion, since it suggests that space heating and water heating for potable uses are not an important part of the review, even though many of the boilers subject to the review are only used for those purposes. Thus, we recommend the first sentence of the definition should be revised to "an in-depth assessment of a facility to identify immediate and long-term opportunities to reduce steam and hot water production at the site, which involves ..." if this work practice is finalized.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 52

Comment: The specifics of the audit are included in Table 2 of the proposal. The following table lists the requirements and our comments on each. [See submittal for Table]

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 57

Comment: Proposed §63.11215(b) requires submission of the energy assessment report along with a signed certification that the assessment is an accurate depiction of the facility. This is unreasonable. Since this is a facility-wide assessment (not just a boiler assessment) and, based on the requirements for the audit listed in Table 3 of the proposal, this report will contain large amounts of process and operating information that will be Confidential Business Information for every source reviewed. Neither the sources, EPA or State Agencies are equipped to handle such a massive influx of CBI documents. Having to scrub this third party document for CBI and

handling all of these documents after submission under CBI procedures will be a massive undertaking, the costs and burdens of which are not reflected in cost analysis, Information Collection Request or Unfunded Mandates analysis. If this requirement is maintained, we recommend that sources only be required to submit a certification that the assessment was completed and a list of actions that will be implemented as a result.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 63.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 58

Comment: One element of the proposed rule is the requirement for facilities to conduct energy assessments to identify cost-effective energy conservation measures. Most facilities already place significant emphasis on energy efficiency due to its immediate impact on bottom-line financial performance. EPA's proposed requirements for energy assessments will add "process" with little expected benefit for the following reasons:
*It is unreasonable for EPA to attempt to establish any criteria to define what constitutes a cost-effective conservation measure. Making investment decisions should be left entirely to the discretion of the owner/operator of the regulated boilers.

Response: As was proposed, the final rule does not require that the findings of the energy assessment be implemented. The decisions to implement are left entirely to the discretion of the owner/operator of the regulated boilers.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 59

Comment: Mandating that all owner/operators adhere to the ENERGY STAR guidelines places an unreasonable burden on owner/operators and will not guarantee meaningful improvements. The ENERGY STAR guideline is continuously updated and improved without following the formal rulemaking process.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 60

Comment: As written, the proposed rule is overly broad and contains inconsistencies. The proposed management or work practice standards contain vague, open-ended requirements. Energy assessments are described in the preamble as a Beyond-The-Floor option and within the rule as a Management or work Practice Standard. Additionally, EPA has expanded the scope of an energy assessment to include equipment and systems beyond the regulated source category of boilers and process heaters.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Mark Denzler
Commenter Affiliation: Illinois Manufacturers' Association
Document Control Number: EPA-HQ-OAR-2006-0790-2004
Comment Excerpt Number: 4

Comment: EPA proposes to require the affected units covered by this provision to submit documentation that an energy assessment was performed and that cost-effective energy conservations measures were identified. However, the scope of this energy assessment goes beyond the regulated source to include “major energy consuming systems” at the facility. Under EPA’s proposal, regulated entities would be subject to an examination by a third party of not only the affected source itself, but also other unaffected units at the facility. The rule requires the submission of a comprehensive report and facility energy management program. EPA’s authority under Section 112 of the Clean Air Act is to establish National Emission Standards for Hazardous Air Pollutants (NESHAP) at area sources. EPA’s proposal states that the rule covers “affected sources” defined as all existing and new industrial, commercial, and institutional boilers and process heaters located at area sources. The “affected source” regulated by this NESHAP is the specified boiler and process heater emission unit not the area source location of the emission unit. For this reason, EPA should amend its proposal to restrict its scope to the affected units and not include the facility location itself in the regulation.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Robert E. McKenna
Commenter Affiliation: Motor and Equipment Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1920.1
Comment Excerpt Number: 5

Comment: In addition, EPA has overreached in crafting the proposed work practices and "beyond the floor" requirements. The energy assessment and management work practice requirements are too broad, too intrusive, and exceed the scope of EPA's authority for Clean Air Act MACT rules. EPA should more narrowly tailor these requirements.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 5

Comment: EPA should eliminate the one-time energy assessment; it is unnecessary and redundant for sources located at nuclear generating plants, or any electrical generating plant.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1947.1, Excerpt Number 8 and DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Michael A. Livermore
Commenter Affiliation: Institute for Policy Integrity New York University School of Law
Document Control Number: EPA-HQ-OAR-2006-0790-1899.1
Comment Excerpt Number: 7

Comment: Implementation of Cost-Effective Measures Should Be Mandatory

The requirement of an energy assessment should provide net benefits to regulated entities as a whole, as well as substantial environmental and health benefits to the entire country. But in order to ensure that maximum net benefits are reaped, EPA should go further and require implementation of all "cost-effective energy conservation measures." Mandatory implementation is justified regardless of whether EPA continues to use its flawed definition of "cost-effective," or adopts the more economically rational definition discussed above.

The agency has requested comment on whether "requiring implementation of cost-effective measures [is] economically feasible." [Footnote: 75 Fed. Reg. at 32,026.] First, it should be noted that the statutory touchstone for whether EPA should issue this requirement is whether it is "achievable" under Section 112(d). For a range of definitions of "cost-effective," EPA can determine that requiring implementation of "cost-effective energy conservation measures" is, in fact, both achievable and economically feasible. [Footnote: Under CAA §112(h), EPA may exempt sources from requirements under Section 112(d) if the requirement is not feasible. However, given a proper definition of "cost-effective," this should not be an issue.]

As explained above, EPA has currently proposed a definition of “cost-effective” that only includes private costs and benefits. This makes the case for requiring implementation very simple. Given a suitable discount rate and time period for the analysis (discussed above), there will be zero net costs to regulated entities from implementing cost-effective measures. Since there will be zero net costs, the requirement should not pose any burden on regulated entities.

Of course, standard economic theory would suggest that regulated entities (as rational actors) would implement all energy conservation measures that have net private benefits on their own, without any requirement. But as discussed above, firms often fail to take advantage of all opportunities to decrease costs (or increase profits). If EPA issues this requirement, it can be assured that the regulated entities will not let this opportunity pass them by. EPA should take the step to ensure that regulated entities will not blindly comply with the bare minimum of the regulation by filing an energy assessment and then promptly forgetting about it.

Energy Audits Should Be Periodic

The final regulation should also require an energy assessment for new sources several years after they come into existence. The preamble justifies the current lack of this requirement because:

[W]e believe it would not be cost effective because most projected new boilers or process heaters will be installed at existing major source facility which would have already conducted an energy assessment as required by this proposed rule. We also believe that any new greenfield major source facility having boilers or process heaters will be designed to operate with energy efficiency. [Footnote: 75 Fed. Reg. at 32,030.]

While this may or may not be accurate, the distinction between “new” sources and existing sources will diminish over time. After the passage of several years, conditions will change compared to when a new facility was originally designed. Markets and technologies evolve. If interest rates drop (and thus the related discount rates), more projects may become cost-effective. If expected fuel prices increase, the financial return from a given quantity of energy savings will be higher. Existing technologies may become cheaper. New technologies will increase the number of projects to consider. All of these changes mean that new sources may no longer be optimized after several years of operation.

The energy assessments of existing sources will become out of date on a similar timeframe. A new set of cost-effective energy conservation measures could be discovered every few years as a result. Thus, for both new and existing sources, audits should be periodic. This should be achievable at relatively low cost because much of the initial work would be done on the first assessment and would not need to be repeated.

Repeated energy assessments will also provide an easy mechanism for verification and enforcement of the required implementation of previously identified cost-effective conservation measures. If the regulated entity has not implemented their required energy conservation measures, this failure will turn up in subsequent energy assessments.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7.

Commenter Name: Mary Graham
Commenter Affiliation: Charles Metro Chamber of Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-1953.1
Comment Excerpt Number: 7

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use.". While this is true, it will do little to reduce HAP emission for the area source boiler. The affected industry, except where limited by permitted production rates, will most likely use the energy savings to increase production.

Furthermore, this proposed requirement is beyond EPA's authority under § 112 to regulate "sources" of HAPs. For example, § 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards". More particularly, § 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications"; however, this authority is limited in § 112(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs. Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: John C. deRuyter
Commenter Affiliation: DuPont
Document Control Number: EPA-HQ-OAR-2006-0790-1964.1
Comment Excerpt Number: 10

Comment: The scope of the energy assessment is believed to be well outside EPA authority under §112 of the CAA. The problem is that the scope includes the energy consuming systems, and that entails all process equipment utilizing steam. Note that the energy assessment definition (§63.11237) includes reference to "process heating systems" whereas this rule is limited to steam boilers; that definition needs to be corrected to be limited to steam. Most companies already routinely conduct energy assessments and surveys to identify improvements that can reduce energy cost, and they are implemented as economic justification and available capital allow. EPA has no authority to mandate that companies make certain investments based on EPA determined criteria. Requiring submission of assessment information relative to confidential

energy consuming processes is not justified and raises a host of CBI problems. If an energy assessment is included in the final rule, several changes must be included:

1. Limit the scope to the affected sources under this rule, that is, the boiler and its directly associated equipment such as combustion unit, fuel systems, heat recovery devices. Do not extend into the distribution systems or energy using equipment.
2. Allow for use of internal facility/company resources who are familiar with the facility and equipment and do not require use of outside contractors. Certification by outside entities does not ensure practical knowledge or effectiveness and should not be required of personnel.
3. Allow for use of past energy assessments or surveys.
4. Do not require extensive design development in order to determine accurate investment costs, but rather allow facilities/companies to pursue evaluations as most appropriate for them.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11, DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8, and DCN EPA-HQ-OAR-2006-0790-1947.1, Excerpt Number 8.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 11

Comment: The proposed rule, as it stands, will require existing affected units to conduct a one-time energy assessment in order to identify energy conservation measures that can be implemented to reduce the facility energy demand, resulting in reduced fuel use. This proposed requirement is beyond EPA's authority and should not be included in the final rule.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 17

Comment: In the regulation, EPA establishes an energy assessment requirement for existing units with a heat input capacity of 10 million Btu per hour or greater. In addition, the regulation requires sources to submit to the regulatory agency the documentation regarding the energy assessment. However, EPA does not establish a requirement in the rule for implementation of the assessment. NHDES requests that EPA establish criteria and procedures for these assessments in order to clarify this requirement, require the records be kept at the facility (instead of submitting to the permitting agency), and require implementation of the assessment at facilities where the

return on investment (ROI) would be 3 years or less since doing so will result in less fuel burned, the best and most effective way to reduce HAPs.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7.

Commenter Name: Sarah E. Amick
Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 22

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use." 75 Fed. Reg. at 31907. The Agency asserts that, "Reduced fuel use will result in a corresponding reduction in HAP, and non-HAP, emissions." Id. This work practice requirement is an "above the floor" measure that EPA argues is justified in light of the emissions reductions and cost savings that can be realized by identifying and implementing energy efficiency projects.
This proposed requirement is beyond EPA's authority and should not be included in the final rule. To begin, EPA is only authorized under 112 to regulate "sources" of HAPs. For example, 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards" (emphasis added). More particularly, 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications"; however, this authority is limited in 112(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs. Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Sarah E. Amick
Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 23

Comment: In addition, EPA proposes in 63.11194 to define the affected source under this rule to include only "industrial, commercial, and institutional boilers." EPA further proposes to define the terms "industrial boiler," "commercial boiler," and "institutional boiler" to include only boilers and not other parts of the facilities to which the boilers belong. 75 Fed. Reg. at

31931 (proposed 63.11237). By the very terms of the proposed rule, the affected source category only includes boilers. Thus, the proposed energy assessment requirement is not supportable because it would apply to equipment that is not part of the source category being regulated.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 26

Comment: The proposed rule requires all sources to conduct a one-time energy assessment. We are concerned about the practicality of this requirement, given the number of minor sources that exist. EPA states in the preamble that they are aware of two organizations that do this work, but there are thousands of minor sources and major sources subject to this requirement. Additionally, there is language in the requirement that expands the scope from the boiler itself to the "source." In our case, this language is not as critical as it would be for the many manufacturing and institutional facilities covered under this rule. The scope of the study appears to be very broad and EPA's cost estimates per facility appears quite low.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Anna K. Chittum
Commenter Affiliation: American Council for an Energy-Efficient Economy
Document Control Number: EPA-HQ-OAR-2006-0790-2189.1
Comment Excerpt Number: 2

Comment: In general, ACEEE supports the use of energy assessments as a "beyond-the-floor" control measure. We agree that identifying energy efficiency process improvements through an assessment or audit process can lead to emissions reductions as well as reduced operating and maintenance costs. We also agree that an energy management plan can lead to further efficiency improvements and thus emissions reductions.

Response: The EPA thanks the commenters for their support.

Commenter Name: Chelly Reesman
Commenter Affiliation: JR Simplot Company
Document Control Number: EPA-HQ-OAR-2006-0790-2244
Comment Excerpt Number: 2

Comment: EPA has proposed a requirement for all existing facilities to conduct a detailed energy assessment performed by energy professionals or engineers that have expertise that cover all energy using systems, processes, and equipment.
This requirement goes beyond EPA's authority under the Clean Air Act. While EPA has tried to connect "energy efficiency" to a reduction in fuel consumption by assuming a reduction in emissions, the assumed decrease in emissions has not been quantified. If a source is meeting the emission limits, the energy efficiency status of the source is immaterial.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1
Comment Excerpt Number: 2

Comment: We applaud inclusion of a facility energy assessment as a beyond-the-MACT-floor requirement under the rule for applicable large units (10 million Btu per hour or greater). We concur that an energy assessment is an appropriate control technology under the Clean Air Act Sec. 112(d)(2) that would help reduce HAP emissions while delivering other environmental, health, energy, and economic benefits.

Response: The EPA thanks the commenters for their support.

Commenter Name: Michael Hutcheson
Commenter Affiliation: Ameren Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2012.1
Comment Excerpt Number: 3

Comment: US EPA requests comments on the Area Source Boiler MACT's proposed requirement to conduct an energy assessment to identify cost-effective energy conservation measures and whether or not it is economically feasible to require that cost-effective measures be identified. Ameren believes that US EPA overstates the potential benefits of energy efficiency audits because in and of themselves, they provide no actual emission reductions and no actual fuel savings. Energy audits only provide energy, fuel and emissions benefits if the source implements the measures identified. US EPA overestimates the number of facilities that would benefit from efficiency measure upgrades based on a study done by the US DOE. However, the US DOE study includes in its top recommendations fuel switching from NG to fuel oil. This results in the use of a lower cost fuel and also results in higher fuel consumption from fuel oil combustion. Implementing this recommendation would therefore result in an increase in HAP emissions. This "energy efficiency" project was actually proposed during the course of the US DOE study 18 times. Furthermore, requiring facilities to conduct energy audits will not provide any benefits whatsoever if the Facilities do not implement any of the energy efficiency

projectsthat might be identified. In addition, US EPA ignores the potential for such projects to result in increases in CO_2 emissions as a result of increased energy efficiency. Should US EPA revise the proposed MACT to require that Facilities implement all cost effective energy conservation measures, larger Facilities and sources may find themselves subject to PSD requirements for greenhouse gases since projects which increase efficiency would constitute construction projects and because they result in more efficient combustion, they will result in higher potential CO_2 emissions.

US EPA contends that an energy assessment is an appropriate above the floor control technology because CAA 112(d) states that "Emission standards promulgated ...and applicable to new or existing sources ...is achievable... through application of measures, processes, methods, systems or techniques including but not limited to measures which ... reduce the volume of, or eliminate emission of such pollutants through process changes, substitution of materials or other modifications. However, consistent with the discussion above, the energy audit itself cannot be considered a process change, substitution of material or any other modification. It does not reduce the volume of, or eliminate emissions of such pollutants in any way. Only the energy efficiency measures themselves can be considered to meet that definition not the audit required by the proposed Area Source Boiler MACT.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7.

Commenter Name: Marilyn Crockett
Commenter Affiliation: Alaska Oil and Gas Association
Document Control Number: EPA-HQ-OAR-2006-0790-2212.1
Comment Excerpt Number: 3

Comment: EPA's requirement for an energy assessment as a "beyond the floor control technology" is unnecessary. Boilers requiring an energy assessment are already subject to emissions standards representative of the best controlled sources. Such sources are very likely already implementing the most common energy efficiency best practice identified by EPA in the preamble, i.e., "simply tuning the boiler to the manufacturer's specification."

Response: We disagree that the energy assessment is unnecessary for boilers already subject to emissions standards representative of the best controlled sources. The best performing units may have the best emission controls but they may not be the most energy efficient.

Commenter Name: Robert Thornton
Commenter Affiliation: International District Energy Association
Document Control Number: EPA-HQ-OAR-2006-0790-2169.1
Comment Excerpt Number: 3

Comment: The scope of the required energy assessment exceeds EPA's authority under the Clean Air Act

IDEA actively supports energy efficiency as a tool to achieve national goals for reduction in fuel consumption, emissions reductions and improvement in energy security. IDEA members have implemented many projects to improve the energy efficiency of our facilities as well as customer facilities. However, the energy assessments proposed as a beyond-the-floor option exceeds EPA's authority, cannot be practically implemented by all sources operating district energy systems, and should not be included in the final rule.

EPA is only authorized under § 112 to regulate "sources" of HAPs. For example, § 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards" (emphasis added). More particularly, § 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications"; however, this authority is limited in § 112(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs.

Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources." In the case of a district energy system, the energy assessment appears to extend beyond the physical plant boundaries and to customers of the district energy system. Owners or operators of district energy systems may not have the authority to complete such an assessment of customer facilities.

The proposed assessment is not an "emission standard" and thus EPA is not legally authorized to either require such an assessment or to compel regulated facilities to implement measures identified in such an assessment. EPA has not demonstrated the relationship of such assessments to HAP reduction, and has provided no data demonstrating such a relationship. Potential energy and cost savings from the energy assessments can't be reliably projected. Further, the assessment will require sources to submit data that may constitute confidential business information.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 63.

Commenter Name: Shelley Schneider
Commenter Affiliation: Nebraska Department of Environmental Quality
Document Control Number: EPA-HQ-OAR-2006-0790-2021.1
Comment Excerpt Number: 3

Comment: NDEQ applauds EPA for including the beyond the floor requirement for existing sources to conduct a one-time energy assessment. We agree with EPA that the information gathered during the assessment could provide valuable infonnation toward energy efficiency and conservation. We suggest EPA require sources to implement the cost effective energy conservation measures identified in the assessment. We agree with EPA's definition of an energy conservation measure as a measure with a payback period of two years or less as utilized in the Energy Policy and Conservation Act.

Response: EPA thanks the commenter for their support.

Commenter Name: Lisa Jacobson
Commenter Affiliation: Business Council for Sustainable Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1991.1
Comment Excerpt Number: 3

Comment: The BCSE, in past comments and policy recommendations to EPA and Congress, has long supported the use of energy efficiency measures to achieve pollution reductions. The Council applauds EPA for its intention to include such measures in the Boiler NESHAP rules and urges the Agency to closely consider the technical comments submitted by BCSE members to make such measures practical and effective. The Council encourages the EPA to continue to consider enhancements in energy efficiency as a cost-effective, commonsense means to reduce air pollution throughout its work to implement the Clean Air Act.

Response: EPA thanks the commenter for their support.

Commenter Name: George M. Israel
Commenter Affiliation: Georgia Chamber of Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-1996.1
Comment Excerpt Number: 4

Comment: It is generally well accepted, even in past statements issued by the EPA, that when managed in a sustainable manner the use of biomass to generate electricity results in no net emissions of carbon dioxide to the environment. Thus, biomass is a powerful tool in reducing greenhouse gas emissions from the domestic energy sector.

Response: We thank the commenter on his opinion of the benefit of biomass combustion.

Commenter Name: Debra J. Jezouit
Commenter Affiliation: The Class of '85 Regulatory Response Group
Document Control Number: EPA-HQ-OAR-2006-0790-1986.1
Comment Excerpt Number: 4

Comment: EPA Does Not Have the Authority to Require a Facility-Wide Energy Assessment The Proposed Rule would require an owner or operator of a Boiler to complete a one-time energy assessment to identify cost-effective energy conservation measures for the facility where the Boiler is located. EPA does not have the authority under section 112 to go beyond the sources listed in a source category and impose requirements on other aspects of a facility. [EPA

seeks comment on whether it should require facilities to implement the measures identified by the proposed assessment. Any attempt by the Agency to do so would far exceed its authority under section 112 of the Act.] Accordingly, the Class of '85 requests that EPA eliminate this requirement from the final rule.

EPA is a federal agency; it has no constitutional or common law existence or authority, but only those authorities conferred upon it by Congress. "It is axiomatic that an administrative agency's power to promulgate legislative regulations is limited to the authority delegated by Congress." [Michigan v. EPA, 268 F.3d 1075, 1083 (D.C. Cir. 2001).] "If there is no statute conferring authority, a federal agency has none." [ID.] Section 112 of the Act is designed to limit HAP emissions from specific emissions units that are listed under section 112(c)(1). Specially, EPA is required to promulgate "emissions standards under subsection (d)" for each category and subcategory listed under section 112(c)(1). [For area sources, EPA may chose an alternative method for setting emissions standards. 42 USC section 7412(d)(5).] The methodology for establishing emissions standards for each source category is laid out in section 112(d); [42 U.S.C. section 7412(c)(2)] it authorizes the Agency to promulgate "[e]missions standards...applicable to new or existing sources." [42 U.S.C. section 7412(d)(2).] Under the Proposed Rule, "[t]he affected source is the collection of all existing boilers within a subcategory located at an area source facility or each new boiler located at an area source facility." [75 Fed. Reg. 31896, 31901(emphasis added).]The affected source clearly does not encompass the entire facility at which a Boiler is located. Accordingly, section 112 does not provide EPA with the authority to promulgate a requirement to conduct a facility assessment that goes beyond the sources in the listed source category. [42 U.S.C. § 7412(c)(2).] ['For area sources, EPA may chose an alternative method for setting emissions standards. 42 USC § 7412(d)(5).] [42 U.S.C. § 7412(d)(2).] [75 Fed. Reg. 31896, 31901(emphasis added)].

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Winslow Sargeant
Commenter Affiliation: U.S. Small Business Administration
Document Control Number: EPA-HQ-OAR-2006-0790-2020
Comment Excerpt Number: 4

Comment: EPA Should Not Have Proposed the Energy Audit Requirement.

EPA has also proposed requiring major sources to perform an "energy audit" of their boiler and related operations to identify potential energy efficiency improvements. The SERs were concerned with work practice standards that would require costly energy audits and implementation of audit findings. These concerns rested upon the uncertainty of the potential costs and the lack of standardized energy audit criteria. In addition, the SERs commented that it was unclear whether these energy audit requirements for small sources would deliver significant emission reductions beyond those achieved with the annual tune-up requirement. [Footnote: SBAR Report at 17.] Advocacy's continuing concern about this proposed requirement stems from current uncertainty about the scope and cost of these audits, and whether there are sufficient

auditors to complete the audits within the required timeframe. Because EPA's concept of an "energy audit" for Clean Air Act purposes may not be the same as an energy audit conducted under the auspices of the Department of Energy, EPA should clarify (1) what is required in an audit, (2) the anticipated benefit of an audit, and (3) what an audit should cost, considering the size and complexity of a given boiler.

Response: In the final rule, we have clarify what is required in the assessment and the costs for different size facilities.

Commenter Name: Anna K. Chittum
Commenter Affiliation: American Council for an Energy-Efficient Economy
Document Control Number: EPA-HQ-OAR-2006-0790-2189.1
Comment Excerpt Number: 4

Comment: While the "Energy Star Facility Energy Management Assessment Matrix" is an excellent set of broadly applicable guidelines, many facilities have already developed energy management plans using similar guidelines that are more appropriate for their facilities. In such cases, we note that the existing in-house energy management plans may yield better emissions reductions than a new Energy Star-based plan developed simply as a response to this proposed rule.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: James L. Kavanaugh
Commenter Affiliation: Missouri Department of Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2251
Comment Excerpt Number: 4

Comment: Though the proposal requires a one-time energy assessment and preparation of a comprehensive report, it does not require the facilities to act on the findings of the report. Nor does the proposal indicate how the delegated authority would enforce this energy assessment requirement. The EPA should clarify the follow up actions to be taken in response to the potentially costly and time-consuming energy assessment requirements, both on the part of the facilities and the delegated enforcement authority.

Response: See preamble for response to comments on the energy assessment requirement.

Commenter Name: Scott Manley

Commenter Affiliation: Wisconsin Manufacturers and Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-2258.1
Comment Excerpt Number: 4

Comment: EPA has overreached in crafting the proposed work practices and "beyond the floor" requirements. The energy assessment and management work practice requirements are too broad, too intrusive, and exceed the scope of EPA's authority for CAA MACT rules. EPA should more narrowly tailor these requirements.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: David M. Kiser
Commenter Affiliation: International Paper Company
Document Control Number: EPA-HQ-OAR-2006-0790-1924.1
Comment Excerpt Number: 5

Comment: An energy assessment for oil fired units is not warranted for the size and type of boilers located at International Paper's area source locations. The typical boiler within the International Paper boiler fleet (for area sources) fires a combination of natural gas and oil and is less than 25 MMBtu per hour. EPA's proposed energy assessment requirement will add no energy saving value to the company but instead will add cost and administrative burden and will only serve to create new avenues for public dissemination of sensitive and business confidential information. Energy efficiency of processes is directly related to cost structure and is highly confidential as a result. Dissemination of this type of information would jeopardize competitive advantages, and certainly should not be a regulatory requirement. There is no value to the provision and it should be deleted from the proposed rule. International Paper fully supports the comments made by AF&PA which provide additional detail regarding our concerns.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 63.

Commenter Name: A. Steven Young
Commenter Affiliation: Association of Independent Corrugated Converters
Document Control Number: EPA-HQ-OAR-2006-0790-1994.1
Comment Excerpt Number: 5

Comment: In addition, EPA has overreached in crafting the proposed work practices and "beyond the floor" requirements. The energy assessment and management work practice requirements are too broad, too intrusive, and exceed the scope of EPA's authority for CAA MACT rules. EPA should more narrowly tailor these requirements.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Winslow Sargeant
Commenter Affiliation: U.S. Small Business Administration
Document Control Number: EPA-HQ-OAR-2006-0790-1950.1
Comment Excerpt Number: 6

Comment: EPA has also proposed requiring major sources to perform an "energy audit" of their boiler and related operations to identify potential energy efficiency improvements. The SERs were concerned with work practice standards that would require costly energy audits and implementation of audit findings. These concerns rested upon the uncertainty of the potential costs and the lack of standardized energy audit criteria. In addition, the SERs commented that it was unclear whether these energy audit requirements for small sources would deliver significant emission reductions beyond those achieved with the annual tune-up requirement. [SBAR Report at 17] Advocacy's continuing concern about this proposed requirement stems from current uncertainty about the scope and cost of these audits, and whether there are sufficient auditors to complete the audits within the required timeframe. Because EPA's concept of an "energy audit" for Clean Air Act purposes may not be the same as an energy audit conducted under the auspices of the Department of Energy, EPA should clarify (1) what is required in an audit, (2) the anticipated benefit of an audit, and (3) what an audit should cost, considering the size and complexity of a given boiler.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: John Ledger
Commenter Affiliation: Associated Oregon Industries
Document Control Number: EPA-HQ-OAR-2006-0790-2024.1
Comment Excerpt Number: 6

Comment: EPA has overreached in crafting the proposed work practices and "beyond the floor" requirements. The energy assessment and management work practice requirements are too broad, too intrusive, and exceed the scope of EPA's authority for CAA MACT rules. EPA should more narrowly tailor these requirements.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: William Rogers
Commenter Affiliation: DTE Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2159.1

Comment Excerpt Number: 6

Comment: DIE Energy opposes the proposed energy assessment under subpart 112 NESHAP rule as not appropriate or justified. The proposal would require an audit of a facility's entire energy consumption spectrum, including energy usage that is not associated with the facility boiler that is subject to the standard.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Myra C. Reece
Commenter Affiliation: South Carolina Department of Health and Environmental Control
Document Control Number: EPA-HQ-OAR-2006-0790-1859.1
Comment Excerpt Number: 7

Comment: The EPA is explicit in its intent to require an energy assessment for the "boiler system" and not the "boiler" itself. The EPA differentiates "boiler" and "boiler system" in the definitions provided in 63.11237 in order to include "energy consuming systems" in the energy assessment. The EPA believes that an energy assessment is an appropriate "beyond-the-floor" control technology because it is one of the measures identified in Section 112(d)(2) of the CAA. The CAA section 112(d)(2) states that "Emission standards promulgated...and applicable to new or existing sources...is achievable...through application of measures, processes, methods, systems or techniques including, but not limited to measures which...reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications..." However, the CAA section 112(d)(2) clearly states that the promulgated standards apply to the "...category or subcategory to which such emission standard applies..." We question whether requiring an energy assessment for energy consuming systems that are not part of the defined source category or subcategory is consistent with how the EPA has historically implemented the CAA section 112. It appears the EPA may be using this as an attempt to regulate greenhouse gases through using the CAA section 112(d)(2) for hazardous air pollutants.

The EPA has consistently determined that a defined affected source subject to a 40 CFR 63 standard cannot simultaneously be subject to another 40 CFR part 63 standard. Even the Area Source Boiler Rule exempts certain sources already subject to other 40 CFR part 63 standards (63.11195). Some of the energy consuming systems present at facilities subject to this rule are already subject to and complying, or will be complying, with existing 40 CFR part 63 standards. As an example, combustion devices regulated under 40 CFR 63 Subpart VVVVVV — National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources, may be considered an energy consuming system under the Area Source Boiler Rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Duane Mummert

Commenter Affiliation: South Carolina Chamber of Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-2247
Comment Excerpt Number: 7

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use.". While this is true, it will do little to reduce HAP emission for the area source boiler. The affected industry, except where limited by permitted production rates, will most likely use the energy savings to increase production. Furthermore, this proposed requirement is beyond EPA's authority under § 112 to regulate "sources" of HAPs. For example, § 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards". More particularly, § 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications"; however, this authority is limited in § 112(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs. Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11. In addition, the requirement to conduct an energy assessment is applicable to only area sources having an large affected boiler.

Commenter Name: Paul Lyskava
Commenter Affiliation: Pennsylvania Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-2223.1
Comment Excerpt Number: 7

Comment: We also recommend the elimination of the proposed energy audit requirements that are not needed or justified.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 8

Comment: SOCMA urges EPA to reconsider its proposed one-time energy assessment for existing area source facilities with a boiler that has a heat input capacity equal to or greater than 10 MMBtu/hour. Such an assessment could be particularly burdensome for area sources.

Response: See preamble for response to comments on the energy assessment requirement.

Commenter Name: Myra C. Reece
Commenter Affiliation: South Carolina Department of Health and Environmental Control
Document Control Number: EPA-HQ-OAR-2006-0790-1859.1
Comment Excerpt Number: 8

Comment: The EPA proposes that existing area sources with affected boilers undergo a one-time energy assessment by "qualified personnel" on the boiler system to identify cost-effective energy conservation measures. The EPA considers the pollution prevention and energy conservation measure of an energy assessment/audit a "beyond-the-floor" option for HAP emissions. We believe that requiring a one time-time energy assessment, without requiring implementation of the assessment recommendations, does not constitute a "beyond-the-floor" option for HAP emissions because the assessment alone does not result in any emission reductions.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 9

Comment: SOCMA questions the legitimacy of imposing this requirement (one-time energy assessment for existing area source facilities) facility-wide. The text of the proposed rule speaks exclusively of “affected sources,” which it defines as “the collection of all existing [or “each new”] industrial, commercial, and institutional boiler[s] located at an area source.” [Footnote: Proposed 40 C.F.R. § 63.11194(a).] Only when one turns to Table 2 does one find, buried within the subparagraphs of Paragraph 2, references to “the facility,” a term not defined or, indeed, otherwise used in the proposed rule. SOCMA submits that the rule, as drafted, does not actually authorize such broad applicability.

Legalities aside, the fact remains that every other aspect of the proposal applies solely to boilers, while this assessment applies to the entire facility. Why? The cost implications of such an overreaching assessment could be very significant. For example, a facility could be enormous, yet have sufficiently small HAP emissions that it qualifies as an area source. Such a facility, where boilers are a very small aspect of overall operations, would be disproportionately burdened by this proposal.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Myra C. Reece
Commenter Affiliation: South Carolina Department of Health and Environmental Control
Document Control Number: EPA-HQ-OAR-2006-0790-1859.1
Comment Excerpt Number: 9

Comment: In Table 2 of the rule, the EPA proposes that sources with existing affected boilers with a heat input capacity of 10 million Btu per hour or greater must have an energy assessment conducted. In the preamble, in section V.D.1.b [75 FR 31907], the EPA states that "existing area source facilities with a boiler that has a capacity equal to or greater than 10 million Btu per hour for mercury and POM include the requirement of a performance of an energy assessment to identify energy conservation measures." However, further in the same section, the EPA states "therefore, we are proposing to require all existing sources to conduct a one-time energy assessment..." The EPA needs to clearly identify which boilers need to conduct an energy assessment.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Pamela F. Faggert
Commenter Affiliation: Dominion
Document Control Number: EPA-HQ-OAR-2006-0790-2257.1
Comment Excerpt Number: 9

Comment: We question the need and appropriateness of the proposed requirement for facility-wide energy assessments as part of a MACT rulemaking. Under the proposed rule, one affected boiler will trigger an entire facility-wide energy assessment/audit. It is over-reaching to require a facility-wide energy audit as part of a rule aimed at small, relatively insignificant boilers and process heaters. At most, energy efficiency audits should be limited to affected boilers or heaters and their related equipment/systems. Furthermore, while we believe energy efficiency improvements should be encouraged, these efforts should follow the currently evolving path under GHG regulation rather than being integrated into a NESHAP/MACT. Also, voluntary Energy STAR program guidelines should not be used as a basis to establish regulatory criteria for energy audits and efficiency measures.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Lewis F. Gossett
Commenter Affiliation: South Carolina Manufacturers Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-2196.1
Comment Excerpt Number: 11

Comment: The proposed energy audit requirement is beyond EPA's authority under 112 to regulate "sources" of HAPs. For example, 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards". More particularly, 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications"; however, this authority is limited in 112(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs. Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Michael Wagner
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2271
Comment Excerpt Number: 12

Comment: Eliminate the energy assessment requirement in the proposed rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 12

Comment: The facility-wide reach of the proposed energy assessment requirement has an unseemly, bootstrapping quality to it – i.e., that EPA is requiring something it could not ordinarily require because, in this case, the toehold of a regulated boiler arguably gives it jurisdiction over the entire "source" (as defined in the statute, albeit not the rule). Given the potentially substantial costs this could impose across regulated facilities, SOCMA urges EPA to limit the assessment to the boilers themselves.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Sheila C. Holman
Commenter Affiliation: North Carolina Department of Environment and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2222.1
Comment Excerpt Number: 12

Comment: [See submittal for Attachment A, Topic 2, which discusses many topics on the Energy Assessment.]

Response: See preamble for response to comments on the energy assessment requirement.

Commenter Name: Martha E. Rudolph
Commenter Affiliation: Colorado Department of Public Health and Environment
Document Control Number: EPA-HQ-OAR-2006-0790-1979.1
Comment Excerpt Number: 13

Comment: The State supports the proposals' roles and responsibilities associated with energy assessment requirements. Specifically, the State does not want the responsibility of reviewing, approving or ensuring adequate implementation of energy assessments, nor do we have the resources to carry out these responsibilities.

Response: The final rule only requires that the facility document and report that an energy assessment was done. The final rule does not require that the energy assessment be submitted to the permitting agency.

Commenter Name: Barry Christensen
Commenter Affiliation: Occidental Chemical Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2227.1
Comment Excerpt Number: 13

Comment: The scope of energy assessments is too broad. If and to the extent EPA includes energy assessments in the final rule, the scope of assessments should be limited to processes which use the steam from the boiler or are tied to the process heater actually subject to the rule, and not the entire plant. The definition suggests that assessments must look at waste minimization, pollution prevention and productivity improvements independent of their impact on facility energy considerations. This scope is too broad because it includes other media which is beyond the scope of an air rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Thompas P. Balf
Commenter Affiliation: Campus Cortium for Environmental Excellence
Document Control Number: EPA-HQ-OAR-2006-0790-1657.1
Comment Excerpt Number: 14

Comment: While we support the energy assessment requirement, we are concerned that our efforts over the last few years to evaluate energy efficiency and conservation opportunities may need to be unnecessarily duplicated after the implementation of this rule.

Specify in 40 CFR 11201(b) that an energy assessment completed on or after January 1, 2008 that meets the requirements in Table 2 shall satisfy the energy assessment portion of this requirement.

Response: We agree with the comment and have added it in the final rule.

Commenter Name: John Donahue
Commenter Affiliation: Sappi Fine Paper North America
Document Control Number: EPA-HQ-OAR-2006-0790-2210.1
Comment Excerpt Number: 14

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment" in order to "identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use." 75 Fed. Reg. at 31907. The Agency asserts that, "Reduced fuel use will result in a
corresponding reduction in HAP, and non-HAP, emissions." Id. This work practice requirement is an "above the floor" measure that EPA argues is justified in light of the emissions reductions and cost savings that can be realized by identifying and implementing energy efficiency projects. This proposed requirement is beyond EPA's authority and should not be included in the final rule. To begin, EPA is only authorized under § 112 to regulate "sources" of HAPs. For example, § 112(d)(1) explains that EPA "may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing ... standards" (emphasis added). More particularly, § 112(d)(2)(A) authorizes EPA to establish standards that would "reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials or other modifications"; however, this authority is limited in § 112(d)(2) standards regulating "sources in the category or subcategory to which such emission standard applies." The term "source" unambiguously means something that actually emits HAPs. Because the proposed energy assessment requirement would apply to processes that demand energy from affected boilers, but are not necessarily sources of HAPs themselves, EPA's proposal exceeds the Agency's limited authority to regulate only HAP "sources."
In addition, EPA proposes in § 63.11194 to define the affected source under this rule to include only "industrial, commercial, and institutional boilers." EPA further proposes to define the terms

“industrial boiler,” “commercial boiler,” and “institutional boiler” to include only boilers and not other parts of the facilities to which the boilers belong. 75 Fed. Reg. at 31931 (proposed § 63.11237). By the very terms of the proposed rule, the affected source category only includes boilers. Thus, the proposed energy assessment requirement is not supportable because it would apply to equipment that is not part of the source category being regulated.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 16

Comment: EPA should not require energy audits as part of the rule requirements.

Aside from the fact that a facility-wide energy audit is questionable from a regulatory perspective because it would apply to things that were not part of the defined "source category," for the wood products industry the effort would be unproductive. The major energy use at a typical wood products facility is the burning of biomass fuel in the boiler. Due to the wet nature of the biomass and the fluctuating loads, these combustion devices normally operate with high excess combustion air ratios which inherently lead to lower thermal efficiencies. At a wood products facility, the biomass fuels generated on-site are essentially "free" and if they were not burned as fuels they would likely be hauled to a landfill where they would degrade to methane gas with its negative global warming potential. Therefore, there is limited benefit to an energy audit at a sawmill operation.

The EPA does not need to compel industries to undertake energy efficiency improvements that provide a significant economic return. It is already in their best interests to do that. In addition, the severe economic impact of the proposed rules would effectively eliminate the availability of the capital necessary for making any additional investments for production or energy efficiency improvements.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11, DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8, and DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7.

Commenter Name: Martin Lunde
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 16

Comment: Simple energy conservation is not sufficiently addressed ...conservation is essentially heating without emissions. Conservation requires no annual testing. Testing methods (such as blower door depressurization and infrared thermography) and technologies (such as air to air heat exchangers) already exist to significantly decrease building energy consumption. There must be a much stronger push for conservation for all buildings.

Response: See preamble for response to comments on the energy assessment requirement.

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 18

Comment: EPA should clarify that the proposed energy assessment is for applicable sources only, and does not apply to the entire subject facility.

Response: We agree that the energy assessment does not apply to the entire facility and have clarified in the final rule that the energy assessment is applicable to the affected boilers and their energy end use systems.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 19

Comment: ABMA requests that EPA clarify the scope of the required energy assessment. As set forth in Table 2 of the Proposed Area Source Rule, the scope of the energy assessment could be interpreted to extend beyond the affected boiler. ABMA recommends that the scope of the energy assessment should be limited to the boiler and directly associated components such as the feed water system, combustion air system, fuel system (including burners), blow down system, combustion control system and heat recovery of the combustion fuel gas. The publication of a standard procedure would ensure uniform and comparable results for all plant energy assessments.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 22

Comment: The Proposed Rule Should Not Mandate Energy Assessments

Energy conservation measures are laudable and a core part of everyday life in the steel industry. In fact, many steelmaking facilities already perform many of the investigations associated with an energy assessment as they have implemented the EnergyStar guidelines for energy management. Nevertheless, as explained throughout this section, EPA lacks the statutory authority to mandate facility-wide energy assessments for at least three reasons: (1) the energy assessment is not an "emission standard," (2) EPA may not reach beyond the defined source category to impose legal obligations, and (3) EPA has not demonstrated that the proposed energy assessment requirement is a cost-effective beyond-the-floor standard. Further, even if such a requirement was legally viable, there are serious implementation issues that would impair the viability and functionality of energy assessments in many instances.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 23

Comment: Section 112 of the CAA does not authorize EPA to mandate that each facility housing a boiler or process heater perform an energy assessment. The Proposed Rule characterizes this energy assessment requirement as a beyond-the-floor regulation issued pursuant to the agency's authority under §112(d)(2). 75 FR at 32026. That provision, however, only authorizes EPA to promulgate "emission standards," which are carefully defined in CAA §302(k) to mean:

A requirement ... which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction, and any design, equipment, work practice or operation standard promulgated under this chapter."

42 U.S.C. §7602(k). The proposed energy assessment requirement falls beyond that definition.

The proposed energy assessment would require an "in-depth energy study identifying all energy conservation measures appropriate for a facility given its operating parameters." 75 FR at 32026. Thus, that measure just mandates an evaluation of the facility's processes to "identify energy conservation measures ... that can be implemented to reduce the facility energy demand...." 75 FR at 32026 (emphasis added). That one-time identification of possible emission reductions and process changes will not "limit the quantity, rate or concentration of emissions of air pollutants," much less "on a continuous basis." Nor is the proposed energy assessment a "design, equipment, work practice or operation standard." As such, it falls beyond the defined concept of an "emission standard."

In fact, the U.S. Court of Appeals for the DC Circuit has held that a regulation imposing a general duty, without numerical emissions limits and without a mandatory plan for implementation, was not a free-standing emission limit and thus "not a section 112-compliant standard." Sierra Club v. EPA, 551 F.3d 1019, 1025-1028 (D.C. Cir. 2008). That same rationale applies here and confirms that the proposed energy assessment does not meet the threshold definition of an emission standard. As such, it is beyond EPA's authority under §112 to promulgate such a requirement.

In addition, EPA cannot impose requirements that reach beyond the defined source category. Section 112(c) establishes the scope of regulation under §112 by requiring EPA to publish "a list of all categories and subcategories of major sources and areas sources" for which "the Administrator shall establish emissions standards under subsection (d)." CAA 112(c)(1) and (2), respectively. Pursuant to that requirement, EPA published a discrete list of major and area source categories. See 70 FR at 37824; see also 67 FR at 70428. Thus, that list of source categories sets both the maximum and minimum scope of EPA's regulatory authority to "establish emissions standards under subsection (d)."

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 23

Comment: The proposed rule would require all existing affected units to conduct a one-time "energy assessment."

The proposed energy assessment is beyond EPA's legal authority and should be removed from the final rule. EPA is only authorized by CAA 112 to regulate "sources" of HAP emissions. See CAA 112(d). EPA's proposed energy assessment goes beyond sources of HAP emissions, requiring evaluations of the "facility" and "major energy consuming systems." See proposed Table 3. The energy assessment would apply to processes that use energy from the affected boilers but are not otherwise industrial boiler sources of HAP emissions. This proposed requirement exceeds EPA's legal authority and should be removed.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 24

Comment: Energy conservation measures are laudable and a core part of everyday life in energy-intensive manufacturing facilities. In fact, many facilities already perform many of the investigations associated with an energy assessment as they have implemented EnergyStar guidelines for energy management. Nevertheless, as explained throughout this section, EPA lacks the statutory authority to mandate facility-wide energy assessments for at least three reasons: (1) the energy assessment is not an "emission standard," (2) EPA may not reach beyond the defined source category to impose legal obligations, and (3) EPA has not demonstrated that the proposed energy assessment requirement is a cost-effective beyond-the-floor standard. Further, even if such a requirement was legally viable, there are serious implementation issues that would impair the viability and functionality of energy assessments in many instances. Section 112 of the CAA does not authorize EPA to mandate that each facility housing a boiler or process heater perform an energy assessment. The Proposed Rule characterizes this energy assessment requirement as a beyond-the-floor regulation issued pursuant to the agency's authority under §112(d)(2). 75 FR at 32026. That provision, however, only authorizes EPA to promulgate "emission standards," which are carefully defined in CAA §302(k) to mean:
A requirement ... which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction, and any design, equipment, work practice or operation standard promulgated under this chapter."
42 U.S.C. §7602(k). The proposed energy assessment requirement falls beyond that definition.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 24

Comment: The Proposed Rule explicitly states that the source categories affected by these rules are industrial, institutional, and commercial boilers and process heaters located at a major source. 75 FR at 32011 and 23049-50. Section 112 does not authorize EPA to promulgate regulations affecting sources beyond those specifically listed. Rather, as the legislative history confirms, "MACT standards shall be focused on a specific portion of a contiguous facility.... The entity covered by MACT would be defined at proposal of the standards." (emphasis added). A Legislative History of the Clean Air Act Amendments of 1990, 1990 CAA Leg. Hist. 731, 866. Thus, this rulemaking under CAA 112(d) only extends to the "specific portion" of the facilities identified in EPA's list under 112(c) and can go no further.

The proposed energy assessment requirement exceeds that focused statutory charge to develop emissions standards by reaching far beyond the "specific portion" of the facilities identified in EPA's 112(c) list. Specifically, the proposed energy assessment would require the inspector to "establish operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints," "review ... available architectural

and engineering plans, facility operation and maintenance procedures and logs, and fuel usage," and facilities containing major sources must develop a "facility energy management program" in accordance with the EnergyStar energy management program. 75 FR at 32068 (emphasis added). Additionally, the inspector is to "identify major energy consuming systems" and "list major energy conservation measures." Id. The inspector must then write up a comprehensive report summarizing his findings. Id. The only step properly limited to the regulated source category is the first one: "a visual inspection of the boiler system." Id. This step stands in stark contrast to the others, as it is the only one explicitly limited to the regulated source category. Save the first requirement of visually inspecting the boiler, the entire energy assessment requirement attempts to regulate operations beyond the defined source category.

EPA clearly lists the source categories subject to §112(d) and the Proposed Rule adheres to that same limitation by stating that it applies to industrial, commercial, and institutional boilers and process heaters. Nowhere is the source category defined as the facility that operates these units. Having defined the scope of this source category in its §112(c)(1) listing, EPA may not now reach beyond that category to impose obligations and limits. See New Jersey v. EPA, 517 F.3d 574, 583 (D.C. Cir. 2008) ("EPA may not construe [a] statute in a way that completely nullifies textually applicable provisions meant to limit its discretion.") (quoting Whitman v. Am. Trucking Ass'ns, 531 U.S. 457, 485 (2001)). As such, EPA may not require the conduct of facility-wide energy assessments or the implementation of findings made during such an assessment. Instead, §112 limits EPA to regulating the source itself, in this case boilers and process heaters.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 26

Comment: EPA cannot impose requirements that reach beyond the defined source category. Section 112(c) establishes the scope of regulation under §112 by requiring EPA to publish "a list of all categories and subcategories of major sources and areas sources" for which "the Administrator shall establish emissions standards under subsection (d)." CAA §§112(c)(1) and (2), respectively. Pursuant to that requirement, EPA published a discrete list of major and area source categories. See 70 FR at 37824; see also 67 FR at 70428. Thus, that list of source categories sets both the maximum and minimum scope of EPA's regulatory authority to "establish emissions standards under subsection (d)."
The Proposed Rule explicitly states that the source categories affected by these rules are industrial, institutional, and commercial boilers and process heaters located at an area source. [75 FR at 32011 and 23049-50]. Section 112 does not authorize EPA to promulgate regulations affecting sources beyond those specifically listed. Rather, as the legislative history confirms,

"MACT standards shall be focused on a specific portion of a contiguous facility.... The entity covered by MACT would be defined at proposal of the standards." (emphasis added). A Legislative History of the Clean Air Act Amendments of 1990, 1990 CAA Leg. Hist. 731, 866. Thus, this rulemaking under CAA §112(d) only extends to the "specific portion" of the facilities identified in EPA's list under §112(c) and can go no further.

The proposed energy assessment requirement exceeds that focused statutory charge to develop emissions standards by reaching far beyond the "specific portion" of the facilities identified in EPA's §112(c) list. Specifically, the proposed energy assessment would require the inspector to "establish operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints," "review ... available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage," and facilities containing major sources must develop a "facility energy management program" in accordance with the EnergyStar energy management program. 75 FR at 32068 (emphasis added). Additionally, the inspector is to "identify major energy consuming systems" and "list major energy conservation measures." Id. The inspector must then write up a comprehensive report summarizing his findings. Id. The only step properly limited to the regulated source category is the first one: "a visual inspection of the boiler system." Id. This step stands in stark contrast to the others, as it is the only one explicitly limited to the regulated source category. Save the first requirement of visually inspecting the boiler, the entire energy assessment requirement attempts to regulate operations beyond the defined source category.

EPA clearly lists the source categories subject to §112(d) and the Proposed Rule adheres to that same limitation by stating that it applies to industrial, commercial, and institutional boilers and process heaters. Nowhere is the source category defined as the facility that operates these units. Having defined the scope of this source category in its §112(c)(1) listing, EPA may not now reach beyond that category to impose obligations and limits. See New Jersey v. EPA, 517 F.3d 574, 583 (D.C. Cir. 2008) ("EPA may not construe [a] statute in a way that completely nullifies textually applicable provisions meant to limit its discretion.") (quoting Whitman v. Am. Trucking Ass'ns, 531 U.S. 457, 485 (2001)). As such, EPA may not require the conduct of facility-wide energy assessments or the implementation of findings made during such an assessment. Instead, §112 limits EPA to regulating the source itself, in this case boilers and process heaters.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 30

Comment: We are concerned that the proposed requirement to conduct a facility-wide energy assessment will be duplicative and unnecessary. As recognized in the Proposed Rule, fuel and energy costs are major drivers at many facilities. [Footnote: Sector-Based Pollution Prevention:

Toxic Reductions through Energy Efficiency and Conservation Among Industrial Boilers, The Delta Institute, at §3.2, Docket ID No. OAR-2002-0058-0842 (July 2002) (concluding that Fuel is traditionally the "most costly item associated with boiler operation").] That is particularly true for steelmaking companies that require large amounts of fuel and energy to operate. Given those existing business incentives, AISI members have already invested heavily to assess cost-effective energy efficiency opportunities. Further, we have made (and continue to make) significant voluntary investments implementing key efficiency projects - including under the EnergyStar program. Requiring facilities that have already completed these efforts to repeat that effort offers little practical benefit.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 31

Comment: We are concerned that the proposed requirement to conduct a facility-wide energy assessment will be duplicative and unnecessary. As recognized in the Proposed Rule, fuel and energy costs are major drivers at many facilities. [Sector-Based Pollution Prevention: Toxic Reductions through Energy Efficiency and Conservation Among Industrial Boilers, The Delta Institute, at §3.2, Docket ID No. OAR-2002-0058-0842 (July 2002) (concluding that Fuel is traditionally the "most costly item associated with boiler operation")]. That is particularly true for companies that require large amounts of fuel and energy to operate. Given those existing business incentives, AISI members have already invested heavily to assess cost-effective energy efficiency opportunities. Further, we have made (and continue to make) significant voluntary investments implementing key efficiency projects - including under the EnergyStar program. Requiring facilities that have already completed these efforts to repeat that effort offers little practical benefit.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 49

Comment: If EPA decides to require an energy assessment, several features should be amended, and cost and other beyond-the-floor impacts should be analyzed. This will require notice and comment.

The assessment should be expressly limited to HAP reductions at the affected industrial, commercial or institutional boiler or process heater, consistent with 112

EPA has no statutory authority to use this rule to regulate processes or equipment outside the "source." Thus, any requirement for an energy assessment should be limited to the affected industrial, commercial or institutional boiler or process heater.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 66

Comment: EPA proposes to require all owners or operators of affected boiler with heat input of 10 MM Btu/hr or greater to submit documentation that an energy assessment was performed, by qualified personnel, and the cost-effective energy conservations measures were identified. Id. at 31929. EPA proposes a number of procedures for the energy assessment, including not only visual inspection of the boiler itself (i.e., the regulated source) but also the "boiler system," and an extensive assessment of the "major energy consuming systems" (i.e., unregulated sources and non-sources at the facility), including a review of "available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage." Id. at 31932. Under EPA's proposal, regulated entities would be required to subject not only the affected source itself, but also other non-covered units at major source location of the covered source to an examination by a third party. The proposed rule further requires the submission of a "comprehensive report." Id. at 31933.

To further complicate matters, EPA also addresses the requirements of an energy assessment in Table 2 of the proposed rule entitled "Work Practice Standards, Emission Reduction Measures, and Management Practices." Table 2 does not use the same language or incorporate the breadth of the proposed definition in 63.11237 which creates ambiguity, inconsistencies and confusion for the facility.

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1

Comment Excerpt Number: 67

Comment: The Assessment Covers Units That Are Not Commercial Boiler "Affected Sources." EPA's authority under 112 is to establish HAP emission standards for industrial, commercial and institutional boilers (ICI boilers). By its own terms, the rule covers "affected sources" defined as all existing and new ICI boilers located at area sources. The "affected source" regulated by this NESHAP is the specified emission unit - the boiler - not the facility where the emission unit is located. [A major source is a "stationary source...that emits or has the potential to emit" some threshold amount of HAP, and area sources are "any stationary source of [HAP] that is not a major source." 42 U.S.C. 7412(a)(1) and (2). A stationary source is any "building, structure, facility, or installation that emits or may emit any air pollutant." 42 U.S.C. 7412(a)(3); 42 U.S.C. 7411(a)(3).] This is consistent with the long-established understanding of the term "affected source" as it relates to the "major source" where the affected source is located. See preamble to rule establishing the General Provisions for all NESHAPs, 59 Fed. Reg. 12408, 12412-13 (March 16, 1994).

Limiting the regulation to the affected source is also consistent with Congress's general statutory scheme, under which EPA is to publish a list of "all categories and subcategories of major sources and area sources" of the listed HAP. 112(c) (1). EPA's published list of source categories groups every conceivable type of industrial process and process unit into a category, each of which is regulated by its own NESHAP, each published as a separate Subpart to 40 C.F.R. Part 63. Therefore, any 112 source other than the boiler affected units for this rule is covered separately by another NESHAP. The statutory scheme does not assign duplicative source category regulations for the same unit.

Since 1992, the sources to be regulated relevant to this rule have been "industrial boilers" and "commercial/institutional boilers." 57 Fed. Reg. 31591. In this rule, EPA defines each of these sources. An industrial boiler is "a boiler used in manufacturing, processing, mining, and refining or any other industry to provide steam, hot water, and/or electricity." A commercial boiler is "a boiler used in commercial establishments such as hotels, restaurants, and laundries to provide electricity, steam, and/or hot water." 75 Fed. Reg. 31931.

However, EPA's proposal extends well beyond regulation of "sources" and compels regulated entities to investigate, monitor and report activity at facilities unregulated by 112 or even by the Clean Air Act. The assessment must be made on the "boiler system," which EPA defines as "the boiler and associated components, such as, the feedwater system, the combustion air system, the fuel system (including burners), blowdown system, combustion control system, and energy consuming systems." Id. The proposal further requires sources to consider, inter alia, the "operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints. . .;" "major energy consuming systems;" "available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage. . .;" and to identify " major energy conservation measures." Id. at 31931 - 33. EPA's authority is limited to setting emission limits for the affected source as defined in the rule and does not extend to the energy using process areas that its proposed assessment clearly contemplates. What EPA requires goes far beyond the affected source, and covers systems beyond the boiler and systems not directly associated with the combustion unit.

EPA is not entitled to read into the statute a roving mandate to review any possible unit, system, or opportunity to reduce energy consumption.

Energy usage within most manufacturing facilities is directly and inextricably related to the processes being used and the qualities of the specific products being produced. The sweeping language EPA has proposed to modify manufacturing processes out of concern for HAP and non-HAP emissions would grant EPA the authority to redesign proprietary and confidential manufacturing systems at industrial sites across the country. This would require many, if not most, industrial facilities to grant third-party auditors and EPA access to highly Confidential Business Information (CBI). Giving EPA the authority to mandate changes to manufacturing processes would put at risk competitive advantages that many manufacturers have secured for their products through careful technical and commercial analysis. Neither third-party auditors nor EPA fully understand the myriad technical and commercial analyses developed over years, or in some cases decades, by companies to optimize energy consumption, product performance and quality, and safety. This would paradoxically create a regulatory vehicle that would allow EPA the authority to mandate changes in energy-consuming manufacturing processes without first developing the in-house expertise to understand the full breadth of the processes, and with it the impact of potential changes to the safety of employees, competitive advantage of the product, or upstream and downstream processing activities at integrated sites.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11, DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8, and DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 63.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 71

Comment: EPA Has No Authority To Compel Facilities To Implement Any Measures That May Be Identified In An Energy Assessment. EPA is considering whether to require the implementation of energy saving measures and seeks comment on whether that would be "economically feasible." 75 Fed. Reg. at 31907. EPA need not determine the economic feasibility of their implementation, because EPA has no authority to compel sources to implement the findings.

No provision of the CAA provides EPA with the authority to compel energy efficiency reductions at a regulated source. It is quite possible that an energy efficiency measure, if implemented, would constitute a "modification" that would trigger other provisions of the Clean Air Act such as PSD or new-source status under NSPS, given that the assessment is intended to identify "major" energy conservation measures. EPA has no authority to compel implementation of measures that would trigger additional permitting measures unrelated to the MACT implementation. EPA likewise lacks authority to compel reduced fuel use to reduce HAP emissions from the boiler, where doing so would cause increased HAP or non-HAP emissions

from systems affiliated with or served by the regulated boiler. In instances where energy consumption adjustments could cause adverse consequences at the source, such as, for example, exceeding allowable emission limits or consuming an unacceptable amount of the compliance margin for a particular pollutant, EPA lacks the authority to compel a source to undertake such measures.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 75

Comment: The Energy Assessments Will Compromise Confidential Business Information. The proposed rule in relevant part defines an energy assessment, or audit, as an in-depth energy study identifying all energy conservation measures appropriate for a facility given its operating parameters. An energy assessment refers to a process which involves a thorough examination of potential savings from energy efficiency improvements, pollution prevention, and productivity improvement. The purpose of an energy assessment is to identify energy conservation measures (such as process changes or other modifications to the facility) that can be implemented to reduce the facility energy demand which would result in reduced fuel use. EPA is proposing that the energy assessment be conducted by energy professionals and/or engineers that have expertise that cover all energy using systems, processes, and equipment.

EPA's proposal for beyond-the-floor controls includes a mandatory in-depth energy assessment of facilities to identify opportunities to improve energy efficiency will unreasonably compromise Confidential Business Information (CBI) and should not be included in the final rule. Many industrial manufacturing facilities derive a significant competitive advantage from proprietary and confidential technologies and processes that are unique and specific to the company. These confidential technologies are regarded as CBI and are in many cases restricted to only to a select few within the company. Many CBI-derived technologies and process designs have a direct influence on how energy is used and integrated, how waste heat is recovered, and how byproducts and emissions are minimized. The amount and importance of CBI-derived technologies increases at large integrated facilities, such as chemical or petroleum processing plants.

While energy auditors may possess some expertise in energy systems thanks to their energy and/or engineering background and experience, a general background in energy systems is not adequate to analyze a complex manufacturing process or an integrated plant. An auditor would necessarily require extensive education about the intricacies of how a specific manufacturing facility uses, integrates, and recovers energy in order produce an assessment with any discernable value. Energy assessments conducted by the Department of Energy have been conducted at the request of the host company, and involve a limited number of personnel with carefully considered procedures to manage the sharing of CBI and information about CBI-

derived technologies. EPA proposes to mandate that all companies engage in energy assessments with third party assessors and that EPA be provided a "comprehensive" report, which would require the disclosure of a significant amount of CBI to auditors. This mandate would place every company's competitive advantage at risk by disclosing CBI and information about CBI-derived technologies to third party auditors.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 63.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 68

Comment: The Assessment Is Not An "Emission Standard." Section 112(c)(2) requires EPA to establish "emission standards" for each listed source category and subcategory. By definition, the identification of energy saving measures is not an emission standard. In addition, were the efficiency measures actually to be undertaken, reduced demand for the output of a regulated source is not an "emission control" technology to limit emissions from the regulated source. 112(d)(3). If this were so, the text of 112 would provide no limiting principle for EPA's authority.

EPA finds justification for the energy assessment by defining it as a beyond-the-floor control technology in 112(d)(2):

Emission standards promulgated...and applicable to new or existing sources...is achievable...through application of measures, processes, methods, systems or techniques including but not limited to measures which...reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications.

Id. at 31907 (citing 42 U.S.C. 7412(d)(2)). EPA posits that "process changes, substitution of materials or other modifications" encompasses "energy assessments." However, when the statute refers to "process changes, substitution of materials or other modifications" it can only be referring to the source "to which such emission standard applies." 112(d)(2). And it can only apply to methods to achieve the emission standards.

Yet EPA's proposal extends well beyond reduction of emissions by "sources" and seeks to compel regulated entities to investigate, monitor and report activity at facilities unregulated by the Clean Air Act. The proposal requires sources to consider, inter alia, the "operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints. . .;" "major energy consuming systems;" "available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage. . .;" and " major energy conservation measures." Id. at 31932 - 33. As defined in the rule, the energy assessment would require "a thorough examination" of a site far

beyond the 112 affected source: “Energy assessment means an in-depth assessment of a facility to identify immediate and long-term opportunities to save energy, focusing on the steam and process heating systems which involves a thorough examination of potential savings from energy efficiency improvements, waste minimization and pollution prevention, and productivity improvement.” Id. at 31931. EPA must limit regulatory requirements to methods that will reduce HAP emissions by the regulated combustion unit itself and not to other systems, energy using systems or process areas. EPA goes beyond its authority by imposing requirements beyond the combustion unit, even covering systems not directly associated with combustion units.

Moreover, EPA improperly identifies the energy assessment as a beyond-the-floor standard. This is not consistent with the text of the CAA, which as EPA explains, requires it to consider control options that are “more stringent” than the MACT floor. Id. at 31905. An energy assessment does not purport to limit emissions, nor impose more stringent standards than the MACT floor.

EPA has developed MACT standards that allow sources to elect to comply with pollution prevention alternatives in lieu of standards for some units and under certain circumstances. See, e.g., Pharmaceuticals Production MACT, 40 C.F.R. Part 63, Subpart GGG; National Emission Standards for Hazardous Air Pollutants for Source Categories: Pharmaceuticals Production; Final Rule, 63 Fed. Reg. 50280 (Sept. 21, 1998) (Pharma MACT). These do not, however, establish analogous precedent for the action EPA proposes in this MACT. The provisions of the Pharma MACT, for example, are a compliance alternative to compliance with the MACT standard. In this area source rule, EPA defines this as a beyond-the-floor MACT standard, making it not only mandatory, but also grounding it in the notion that sources can and must achieve increased emission reductions by its greater stringency than the floor. In addition, the Pharma compliance alternative relates directly to the reduction of the regulated pollutants from the same four regulated source types as those regulated by the MACT standard. Here, no such direct correlation can be made, and the assessment covers unregulated, non-emitting elements of the company’s operation beyond the regulated boiler.

In another section of this proposed rule, EPA identifies the energy assessment as a “work practice” standard, including it in Table 2. Authority to require work practice standards derives from 112(h), and EPA does not provide any legal justification for the energy assessment as a “work practice.” Its inclusion in Table 2 appears to be in error, but in any event, EPA lacks statutory authority to require this beyond-the-floor energy assessment as proposed under any provision of the CAA.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 73

Comment: The Proposed Work Practice Standards Are Vague, Potentially Duplicative Of Actions Already Taken and Burdensome. Table 2 of the proposed rule includes a list of 7 practices that any existing coal, oil, biomass or oil fired boiler with heat input capacity of 10 MMBtu/hr and greater located at an area source facility must undertake using qualified personnel:

(1) a visual inspection of the boiler system;
(2) establish operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints;
(3) identify major energy consuming systems;
(4) a review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage;
(5) a list of major energy conservation measures;
(6) the energy savings potential of the energy conservation measures identified; and
(7) a comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.

Over the years, ACC member companies have spent millions of dollars performing facility assessments and establishing energy management systems. EPA should not require these facilities to redo, under an EPA process, comprehensive assessments that were already done in a manner consistent with the energy assessment that EPA is proposing in this rulemaking.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1947.1, Excerpt Number 8.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 74

Comment: Some of EPA's requirements are vague, e.g., conduct a visual inspection of the boiler system. What is the scope of the visual inspection? How does it contribute to an energy assessment? If EPA finalizes any inspection requirement, the scope of the inspection should be on the boiler equipment in the affected source-- not the "boiler system" as defined in the proposed rule. As noted in our comments on the scope of the energy assessment and management system, EPA should only establish requirements for the affected source.

EPA is proposing to require facilities to establish operating characteristics of the facility, energy system specifications, operating and maintenance procedures, and unusual operating constraints. Establishing target operating ranges and system specifications are an appropriate part of an energy management assessment and management system but they should be viewed as targets, not enforceable operating limits. We are concerned that some permitting agencies may view these requirements as enforceable limits which would result in constrained operations or, more likely, facilities would have to define a very broad range of operating parameters in order to establish compliance margins. This would partially defeat the intent of developing energy

management systems. EPA should clarify that parameters established as operating characteristics, system specifications, and operating/maintenance procedures are not enforceable limits.

As written, requirement (2) is an open-ended and goes beyond energy management. In addition, for smaller facilities, this level of detail is not needed. The scope of any requirements should be dictated by the size and complexity of the regulated entity. EPA should clarify that the scope of requirement (2) includes only key parameters or procedures that relate to an energy assessment and management as appropriate for that facility.

EPA is proposing in (3) to require facilities to identify major energy consuming items. Again, the requirement is open-ended and goes beyond the affected source of this proposed rule. The scope should be clarified and narrowed to include only energy-related systems within the affected source.

EPA is proposing in (4) to require a review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage. At most, such a review should be limited to equipment in the affected source. We recommend EPA clarify that the scope is for the affected source and that the review is energy-related only.

EPA is proposing in (5) to require a list of major energy conservation measures. Any energy assessment needs to identify potential operating, maintenance or investment energy efficiency steps. The word “major” is important in that there is an endless list of potential steps that could be implemented and it would be in appropriate for sites to list “all” steps because many are ruled out immediately as impractical. For example, raising the thermostat to 95 degrees in the summer is a conservation measure, but not practical for a functioning work force.

EPA proposes in (7) to require a comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments. As written this is overly prescriptive. An energy assessment is just the first step in an energy management system and, for example, developing comprehensive cost information may require significant effort to scope our projects and develop the associated cost estimate. And cost isn’t the only criterion to be used as a comparison to energy reduction benefit. For example, safety and reliability are key determinants in what operating/investment steps are taken at a facility. EPA should streamline this requirement to: “a summary report outlining major energy efficiency opportunities.”

Response: See response for DCN EPA-HQ-OAR-2006-0790-0392.1, Excerpt Number 8.

Commenter Name: Wayne York
Commenter Affiliation: Hancock Lumber Company, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2002
Comment Excerpt Number: 9

Comment: The rule also requires facilities to conduct an energy assessment for their subject boiler systems. With the recent spikes in energy costs, many facilities have already conducted energy audits and implemented cost-effective energy reduction measures. Therefore, the rule should have allowances for facilities to be able to use the results of energy audits they have previously conducted, if the findings apply to the subject boiler(s).

Response: See response for DCN EPA-HQ-OAR-2006-0790-1947.1, Excerpt Number 8.

Beyond the Floor: Energy Audit/Assessment – Third Party Assessors

Commenter Name: Lisa Beal
Commenter Affiliation: Interstate Natural Gas Association of America
Document Control Number: EPA-HQ-OAR-2006-0790-1919.1
Comment Excerpt Number: 5

Comment: Sector-specific training and experience will be sorely lacking for "qualified professionals". Third party auditors are unlikely to have experience with gas transmission operations and thus cannot be expected to provide reasoned, insightful recommendations for an energy assessment at such a facility;

Response: In the final rule, the definition of qualified energy assessor has been revised to include a person who has the technical expertise and does not necessarily be a third-party certified contractor.

Commenter Name: Lisa Beal
Commenter Affiliation: Interstate Natural Gas Association of America
Document Control Number: EPA-HQ-OAR-2006-0790-1919.1
Comment Excerpt Number: 9

Comment: In addition, INGAA is concerned with unwarranted costs and implied criteria that result from a third party audit.

The energy assessment requirements are identified in Table 3 of the rule and include assessment by qualified personnel along with the following:

"...(b) establish operating characteristics of the facility, [emphasis added] energy system specifications, operating and maintenance procedures, and unusual operating constraints,
(c) identify major energy consuming systems,
(d) a review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage,
(e) a list of major energy conservation measures,

(f) the energy savings potential of the energy conservation measures identified, and a comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments, and
(g) a facility energy management program developed according to the ENERGY STAR guideline for energy management."

EPA defines qualified personnel in the preamble as certificated specialists, but INGAA questions the expertise and relevance of the certification as it applies to natural gas transmission systems.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 62

Comment: EPA should not require a third-party certified contractor as proposed.

The Proposed Rule would require sources to hire a "qualified specialist . . . who has successfully completed the Department of Energy's Qualified Specialist Program for all systems or a professional engineer certified as a Certified Energy Manager by the Association of Energy Engineers." 75 FR 31907. This is an arbitrary requirement that overlooks the increased cost associated with a certified specialist and existing regulated entity resources. Sources have at their disposal the most qualified individuals to assess the energy savings opportunities for the regulated source – those who are most familiar with the processes involved, day-to-day operations, and historic patterns of operation at the site. Sources should not be compelled to contract with outside personnel who are far less knowledgeable about the operations of the site, to assess energy conservation measures that may be undertaken. This requirement would unnecessarily increase costs and burden to the regulated entities.

Response: In the final rule, the definition of qualified energy assessor has been revised to include a person who has the technical expertise and does not necessarily have to be a third-party certified contractor.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 53

Comment: The audits are required to be performed by a qualified specialized who has successfully completed the Department of Energy's Qualified Specialist Program for all systems or a professional engineer certified as a Certified Energy Manager by the Association of Energy Engineers. The availability of these individuals is limited and all of these audits, to be required for both area and major sources will be occurring at once, so hourly costs will be much higher than typical. Also, because these are one-time efforts there will be only limited expansion in the pool of qualified personnel.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 61

Comment: EPA proposes to mandate that all companies engage in energy assessments with third party assessors, which would require the disclosure of a significant amount of Confidential Business Information to auditors and publicly through the submittal of energy assessment reports.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62 and DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 63.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 62

Comment: EPA's position that third party assessors are required to conduct energy assessments is not practical. Many industrial manufacturing processes are complex, and it often takes talented personnel years or decades of site-specific experience to achieve expert status. Additionally, requiring specific accreditation as described in the proposed rule would unnecessarily limit the available pool of qualified assessors.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Robert P. Strieter
Commenter Affiliation: The Aluminum Association
Document Control Number: EPA-HQ-OAR-2006-0790-1838.1
Comment Excerpt Number: 3

Comment: For the energy assessment requirement, we are concerned that the three year compliance period will result in an inadequate number of qualified parties to conduct the review. As the Boiler MACT rules will impact thousands of boilers and process heaters in the U.S., the availability of an adequate number of contractors and experts to conduct the assessments is of concern. The proposal should be revised to provide a five-year compliance period for applicable boilers to conduct the energy assessment. After the initial three year emission compliance period is passed for many boilers, there should be adequate numbers of qualified personnel available to conduct the additional efficiency assessments.

Response: The EPA disagrees with the commenters that the 3-year compliance deadline is too short considering the number of sources that will be competing for the resources and materials from engineering consultants, equipment vendors, construction contractors, financial institutions, and other critical suppliers. Section 112(i)(3)(B) allows EPA, on a case-by-case basis to grant an extension permitting an existing source up to one additional year to comply with standards if such additional period is necessary for the installation of controls. However, performance of an energy assessment does not involve the installation of controls.

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 6

Comment: Hiring an outside consultant, as it appears to be the requirement by EPA, to conduct an energy assessment at a nuclear power plant, or any electrical generating plant, would result in a considerable expense without any meaningful decrease in hazardous air pollutant emissions. Electrical generating plants minimize station energy use as a matter of good business practice.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 13

Comment: There is a high likelihood that there will not be an adequate number of people meeting the proposed qualification requirements to perform the hundreds of energy assessments that would be required in the required timeframe.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1838.1, Excerpt Number 3.

Commenter Name: Anna K. Chittum
Commenter Affiliation: American Council for an Energy-Efficient Economy
Document Control Number: EPA-HQ-OAR-2006-0790-2189.1
Comment Excerpt Number: 3

Comment: We urge the EPA to consider allowing facilities to use their own in-house assessment teams and energy management practices when such teams and practices are equivalent to the parameters laid out for energy managers and energy management practices in this proposed rule (p. 31907). While external certified energy experts such as the proposed "DOE Qualified Specialists" or "Certified Energy Managers" are ideal for conducting energy assessments, in some facilities, individuals without such credentials have conducted exceptionally thorough in-house energy assessments. By allowing in-house energy managers to conduct or aide these assessments when appropriate, the EPA may ensure it gets a better product by virtue of the deep institutional knowledge these individuals possess of the unique aspects of the facilities in which they work. We believe that if such in-house staff can demonstrate they are as qualified as the proposed certified specialists, their assessments should be considered to be equal to those of an external third party.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1
Comment Excerpt Number: 4

Comment: Our staff suggests that there are numerous experts available to provide steam and process heating assessments. The DOE Industrial Technology Program has a list of some of these experts. We suggest that Qualified Specialists need not be qualified on all available DOE software tools but that the Steam System Assessment Tool (SSAT) and Process Heating Assessment & Survey Tool (PHAST) are most pertinent.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Melissa Mullarkey
Commenter Affiliation: Recycled Energy Development, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2193.1
Comment Excerpt Number: 6

Comment: RED agrees with comments by the Alliance to Save Energy and the American Council for an Energy Efficient Economy that EPA should allow facilities to use their own in-house assessment teams and energy management practices when such teams and practices are

equivalent to the parameters laid out for energy managers and energy management practices in this proposed rule (p. 31907). By allowing in-house energy managers to conduct or aide these energy assessments, the EPA will obtain better products by virtue of the deep institutional knowledge these individuals possess of the unique aspects of the facilities in which they work. We believe that if such in-house staff can demonstrate they are as qualified as the proposed external specialists, their assessments should be accepted by EPA.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Michael A. Zapkin
Commenter Affiliation: Eastman Kodak Company
Document Control Number: EPA-HQ-OAR-2006-0790-2170.1
Comment Excerpt Number: 8

Comment: EPA request: is there adequate access to certified assessors?

This question skips over the first question that EPA does not adequately address. Should EPA require certified assessors in the first place? Kodak believes that if EPA does indeed mandate this program that it should be conducted as a self assessment exercise. Most major facilities already have some sort of program in place to address energy efficiency. Within these programs personnel who understand the complexity of energy systems as they have evolved within individual facilities are better equipped to determine the actual efficiency gains, the costs and potential pitfalls of implementation of such programs. Much of the assessment will be done on confidential operations that a third party assessor would have little knowledge of or ability to contribute.

Certified assessors may be well qualified to understand energy efficiency, but would not have sufficient knowledge to adequately recommend improvements without significant levels of input from facility personnel. Requiring certification as prescribed in the proposed rule would necessitate sending experienced company personnel to training that they may already have or may not need for the particular facility.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 11

Comment: SOCMA also has concerns about the number and type of assessors that would be required. Who would conduct the assessments and certification? Would there be enough assessors? Would facilities across the country have adequate access to them?

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: John Hopewell
Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 13

Comment: Furthermore, paint and coatings facilities could be unfamiliar to a third party auditor and could extend the amount of time and money needed to perform one. Therefore if EPA promulgates the rule with this provision we request that a facility be allowed conduct their own energy assessment with no requirement to report "cost-effective energy conservation measures".

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Barry Christensen
Commenter Affiliation: Occidental Chemical Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2227.1
Comment Excerpt Number: 14

Comment: It is not necessary to use specially trained and certified specialists to conduct energy assessments. If and to the extent EPA includes the energy assessment requirements in the final rule, EPA should amend the rule to allow experienced company personnel to conduct energy assessments. Company engineers are most familiar with the applicable process details and these professionals with experience in energy management are more than qualified to conduct these assessments.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 27

Comment: Even if viable, the proposed energy assessment requirement presents serious implementation difficulties. One threshold problem is that the proposed energy assessment must be performed by "qualified personnel." These inspectors may well have a conflict of interest - particularly where their firms would stand to benefit from implementing any suggested modifications. As a result, regulated entities would have a difficult time delineating between

truly appropriate modifications and those suggested by the evaluator in hopes of gaining additional business.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 28

Comment: In addition, the number of personnel qualified to perform energy assessments is unknown. The Proposed Rule would require assessors to complete the Department of Energy's Qualified Specialist Program or become a Certified Energy Manager by the Association of Energy Engineers. 75 FR at 32026. Given the huge number of facilities impacted by the Proposed Rule and related major source Boiler MACT standards, [Footnote: For major sources, 1,608 facilities would be required to conduct energy audits. Methodology for Estimating Cost and Emissions Impacts for Industrial, Commercial, Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants - Major Source, from S. McClutchey, A. Singleton & G. Gibson, to J. Eddinger, at §3.4 (Apr. 2010), Docket ID No. OAR-2002- 0058-0812. Up to 94,339 area source facilities may also be required to conduct energy audits. Methodology for Estimating Impacts from Industrial, Commercial, Institutional Boilers at Area Sources of Hazardous Air Pollutant Emissions, from G. Gibson, S. McClutchey & A. Singleton, to J. Eddinger, at §3.2 (Apr. 2010), Docket ID No. OAR-2006-0790-0032.] there may well be a shortage of qualified personnel. That raises serious concerns, including: (1) personnel with significant experience and true expertise will be unavailable, (2) compliance may become difficult or impossible in a timely manner, and (3) competition for the limited pool of highly qualified assessors will cause their rates to increase significantly.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 30

Comment: There would also be substantial inefficiency associated with getting a third-party inspector sufficiently "up to speed" to make informed conclusions regarding our industries' highly complex operations. In contrast, existing operations personnel already have extensive expertise and unique knowledge of the particular processes at each of our industries' facilities. As such, they are better situated to make informed, realistic determinations of where energy reductions may be achievable than outside assessors - and at far lower cost. Indeed, they have already been doing so effectively for years at most of our industry's major facilities.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 52

Comment: The assessment should be done by facility or company staff rather than by contractors.

The proposal would require sources to hire a "qualified specialist" "who has successfully completed the Department of Energy's Qualified Specialist Program for all systems or a professional engineer certified as a Certified Energy Manager by the Association of Energy Engineers." 75 Fed. Reg. 32026. This is an arbitrary requirement that overlooks existing regulated entity resources. Sources have at their disposal the most qualified individuals to assess the energy savings opportunities for the regulated source – those who are most familiar with the processes involved, day-to-day operations, and historic patterns of operation at the site. Sources should not be compelled to contract with outside personnel who are far less knowledgeable about the operations of the site, to assess energy conservation measures that may be undertaken. This requirement would unnecessarily increase costs and burden to the regulated entities.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Beyond the Floor: Energy Audit/Assessment – Certification of Energy Engineers

Commenter Name: Norman Bujold
Commenter Affiliation: Cleaver Brooks
Document Control Number: EPA-HQ-OAR-2006-0790-0392.1
Comment Excerpt Number: 7

Comment: ENERGY ASSESSMENT
Qualified personnel definition relies on specialists who completed DOE or AEE programs or equivalent, should also include third party personnel trained and knowledgeable in the equipment and process involved.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: J. Michael Geers

Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 12

Comment: If EPA insists upon implementing the one time energy assessment, Duke Energy disagrees that it can only be conducted by individuals that have successfully completed DOE's Qualified Specialist program, or a Professional Engineer who is certified as a Certified Energy Manager by the Association of Energy Engineers. Duke Energy, as well as many other entities, has staff members who are highly trained as engineers or other disciplines that are responsible for analyzing performance and energy efficiency as part of their routine job duties. These people are intimately familiar with the design and operation of its facilities. Duke Energy sees no benefit to requiring an outside entity can perform an energy assessment. If EPA does impose a requirement for an energy assessment, it should expand the definition of a qualified specialist to a Professional Engineer with experience in performance or energy efficiency.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Trent A. Dougherty
Commenter Affiliation: Ohio Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1922.1
Comment Excerpt Number: 2

Comment: OEC commends the EPA for promoting a rule to reduce Hazardous Air Pollutants that recognizes and promotes the role energy efficiency can play in reducing emissions from the industrial, commercial and institutional sectors. Energy Efficiency is the cleanest, cheapest, most reliable energy resource we have.

One refinement to this rule we suggest however, concerns the requirement for "DOE Qualified Specialists" or "Certified Energy Managers." While these specialists are ideal for conducting energy assessments, in some facilities individuals without such credentials have conducted exceptionally thorough in-house energy assessments. By allowing in-house energy managers to conduct or aide these assessments when appropriate, the EPA may ensure that it gets a better product by virtue of the deep institutional knowledge these individuals have about their own facilities. We believe that if such in-house staff can demonstrate they are as qualified as the proposed certified specialists, their assessments should be considered to be equal to those of a third party.

We urge the EPA to consider allowing facilities to use their own in-house assessment teams and energy management practices when such teams and practices are equivalent to the parameters laid out for energy managers and energy management practices in this proposed rule (p. 31907). Further, permitting such in-house knowledge to be tapped to this degree could facilitate a cultural shift in many industrial facilities to make energy efficiency a priority.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1
Comment Excerpt Number: 5

Comment: Beyond the DOE Qualified Specialist Program and Association of Energy Engineers Certified Energy Manager credential, we are not aware of other specific certifications but we note that the Gas Technology Institute (GTI), Industrial Heating Equipment Association (IHEA), and Council of Industrial Boiler Owners (CIBO) should be capable of developing relevant standards of practice and credentials if they have not done so already.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 13

Comment: Regarding energy assessments by a qualified specialist, personnel employed by utility companies that service area sources with expertise in the area of energy efficiency should meet the qualifications to perform these assessments.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 18

Comment: Comments Related to Energy Assessment Requirements
EPA has requested comment on its requirement for existing boilers located at major source facilities to undergo an energy assessment to identify cost-effective energy measures. ABMA supports EPA's proposal that such assessment would be conducted by professionals and/or engineers that have relevant expertise, such as those who have successfully completed the Department of Energy Qualified Specialist Program, or a professional engineer certified as a Certified Energy Manager by the Association of Energy Engineers. ABMA suggests that such qualified personnel may also include other persons who are equally knowledgeable about the equipment and processes that are the subject of the assessment.

It is also of utmost concern that the boiler owner/operator has full faith that the qualifications of any provider of assessment services have been sufficiently vetted to assure that fly-by-nighters, scammers or those out to make a quick buck as a result of mandated federal requirements be quickly identifiable and avoidable. Toward that end, ABMA would recommend that providers of energy assessment services should have no financial interest in any company that might profit from the assessment's findings – in other words, conflicts of interest should be avoided wherever possible.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 29

Comment: There would also be substantial inefficiency associated with getting a third-party inspector sufficiently "up to speed" to make informed conclusions regarding our industries' highly complex steelmaking operations. In contrast, existing operations personnel already have extensive steelmaking expertise and unique knowledge of the particular processes at each of our industries' facilities. As such, they are better situated to make informed, realistic determinations of where energy reductions may be achievable than outside assessors - and at far lower cost. Indeed, they have already been doing so effectively for years at most of our industries' major facilities.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 29

Comment: The number of personnel qualified to perform energy assessments is unknown. The Proposed Rule would require assessors to complete the Department of Energy's Qualified Specialist Program or become a Certified Energy Manager by the Association of Energy Engineers. 75 FR at 32026. Given the huge number of facilities impacted by the Proposed Rule and related Boiler MACT rule for major sources [1,608 major source facilities would be required to conduct energy audits according to "Methodology for Estimating Cost and Emissions Impacts for Industrial, Commercial, Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants - Major Source", from S. McClutchey, A. Singleton & G. Gibson, to J. Eddinger, at §3.4 (Apr. 2010), Docket ID No. OAR-2002-0058-0812. Up to 94,339 area source facilities may also be required to conduct energy audits according to "Methodology for Estimating Impacts from Industrial, Commercial, Institutional Boilers at Area Sources of

Hazardous Air Pollutant Emissions", from G. Gibson, S. McClutchey & A. Singleton, to J. Eddinger, at §3.2 (Apr. 2010), Docket ID No. OAR-2006-0790-0032], there may well be a shortage of qualified personnel. That raises serious concerns, including: (1) personnel with significant experience and true expertise will be unavailable, (2) compliance may become difficult or impossible in a timely manner, and (3) competition for the limited pool of highly qualified assessors will cause their rates to increase significantly.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 76

Comment: The Energy Assessment Should Allow Options for Self-Assessment and Self-Certification. The proposed rule in relevant part would require that the energy assessment be conducted by energy professionals and/or engineers that have expertise that cover all energy using systems, processes, and equipment. EPA is proposing that a qualified individual is someone who has successfully completed the DOE's Qualified Specialist Program for all systems or a professional engineer certified as a Certified Energy Manager by the Association of Energy Engineers.

EPA's position that third-party energy professionals and/or engineers that possess certain external certification(s) are the only auditors with the sufficient skill necessary to provide a competent energy audit is inaccurate and objectionable. Many industrial manufacturing processes are complex and unique to a particular company or site. These complex and unique processes have evolved over the span of years or decades of experience, innovation, and specific confidential process knowledge. It often takes talented personnel years or decades of site-specific and process-specific experience to achieve expert status within a complex integrated manufacturing site by virtue of their knowledge of the specific manufacturing processes and equipment. Reliance upon third-party auditors to assess these large integrated sites, which are often among the largest consumers of energy, will not consistently generate insightful and actionable results. It is also problematic to attempt to define at what level of complexity a plant or manufacturing site would cease to be beyond the capabilities of a third-party auditor. Therefore, EPA should include self-assessment by company personnel as a fully acceptable method of conducting an energy audit. This should be allowed in all cases and at all facilities impacted by this rule.

Requiring specific accreditation as described in the proposed rule would unnecessarily limit the available pool of qualified assessors, resulting in potential shortages and the potential for significant cost escalation. Such a third-party energy professional accreditation requirement would also leave out a vast population of competent and qualified personnel that may be of equal, if not higher, qualification to audit energy systems. For example, many talented collegiate professors engaged in research, education and extension in the field of energy and energy-related

engineering consult with industrial, commercial and institutional sites on energy efficiency without energy-specific accreditation. Their advanced degrees, professional engineering licenses, fields of research, blend of academic and manufacturing experience, and/or extension activities qualifies them to provide insightful and actionable recommendations despite lacking a standardized energy efficiency certificate.

A review of the Certified Energy Manager (CEM) certification requirements indicates that they are oriented towards commercial building reviews (e.g., HVAC, electrical, motors and drives, building envelope, green buildings, lighting). Someone with a CEM certificate would not be qualified to review chemical facility operations. Our processes and equipment are specific to our industry and not generally covered by generic certified energy manager courses or online evaluation tools.

Facilities should have the flexibility and discretion to identify qualified and competent assessors by evaluating experience, track record of results, experience within specific industry or process areas, and accreditation. EPA should eliminate any and all references to specific accreditation requirements in this rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1983.1, Excerpt Number 62.

Beyond the Floor: Energy Audit/Assessment – Costs

Commenter Name: David Meierhenry
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-0414.1
Comment Excerpt Number: 7

Comment: In section V.D.(1)(b) of the preamble, middle of the second paragraph, the EPA states. “Furthermore, the costs of any energy conservation improvement will be offset by the cost savings in lower fuel costs.” This sentence should be deleted. The statement is not true if the EPA is including in the assessment non-boiler related energy projects which will have no impact on boiler fuel use. The statement may also not be true if there is an increase in fuel prices or if the EPA is considering non-cost-effective conservation measures.

Response: The scope of the energy assessment has been clarified to cover the boiler system and only those systems using the energy from the affected boilers.

Commenter Name: Lisa Beal
Commenter Affiliation: Interstate Natural Gas Association of America
Document Control Number: EPA-HQ-OAR-2006-0790-1919.1
Comment Excerpt Number: 7

Comment: Given the lack of trained auditors with appropriate sector-specific experience, and lack of clarity regarding the breadth of these audits and the requirements for implementing audit recommendations, it is difficult for INGAA to assess potential costs at this time. However, EPA costs estimates appear inordinately low. Should EPA retain this requirement, a thorough sector-specific cost benefit assessment should be completed. This benefit assessment should consider current energy efficiency initiatives and fuel reduction activities, and analyze the "net benefit" (or lack thereof) likely to be derived from any mandatory requirement.

Response: In the final rule, the definition of energy assessment has been revised to set the maximum time allowed for the energy assessment based on the size (fuel input) of the facility. Therefore, the cost will be a function of the boiler capacity at area source facilities.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 58

Comment: EPA presumes HAP reductions and energy and energy-related cost savings from implemented energy assessments 75 FR 31907. Each of these presumptions is unreliable, and entirely unsupported by the record. As described above, at some facilities, reduced fuel consumption could result in increased emissions to the facility, rendering the measures inconsistent with § 112(d)(2). Alternatively, undertaking measures to reduce fuel consumption could require more costly measures to counterbalance the effect of the reduced fuel consumption, rendering the measures not cost-effective. What is clear, however, is that EPA cannot possibly project with any accuracy the ability of sources in this category to cost-effectively undertake energy efficiency measures, much less their emission impacts, cost, or other factors that the CAA requires be included in that analysis. The complete absence of data makes any such presumptions irrational.

EPA makes an unsupported assertion that "the costs of any energy conservation improvement will be offset by the cost savings in lower fuel costs." 75 FR 31907. EPA to some extent assures that this assumption will be true by defining a "cost-effective energy conservation measure" as one that has a payback period of two years or less. Id. Yet this is an artificial criterion applied with no basis or support to EPA's conclusion that the benefits of the program outweigh the costs. Project justification criteria vary significantly by company, facility, product and even time of year. EPA's conclusory analysis of the cost-benefit analysis vastly oversimplifies capital expenditure decisions and artificially limits the calculus to fit the need to justify the beyond-the-floor standard. Nowhere, however, does EPA explain what provision in §112(d) or elsewhere in the CAA grants EPA the authority to mandate investment criteria for projects implemented pursuant to the energy assessments.

Even regarding the presumption of emission reductions itself, the proposal is very inconsistent. In some sections, the proposal accurately points out that if efficiency measures are implemented,

fuel use is reduced, HAP emissions may be reduced and energy-related savings are realized. 75 FR 31907. Yet, in other sections, the proposal inaccurately asserts that the energy assessment in-and-of-itself will lead to emission reductions. 75 FR 31907.

Response: See preamble for response to comments on the energy assessment requirement.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 61

Comment: EPA must also consider impacts of the assessment, including cost and whether boiler-related HAP reductions may be offset by HAP and other pollutant increases, or other energy-consumptive measures that could occur at the facility associated with the boiler.

For any beyond-the-floor requirement, the CAA requires EPA to analyze cost, non-air quality health and environmental impacts and energy requirements (§ 112(d)(2)). EPA purports to propose as beyond-the-floor that an energy assessment be undertaken, yet it relies on projected energy and cost benefits from implementation of the assessment. The record lacks any beyond-the-floor analysis of requiring either the assessment or its implementation, without which EPA has no basis to sustain the requirement.
EPA estimates the cost of an energy assessment to be $2,500 - $55,000, depending on the size of the facility. 75 FR 31907. [Footnote: Enter text of Ref. 8 here.] EPA does not view as significant, asserting that the cost is "minimal" compared to the compliance cost that could be imposed through an emission limit. 75 FR 31907. [see pdf for footnotes] Yet EPA fails to account for strained budgets and the real cost to conduct a third-party energy assessment required by the proposed rule, much less the cost to implement any energy conservation measures.

Based on experience with energy assessments, we estimate the cost of an energy assessment at a complex facility with multiple types of combustion equipment and systems could well exceed $100,000 since multiple types of people would be needed. The need to evaluate economic viability of changes requires engineering and cost estimates of capital expenditures and determination of return on investment or economic payback; the level of engineering assessment typically requires some level of design, thus greatly increasing the cost of the assessments and project viability determination. The EPA estimated cost in no way would cover such a level of detail. Programs developed by U.S. Department of Energy (DOE) have not extended fully throughout facilities or to the level of detail envisioned by EPA, so that comparable costs to DOE programs are not necessarily correct. Therefore, the total cost and burden of the energy assessment requirement as proposed will be significantly higher than estimated by EPA.
In other aspects of the rulemaking, EPA expresses graver concern with the cost of the rule. For example, EPA expressed concern with the cost of Title V permitting that would be imposed on the "estimated 91,300 area source facilities (including schools, hospitals, and churches) in the categories." 75 FR 31912.

Response: The energy assessment requirement has been revised to minimize the burden on the facility. Only facilities have large boilers are required to conduct the energy assessment. Also, we have revised the definition to limit the length of time to conduct the assessment depending on the boiler capacity at the facility. We have also revised the definition of qualified energy assessor to allow non-third-party contractors to conduct the assessment. The final rule also does not require the implementation of the findings of the energy assessment.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 49

Comment: The proposal would require an energy audit of any area source facility having a boiler with a design heat capacity of greater than 10 MMBTU/hr. The audit would cover the entire facility, not just boilers and not just boilers over 10 MMBTU/hr. Furthermore, the audit would have to be performed by a "qualified individual" as defined in the proposal and follow "Energy Star" methodologies. The proposal does not require installation of potential energy efficiency projects identified in the audit, but asks for comment on requiring installation of projects with a 2 year payout. Even without installation as a requirement, having the audit requirement and a definition of a cost effective energy project would create a presumption that all such projects should be installed to meet the general duty in the Part 63 general provisions and proposed in §63.11205(a). Thus, if the audit requirement is finalized, a significant percentage of any identified projects with a two year payout will be installed and the Agency must include those costs in the justification analysis for this beyond-the-floor requirement, particularly since it takes credit for the energy reductions supposedly achieved by installing such projects. Failing to consider costs as well as benefits in evaluating beyond-the-floor requirements violates the CAA and circumvents the proper application of the Administrative Procedures Act and a variety of procedural laws and Executive Orders.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 55

Comment: The cost estimate seems to assume the owner has engineering or financial analysis capability, which will not be true for many area sources, and thus does not include the cost for having to hire out these functions. It also seems to assume a single auditor. In fact, in order to comply with the specified requirements, a team of engineers will be needed for an extended

period of time. It is likely the only situation where the EPA's cost estimate might be correct is where a single boiler is being used for space heating. Any more complicated situation will require many times the cost estimated.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 56

Comment: The cost estimate seems to assume the audit scope is limited to the boilers and their closely associated systems at an area source, but the rule specifies that the audit is site-wide. For many area sources evaluating possible boiler efficiency projects will be a minor part of the audit. If the audit requirements remain unchanged, the cost estimate needs to be adjusted to reflect the true scope of the requirements spelled out in the proposal and address the cost of auditing all of the site energy producers and consumers and evaluating a large number of potential projects.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1
Comment Excerpt Number: 3

Comment: Alliance staff note that Department of Energy (DOE)-supported Industrial Assessment Centers (IACs) typically can perform thorough steam system assessments in the lower part of the $2,500 to $55,000 range. Our staff estimates that most facilities targeted by the rule could be given a thorough, one-time assessment in the $20,000 to $30,000 range and that the $55,000 cost would apply to very large and complex facilities.

Response: EPA thanks the commenter for the cost information.

Commenter Name: Marilyn Crockett
Commenter Affiliation: Alaska Oil and Gas Association
Document Control Number: EPA-HQ-OAR-2006-0790-2212.1
Comment Excerpt Number: 4

Comment: EPA states that the cost of the assessment is minimal compared to the cost of testing and monitoring to demonstrate compliance with an emission limit. This may be true, but the cost of the assessment is incremental to, rather than in lieu of already expensive ongoing compliance costs. AOGA also believes that only well tuned boilers are capable of continuously complying with the rule's very low CO emission standards, and therefore the energy assessment is unlikely be offset by significantly lower fuel costs as EPA has assumed, or to add any meaningful reductions in HAP emissions.
AOGA requests that EPA reconsider the need for an energy assessment, and rely upon the energy efficiency represented by the boilers used to establish the MACT floor, and the need for all boilers meeting these emission levels (by complying with the emission standards) to operate in an energy efficient manner.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: William Rogers
Commenter Affiliation: DTE Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2159.1
Comment Excerpt Number: 7

Comment: We agree with the INGAA comment that such an energy audit is inappropriate for a NESHAP standard, and the results of such an audit may vary significantly without clearly defined recommendations and costs that may vary significantly between auditors.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Barry Christensen
Commenter Affiliation: Occidental Chemical Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2227.1
Comment Excerpt Number: 12

Comment: EPA has underestimated the cost and associated complexity of performing energy assessments. In order to create the required documentation to support energy assessments, it will be necessary to redirect personnel at each location and retain consultants for substantial periods. An order of magnitude estimate for the required man hours is 1,000 - 2,000 employee hours and 1,000 - 2,000 consultant hours at each location. The net air quality benefit of such an effort will be minute. OCC has identified and is pursuing many energy reduction projects without these prescribed and burdensome procedural and organizational structures. OCC respectfully requests that EPA withdraw the requirement to perform energy assessments.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: John Hopewell
Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 12

Comment: ACA believes EPA has underestimated the costs of conducting an energy audit, especially on the low end. One member company estimates that it would cost over $15,000 to audit one very small area source facility. Considering this company has its own in -house certified assessor, the costs for using a third party contractor could double the price.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 16

Comment: The significant costs and burdens for the proposed ongoing energy management program are not reflected in the rulemaking record, the ICR, the Unfunded Mandates materials or SBREFA materials. Cost and burden estimates for the one-time energy audit are included in the record, but we believe they are grossly underestimated. Claimed benefits are unlikely to be achieved because major sources have already addressed energy efficiency.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 20

Comment: EPA also has proposed to require as a “beyond the floor” emission control for mercury and POM that boilers with applicable emissions limitations perform an energy assessment. EPA has estimated that the one-time cost to perform this assessment will range between $2,500 and $55,000. 75 Fed. Reg. at 31,907. Ethan Allen requests that EPA confirm that an energy assessment is a one-time requirement and that it will not become an ongoing obligation. While the agency states that the implementation costs of energy conservation measures identified by the assessment should be offset by a corresponding reduction in fuel usage, it does not address how entities will otherwise recoup the cost of the assessment itself.

EPA should consider and address how many entities may not have identifiable efficiencies, and thus how such entities would be able to recoup the cost of the required test. Also, it is not clear whether EPA is formally requiring companies to implement any of the conservation measures that may be identified. Ethan Allen further believes that EPA greatly underestimates the cost to perform the energy assessment and likely is relying on outdated cost figures. Therefore, EPA should perform a full reevaluation of the potential costs and clarify whether companies will be expected to adopt any conservation measures identified by the assessment.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 25

Comment: The proposed energy assessment requirement is not cost-effective, particularly for complex steelmaking facilities. For beyond-the-floor controls, §112(d)(2) requires EPA to take "into consideration the cost of achieving ... emission reduction[s] and any non-air quality health and environmental impacts and energy requirements" which EPA "determines is achievable for new or existing sources in the category or subcategory to which such emission standard applies...." Thus, EPA must balance the cost of implementing pollution control measures with the magnitude of the reductions that will be achieved.

As an initial matter, the cost estimates in the Proposed Rule significantly underestimate the magnitude of conducting an energy assessment at large, complex manufacturing facilities like integrated steel mills. Our industries' extensive experience in voluntarily working to reduce energy consumption indicates that conducting the energy assessment described in the Proposed Rule at an integrated mill would be exceedingly costly - exclusive of the significant time and effort that plant personnel would need to dedicate to the task. Given our industries' existing focus on securing voluntary energy reductions, that significant expenditure would be duplicative and wasteful in many cases.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 28

Comment: As an initial matter, the cost estimates in the Proposed Rule significantly underestimate the magnitude of conducting an energy assessment. Our industry experience in voluntarily working to reduce energy consumption indicates that conducting the energy

assessment described in the Proposed Rule would be exceedingly costly - exclusive of the significant time and effort that plant personnel would need to dedicate to the task. Given our industries' existing focus on energy efficiency, that significant expenditure would be duplicative and wasteful in many cases.
Fundamentally, this undertaking [ENERGY AUDIT/ASSESSMENT] is a means to no particular end. Any potential emission reductions, energy reductions, or non-air quality health and environmental benefits are not estimable because the proposed energy assessment requirement is just a study. While the Proposed Rule speculates that facilities may elect to implement certain findings, it cannot quantify any emissions reductions that may occur with the requisite level of certainty. Thus, this requirement fails EPA's traditional cost-effectiveness evaluation, which focuses on the annual cost per ton of HAP emissions eliminated. See, e.g., Arteva Specialties S.A.R.L. v. EPA, 323 F.3d 1088, 1089-90 (D.C. Cir. 2003). EPA apparently has not performed this calculation and it is impossible for any impacted entity to do so. While the Proposed Rule offers a rough emissions reduction estimate, 75 FR at 32026, that estimate apparently stems from presumed voluntary measures, with no solid indication that any HAP reduction will actually occur. Since there are no demonstrable emissions reductions from the proposed energy assessment requirement, the significant costs associated with that process are not warranted. As such, this proposed beyond-the-floor control fails the threshold test imposed by §112(d)(2).
Even if viable, the proposed energy assessment requirement presents serious implementation difficulties. One threshold problem is that the proposed energy assessment must be performed by "qualified personnel." These inspectors may well have a conflict of interest - particularly where their firms would stand to benefit from implementing any suggested modifications. As a result, regulated entities would have a difficult time delineating between
truly appropriate modifications and those suggested by the evaluator in hopes of gaining additional business.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 45

Comment: EPA presumes HAP reductions and energy and energy-related cost savings from implemented energy assessments 75 Fed. Reg. 32026 (estimating HAP reductions of 820 – 1640 tons per year). Each of these presumptions is unreliable, due principally to the diversity and complexity of the source category. As described above, at some facilities, reduced fuel consumption could result in increased emissions to the facility, rendering the measures inconsistent with 112(d)(2). Alternatively, undertaking measures to reduce fuel consumption could require more costly measures to counterbalance the effect of the reduced fuel consumption, rendering the measures not cost-effective. What is clear, however, is that EPA cannot possibly project with any accuracy the ability of sources in this category to cost-effectively undertake energy efficiency measures, much less their emission impacts, cost, or other factors that the CAA

requires be included in that analysis. The complete absence of data makes any such presumptions irrational.

EPA makes an unsupported assertion that "the costs of any energy conservation improvement will be offset by the cost savings in lower fuel costs." 75 Fed. Reg. at 32,026. EPA to some extent assures that this assumption will be true by defining a "cost-effective energy conservation measure" as one that has a payback period of two years or less. Id. Yet this is an artificial criterion applied with no basis or support to EPA's conclusion that the benefits of the program outweigh the costs. There is not in the record any substantiation of this point. Project justification criteria vary significantly by company, facility, product and even time of year. EPA's conclusory analysis of the cost-benefit analysis vastly oversimplifies capital expenditure decisions and artificially limits the calculus to fit the need to justify the beyond-the-floor standard. Nowhere, however, does EPA explain what provision in 112(d) or elsewhere in the CAA grants EPA the authority to mandate investment criteria for projects implemented pursuant to the energy assessments.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 50

Comment: EPA must also consider impacts of the assessment, including cost and whether boiler-related HAP reductions may be offset by HAP and other pollutant increases, or other energy-consumptive measures that could occur at the facility associated with the boiler

For any beyond-the-floor requirement, the CAA requires EPA to analyze cost, non-air quality health and environmental impacts and energy requirements. 112(d)(2). EPA purports to propose as beyond-the-floor that an energy assessment be undertaken, yet it relies on projected energy and cost benefits from implementation of the assessment. The record lacks any beyond-the-floor analysis of requiring either the assessment or its implementation, without which EPA has no basis to sustain the requirement.

EPA estimates the cost of an energy assessment to be $2500 - $55,000, depending on the size of the facility. EPA also notes that 1551 facilities would be required to perform the assessment at an annualized cost of $26 million. Based on experience with energy assessments, we estimate the cost of an energy assessment at a complex facility with multiple types of combustion equipment and systems could well exceed $100,000 since multiple types of people would be needed. The need to evaluate economic viability of changes requires engineering and cost estimates of capital expenditures and determination of return on investment or economic payback; the level of engineering assessment typically requires some level of design, thus greatly increasing the cost of the assessments and project viability determination. The EPA estimated cost in no way would cover such a level of detail. Programs developed by DOE have not extended fully throughout

facilities or to the level of detail envisioned by EPA, so that comparable costs to DOE programs are not necessarily correct. Therefore, the total cost and burden of the energy assessment requirement as proposed will be significantly higher than estimated by EPA.

Response: This comment pertains to the major source boiler rulemaking. Provided the commenter has submitted this comment to the major source boiler rulemaking docket, the response to this comment will be provided there.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 72

Comment: EPA Must Consider All Of The Potential Impacts That Could Occur At The Facility As A Result Of The Energy Assessment. For any beyond-the-floor requirement, 112(d)(2) requires EPA to analyze cost, non-air quality health and environmental impacts and energy requirements. EPA proposes that an energy assessment be undertaken as a beyond-the-floor requirement, yet it relies on projected energy and cost benefits from implementation of the assessment. The record lacks any beyond-the-floor analysis of requiring either the assessment or its implementation, without which EPA has no basis to sustain the requirement.

EPA estimates the cost of an energy assessment to be $2,500 - $55,000, depending on the size of the facility. Based on experience with energy assessments, we estimate the cost of an energy assessment at a complex facility with multiple types of combustion equipment and systems could well exceed $100,000 since multiple types of people would be needed. The need to evaluate economic viability of changes requires engineering and cost estimates of capital expenditures and determination of return on investment or economic payback; the level of engineering assessment typically requires some level of design, thus greatly increasing the cost of the assessments and project viability determination. The EPA estimated cost in no way would cover such a level of detail. Programs developed by the Department of Energy (DOE) have not extended fully throughout facilities or to the level of detail envisioned by EPA, so that comparable costs to DOE programs are not necessarily correct. Therefore, the total cost and burden of the energy assessment requirement as proposed will be significantly higher than estimated by EPA.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 61.

Beyond the Floor: Energy Audit/Assessment – On-Line Tools

Commenter Name: David J. Prior

Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 15

Comment: Existing boilers less than 10 mmBtu/h should require an energy assessment as proposed but use the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) provisional method 155p to determine a thermal-efficiency curve for the boiler.

Response: We disagree with the comment. In order to minimize the economic impact on area sources, with most being small entities, the final rule retains the energy assessment being limited to facilities with large affected boilers.

Commenter Name: Anna K. Chittum
Commenter Affiliation: American Council for an Energy-Efficient Economy
Document Control Number: EPA-HQ-OAR-2006-0790-2189.1
Comment Excerpt Number: 5

Comment: The proposed rule also specifically asks about the efficacy of DOE online tools for making decisions about efficiency upgrades (p. 31907). In general, we believe DOE online tools to be very good, and certainly helpful to such decision-making processes. However, we do not believe that the tools themselves offer a full decision-making suite – some have a limited scope or applicability. We believe such tools should be used when appropriate and useful, but that other tools and resources may be necessary and appropriate to help a facility determine the most cost-effective and advantageous efficiency upgrade plan.

Response: EPA thanks the commenter for her comment on on-line tools.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1
Comment Excerpt Number: 6

Comment: The free DOE online tools (SSAT and PHAST) can model improvements in boiler/steam system/furnace efficiency and may be used to decide whether a facility could benefit from efficiency upgrades. However, this is highly dependent on the knowledge level of the tool user. Tool results are only as good as the data entered and the better trained the tool user, the better the user can interpret the results.

Response: EPA thanks the commenter for his comment on on-line tools.

Commenter Name: Michael A. Zapkin
Commenter Affiliation: Eastman Kodak Company
Document Control Number: EPA-HQ-OAR-2006-0790-2170.1
Comment Excerpt Number: 9

Comment: EPA request: are online tools adequate to inform the facility's decision to make efficiency upgrades?

In general on-line resources are a valuable tool to begin a search of suitable technologies. However, in most cases, these tools are too generic and lack the detailed information necessary for a facility to make an informed and complete decision.

Response: EPA thanks the commenter for his comment on on-line tools.

Beyond the Floor: Energy Audit/Assessment - Economic Feasibility

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 59

Comment: EPA is considering whether to require the implementation of energy saving measures and seeks comment on whether that would be "economically feasible." 75 FR 31907. EPA needn't determine the economic feasibility of their implementation, because in any event, EPA has no authority to compel sources to implement the findings.

No provision of the CAA provides EPA with the free-ranging authority to compel energy efficiency reductions at a regulated source. It is quite possible that an energy efficiency measure, if implemented, would constitute a "modification" that would trigger other provisions of the CAA such as prevention of significant deterioration (PSD) or new-source status under NSPS. If indeed major measures are identified, then a fortiori EPA lacks authority to compel their implementation, where that would effectively require additional permitting measures unrelated to the MACT implementation. EPA likewise lacks authority to compel reduced fuel use to reduce HAP emissions from the boiler, particularly where that would cause increased HAP or non-HAP emissions from systems affiliated with or served by the regulated boiler. In instances where energy consumption adjustments could cause adverse consequences at the source, such as, for example, exceeding allowable emission limits or consuming an unacceptable amount of the compliance margin for a particular pollutant, EPA lacks the authority to compel a source to undertake such measures.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7.

Commenter Name: Britt S. Fleming
Commenter Affiliation: Auto Goup
Document Control Number: EPA-HQ-OAR-2006-0790-1916.1
Comment Excerpt Number: 8

Comment: EPA's assumption that "the costs of any energy conservation improvement will be offset by the cost savings in lower fuel costs" also is arbitrary. EPA attempts to assure that this assumption will be true by defining a "cost-effective energy conservation measure" as one that has a payback period of two years or less.50 This is essentially an artificial criterion applied with no basis or support for EPA's conclusion that the benefits of the program outweigh the costs. The record contains no substantiation of this point. Project justification criteria vary significantly by company, facility, product, time of year, and economic conditions. In addition, EPA fails to evaluate or consider whether other payback periods may be more appropriate. EPA's conclusory analysis of the cost-benefit analysis vastly oversimplifies capital expenditure decisions and artificially limits the calculus to fit the need to justify the beyond-the-floor standard. Nowhere, however, does EPA explain what provision in section 112(d) or elsewhere in the CAA grants EPA the authority to mandate investment criteria for projects implemented pursuant to the energy assessments.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1783.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7.

Commenter Name: Andrea Grant
Commenter Affiliation: Castle Oil Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1945.1
Comment Excerpt Number: 12

Comment: EPA is proposing, in addition to the numerical emission standards, to require an energy assessment for boilers with a heat input capacity of 10 MMBtus/hr or greater as a "beyond-the-floor" option for mercury and POM emissions. The purpose is to improve energy efficiency. However, as described by EPA, such an assessment is time-consuming and costly. The Agency recognizes that a simple "best practice" for reducing fuel consumption, and correspondingly reducing emissions, is tuning the boiler to the manufacturer's specification. Accordingly, to simplify meeting the maximum degree of reduction as required by Section 112 of the Clean Air Act, EPA should require all boilers to undergo a tune-up to manufacturer's specifications every two years. An energy assessment is unnecessary and burdensome.

Response: We disagree that an energy assessment is unnecessary and burdensome. The purpose of the energy assessment is to identify measures that could be taken to improve the

energy efficiency of the not only the boiler but the systems using the boiler's energy resulting in less fuel use and less emissions. In the final rule, we have clarified and limited the scope of the energy assessment based on the fuel use at the facility.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 51

Comment: The proposal would not require installation of energy efficiency projects, because "there was insufficient information to determine if requiring implementation of cost-effective measures were economically feasible." EPA therefore asks for comment on whether installation of such projects should be required. EPA identifies a cost-effective energy conservation measure to be any measure that has a payback (return of investment) period of two years or less. This payback period was selected based on section 325(o)(2)(B)(iii) of the Energy Policy and Conservation Act which states that there is a presumption that an energy conservation standard is economically justified if the increased installed cost for a measure is less than three times the value of the first-year energy savings resulting from the measure. Despite the correct decision not to require installation of energy projects based only on return on investment, the Agency inappropriately assumes a significant energy saving will result from this requirement and even uses that assumed saving to justify other, unrelated rule requirements.

We believe there are too many factors that must be considered to impose a requirement to install energy efficiency projects, regardless of payout period. These factors include the following.

Will there be HAP reductions? How much? Which ones?

Will other emissions be increased? For instance, will NOx or CO emissions increase, even if Hg and POM (and total VOC) emissions are decreased? Will there be water or solid wastes to be handled and managed?

Can the project be permitted? Are required offsets available? What are the costs associated with this permitting? Will other rules and permit conditions be triggered and what will be required to comply with those?

What is the quality of the return of investment calculation? For many small facilities, these estimates will be obtained from a vendor who wants to get the business and will be totally dependent on the cost of fuel assumed by the vendor. Fuel price is a particularly difficult item to predict and thus easily manipulated to make a project look attractive.

Can the facility afford the boiler and, potentially, production outage associated with the project? What is the long-term impact of the outage on sales? Market share?

Does the facility have the expertise to manage the project. For instance, can an apartment manager or store owner manage major changes to his heating system?

What are the long term personnel impacts on the facility of the project? For instance, will the business need to hire a fulltime boiler operator or an instrument technician to keep the system operating.

What new or additional safety risks will result from the project?

What new or additional operating risks will result from the project? Will the boiler be harder to operate (i.e., control), particularly at unmanned sites?

Will the project impact boiler capability or response time? This is a particular concern for standby equipment, which must respond quickly to sudden demand increases.

Is there cash flow available after funding operations? Is there cash flow available after funding of other required safety and environmental projects? Is there cash flow available after funding stay-in-business projects?

Are there other projects (not associated with boilers) that result in larger or more critical[footnote: For instance, in ozone non-attainment area a project that reduces NOx may be more critical than one that results in a small amount of Hg or POM reduction.] emission or energy reductions?

What is the remaining boiler life? Facility life? In combination with other demands, would shutdown of the facility be more economic than installing the project?

Evaluating all of these factors and keeping records of all of the decisions, is a daunting task even for an engineering organization. It will be an impossible task for others. Additionally, many of these issues are subjective evaluations (e.g., increased safety risk, available cash flow) that are not amenable to hard analysis. Thus, we believe requiring installation of projects under this proposed provision would be unwise and would likely result in widespread non-compliance, would drain funds and resources from more environmentally valuable projects and impact the potential safety and operability of some facilities.

Overall, we believe neither the proposed audit nor any requirement to implement energy efficiency projects is authorized or justified under section §112 of the Act and we do not believe this proposal would provide any significant emission reductions in Hg or POM. The energy assessment work practice should not be finalized and the Agency should remove the unsubstantiated claim of a 1% energy saving from its rule analyses.

Response: We agree that there are many factors that go into determining whether to implement any facility improvement. See response for DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7 on the rationale for not requiring implementation of the cost-effective findings.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 11

Comment: The rule proposes a onetime energy assessment and has an effectiveness test – any project with a payback of less than 2 years is to be implemented. Unfortunately EPA did not and likely cannot sufficiently define the procedure and assumptions needed to conduct this test so that the results are consistent across all industries. If such a program cannot be sufficiently defined and consistently enforced, it must not be imposed at all. The proposal contains a number of fatal flaws including the following:

EPA has not specified a rate of return for use in evaluating a potential investment. A project may or may not have a two year payback period depending upon the effective cost of money needed to finance a project.

Different entities in the regulated community have different costs to finance projects. Public entities such as departments in Federal, State, and Local government raise funds at a different cost than private industry. Financing costs also vary across industries. Utilities finance projects with a different debt to equity ratio than other industries. The net result is that the same project could be cost effective for one industry, but not for another just because of the difference in project financing costs. This produces an arbitrary result.

The cost effectiveness of a given project is dependent upon what an entity assumes for the output factor of that source. Industries are in different circumstances given the current economic climate so their future output may be uncertain. Because of the wide variety of industries impacted by this rule, Duke Energy does not believe it is possible to properly specify how all of the regulated community would project future output so as to achieve a consistent approach.

EPA has made no attempt to identify what costs are to be included in the analysis and how they are to be treated. These include costs such as corporate overheads, depreciation, taxes, project management, supervision, but to name a few.

EPA's intent is to increase energy efficiency which is a laudable goal. However, given that EPA is hard pressed to articulate a requirement that can be sufficiently defined and consistently applied, it becomes arbitrary and capricious. As a result it should be deleted from the final rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Melissa Mullarkey
Commenter Affiliation: Recycled Energy Development, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2193.1

Comment Excerpt Number: 5

Comment: RED commends EPA for addressing the use of an energy assessment as a "beyond-the-floor" control measure. We agree with the observations on page 31907 that energy efficiency process improvements, through an assessment or audit process, can lead to emissions reductions as well as reduced operating and maintenance costs. We also agree that an energy management plan can lead to further efficiency improvements and thus emission reductions.

That said, EPA would achieve more efficiency improvements and emission reductions if it removed the requirement that conservation measures be restricted to projects with less than a two-year payback period (page 31907). EPA in numerous other contexts has noted the enormous efficiency potential from combined heat and power (CHP) and recycled energy projects. While delivering tremendous and cost-effective efficiency gains (and, therefore, emission reductions), such facilities require a longer pay-back period. RED, therefore, encourages EPA to include language within its final rule that expressly encourages energy assessments that highlight the potential for CHP and recycled energy without imposing a two-year payback limitation.

Response: EPA thanks the commenter for her support. In the final rule for boilers located at area source facilities, the energy assessment requires identifying energy conservation measures and their energy savings potential. It does not limit the listing to only cost-effective measures.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1
Comment Excerpt Number: 8

Comment: We do not have a particular rate of return recommendation. We note net present value (NPV) and internal rate of return (IRR) as common bases for evaluating returns as compared to simple payback. Further, we suggest that EPA consider lifecycle calculations of equipment and energy costs as good approaches for economic evaluation of measures and alternatives. This would comport with the "cost of conserved energy" approach discussed in (5) above.

Response: In the final rule for boilers located at area source facilities, the energy assessment requires identifying energy conservation measures and their energy savings potential. It does not limit the listing to only cost-effective measures.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 10

Comment: More specifically, EPA estimates that the "one-time cost" of such an assessment (one-time energy assessment for existing area source facilities) "ranges from $2,500 to $55,000 depending on the size of the facility." An energy assessment that cost up to $55,000 would not be "minimal" to the small businesses which compose approximately 70% of SOCMA's membership. In addition to burdening small facilities with additional costs that they can ill afford, the broad range of this estimate strongly suggests a significant level of uncertainty about how much a particular facility will likely have to pay. Such uncertainty is particularly troubling for facilities that need to plan for possible new capital costs during a period of economic turmoil.

The agency elaborates, arguing that if a facility elected to implement the energy conservation measures identified in such an assessment, "it would potentially [emphasis added] result in greater mercury and POM reduction than achieved by a boiler tune-up alone." Furthermore, EPA contends that "the cost of an energy assessment is minimal, in most cases, compared to the cost for testing and monitoring to demonstrate compliance with an emission limit." Given the vagueness of EPA's own cost estimate, it is unclear how the Agency can reach such a firm conclusion about the costs of such an assessment.

EPA continues, noting that "[s]ince there was insufficient information to determine if requiring implementation of cost-effective measures were economically feasible," the agency was seeking additional comment on that point. So, by its own admission, EPA acknowledges that it does not have enough information to determine whether one of the primary justifications of the energy assessment – the energy conservation opportunities that it would identify – were large enough to make the assessment requirement economically feasible.

Response: In the final rule, we have limited the scope of the energy assessment based on the fuel use of the facility. The energy assessment for most area source facilities is limited to what can be accomplished in one work day.

Commenter Name: John Hopewell
Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 11

Comment: In general, ACA agrees that energy assessments are a good best management practice and most paint and coatings facilities have performed one. EPA is proposing that each area source facility with a large boiler conduct and energy assessment (i.e. audit) to indentify conservation measures, But what constitutes a cost-effective conservation measure20? ACA believes that making investment decisions should be left entirely to the discretion of the owner/operator of the regulated boilers. Any attempt to make a broad generalization about what constitutes economic justification ignores the significant variability in investment criteria that companies and institutions analyze to ensure their continued competitiveness.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Michael A. Zapkin
Commenter Affiliation: Eastman Kodak Company
Document Control Number: EPA-HQ-OAR-2006-0790-2170.1
Comment Excerpt Number: 11

Comment: EPA request: what rate of return should be used?

Again EPA oversteps its bounds when it presumes a rate of return for a project. As noted above, energy project funding is not based just on the rate of return, but also on the expected life of the processes and the power boiler and the risk to changes in facility conditions. By including a presumed rate of return, EPA is implying that a project that simply exceeds this threshold is worthy. It fails to recognize that other variables may be equally important and a facility may have other projects with higher rates of return or have greater strategic value.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Barry Christensen
Commenter Affiliation: Occidental Chemical Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2227.1
Comment Excerpt Number: 15

Comment: Implementing energy projects should be voluntary and not mandatory. Mandatory implementation of projects with less than a two year payback or a set rate of return on investment is not feasible. Implementing specific energy projects is a complex issue that requires in-depth evaluation and planning. The ability to implement a particular project can relate to a host of factors, including the economy and a company's financial situation, as well as other internal capital demands and the company's prior history of successfully implementing other energy conservation projects.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 47

Comment: EPA lacks authority under the Clean Air Act to compel regulated facilities to implement any measures that may be identified in an energy assessment.

EPA is considering whether to require the implementation of energy saving measures and seeks comment on whether that would be "economically feasible." 75 Fed. Reg. at 32,026. EPA needn't determine the economic feasibility of their implementation, because in any event, EPA has no authority to compel sources to implement the findings.

No provision of the CAA provides EPA with the free-ranging authority to compel energy efficiency reductions at a regulated source. As discussed above, EPA has no authority to use this rule to regulate processes and equipment beyond the "source." Further, it is quite possible that an energy efficiency measure, if implemented, would constitute a "modification" that would trigger other provisions of the Clean Air Act such as PSD or new-source status under NSPS. This is probably likely, given that the assessment is intended to identify "major" energy conservation measures. 75 Fed. Reg. 32014. If indeed major measures are identified, then a fortiori EPA lacks authority to compel their implementation, where that would effectively require additional permitting measures unrelated to the MACT implementation. EPA likewise lacks authority to compel reduced fuel use to reduce HAP emissions from the boiler, where that would cause increased HAP or non-HAP emissions from systems affiliated with or served by the regulated boiler. In instances where energy consumption adjustments could cause adverse consequences at the source, such as, for example, exceeding allowable emission limits or consuming an unacceptable amount of the compliance margin for a particular pollutant, EPA lacks the authority to compel a source to undertake such measures.

Response: See responses for DCN EPA-HQ-OAR-2006-0790-1473.1, Excerpt Number 11 and DCN EPA-HQ-OAR-2006-0790-1915.1, Excerpt Number 7.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 70

Comment: EPA presumes HAP reductions and energy and energy-related cost savings from implemented energy assessments Id. Each of these presumptions is unreliable, due principally to the diversity and complexity of the source category. As described above, at some facilities, reduced fuel consumption could result in increased emissions to the facility, rendering the measures inconsistent with 112(d)(2). Alternatively, undertaking measures to reduce fuel consumption could require more costly measures to counterbalance the effect of the reduced fuel consumption, rendering the measures not cost-effective. What is clear, however, is that EPA cannot project with any accuracy the ability of area source boilers to cost-effectively undertake energy efficiency measures, much less their resulting emission impacts, cost, or other factors that the CAA requires be included in that analysis. The complete absence of data makes any such presumptions absurd.

EPA makes an unsupported assertion that "the costs of any energy conservation improvement will be offset by the cost savings in lower fuel costs." Id. EPA to some extent assures that this assumption will be true by defining a "cost-effective energy conservation measure" as one that

has a payback period of two years or less. Id. Yet this is an artificial criterion applied with no basis or support to EPA's conclusion that the benefits of the program outweigh the costs. There is nothing in the record to substantiate this point. Project justification criteria vary significantly by company, facility, product and even time of year. EPA's conclusory analysis of the cost-benefit analysis vastly oversimplifies capital expenditure decisions and artificially limits the calculus to fit the need to justify the beyond-the-floor standard. Nowhere does EPA explain what provision in 112(d) or elsewhere in the Act grants EPA the authority to mandate investment criteria for projects implemented pursuant to the energy assessments.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Beyond the Floor: Energy Audit/Assessment- Definition of Cost-Effective

Commenter Name: David Meierhenry
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-0414.1
Comment Excerpt Number: 5

Comment: In section V.D.(1)(b) of the preamble, at the beginning of the third paragraph, the EPA states "we are defining a cost-effective energy conservation measure to be any measure that has a payback (return of investment) period of two years or less." This definition needs to be included in the definition section of the rule at 63.11237. Item 7 in Table 2 describes the contents of the energy assessment report including "…the cost of specific improvements, benefits, and the time frame for recouping those investments." In the final rule, the regulated community needs to know, without hunting through the preamble, if the EPA is defining these improvements and investments as cost-effective.

Response: In the final rule for boilers located at area source facilities, the energy assessment requires identifying energy conservation measures and their energy savings potential. It does not limit the listing to only cost-effective measures.

Commenter Name: Michael A. Livermore
Commenter Affiliation: Institute for Policy Integrity New York University School of Law
Document Control Number: EPA-HQ-OAR-2006-0790-1899.1
Comment Excerpt Number: 5

Comment: For some existing major and area sources, EPA has proposed requiring an "energy assessment" to identify "a list of energy conservation measures." [Footnote: See, e.g., 75 Fed. Reg. at 32,068.] While the proposed regulations do not require implementation of any of the energy conservation measures identified, they do define "cost-effective energy conservation

measures" as any measure with "a payback (return of investment) period of two years." [Footnote: See, e.g., 75 Fed. Reg. at 32,068. at 32,063.]

That definition is fatally flawed statutorily and unjustified economically. If implementation of these measures is not required, there is arguably no need to define "cost-effective," and thus no definition should be issued. But since implementation of these measures is cost-benefit justified and should be required, properly defining "cost-effective energy conservation measures" becomes important. The proper definition for that term should be: any energy conservation measure whose net present benefits are greater than zero.

EPA Improperly Looked to the Energy Policy and Conservation Act to Define "Cost-Effective"

The definition of "cost-effective" chosen by EPA is improper for many reasons. There is no need for EPA to look to the Energy Policy and Conservation Act ("EPCA") to define "cost-effective" under the CAA, and there are important differences between the statutes. The definition of "achievable" under Section 112(d) (and thus the subsidiary definition of "cost-effective" if the agency is to require implementation of "cost-effective energy conservation measures") should be based on the statutory text and purposes of the Clean Air Act and not on any part of the EPCA. In addition, the definition chosen by EPA is an improper interpretation of the clause from the EPCA that the agency looked to for guidance. The general context of the EPCA indicates that the clause sets a floor for "economically justified" and is not an independently valid definition of the term. Moreover, it is clear from the EPCA that Congress intended "economically justified" to mean cost-benefit justified.

The agency maintains that its proposed definition—"a payback period of two years"—is based on section 325(o)(2)(B)(iii) of the Energy Policy and Conservation Act of 1975.. [Footnote: Codified at 42 U.S.C. § 6295 (2010).] The proposed rules' preamble explains that under this section "there is a presumption that an energy conservation standard is economically justified if the increased installed cost for a measure is less than three times the value of the first-year energy savings resulting from the measure." [Footnote: 75 Fed. Reg. at 32,026.]

First, it is not clear how the agency justifies reading the phrase "three times the value of the first year energy savings" under the EPCA to indicate a two-year payback period. These calculations are distinct in obvious ways.

Second, this interpretation omits crucial parts of the EPCA's statutory scheme. The full text of the cited clause from the EPCA is as follows:

If the Secretary [of Energy] finds that the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy, and as applicable, water, savings during the first year that the consumer will receive as a result of the standard, as calculated under the applicable test procedure, there shall be a rebuttable presumption that such standard level is economically justified. A determination by the Secretary that such criterion is not met shall not be taken into consideration in the Secretary's determination of whether a standard is economically justified. [Footnote: 42 U.S.C. § 6295(o)(2)(B)(iii).]

The final sentence of this clause indicates that a finding that a standard does not meet the criterion cannot even be taken into consideration for whether the standard is "economically justified." Thus, the definition chosen by EPA for "cost-effective" is inappropriate even within the context of the clause they cite to support it.

Third, the cited clause only makes sense in the context of EPCA's Section 325(o)(2)(A):

Any new or amended energy conservation standard prescribed by the Secretary under this section for any type (or class) of covered product shall be designed to achieve the maximum improvement in energy efficiency . . . which the Secretary determines is technologically feasible and economically justified. [Footnote: 42 U.S.C. § 6295(o)(2)(A).]

In this context, it is clear that the section cited by EPA as justification for the definition of "cost-effective" explicitly sets a floor for the Secretary of Energy's determination of "technologically feasible and economically justified," and is not a reasonable definition of "economically justified" or "cost-effective" by itself. More generally, Congress intended "economically justified" to mean cost-benefit justified, because the statute requires the Secretary of Energy to "determine whether the benefits of the standard exceed its burdens." [Footnote: 42 U.S.C. § 6295(o)(2)(B)(i).]

Ultimately, the EPCA is not an appropriate place to look for a definition under the Clean Air Act at all. First, there are no statutory terms within the relevant sections of Clean Air Act that refer to the EPCA. Second, there is no duplication of statutory terms where proper interpretation would suggest that meanings should be harmonized across the statutes. [Footnote: See, e.g., W.V. University Hospitals, Inc. v. Casey, 499 U.S. 83, 100-101 (1991) (looking to other statutes to determine the definition of "attorney's fees").] For example, the EPCA uses "technologically feasible and economically justified" and then lays out criteria to guide the Secretary of Energy for making determinations based on that phrase. [Footnote: 42 U.S.C. § 6295(o)(2)(B)(i)(I)-(VII): "(I) the economic impact of the standard on the manufacturers and on the consumers of the products subject to such standard; (II) the savings in operating costs throughout the estimated average life of the covered product in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the covered products which are likely to result from the imposition of the standard; (III) the total projected amount of energy, or as applicable, water, savings likely to result directly from the imposition of the standard; (IV) any lessening of the utility or the performance of the covered products likely to result from the imposition of the standard; (V) the impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the imposition of the standard; (VI) the need for national energy and water conservation; and (VII) other factors the Secretary considers relevant."] None of those criteria or terms is repeated in the Clean Air Act. For purposes of an energy assessment under Section 112(d) of the Clean Air Act, EPA should apply the statutory language of the Clean Air Act and standard economic principles, not the EPCA.

"Cost-Effective" Should be Defined Using Proper Economic Principles

The proposed definition of “cost-effective energy conservation measure” is “a measure that is implemented to improve the energy efficiency of the boiler or facility that has a payback (return of investment) period of two years or less.” [Footnote: 75 Fed. Reg. at 32,063.] The agency is requesting comment on “what rate of return should be used” and whether this definition is appropriate “since it refers to payback of energy saving investments without regard to the impact on HAP reduction.” [Footnote: 75 Fed. Reg. at 32,027.]

By implicitly limiting the criteria to the private costs and benefits for regulated parties, this definition clearly falls short of the authority EPA has under the best interpretation of the statute (discussed above). Because EPA has authority to consider a fuller range of social costs and benefits in determining which beyond-the-floor regulations are “achievable” under Section 112(d), the definition of “cost-effective” could include social costs and benefits. However, as a practical matter, EPA is likely to exercise its statutory authority to stay focused on private costs and benefits in defining “cost-effective” for these purposes. An energy audit focused on private costs and benefits can still be a crucial element of a broader suite of regulatory policies designed to maximize net social welfare and minimize the negative impacts of HAP emissions. As such, these comments will explore how best to define “cost-effective” considering only private costs and benefits.

Given that it makes sense to define “cost-effective” in this context as reflecting private costs and benefits, it also makes sense to evaluate these costs and benefits in the way that an economically rational firm would value them. This means that all benefits and costs from a project should be considered, and a firm should undertake all investments where the net present value of all costs and benefits is higher than zero.

There are two important practical elements in determining the net present value of private investments: the timeframe of the analysis, and the discount rate for future costs and benefits.

The proper period of analysis for evaluating an investment is the period during which the investment affects relevant parties. The Economic Analysis Resource Document published by EPA’s Office of Air Quality Planning and Standards states that:

It is common practice to calculate the costs of a regulatory option over the period of time corresponding to the expected useful lifetime of capital equipment purchased to comply with the rule. For example, if the capital equipment purchased as a result of the rule has an expected useful life of 15 years, an analyst might calculate the expected costs of the rule over a 15-year period. For consistency, benefits should be calculated over the same 15-year period. [Footnote: OFFICE OF AIR QUALITY PLANNING AND STANDARDS, EPA, OAQPS ECONOMIC ANALYSIS RESOURCE DOCUMENT at 8-1 (1999).]

This rule of thumb should be used here as well. In the case of energy conservation measures, the “useful lifetime” of the project is the period when it provides benefits to the regulated party. Because many (if not all) of the energy conservation measures being considered will have beneficial effects lasting longer than two years, EPA is unnecessarily limiting the consideration of benefits by defining the payback period as two years. Incorporating the full upfront costs of the measures but ignoring substantial future benefits would lead to under-adoption of energy

conservation measures. [Footnote: Assuming that most capital costs are incurred in the early years of the project.] Given that the statutory explanation chosen by EPA for the two-year payback period is severely deficient, the agency should instead select the project's useful lifetime as the more economically rational period for analyzing energy conservation measures.

The discount rate is also important because it will determine how many measures will have a net present value above zero. In the context of an investment like an energy conservation measure, the costs of implementation will often be frontloaded and the benefits will be fairly constant from year to year (assuming fairly even amounts of energy savings and relatively stable prices). As a result, fewer energy conservation measures will look cost-effective with higher discount rates. For example, consider an investment with a cost of $100,000 in the first year but benefits of $12,000 per year for 10 years. Table 2 shows the net present value of this hypothetical investment under two different discount rates. [See submittal for Table 2.]

With the discount rate of 3%, the investment has positive returns. However, with the higher discount rate of 7%, the investment has negative returns.

For private investment decisions, the proper discount rate is the opportunity cost of capital, on the assumption that any dollar spent could earn the rate of return that the entity is achieving in its other projects. The correct rate will be the risk-adjusted rate of return that would be used to evaluate similar investment projects. [Footnote: The standard formulation would include the risk-free rate of return, plus an adjustment for the variance of the rate of return on the project. The risk of the particular energy conservation measure will be driven by volatility in energy prices or uncertainty in the actual quantity of energy savings.]

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1
Comment Excerpt Number: 7

Comment: We do not have a specific view as to whether a two-year simple payback is a good threshold. Our staff suggests that an alternative approach would be to compare the per-unit of energy cost of implementation of a measure with the cost of energy. If cost of implementation (cost of conserved energy [CCE]) is less than cost of energy purchased then the measure would be cost-effective. [CCE is the levelized annual cost of the efficiency measure over its lifetime divided by the estimated annual energy savings.] Our view is that EPA should consider requiring implementation of measures that meet such a cost-effectiveness test. Such measures will economically achieve lower HAP emissions through reduced fuel combustion.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Michael A. Zapkin
Commenter Affiliation: Eastman Kodak Company
Document Control Number: EPA-HQ-OAR-2006-0790-2170.1
Comment Excerpt Number: 10

Comment: EPA request: is the definition of "cost-effective" appropriate in this context since it refers to payback of energy saving investments without regard to the impact on HAP reduction?

The definition of "cost-effective" should be deleted from the rule. We firmly believe that EPA cannot define cost effectiveness in these terms. By inclusion of such a definition, EPA is making the presumption that facilities should undergo such projects. While such projects may be worthy they are still subject to strategic decisions related to product life and other factors.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 26

Comment: But more fundamentally, this undertaking is a means to no particular end. Any potential emission reductions, energy reductions, or non-air quality health and environmental benefits are not estimable because the proposed energy assessment requirement is just a study. While the Proposed Rule speculates that facilities may elect to implement certain findings, it cannot quantify any emissions reductions that may occur with the requisite level of certainty. Thus, this requirement fails EPA's traditional cost-effectiveness evaluation, which focuses on the annual cost per ton of HAP emissions eliminated. See, e.g., Arteva Specialties S.A.R.L. v. EPA, 323 F.3d 1088, 1089-90 (D.C. Cir. 2003). EPA apparently has not performed this calculation and it is impossible for any impacted entity to do so. While the Proposed Rule offers a rough emissions reduction estimate, 75 FR at 32026, that estimate apparently stems from presumed voluntary measures, with no solid indication that any HAP reduction will actually occur. Since there are no demonstrable emissions reductions from the proposed energy assessment requirement, the significant costs associated with that process are not warranted. As such, this proposed beyond-the-floor control fails the threshold test imposed by 112(d)(2).

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 27

Comment: In addition, the proposed energy assessment requirement is not cost-effective, particularly for complex facilities. For beyond-the-floor controls, §112(d)(2) requires EPA to take "into consideration the cost of achieving ... emission reduction[s] and any non-air quality health and environmental impacts and energy requirements" which EPA "determines is achievable for new or existing sources in the category or subcategory to which such emission standard applies...." Thus, EPA must balance the cost of implementing pollution control measures with the magnitude of the reductions that will be achieved.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 51.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 46

Comment: Even regarding the presumption of emission reductions itself, the proposal is very inconsistent. In some sections, the proposal accurately points out that if efficiency measures are implemented, fuel use is reduced, HAP emissions may be reduced and energy-related savings are realized. 75 Fed. Reg. at 32,026. Yet, in other sections, the proposal inaccurately asserts that the energy assessment in-and-of-itself will lead to emission reductions. 75 Fed. Reg. at 32,026.

Response: See preamble for response to comments on the energy assessment requirement.

Beyond the Floor: Energy Audit/Assessment – Available Guidelines

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 54

Comment: The proposal also requires using the Energy Star methodology, which means sources cannot make use of existing audits and, thus, all sources will have to have new audits. It is also unclear that the Energy Star methodology is efficient when applied to process industries such as oil and gas production. It is also important to note that the Agency specifies in the Energy Star literature that it is a voluntary program.

Response: As discussed in the preamble of the proposed rule, EPA is proposing that sites as part of their energy assessment also evaluate their current energy management practices. The

ENERGY STAR Facility Assessment Matrix, discussed in the preamble, provides a simple, free, and easy to use tool that can be used to evaluate current energy management practices. Based on the experience of the ENERGY STAR program, the time and resources required to conduct such an evaluation is minimal. The proposed rule does not require sites to use this tool, but instead compare their current practices with those outlined in the ENERGY STAR Guidelines for Energy Management. Many sites will find they already maintain practices and programs consistent with the ENERGY STAR Guidelines.

EPA disagrees that the ENERGY STAR Guidelines for Energy Management (Guidelines) would create dozen of new applicable requirements. The ENERGY STAR Guidelines provide a very flexible approach to energy management and are based on observed best practices in industry today. Companies with existing practices and programs would not be required to establish new practices, but instead simply confirm that existing practices and programs are consistent. Unlike consensus standards such as ANSI MSE 2000-2008 Energy Management Standard or the proposed ISO 50001 Standard for Energy Management, the ENERGY STAR Guidelines do not establish any mandatory requirements. Instead the Guidelines provide broad framework for an effective approach to energy management. The ENERGY STAR Guidelines have also not been frequently changed or revised since their publication.

The intent of this provision is not to establish new requirements but instead to encourage sites without energy management practices to put in place basic energy management practices. Both EPA and DOE have seen that companies and sites with basic energy management practices are more effective in improving efficiency or maintaining a given level of energy performance. EPA has seen that effective energy management can maintain boiler efficiency as well as improve efficiency resulting in lower fuel consumption and lower associated emissions.

Commenter Name: Eric Trauner
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2286
Comment Excerpt Number: 6

Comment: There could be some debate as to whether the underlying law can be construed as requiring a study on energy conservation. As for execution of such a study, expectations for review of energy conservation options may be defined differently by different oversight authorities. US-EPA would do well to clearly state that the philosophies of Quality Systems and Environmental Management Systems would be considered adequate for such studies.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2025.1, Excerpt Number 54.

Commenter Name: Floyd DesChamps
Commenter Affiliation: Alliance to Save Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2191.1

Comment Excerpt Number: 9

Comment: The American National Standards Institute Management System for Energy ANSI/MSE 2008 and the ISO 50001 Energy Management Standard (expected to be finalized in Spring 2011) should be considered as a guideline for other energy management guidelines beyond Energy Star.

Response: The ENERGY STAR Guidelines for Energy Management, ANSI MSE 2000-2008, and the proposed ISO 50001 standard all offer a similar framework for organizational energy management practices. The proposed rule referenced the ENERGY STAR Guidelines for Energy Management (Guidelines) since they are available for free, provided greater flexibility, and are more widely adopted by many industrial organizations.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 51

Comment: Adoption of ENERGY STAR should not be required to replace the far more sophisticated, source-specific energy management programs already in place at regulated sources

In many cases facilities and companies have already conducted detailed energy assessments. If any energy assessment requirement is included in the final rule, regulated entities should be allowed to utilize any existing programs or assessments to the extent possible.

Response: As part of the energy assessment process, EPA has proposed that a review of current energy management practices under taken. To provide guidance on how to review energy management practices, EPA has proposed that current practices be compared to those outlined in the ENERGY STAR Guidelines for Energy Management. The ENERGY STAR Guidelines for Energy Management are based on observed energy management practices used in many companies today and are intended to provide broad framework for energy management. The intent of the energy management provision in the proposed rules is not to require sites with existing energy management programs to replace these programs. Rather, intent is to have such facilities confirm that that existing practices are consistent with an established framework for energy management.

Other - Beyond-the-Floor

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1

Comment Excerpt Number: 63

Comment: Some projects that result from energy assessments could trigger other regulatory burdens, such as NSPS and NSR, resulting in significant negative impacts to the site and/or company. In the proposed rule, there is no exemption for such improvement projects from other regulatory initiatives.

Response: The purpose of an energy assessment is to identify energy conservation measures that can be implemented to reduce the facility energy demand which would result in reduced fuel use. EPA acknowledges that the proposed definition of "energy assessment" is unclear and we have revised the final rule to clarify what definition and requirements are involved. No additional regulatory burdens are expected to become associated with the completion of a required energy assessment.

Rationale for Regulated Pollutants

Choice of Regulated Pollutants: Surrogates

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 6

Comment: I support using surrogate information as a screening. The complete replacement of actual HAP measurement with the surrogate is simply stupid. The rule must provide for actual measurement of the thirty or so HAPs. Actual limits for individual species of HAP must be established and is relatively simple to set based on screening models and health risk assessment tools available. Surrogate only analysis does not achieve the requirements of the Clean Air Act. All HAPs that can be particulate can be measured by fuel analysis. Total organic HAPs can be measured by the organic fraction in the front and back half of a Method 5 source test.

Response: Please see the Preamble for information on the decision to use surrogates.

Commenter Name: Los Angeles Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0397
Comment Excerpt Number: 53

Comment: As should be the case with Boiler MACT, facilities should have the option to comply with the emission limits for the HAP of concern rather than the surrogate.

Response: Please see Area Source Boiler Preamble for information on surrogates chosen.

Commenter Name: Russ Mull
Commenter Affiliation: Shasta County Air Quality Management Distric
Document Control Number: EPA-HQ-OAR-2006-0790-1167
Comment Excerpt Number: 3

Comment: One serious flaw, is the statement that is made throughout the preamble, that CO is an indicator of incomplete combustion and therefore can be used as a surrogate for non-dioxin organic HAP emissions. This statement implies that higher levels of carbon monoxide emissions from a biomass boiler are indicative of a significant risk to the surrounding population from hazardous air pollutants, which is not the case.

Response: Please see the Preamble for information on the decision to use surrogates.

Commenter Name: William H. Carlson
Commenter Affiliation: Carlson Small Power Consultants
Document Control Number: EPA-HQ-OAR-2006-0790-1493.1
Comment Excerpt Number: 3

Comment: The choice of CO to represent a proxy for nonmetallic HAPs for biomass is also a curious and scientifically unsupported choice. Most biomass combusted in the U.S. today contains virtually none of the necessary precursors of dioxins, furans and HCl. EPA allows a "test out" of the necessary compliance for these based on fuel quality, but that "test out" does not eliminate the necessity to comply with CO limits. It is the combination of CO and PM compliance that will destroy the existing industry, stunt the future growth of the industry and lead to higher overall emissions, all as explained herein.

When you look at EPA's own Table 1 in the June 4, 2010 Federal Register Notice of Proposed Regulation, the juxtaposition of coal and biomass regulations next to each other, and the order of magnitude higher biomass CO emissions for similar boiler designs should be a strong clue that something is different about this fuel. Further, even cursory evaluation would lead EPA to the conclusion that we should be very careful about our choice of representative units for biomass fuel. I see no evidence that EPA even recognizes the fundamental principle of biomass combustion that fuel moisture typically governs CO levels, fuel moisture cannot reasonably be altered, and there is basically no fundamental relationship between CO levels and HAP emissions for biomass.

CO compliance will not be a simple matter of switching to a drier fuel, or drying the fuel as these are beyond the economic means of biomass combustion operators as will be explained later. In addition, both the selection of drier fuels (urban wood) and the process of drying of other fuels

actually increases the potential for HAP emissions while seeking to comply with CO emission limits designed to lower HAP emissions.

Response: Please see the Area Source Boiler Preamble for details on the current requirements for biomass boilers.

Commenter Name: William H. Carlson
Commenter Affiliation: Carlson Small Power Consultants
Document Control Number: EPA-HQ-OAR-2006-0790-1493.1
Comment Excerpt Number: 8

Comment: The premise of the PM standard is using PM as a proxy for hazardous metal emissions. As in the CO debate, biomass really has not inherent metals, those only being introduced at the consumer level. Thus, requiring ESP's on all existing units, when they could easily "test out" based on fuel quality, is nonsensical, expensive, and will result in increased PM emissions nationally as explained later.

Response: Please see the Area Source Boiler Preamble for information on the requirements for biomass boilers.

Commenter Name: N/A
Commenter Affiliation: Mercatus Center, George Mason University
Document Control Number: EPA-HQ-OAR-2006-0790-1837.1
Comment Excerpt Number: 4

Comment: EPA asserts that technologies reducing emissions of one pollutant have typically reduced emissions of other pollutants. The agency therefore assumes that requiring reductions in emissions of that pollutant will result in reduced emissions of the other pollutants. However, the existence of an emissions standard can reduce the strength of the correlation between emissions of the regulated pollutants and other pollutants. When cars ran on leaded gasoline, a more efficient engine would have reduced emissions of lead and other pollutants similarly. When the federal government began to phase out leaded gasoline, emissions of lead dropped to zero but while emissions of some other pollutants dropped too, they did not fall to zero. Emissions of some pollutants increased, either as some drivers switched to lower octane fuel, reducing fuel efficiency, or used alternatives to lead such as benzene.17 Likewise, if a firm buys a more fuel-efficient boiler, emissions of all pollutants would likely drop. If a firm is specifically seeking to reduce emissions of a regulated pollutant, emissions of other pollutants may not drop proportionally.

Response: Please see Area Source Boiler Preamble for explanation about the use of surrogates.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 12

Comment: Our conclusion that the analytical record calls for a contrary approach to regulation than the one taken in the proposal is based on EPA's main report on the subject of POM emissions from industrial and other sources. In the 1998 report[see submittal for reference] on the emissions inventory used to "provide the reference basis for the development of a national strategy to control the Section 112(c)(6) pollutants" several important data points specifically referencing POM inventories from biomass and oil fired area source boilers are provided. The data presented do not support EPA's decision to focus MACT controls on these sources for POM reductions.

Regarding POM inventories, the report notes:
The complex mixture of POM consists of literally thousands of organic compounds. Because inventorying all POM compounds individually is impossible, surrogate approaches have been used. Most commonly, a single PAH, such as benzo-a-pyrene [B(a)P], or the sum of representative or particularly toxic PAH species, have been used as surrogates for POM (U.S. EPA, 1990; U.S EPA, 1989).

The report goes on to note that it has developed inventories for three POM 'surrogates'.

Two of the 'surrogates' are Polycyclic Aromatic Hydrocarbon (PAH) measurements, 7- PAH and 16-PAH. The 16 compounds in 16-PAH contain the principal pyrolysis compounds of concern in combustion emissions and seven compounds identified as animal carcinogens by the International Agency for Research on Cancer (IARC). 16- PAH is inventoried in the report for over 100 industrial and fugitive sources, including 'Industrial Wood/Wood Residue Combustion' and 'Commercial Wood/Wood Residue Combustion.' These two groups in the report comprise the principal sources proposed for regulation under the biomass subcategory in the area source proposal. The report also contains information on including 'Industrial Oil Combustion' and 'Commercial Oil Combustion.' These two groups in the report comprise the principal sources proposed for regulation under the oil subcategory in the area source proposal.

In the proposal, EPA links 16-PAH with a third surrogate in the 1998 report, Extractible Organic Matter (EOM), in its discussion of measures chosen for making regulatory decisions on POM (FR 31917): "The POM emitted is composed of 16 Polycyclic Aromatic Hydrocarbon (PAH) and extractable organic matter (EOM)." Both the report language, referring to EOM as an 'alternative' surrogate and the severe lack of data in the report dictate that EOM cannot be used as a surrogate for POM for the purpose of justifying the impact of wood and oil combustion emissions. Additionally, the report also expresses uncertainty about the link between EOM and actual health effects. The report language says:

Alternatively, EPA's Office of Research and Development has been developing an approach using the EOM content of particulate matter as an appropriate measure of complex POM mixtures. EOM is believed to contain the PAH and substituted-PAH compounds that predict cancer risk better than any individual PAH or any sum of PAH species...However, there is some evidence that the primary health effects associated with particulate POM may be the carbon core of the particles rather than the overall organic fraction (represented as EOM). A drawback to using EOM as a surrogate for POM is the limited amount of data available to quantify emissions. Few EOM inventories or emission factors exist at this time.

The inventory report has good reason to equivocate on this issue. Though the report notes that the EOM data includes other extractible organics in addition to the PAHs, there is no discussion regarding the magnitude of any health effects these compounds may have. These compounds need to be accounted for in any discussion of health impact. The reasonable assumption is that any observed health effects come from the PAH fraction. Since EOM includes compounds other than PAH/POMs, it prima facie should be used as a surrogate until those other compounds are identified.

The report identifies a relatively higher percentage of wood and oil combustion area source emissions in the inventory, 2.4% and 0.28%, respectively. However, there is a large bias in these percentages since wood and oil combustion represent two of the limited number of categories for which EPA has developed emissions factors. Consequently, those numbers are deceptively high since they are based on the percentage of a limited database, compared to 16-PAH. The actual percentages would be much lower if a comparable data base were available. Less than 25% of the 100+ sources in the inventory reported EOM emissions data versus almost 100% for 16-PAH. As noted, EPA indicates that it considers the POM surrogate for these sources to be some combination of 16-PAH and EOM (FR 31917). However, the analytical basis for using both when determining the actual proportion of POM emissions tha area source biomass and oil boilers are responsible for is questionable given the limited EOM database. Over 75% of the sources in the inventory do not have EOM data Consequently, 16-PAH is the only reasonable surrogate that can be used for an impact analysis.

Response: Please see Area Source Boiler Preamble for discussion of this topic.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 2

Comment: Develop a standard for gaseous HAP using VOC, TOC, or THC as a surrogate as utilized in several other combustion NESHAP. We understand that an alternative surrogate to CO would require additional testing and data collection from these boilers. This could be done as part of EPA's information collection request.

Response: Please see the Preamble for information on the decision to use surrogates.

Commenter Name: Richard Rosvold
Commenter Affiliation: Xcel Energy Services, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2259.1
Comment Excerpt Number: 3

Comment: In general, we support the use of surrogates, rather than requiring limits for each individual HAP. Having individual limits for each chemical would be burdensome and would not provide any additional environmental benefit.

Response: The EPA appreciates the input and support. Please see the Area Source Boiler Preamble for information on how surrogates are used in the final rule.

Commenter Name: Jonathan Wood
Commenter Affiliation: Vermont Agency of Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2248
Comment Excerpt Number: 4

Comment: The Agency appreciates the difficulty EPA faces in establishing appropriate emission limitations in compliance with the Clean Air Act and court decisions. The Agency concurs with EPA's proposed use of carbon monoxide and particulate matter as surrogates for organic and inorganic HAPs since the alternative could result in far more complex regulations and expensive monitoring requirements with little additional environmental gain. However, the Agency does not feel the carbon monoxide surrogacy for wood combustion is well established below 300 ppm. Reducing carbon monoxide levels below this level may result in additional HAP reductions but the data currently available is not sufficient to demonstrate this. The Agency also feels that the proposed carbon monoxide emission limits for fuel oil are set below a level that surrogacy can adequately be demonstrated and at a level so low that instrumentation may not be sufficiently accurate. The Agency requests that EPA continue to use carbon monoxide and particulate matter as reasonable surrogates but only within the range that accurate surrogacy can be demonstrated.

Response: Please see the Preamble for information on the decision to use surrogates.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 10

Comment: CE may be a good surrogate for an ongoing CO measure and could allow for variation in load

Response: Please see Area Source Boiler Preamble for information on how surrogates are used in the final rule.

Commenter Name: Barry Christensen
Commenter Affiliation: Occidental Chemical Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2227.1
Comment Excerpt Number: 11

Comment: It is too costly and impractical to monitor and directly limit each individual HAP.

Response: The EPA appreciates the commenter's input. Please see the Area Source Boiler Preamble for information on how surrogates are used in the final rule.

Choice of Regulated Pollutants: Organic HAP (POM, ethylene dichloride, PCB)

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 4

Comment: The correlation between CO emissions and POM emissions is not evident on most biomass boilers until the CO level exceeds 500 ppm and in most cases 1000 ppm.

Response: Please see Area Source Boiler Preamble for explanation about changes to POM limits for biomass boilers.

Commenter Name: Charles Niebling
Commenter Affiliation: New England Wood Pellet
Document Control Number: EPA-HQ-OAR-2006-0790-0836
Comment Excerpt Number: 6

Comment: NEWP understands the usefulness and economy of using CO as a surrogate for Particulate Organic Matter (POM) and PM for metals; however, NEWP believes that these indicators may not be accurate when evaluating emissions from modern high?efficiency biomass combustion systems.

Research indicates that the relationship between CO and reduced POM is not consistent for biomass boilers across the full range of CO concentrations. As displayed in Graph 1 [See submittal for Graph 1], there is a correlation between reduced CO and reduced organic POMs as the CO level is reduced to around 680 ppm @ 7% O2. However, if CO is further reduced below 680 ppm, there are only minimal additional reductions in organic hydrocarbons. Therefore, NEWP suggests that requiring ultra?low CO emissions from biomass may not achieve significantly lower POMs and the associated health benefits.
Based on weak correlation of CO and POMs, the lower toxicity of PM from completely combusted biomass vs. petroleum PM, and the likely overstatement of health impacts in areas of low population density, NEWP believes there is a good basis that the exceptionally strict standards proposed in the rule are unwarranted.

Response: Please see preamble for response to the consistency of the relationship across the range of concentrations.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 16

Comment: Since THC is an indicator of non-dioxin organic HAPs (CO is not a HAP whereas much of the THCs are HAPs), there is no reason EPA cannot provide a THC option. Without the THC option, some sources are likely to be faced with a very costly choice: either install a capital intensive CO catalytic reduction system; or remove the most modern and most effective combustion controls for NOx to control CO, and install very expensive post-combustion NOx reduction technologies such as Selective Catalytic Reduction (SCR).

The use of less capital intensive NOx control technologies like Selective Non-Catalytic Reduction (SNCR) on units equipped with SDA's, due to the negative downstream effects of ammonia slip on personnel safety (NH3 release in recycle slurry) and the reliability of downstream components (formation of fouling ammonium salts). Further note that either of these options will significantly increase system draft loss, which will likely require a new ID fan at considerable expense. The enormous capital expense of these options present are not justified, given that such a solution reduces CO but may not actually reduce non-dioxin organic HAPs. This is a classic case of unintended consequences with little commensurate benefit to health or the environment.

Response: Please see Area Source Boiler Preamble for discussion of surrogates.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council

Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 4

Comment: CARBON MONOXIDE IS NOT A VALID SURROGATE FOR POM.
Even if the Clean Air Act allowed EPA to satisfy § 112(c)(6) through the use of surrogate pollutants, EPA's claim that CO is a valid surrogate for POM is unlawful and arbitrary. Clean Air Act "section 112(d)(1) requires EPA to set emission standards for every [listed] HAP emitted from each category or subcategory of major sources." Mossville Envt'l Action Now v. EPA, 370 F.3d 1232, 1236 (D.C. Cir. 2004)(citing National Lime Ass'n v. EPA, 233 F.3d 625,634 (D.C. Cir. 2000). Although the D.C. Circuit Court has held EPA may use surrogates, it has repeatedly made clear that any such surrogates must satisfy all three parts of a three part test to be valid. Specifically, EPA must demonstrate that:
1) the target HAP is "invariably" present in the surrogate pollutant;
2) methods to control or capture the surrogate pollutant "indiscriminately" control or capture the target HAP as well; and
3) the controls for the surrogate are the "only means" by which facilities "achieve" reductions of the target HAP.
Sierra Club v. EPA, 353 F.3d 976, 984 (D.C. Cir. 2004) (quoting National Lime, 233 F.3d at 639).

Here, EPA claims that CO is a valid surrogate for POM. Specifically, EPA claims that CO is an indicator of incomplete combustion and that high CO levels are a potential indicator of elevated organic HAP emissions. 75 Fed. Reg. at 31904. EPA also says that monitoring equipment for CO is readily available and monitoring CO emissions is cheaper and easier than monitoring emissions of "each individual organic HAP." Id. Finally, EPA claims that it considered using total hydrocarbons (THC) as a surrogate, but lacked data on emissions or permit limits for area sources' emissions of THC. Id.

Nowhere in EPA's discussion of CO as a surrogate does the agency even acknowledge the D.C. Circuit's well-established test for the validity of surrogates. Far less does the agency make any attempt to show how CO satisfies this test. In itself, that failure renders EPA's claim that CO is a valid surrogate arbitrary and capricious.

Response: Please see Area Source Boiler Preamble for final rule language and discussion of validity of CO as a surrogate for POM.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 5

Comment: Further, CO fails the test for being a valid surrogate. POM is not invariably present in CO. Indeed, it is never present in CO; they are two separate pollutants. High levels of CO may

not be indicative of high POM levels, and low CO levels may not be indicative of low POM levels. Indeed, EPA does not even claim that low levels of CO demonstrate low levels of POM.

EPA does not claim, nor could it, that the measures for controlling CO indiscriminately capture POM. To the contrary, POM is to a large extent a particulate organic compound that is present in the particulate fraction of emissions.[See John A. Dean, Lange's Handbook of Chemistry, 13th Ed., McGraw Hill Book Co., 1985; Robert H. Perry and Don W. Green, Perry's Chemical Engineers' Handbook, 7th Ed., 1997; David R. Lide (Ed.), CRC Handbook of Chemistry and Physics, CRC Press, 75th Ed., 1994.] Most of the particulate organic compounds form after the combustion process, as do dioxin/furans. This is far from the same mechanism by which CO is formed. As a result, CO minimization or control does not indiscriminately minimize or capture POM. Additionally sources can achieve lowered emissions of POM by means other than CO control. For example, "combustion optimization" is a typical means that is used to control carbon monoxide. This includes changes in combustion residence time, turbulence, and temperature. Yet, combustion optimization can actually increase some organic HAPs (such as polynuclear aromatic hydrocarbons) while reducing others (such as VOCs). Other carbon monoxide controls, such as substituting alternative fuels (natural gas, or distillate oil), would reduce such organic HAPs at a far higher rate than methods for the limitation of carbon monoxide.

Response: Please see Area Source Boiler Preamble for explanation about the relationship at lower emission levels.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 6

Comment: EPA does not claim, nor could it, that measures for the control of CO are the only means by which facilities achieve lower emissions of POM. As noted above, sources also are achieving reductions in POM through the use of cleaner fuel and end-of-stack control technologies such as fabric filters and scrubbers that capture POM and POM-precursors before they are emitted.

Response: Please see Area Source Boiler Preamble for explanation about surrogates chosen

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Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1

Comment Excerpt Number: 7

Comment: EPA's arguments about the alleged cost of monitoring individual organic HAPs and its lack of data for THC emissions are irrelevant. An invalid surrogate such as CO cannot become valid just because EPA thinks it would be cheaper to monitor than other pollutants. EPA's clear statutory duty to set valid standard for each HAP that a category emits, or set a valid surrogate standard for that HAP, is in no way trumped or displaced by the agency's view that doing so is expensive. Especially irrelevant is EPA's claim that setting standards or "each individual organic HAP," 75 Fed. Reg. at 31904. The agency is not proposing CO as a surrogate for any HAP except POM, and the agency provides no reason to believe that measuring and monitoring CO is feasible but measuring and monitoring POM is not. Finally, EPA's claim that it cannot use THC as a surrogate is not only irrelevant, but self-serving and reprehensible. Assuming that THC could be a valid surrogate for POM, EPA has had more than enough time to gather emissions information for THC. The agency should be ashamed to proffer its own failure to gather such information in attempt to excuse itself from following the law.

Response: Please see Area Source Boiler Preamble for explanation about surrogates chosen and changes to the CO emission limits.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 15

Comment: EPA has proposed to rely on CO as a surrogate for organic HAP emissions at area sources. This approach is inappropriate because there is a lack of data and EPA has not demonstrated a correlation between HAP emissions and CO levels below 100 ppm when combusting liquid fuels. CIBO recommends that EPA revisit its floor setting methodology and demonstrate that the proposed CO emissions standard is generally achievable by liquid-fired units. Additionally, EPA's overall approach with regard to the use of CO as a surrogate for organic HAP focuses on continued minimization of CO emissions; however, EPA ignores the fact that lowering CO emissions for many units will result in an increase of NOx emissions and a decrease in efficiency.

Furthermore, total hydrocarbons (THC) could be used as an alternative standard to CO as a surrogate for non-dioxin organic HAPs. While most hazardous waste incinerator operators will rely on the CO option, some sources may opt to select the THC option as THC CEMS, while more costly, are a workable option. THC levels are often more stable and less reactive to load swings than CO. Since THC is an indicator of non-dioxin organic HAPs (CO is not a HAP whereas much of the THCs are HAPs), there is no reason EPA cannot provide a THC option.

Response: Please see Area Source Boiler Preamble for explanation about changes to POM limits for biomass boilers.

Commenter Name: James P. Brooks
Commenter Affiliation: Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1915.1
Comment Excerpt Number: 11

Comment: The Maine DEP is concerned that all of these factors indicate that the proposed CO limits will be impractical, if not impossible, to measure and demonstrate compliance with, and that achieving compliance will not ensure reductions of the real target - organic HAP emissions. The Maine DEP strongly recommends that EPA re-evaluate all available data pertaining to total hydrocarbon emissions from boilers and establish emission standards for that category of pollutants instead of CO. We also recommend that EPA review emissions data based on boiler systems and not individual pollutants. Most of EPA's selected "best performing units" can meet the proposed standard for one pollutant, but not the others (ie. most of EPA's selected units could not comply with all elements of the proposal simultaneously).

Response: Please see Area Source Boiler Preamble for explanation about surrogates chosen and changes to the CO emission limits.

Commenter Name: W. James Wagoner
Commenter Affiliation: Butte County Air Quality Management District
Document Control Number: EPA-HQ-OAR-2006-0790-1993.1
Comment Excerpt Number: 1

Comment: Pacific Oroville, Power, Inc. (POPI) is a 22 Megawatt biomass-fired power plant that was permitted and built in the early 1980's. Electricity is produced through two turbine generator sets powered by two (2) Zurn biomass-fired boilers. The boilers are water-tube, fixed grate, spreader stoker boilers each rated at 110,000 pounds per hour of steam production. Each boiler is equipped with a multiclone and electrostatic precipitator for control of particulates. Flue gas from both boilers is ducted to a common stack.

The proposed regulation uses carbon monoxide (CO) as an indicator of incomplete combustion and as a surrogate for non-dioxin organic HAP emissions, implying that high levels of CO emissions from a biomass boiler are indicative of a significant risk to the surrounding population from hazardous air pollutants. POPI has been subject to the requirements of California's Air Toxics "Hot Spots" program since 1989. The Hot Spots program requires the periodic assessment of toxic air emissions from facilities like POPI. The District reviewed POPI's toxic air contaminant emissions in 2009 and required extensive toxics source testing in November, 2009 to update the facility's toxic emissions inventory. The source permit limit for CO is 1732 ppm (much, much higher than the proposed Area Source MACT CO standard), and the source operates near that limit. However, using the testing results and approved assessment protocols, the District found the facility does not pose a significant risk (in this case, less than 1 in 1,000,000 excess potential cancer cases) to the surrounding population. Therefore, the District

questions using the proposed CO limit as a surrogate for "predicting" toxic emissions and associated health impacts from biomass operations with fixed grate boilers. The District strongly encourages you to reconsider the proposed use of CO as a surrogate for the emission of HAPs from biomass facilities. If the toxics source tests results may be useful in re-evaluating the applicability of the proposed standards for biomass boilers, the District will gladly provide this information.

Response: Please see Area Source Boiler Preamble for explanation about changes to POM limits for biomass boilers.

Commenter Name: David J. Prior
Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 2

Comment: Carbon Monoxide (CO) Emissions From Oil- and Wood-fired Boilers as a Surrogate for PAHs
The proposed Area Source Boiler Rule uses CO as a surrogate for seven PAHs, indicating that PAHs are formed under conditions of poor combustion when CO is elevated. The proposed area source boiler rule will require all new oil-fired boilers to meet a CO MACT of 1 ppm at 3% oxygen and wood-fired boilers meet a MACT limit of 100 ppm at 7% oxygen. Carbon monoxide emissions from wood-fired boilers are much higher than from oil-fired boilers [see submittal for Table 3]. Figure 2[See submittal for Figure 2.] is a scatter plot of the total of these 7 PAHs for each wood boiler test versus the CO value from each test. As indicated by the plot, there is no apparent relationship between PAHs and CO suggesting CO may not be a good surrogate for PAHs (NYSERDA, 2010)[footnote: Data provided by NESCAUM under NYSERDA supported project]. Analysis by NESCUAM for larger wood chip boilers also did not find a CO:PAH correlation.

Response: Please see Area Source Boiler Preamble for CO limits set in final rule.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 2

Comment: NESCAUM has serious concerns with the proposed CO limits in both rules. First and foremost, NESCAUM states do not concur with the assumption that, at lower emission levels, CO is an appropriate surrogate for reducing polycyclic organic matter (POM) emissions. Analyses by states of this issue support this conclusion. If EPA’s position is that increased combustion will result in lower emission levels of organics, then we suggest that EPA use a

combustion efficiency limit and test method rather than a CO standard. For existing units, EPA should require annual tune-up and testing of combustion efficiency (oxidative). For new units, EPA should require that they meet the U.S. Department of Energy's AFUE standards for direct heating devices and boilers or ASHRAE155p standards.

If EPA chooses to continue to use CO as a surrogate for POM emissions, we recommend that it re-evaluate its approach towards emission limits and control options for CO. Increasing combustion efficiency may reduce POM emissions, but the use of CO controls may not. Furthermore, the proposed CO limits may be unachievable for some existing units. If such a unit has NOx limits, then it will need to install add-on CO controls to these units, likely CO catalysts, which will do nothing to reduce HAP emissions. If a unit does not have NOx emission limits, it may increase NOx emissions in order to reduce its CO emissions, once again with little impact on its overall HAP emissions. NESCAUM recommends that EPA use a multi-pollutant approach to re-evaluate the proposed CO emission limits in light of the potential negative impacts of the CO limits on the emissions of other air pollutants.

Response: Please see Area Source Boiler Preamble for explanation about the relationship at lower emission levels.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 5

Comment: As we discuss in detail in Sections VI.C of our major source comments [See DCN: EPA-HQ-OAR-2002-0058-2960.1 for comments], CO is not a good surrogate for organic HAPs, including POM, at low concentrations. Additionally, operation below the proposed 1 and 2 ppm CO limits for liquid-fired boilers and the controls associated with meeting those limits, where they are achievable at all, are likely to result in a net creation of POM, rather than a reduction. Operation at such low CO levels requires operation at non-optimum combustion efficiencies, increasing fuel use and POM, NOx and other pollutant production. It also forces sources to operate so close to burner instability, that normal operating variability will cause POM excursions. Even where oxidation catalyst systems are employed, POM will increase because these systems operate in a temperature range that fosters POM creation, along with dioxin/furan and PM2.5 creation.

Response: Please see Area Source Boiler Preamble for discussion of these topics.

Commenter Name: Gary Rubenstein
Commenter Affiliation: Kauai Island Utility Cooperative, KIUC
Document Control Number: EPA-HQ-OAR-2006-0790-2028.1

Comment Excerpt Number: 6

Comment: We further note that the surrogacy relationship between CO and POM emissions from oil-fired boilers is not well established in the regulatory proposal or RIA. This is evidenced by the following statements in the preamble of the Proposed Rule:

In terms of developing MACT emission limits for area source boilers, we have:

—No emission data for POM,

—Limited emission data (nine coal-fired boilers) for mercury, —No State regulations applicable for mercury or POM, —No State permits specific for mercury or POM,

—No surrogate for mercury, but CO as a surrogate for POM,

—Emission data on four coal-fired area source boilers using add-on control technology for mercury,

—Limited emission data for CO (5 coal-fired boilers, 30 wood-fired boilers, 68 oilfired boilers),

—A few State permits with CO limits for coal, oil, and wood-fired area source boilers[.]13 [Emphasis added]

Despite the above admission of no emission data for POM, EPA nonetheless is proposing MACT for POM based on CO surrogacy. The only discussion of the surrogacy relationship within the Proposed Rule's preamble, the RIA, or the MACT Floor Analysis14 is a few occurrences in the preamble stating both POM and CO are formed by incomplete combustion. Based on these statements, a MACT analysis for CO was performed and the resultant CO limit for oil-fired area source boilers is required (i.e.,

2.0 ppmvd @ 3% O2). While we agree with the general statements that both CO and POM are the products of incomplete combustion, further study is required prior to requiring CO MACT as a surrogate for POM MACT. At a minimum, EPA should include a statistically significant number of concurrent CO and PAH measurements from oil-fired boilers to establish this relationship over a wide range of exhaust CO concentrations. This relationship may establish that PAH emissions are negligible (or even non-detectable) at CO concentrations much higher than 2 ppm. If this were the case, the Proposed Rule's level of CO control would not be warranted. Conversely, the relationship may show that low-end CO reductions (e.g., reducing CO concentrations from 20 ppm to 2 ppm) do not result in any significant additional PAH reductions. Until this surrogacy relationship can be fully established, we recommend that the rule require GACT pursuant to 112(c)(3) in a manner aimed at minimizing incomplete combustion.

Response: Please see Area Source Boiler Preamble for a response on the consistency of the relationship across the range of concentrations and to changes to the rule.

Commenter Name: James P. Brooks
Commenter Affiliation: Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1915.1
Comment Excerpt Number: 9

Comment: The Maine DEP's February 2010 report on Carbon Monoxide Variability in Maine Wood-Fired Boilers concluded that there is no reliable correlation between CO and volatile organic compound emissions (an indicator of total hydrocarbon emissions) from biomass boilers. This report was previously supplied to EPA and will be resubmitted to Docket ID No. EPA-HQ-OAR-2002-058 pertaining to EPA's concurrently proposed Major Source Boiler MACT.

Response: The final rule requires GACT for biomass boilers with regard to CO emissions, which involves annual tune-ups.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 24

Comment: For all of the same reasons discussed in Section VI.C of our comments on the Major Source Boiler and Process Heater NESHAP proposal relative to the CO limits for gas- and liquid-fired equipment at a major source[See DCN: EPA-HQ-OAR-2002-0058-2960.1 for comments], the CO limits for existing and new liquid-fired boilers in this area source proposal do not reflect MACT for POM and do not meet the requirements of §63.112(d)(2) and are based on inadequate data. The proposed CO limits are not MACT or even GACT, are unenforceable and are unachievable. CO at low ppm levels is not a surrogate for Polycyclic Organic Matter (POM), are not feasible (either from a measurement, operability, or cost standpoint) at all times and simultaneously with other applicable limits and would result in increased HAP, VOC, NOx and CO_2 emissions and decreased boiler efficiency (effects which were not considered in this rulemaking). Below some CO level, which we believe is about 100 ppm, CO does not appear to be a good surrogate for organic HAPs (including POM) and thus there is no basis in §112(d) for either setting a CO emission limit below that point or for using a tune-up procedure to minimize CO below that level.

Response: Please see Area Source Boiler Preamble for response on the consistency of the relationship across the range of concentrations.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1

Comment Excerpt Number: 31

Comment: In the Area Source proposal, EPA repeats the same fundamentally flawed approach that was used to calculate a CO surrogate based limit in the Major Source proposal. As noted in our Major Source comments, AF&PA supports the CO surrogate approach (See Section IV. C, EPA-HQ-OAR-2002-0058; we incorporate those comments by reference). CO is both a logical and a practical surrogate measurement tool that has been reviewed in the past. However, in using CO, EPA disregards fundamental characteristics of Boiler operation related to the natural variability in CO emissions in evaluating the data available and setting the standards. Most importantly, the standards are set in a way that is completely at odds with the compliance requirements. In addition, there are numerous problems with the dataset, noted below, which compound the generally flawed approach used to calculate Area Source limits. Fortunately, these problems can be addressed, but only if EPA completely reorients its approach and evaluates the long term data that are available to develop a reasonably defensible standard. EPA must completely revise its approach to developing a standard if it chooses to pursue a CO emission limit.

Response: Please see Area Source Boiler Preamble for explanation about surrogates and changes to the CO emission limits.

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 1

Comment: The proposal uses carbon monoxide (CO) as a surrogate for polycyclic organic matter (POM) and other urban organic HAPs
EPA is proposing to use CO as a surrogate for organic HAPs, including POM, emitted from various fuels burned in boilers because the presence of CO is an indicator of incomplete combustion and possibly an indicator of elevated organic HAP emissions. In addition, monitoring equipment and measuring of CO is more readily available and cost effective than measuring and monitoring individual organic HAPs. While NHDES recognizes that using a surrogate for HAPs in this proposal is more practical than imposing individual standards for each specific HAP, NHDES is concerned that setting a CO limit in this regulation could potentially result in facilities installing CO controls to meet the CO emission limits in the rule instead of improving the efficiency of the boiler to reduce HAP emissions, especially if the CO emission limitations set by the rule are exceedingly restrictive. There has been some indication from various studies that reducing CO emissions to reduce HAP emissions is only effective to a certain point and that below that level, HAP emissions are no longer effectively reduced. NHDES recommends that if EPA continues to use CO as a surrogate for HAPs, that EPA research the available data to confirm this break even point and set CO emission levels such that the intent of the rule (reduction in HAP emissions) is actually achieved by the rule.
In addition, the State of Maine Department of Environmental Protection (ME DEP) has completed a study that focused on, among other things, different fuel types and their affect on

CO variability. As a result of the data that ME DEP studied, they recommended that EPA not utilize CO as a surrogate for HAP in wood-fired and multi-fuel fired boilers because the data showed that CO is extremely variable in wood-fired and multi-fuel fired boilers. In addition, a CO standard could result in a facility burning significantly more fossil fuels to reduce the variability and meet the CO standard. ME DEP points to quality of wood fuels, moisture content, and unit load rates as contributors to CO variability. If EPA ultimately elects to use CO as a surrogate for wood-fired boilers, NH DES supports ME DEP's recommendation that the CO standard for these units should be higher in order to take into account the inherent variability encountered when combusting only wood. [Footnote: Carbon Monoxide Variability in Maine Wood Fired Boilers, ME DEP, Feb/limy 2010]

Response: The final rule requires GACT for biomass and oil biolers, which involves annual tune-up.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 1

Comment: EPA should NOT utilize CO as a surrogate for HAP in wood fired and multi-fueled boilers. The data illustrates that CO is extremely variable in wood fired/multi-fueled boilers. An inappropriately low CO standard may result in facilities burning significantly more fossil fuels to reduce variability and meet a CO standard. Alternatively, a facility may choose add-on CO control equipment which would control CO but not HAPs.

Response: The final rule requires GACT for biomass and oil boilers, which involves annual tune-up.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 2

Comment: Develop a standard for gaseous HAP using VOC, TOC, or THC as a surrogate as utilized in several other combustion NESHAP. We understand that an alternative surrogate to CO would require additional testing and data collection from these boilers. This could be done as part of EPA's information collection request.

Response: Please see the Area Source Boiler Preamble for explanation about surrogates.

Commenter Name: Cheryl Sonnier Nolan
Commenter Affiliation: Louisiana Department of Environmental Quality
Document Control Number: EPA-HQ-OAR-2006-0790-2277
Comment Excerpt Number: 2

Comment: Biomass Combustion Results in Negligible Emissions of the Targeted Pollutant

For the biomass subcategory, EPA proposes to regulate CO as a surrogate for polycyclic organic matter (POM) emissions. POM is represented by total emissions of polycyclic aromatic hydrocarbons (7-PAH).2 However, bagasse combustion results in negligible emissions of these seven compounds. One test sponsored by the American Sugar Cane League revealed the 7-PAH emission rate to be only 0.0000101 pound per ton of bagasse burned. Relevant pages from the stack test report are attached, and the full report can be transmitted to EPA if desired. [See submittal for testing data.]

Thus, should EPA improperly conclude that all biomass-fired sources are subject to 40 CFR 63 Subpart JJJJJJ, the agency should specifically reconsider bagasse combustion, as this area source category contributes insignificantly to emissions of POM and its regulation would not be necessary to attain the 90 percent requirement imposed by Section 112(c)(6) of the CAA.

Response: The final rule requires GACT for biomass and oil boilers, which involves annual tune-up.

Commenter Name: Matthew Markee
Commenter Affiliation: IN Group Companies
Document Control Number: EPA-HQ-OAR-2006-0790-1965.1
Comment Excerpt Number: 2

Comment: IN disagrees with EPA that carbon monoxide (CO) is an appropriate surrogate for estimating the concentration of organic HAPs in flue gas emissions. No definitive correlation between CO and organic HAPs emissions exists. In fact, scientific evidence shows that higher CO levels indicate better combustion and therefore more complete destruction of organic HAPs. Thus, IN requests EPA abandon its proposed use of CO emissions as an indicator of organic HAPs emissions. (See submittal letter pages 4-8 for examples supporting this theory.)

Response: Please see Area Source Boiler Preamble for explanation about surrogates chosen

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Commenter Name: Matthew Markee
Commenter Affiliation: IN Group Companies
Document Control Number: EPA-HQ-OAR-2006-0790-1965.1
Comment Excerpt Number: 3

Comment: IN agrees with EPA that economically practical emissions monitoring equipment is widely available today for monitoring CO emissions. IN also agrees with EPA that economically practical equipment and test procedures do not exist today for measuring and monitoring organic HAPs emissions. Thus, IN acknowledges that if a strong and consistent correlation were to exist between CO and organic HAPs emissions across different combustion systems and operating conditions at all times, then CO could be a viable candidate as a surrogate for estimating actual organic HAPs concentrations.

However, before considering how to use CO to estimate organic HAPs concentrations, a strong correlation (that is, a correlation close to +1.0 or -1.0 but not close to 0) between CO and organic HAPs must first be established. Moreover, such a correlation must always have a "consistent" polarity (either positive or negative but not alternating). Across multiple installations, if CO concentrations are shown to sometimes but not always correlate strongly (either positively or negatively) with organic HAPs concentrations, or if CO concentrations are shown to sometimes be correlated positively while also sometimes be correlated negatively with organic HAPs, then clearly CO fails to be a suitable surrogate for estimating organic HAPs emissions. EPA has not demonstrated quantitatively that both a strong and consistent correlation exists between CO and organic HAPs emissions across multiple installations for each type of organic fuel in use.

Response: The EPA appreciates the input, but disagrees with the conclusion. Please see Area Source Boiler Preamble for explanation of surrogates.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 7

Comment: NOx vs CO [See submittal for all figures.]

NO„ and CO data obtained from Red Shield - Old Town, SAPPI - Somerset No.1 Power Boiler, and Verso Paper Androscoggin was compiled into Figures and the inverse correlation between and NO„ and CO was evident. These Figures can be found in Appendix A.

Verso Paper Androscoggin provided annual NOx and CO stack test data shown in Figure #1. This Figure indicates NOx decreases as CO increases and vice versa.

SAPPI Somerset provided daily CO and NOx data from April through July (Figure #2); the correlation was seen again.

This phenomenon was also seen in the data collected from the Red Shield facility; particularly when the facility was burning only whole tree chips (Figure #3). CO and NOx variability was much lower when CDW, a dry fuel, was included in Red Shield's fuel mi„ as in September 2007 (See Figure #4 — note the scale on this Figure is the same as the scale used for Figure #3). As

shown by Figure #5, CO and the percent oxygen were much less variable when dry fuel such as CDW was part of the fuel mix; in turn NOx was higher.

Response: Please see DCN EPA- HQ-OAR-2006-0790-0067.1 excerpt 5 for discussion of this topic.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 9

Comment: In National Lime, EPA found that the use of PM as a surrogate for HAP metals was not contrary to law for two reasons. First, the proposed rule in question did "not treat PM, unlike a HAP metal, as a pollutant the emissions of which determine whether a cement plant is a 'major source' of emissions." Id. at 638. Second, EPA did not suggest that it contemplated broad regulation of PM pursuant to §112 as the regulation of PM was particular to the cement industry.

Here, the use of CO as a surrogate is contrary to law. EPA contemplates broad regulation of CO under §112 as EPA regulates CO from all new and existing area source boilers, wherever found, crossing industrial, commercial, and institutional settings indiscriminately. It is not limited, as was the rule in National Lime, to one industry. Thus, EPA uses CO as a HAP to regulate organic HAP emissions, in effect, then, adding it to the list of HAPs.

Response: Please see Area Source Boiler Preamble for response to relevance of National Lime to CO.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 9

Comment: Steam Flow, Oxygen, and CO variability

During an informal review of this document, it was suggested that we compare CO variability with fluctuations in steam flow and the oxygen percent leaving the boiler. An oxygen trend was included in Figure #5. It demonstrates that, when combusting biomass, higher amounts of oxygen are needed to ensure combustion and increased CO variability results from the higher moisture content. We theorize that moisture content in the fuel will create the need for higher air flow which in turn would produce higher oxygen levels. [See submittal for all figures.]

Figure #6 includes trends for steam flow, NOx and CO with construction and demolition wood (CDW) compared to Whole Tree Chips (WTC), included in the fuel mix in Red Shield's No. 6

boiler. Surprisingly, NOx trended well with steam flow: this phenomenon illustrated in Figure #7. Figure # 8 demonstrates the correlation between NOx and steam flow. Higher furnace temperature results in both higher steam flow and higher NOx being produced in the boiler. Figure #9 shows an inverse correlation between steam flow and CO.
Figure #7 includes NOx, steam flow and percent oxygen with CDW compared to WTC with and without CDW included in the fuel mix.

A 5 day "snapshot" of Red Shield's data illustrated in Figures # 10 and 11. Figure #10 includes hourly averages of NOx, CO, O2 %, and steam flow occurring in early June 2009. The Figure shows sudden decreases in oxygen will result in increases in CO. The inverse correlation is not as consistent. Figure 11 includes NOx, steam load and oxygen. Again, as seen in Figure #6 and #11, NOx trends well with steam flow. Figure #12 shows trends of steam flow, oxygen and CO. In addition, heat input and oxygen data was also included in Figures #15, Figure #17, and Figure #19.

Although EPA is required to consider only HAP emissions as part of the Boiler MACT development, EPA must keep in mind that using CO as a surrogate for wood fired boilers may result in an unintended increase in other pollutants such as NO and HAP metals as facilities switch from biomass to other fuels in an effort to reduce and control CO.

Response: The final rule now requires GACT for biomass and oil boilers, which involves annual tune-up.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 10

Comment: EPA's use of CO as a surrogate is unreasonable in this situation. There are several reasons for this conclusion: there is no guarantee that reducing CO will reduce POM; complete combustion is but one of several factors relating to POM formation; actual data show that CO levels are not dispositive of POM formation; higher combustion temperatures may lead to higher POM formation; and controlling CO will lead to other emission exceedences.

Response: The final rule requires GACT for biomass and oil boilers with regard to CO emissions, which involves annual tune-up.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 11

Comment: The same level of certainty and agreement found in National Lime is not present in this situation. Regulating CO will not necessarily lead to a decrease in POM formation or emissions.

In National Lime all agreed, and it was assumed, that the regulation of PM and the use of PM control technology would indiscriminately capture HAP metals along with particulates. EPA demonstrated "where there is cement kiln PM, HAP metals are always in it, and when cement kiln PM is removed from emissions, HAP metals are always removed with it." Id. at 639.

Here, EPA makes no finding or statement that the reduction of CO will, in fact, also reduce organic HAP emissions. Instead, EPA merely states that higher CO emissions are a "potential" indicator of elevated organic HAP emissions.

Response: Please see the Preamble for a discussion on the choice of CO as a surrogate.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 12

Comment: Actual data from bagasse-fired boilers establish that the reduction of CO will not assure lower organic HAP emissions. As mentioned elsewhere in these comments, the ASCL conducted stack tests in 1998-1999 on bagasse-fired boilers in south Louisiana. Table 7 illustrates that the bagasse-fired boiler with the lowest CO emissions had the highest POM (as 7-PAH) emissions. [See submittal for Table 7.] Further, CO emissions from the bagasse-fired boilers fluctuated between 141 ppmv and 256 ppmv, yet the measured POM emissions were very similar (0.0007 pounds/ton bagasse to 0.00078 pounds/ton bagasse). These data undermine EPA's presumptions and contradict its conclusions.

Response: The final rule requires GACT for biomass and oil boilers with regard to CO emissions, which involves an annual tune-up.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 13

Comment: Overall CO variability

To determine how much CO variability occurs in multi-fueled boilers, we looked at the average range taking the highest daily CO reading subtracted from the lowest CO reading for each day. This was to give us an idea of how much the CO varies on a daily basis. On a daily basis, CO can

vary by as little as 21 ppm through out the course of a day for multi-fuel boilers to more than 1000 ppm when only wood is being fired. EPA must take this into account when developing a CO standard to be used in the Boiler MACT or CISWI, realizing that CO results from stack testing can not show the variability present in wood and multi-fuel fired boilers. [See submittal for all figures.]

Response: The final rule requires GACT for biomass and oil boilers with regard to CO emissions, which involves tune-up.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 13

Comment: A higher combustion temperature is generally associated with more complete combustion, which is EPA's stated goal in using CO as a surrogate. However, in the 1998-1999 tests, the boiler with the highest stack gas temperature measured in the flue gas at the sample port showed the highest POM (as 7-PAH) emissions. Conversely, the lowest temperature yielded the lowest measurement of POM (as 7-PAH). This suggests that temperature, not CO, may be a better indicator of POM emissions.

Further, the AP-42 emission factors for anthracite coal establish that better combustion through higher temperatures does not cause reduced POM formation. In fact, it may increase POM formation. Stoker-fired boilers, which have a high combustion temperature, have a POM emission factor of 0.006224 pound/MMBTU. By way of contrast, residential space heaters have a POM emission factor of 0.000042949 pound/MMBTU. If EPA's assumption regarding higher combustion temperature were correct, the stoker-fired boiler should have a lower POM emission rate. See AP-42, Table 1.2-5 - Emission Factors for Anthracite Coal.

Response: Please see the Preamble for a discussion on the choice of CO as a surrogate.

Commenter Name: David Suess
Commenter Affiliation: DSG Solutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1977.1
Comment Excerpt Number: 14

Comment: As mentioned within the regulation's background discussion there may be other more representative surrogates for HAPs than CO (e.g. total hydrocarbons) and obviously testing for the major HAP(s) indicative of the fuel(s) regulated under this part would be the most accurate in terms of understanding/minimizing HAP emissions from sources. For facilities that can not satisfy the CO emissions limit, would an alternative compliance method (e.g. HAP(s) stack testing) be acceptable?

Response: Please see the Preamble for a discussion on the choice of CO as a surrogate.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 14

Comment: The attempt to reduce CO emissions to meet the emission standard will create other unintended consequences. One may be the increase in emissions of nitrogen oxides (NOx). Due to the moisture and oxygen content of bagasse, it burns at a lower temperature than fossil fuels, which reduces the formation of combustion-related NOx. Raising the combustion temperature in order to decrease CO emissions may lead to increased formation of NOx. Locating and Estimating Air Emissions from Sources of Polycyclic Organic Matter, EPA, No. EPA-454/R-98-014, July, 1998, pp. 4-47 and 4-53.

The relationship between CO and POM (in general and as 7-PAH) is much more variable than expressed by EPA. As a result, it is unreasonable to utilize CO as a surrogate.

Response: The final rule requires GACT for biomass and oil boilers with respect to CO, which involves annual tune-up.

Commenter Name: John Huber
Commenter Affiliation: National Oilheat Research Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1831.1
Comment Excerpt Number: 20

Comment: NORA has found no scientific correlation between POM, and/or 7 PAH emissions and CO emissions. In fact, NORA is aware of a recent biomass boiler study demonstrating no correlations between CO emissions and & 7 PAH emissions in biomass combustion. These recent biomass test results render EPA's correlation claim that CO as a good proxy for 7 PAH emissions doubtful. Additionally, for the small boilers, the service personnel who regularly test those boilers do not have test equipment suitable to test to these levels.

Response: The final rule requires GACT for biomass and oil boilers, which involves annual tune-up.

Commenter Name: Gregory A. Wilkins
Commenter Affiliation: Marathon Petroleum Company, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2165.1

Comment Excerpt Number: 3

Comment: Because EPA's current proposed approach has the unintended consequence of requiring inefficient operation of fired equipment (resulting in more fuel consumed than is optimal) Marathon recommends that the CO standards be adjusted so that equipment can be operated for optimal energy efficiency during all period of normal operation, including turndown. While optimal CO levels are generally no more than 400 ppmv, excess oxygen is added to assure safe operation of fired equipment to account for changes in process heat needs, fuel composition and other variables. HAP emissions are negligible with little change between these low CO levels and EPA's proposed standard. Finalizing more appropriate CO standards and work practices will result in less fuel consumption and fewer emissions.

Response: Please see Area Source Boiler Preamble for explanation about surrogates chosen and changes to the CO emission limits.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 1

Comment: EPA should NOT utilize CO as a surrogate for HAP in wood fired and multi-fueled boilers. The data illustrates that CO is extremely variable in wood fired/multi-fueled boilers. An inappropriately low CO standard may result in facilities burning significantly more fossil fuels to reduce variability and meet a CO standard. Alternatively, a facility may choose add-on CO control equipment which would control CO but not HAPs.

Response: The final rule requires GACT for biomass boilers with regard to CO emissions, which involves a tune-up.

Commenter Name: Tim W. Sonnichsen
Commenter Affiliation: Sonnichsen Engineering, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2139.1
Comment Excerpt Number: 3

Comment: Minimizing CO to Minimize Toxic Organics is Inappropriate

The EPA presumes that carbon monoxide (CO) is an appropriate surrogate for other hydrocarbon HAP's. Page 24 of the Area Rule states "A high level of CO is an indicator of incomplete combustion and, thus, a potential indication of elevated organic HAP emissions." The key words in this sentence are "high" and "potential."

If high levels of CO are and indicator of organic HAP's, then the proposed practice of minimizing CO levels to very low levels does not necessarily mean that organic HAP's emissions would be any lower than what would occur at higher CO emission levels. EPA only refers to the potential relationship of CO to organic HAP's. Obviously, there is not a one-to-one correlation of decreasing HAP's with decreasing CO.

Response: Please see the Preamble for a discussion on the choice of CO as a surrogate.

Commenter Name: Charlie Cary
Commenter Affiliation: Biomass Combustion Systems, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1990.1
Comment Excerpt Number: 4

Comment: The assessment of health effects is inaccurate. EPA uses CO as a surrogate for Particulate Organic Matter (POM) emissions and PM for a surrogate for heavy metals emissions but these relationships are questionable.

Response: Please see Area Source Boiler Preamble for response to the consistency of the relationship across the range of concentrations.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 5

Comment: EPA has not adequately identified its basis for using CO as a surrogate for polycyclic organic matter ("POM"). ABMA acknowledges a correlation between CO and organic HAPs; however, ABMA is not aware of any relevant testing data that correlates the relationship between HAPs and CO when operating at CO levels less than 100 ppm. By contrast, data from the Petroleum Environmental Research Forum Project 92-19 provides some of the most complete data examining the relationship between CO and HAPs during gas firing. While there is a fairly linear correlation between decreasing CO and decreasing HAPs at higher levels, once the CO values fall under 100 ppm, further reduction of CO did not provide any substantial correlating reduction of HAPs. Based on this data, it can be concluded that during gas firing the reduction of CO from 100 ppm to 1 ppm may not create any incremental benefit in terms of HAP reductions. Without any data to the contrary, this relationship between CO and HAPs should also be applied to oil-firing, where EPA has not demonstrated that a significant HAP reduction would occur at CO levels below 100 ppmvd.

Response: Please see Area Source Boiler Preamble for final rule language.

Commenter Name: John M. Irving
Commenter Affiliation: Burlington Electric Department
Document Control Number: EPA-HQ-OAR-2006-0790-2171.1
Comment Excerpt Number: 5

Comment: The use of CO as a surrogate for POM does not correlate well with large wood-fired units. We believe that larger wood-fired units have higher operating temperatures and longer residence times, greatly reducing HAPs. There should be language in the Area Source Boiler MACT regulations that specifies a threshold of negligible POM and a process to stack test out of the regulation. After specified and appropriate stack testing, a facility could be removed from the Area Source Boiler MACT, since the facility proved that CO was not a surrogate to POM. Therefore, the CO standard would no longer be representative or necessary.

Response: The final rule requires GACT for biomass boilers with regard to CO emissions.

Commenter Name: Michael A. Zapkin
Commenter Affiliation: Eastman Kodak Company
Document Control Number: EPA-HQ-OAR-2006-0790-2170.1
Comment Excerpt Number: 6

Comment: An alternative means of establishing HAP compliance for the HAP surrogate CO should be provided

For existing liquid fuel fired boilers, the area source boiler MACT establishes an emission limit for one HAP surrogate (CO). Control of the HAP surrogate is not required under the CAA. Rather EPA has proposed that this is a reasonable surrogate for organic HAPs and this surrogate functions as a more cost-effective means of controlling these HAPs. Alternate compliance options, such as setting a CO level based on passing an organic HAP emissions test or using an alternate surrogate such as total hydrocarbons should be provided as an alternative to meeting the CO standard. The total hydrocarbon approach is used in the hazardous waste incinerator MACT (63.1219(a)(5)).

Response: Please see Area Source Boiler preamble for discussion on surrogates.

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 7

Comment: The proposed standard establishes the use of ubiquitous combustion chemicals as surrogates for minor or trace compounds. For example, carbon monoxide is created from the

incomplete combustion of any fuel. This standard, as proposed, assumes that all incomplete combustion byproducts are hazardous air pollutants; and therefore, non-dioxin organic chemicals may directly be estimated or regulated using this surrogate parameter.

In this proposal CO is established as a surrogate for organic HAP. Minimizing CO is, therefore, intended to demonstrate that organic HAP is minimized. It appears clear however that the level of organic HAP emissions becomes insensitive to CO concentration below some value, approximately 100 ppm for gas-fired units. Following is a general discussion of the relationship between CO concentration and organic HAP emissions. EPA itself has already reached this conclusion in the Hazardous Waste NESHAP rulemaking. As the Agency states at 70 FR 59462 (October 12, 2005):

We explained at proposal why the carbon monoxide standard of 100 ppmv and the hydrocarbon standard of 10 ppmv are appropriate floors. See 69 FR at 21282. The floor level for carbon monoxide of 100 ppmv is a currently enforceable Federal standard. Although some sources are achieving carbon monoxide levels below 100 ppmv, it is not appropriate to establish a lower floor level because carbon monoxide is a conservative surrogate for organic HAP. Organic HAP emissions may or may not be substantial at carbon monoxide levels greater than 100 ppmv, and are extremely low when sources operate under the good combustion conditions required to achieve carbon monoxide levels in the range of zero to 100 ppmv.141 (See also the discussion below regarding the progression of hydrocarbon oxidation to carbon dioxide and water). As such, lowering the carbon monoxide floor below 100 ppmv may not provide significant reductions in organic HAP emissions. Moreover, it would be inappropriate to establish the floor blindly using a mathematical approach—the average emissions for the best performing sources—because the best performing sources may not be able to replicate their emission levels (and other sources may not be able to duplicate those emission levels) using the exact types of good combustion practices they used during the compliance test documented in our data base. This is because there are myriad factors that affect combustion efficiency and, subsequently, carbon monoxide emissions. Extremely low carbon monoxide emissions cannot be assured by controlling only one or two operating parameters.

The use of CO as a surrogate for the reduction of organic compounds is not new, but previous rulemakings have concluded that it is only necessary to reduce CO to less than a particular level to minimize organic HAPs. For example, CO was used as an indicator of combustion efficiency as part of the Interim Status rule for Boilers and Industrial Furnaces (BIFs) that burn hazardous waste. At the time, EPA's research demonstrated that BIF units with CO emissions less than 100 ppmvd were achieving the desired destruction efficiency of the organic HAP in the waste streams. As mentioned previously, because the chemical kinetics make CO far more difficult to oxidize than other organic compounds, it is not necessary to drive CO emissions to zero to obtain a corresponding minimization of organic emissions.

The data used to support the BIF Interim Status rule documented how the selected level of CO corresponded to minimal emissions of the target compounds. That should be the case for Boiler MACT as well. It is not logical to apply the same rules to establish a CO floor, when CO is merely the surrogate. It is more reasonable to collect data that demonstrate low organic emissions, and then to document the corresponding CO emissions for those sources.

Response: Please see Area Source Boiler preamble for discussion about surrogates and changes to the CO emission limits.

Commenter Name: Charlie Cary
Commenter Affiliation: Biomass Combustion Systems, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1990.1
Comment Excerpt Number: 7

Comment: Research indicates that the relationship between CO and reduced POM is not consistent for biomass boilers across the full range of CO concentrations. The New York State Energy Research and Development Authority found in their "European Wood-Heating Survey" (April 2010 p.3-5) that there is a correlation between reduced CO and reduced organic POMs as the CO level is reduced to around 680 PPM @7%. Below this threshold there is little correlation. This strongly suggests the previous State regulations which were bases on 500-600 PPM of CO indicating efficient combustion had it right and the Federal proposed regulations of 100 PPM are off the mark by a factor of five.

Response: Please see Area Source Boiler Preamble for explanation about changes to POM limits for biomass boilers.

Commenter Name: Gailyn Messersmith
Commenter Affiliation: Messersmith Manufacturing, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1949.1
Comment Excerpt Number: 8

Comment: Conduct much more rigorous studies to establish or verify the following:

* The actual correlation of CO to POM for combustion of biomass fuel vs. the assumed relationship.

Response: Please see Area Source Boiler Preamble for explanation about changes to POM limits for biomass boilers.

Commenter Name: Lewis F. Gossett
Commenter Affiliation: South Carolina Manufacturers Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-2196.1
Comment Excerpt Number: 8

Comment: SCMA does not believe that any continuous emission monitoring (such as CEMS) can be justified for a boiler that is not a major source of HAP, such as the proposed requirement for boilers greater than 100 MMBtu/hr to have CEMS for carbon monoxide (CO), especially when CO is just a surrogate for POM and other organic urban HAP. EPA states that they have no emission data for POM on coal boilers, but chose CO as the surrogate, assuming that as an indicator of incomplete combustion, it would also potentially indicate elevated organic HAP emissions. EPA provides no evidence or data to support their assertion that minimizing CO emissions through more complete combustion will result in minimizing organic urban HAP emissions. EPA should study this further before arbitrarily imposing CEMS on minor area sources.

Response: Please see Area Source Boiler Preamble for explanation about changes to POM limits for biomass boilers.

Commenter Name: Barry Christensen
Commenter Affiliation: Occidental Chemical Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2227.1
Comment Excerpt Number: 9

Comment: OCC strongly supports EPA's use of surrogate parameters. For example, carbon monoxide is a measure of incomplete combustion and a more practical parameter to measure than individual organic HAPs.

Response: The EPA appreciates the input and support. Please see preamble for explanation of surrogates.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 10

Comment: The use of CO as a surrogate for the reduction of organic compounds is not new. For example, CO was used as an indicator of combustion efficiency as part of the Interim Status rule for Boilers and Industrial Furnaces (BIFs) that burn hazardous waste. At that time, EPA's research demonstrated that BIF units with CO emissions less than 100 ppmvd were achieving the desired destruction efficiency of the hazardous organics in the waste streams. Because the chemical kinetics make CO far more difficult to oxidize than other organic compounds, it is not necessary to drive CO emissions to zero to obtain a corresponding minimization of organic emissions.

The data used to support the BIF Interim Status rule documented how the selected level of CO corresponded to minimal emissions of the target compounds. That should be the case for Boiler

GACT as well. It is not logical to apply the same rules to establish a CO floor, when CO is merely the surrogate. It is more reasonable to collect data that demonstrate low organic emissions, and then to document the corresponding CO emissions for those sources.

Response: Please see the Preamble for a discussion on the choice of CO as a surrogate.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 10

Comment: BTEC understands the usefulness and economy of using CO as a surrogate for Particulate
Organic Matter (POM) and PM for metals; however, BTEC believes that these indicators may not be accurate when evaluating emissions from modern high-efficiency biomass combustion systems.

Various research has demonstrated that high efficiency biomass boilers burn with sufficient time, temperature, and turbulence to render particulate emissions into primarily low toxicity inorganic salts and virtually eliminate any volatile organic hydrocarbons. This stands in contrast to the PM emissions from heating oil (diesel) combustion and/or inefficient wood combustion which is predominantly polycyclic organic matter. EPA has assumed that all particulate emissions from new biomass boilers are highly toxic. However, recent research indicates that the inorganic salt emissions from high-efficiency biomass combustion are five times less toxic to cells than the emissions from petroleum based PM. [Footnote: Nussbaumer T., Klippel N., Oser M., "Health relevance of aerosols from biomass combustion in comparison to diesel soot indicated by cytotoxity tests," 14th European Biomass Conference, Paris, 2005.]

Additionally, research indicates that the relationship between CO and reduced POM is not consistent for biomass boilers across the full range of CO concentrations. As displayed in Graph 1 of the submittal, there is a correlation between reduced CO and reduced organic POMs as the CO level is reduced to around 680 ppm @7% O2. However, if CO is further reduced below 680 ppm, there are only minimal additional reductions in organic hydrocarbons. Therefore, BTEC suggests that requiring ultra-low CO emissions from biomass may not achieve significantly lower POMs and the associated health benefits.

Response: The final rule requires GACT for biomass and oil boilers, which involves annual tune-up.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1

Comment Excerpt Number: 11

Comment: Another aspect of CO emissions that make them a poor candidate for establishing a GACT floor as a surrogate for organic HAP is that CO emissions may vary significantly, without any adjustments being made to the boiler controls. For example, in a wood-fired boiler with a traveling grate, variations in the composition or moisture content of the wood may cause it to pile on the grate and smolder, leading to elevated CO emissions.

As previously mentioned, some boilers produce high levels of CO only when they are experiencing load variations. The testing that was done to establish the GACT floor appears to be all conducted at steady load. A biomass stoker unit may have low to moderate CO emissions at steady load, but significant emissions as the load varies. As such, the CO data used to establish the floor may not be representative of normal boiler operation and a low CO limit may not be achievable by even the top performers.

Response: Please see Area Source Boiler Preamble for response to the consistency of the relationship across the range of concentrations and to changes to the rule.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 12

Comment: EPA is proposing to regulate CO as a surrogate for urban organic HAP. We are unaware of any relevant testing data that correlates the relationship between HAP and CO when firing oil and operating at CO levels of less than 100 ppm. Data from the Petroleum Environmental Research Forum Project 92-191 provides some of the most complete data between the relationship between CO and HAP from units firing gas. Based on this data, while there is a fairly linear correlation between decreasing CO and decreasing HAP at higher CO levels, once the CO values fall under 100 ppm further reduction of CO does not provide any substantial reduction of HAP. This data was correlated for CO versus hydrocarbons, aldehydes, PAH, LVOC, and HVOC. Based on this data it can be concluded that the reduction of CO from 100 ppm to 1-2 ppm may not create any potential benefit in terms of HAP reductions. EPA has presented no data, nor any scientific analysis, that would show that this relationship between CO and HAP's would be any different for oil firing. Therefore the requirement to control CO to these extremely low levels on oil cannot be substantiated as providing any significant reduction in HAP versus a CO level that can be reasonably achieved, such as 100ppm.

Response: Please see Area Source Boiler Preamble for response to the consistency of the relationship across the range of concentrations.

Commenter Name: Christopher Recchia

Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 13

Comment: CO as a surrogate for HAPs is appreciated, but not necessarily accurate for woody biomass – we reiterate BTEC's comments regarding types of HAPs in wood emissions versus fossil fuel emissions and therefore the health implications of fossil based HAPs may not be applicable to biomass combustion.

Response: The final rule requires GACT for biomass or oil boilers with regard to CO emissions, which involves annual tune-up.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 29

Comment: Carbon monoxide is the most common product of incomplete combustion (PIC), and because of its associated chemical kinetics, is one of the most difficult PICs to oxidize completely. As such, CO emissions have historically been used as an indicator of the quality of the combustion process. In concept, low CO emissions should equate to negligible emissions of other organic compounds. While this is generally true, the mechanisms by which CO is formed and destroyed in the combustion process are different than for other organics. As such, in cases where other organic compounds have been completely oxidized, CO concentrations may still be elevated.

EPA is proposing to regulate CO as a surrogate for urban organic HAP. We are unaware of any relevant testing data that correlates the relationship between HAP and CO when firing oil and operating at CO levels of less than 100 ppm. Data from the Petroleum Environmental Research Forum Project 92-19 [http://www.epa.gov/ttnatw01/iccr/dirss/perfrept.pdf] provides some of the most complete data between the relationship between CO and HAP from units firing gas. Based on this data, while there is a fairly linear correlation between decreasing CO and decreasing HAP at higher CO levels, once the CO values fall under 100 ppm further reduction of CO does not provide any substantial reduction of HAP. This data was correlated for CO versus hydrocarbons, aldehydes, PAH, LVOC, and HVOC. Based on this data, one may conclude that the reduction of CO from 100 ppm to 1-2 ppm may not create any additional benefit in terms of HAP reductions. EPA has presented no data, nor any scientific analysis, that would show that this relationship between CO and HAP's would be any different for oil firing. Therefore the requirement for oil-fired units to control CO to these extremely low levels cannot be substantiated as providing any significant reduction in HAP versus a CO level that can be reasonably achieved, such as 100ppm.

Dramatic reductions in CO emissions do not necessarily improve the quality of the combustion, thereby minimizing emissions of other organic compounds. Instead, forcing CO emissions lower

and lower ends up over-constraining the combustion process, producing negative impacts on other air quality concerns, without documented improvements in emissions of organics. Most boilers are designed to mix fuel and air at an appropriate ratio, and to provide sufficient residence time for the fuel to combust completely. Obviously, these factors are fuel-dependent, as a gaseous fuel will require less time for complete combustion than a liquid fuel, which in turn requires less time to burn than a solid fuel. The need for longer residence time is why the radiant sections in solid-fuel fired boilers are larger than for gas-fired units. The size of the boiler is typically optimized to allow for complete combustion, while minimizing the cost of construction materials and installation cost. If the construction cost were not a concern, a new boiler could be designed with additional residence time to complete the combustion process and minimize CO emissions, but this is obviously not the case.

Unfortunately, increasing the size of the furnace is not an option for existing units. For these units, the strategy for reducing CO emissions is typically to raise the level of excess oxygen. The increase in oxygen concentration has two positive effects. First, it acts to overcome poor distribution of the fuel. Second, it increases the flame temperature, which speeds up the combustion reactions, allowing more complete combustion to occur for the same residence time.

However, there are a number of negative impacts associated with operating a boiler at higher levels of excess oxygen. The main impact is decreased efficiency, since the efficiency gain by reducing CO is minuscule compared to the increased dry gas loss due to increased excess air (more energy carried out the stack due to higher flue gas volume and higher flue gas temperature). Many boilers do not have sufficient fan capacity to run with elevated excess oxygen at the high end of the load range. Therefore, these units would effectively be de-rated by such strategy unless fans are replaced, which can be a major revision and is not always possible. A site might have to add another boiler to offset the reduction in steam generating capacity.

The minimization of excess oxygen in boiler applications is a key feature for maximizing boiler efficiency. The boiler efficiency is defined by the amount of combustion air that is present, and the difference between the ambient temperature and the stack exhaust temperature. The more air that is heated up through the combustion process, the more heat is lost to the atmosphere, causing the boiler to be less efficient. A less efficient boiler will require more fuel to be fired to produce a given amount of steam. The additional fuel firing results in higher operating costs, and higher greenhouse gas emissions.

Minimizing the level of excess oxygen is also a primary strategy for reducing NOx emissions from a boiler. The NOx formation mechanisms are dependent upon the temperatures in the flame zone, and the stoichiometry. Reducing the level of excess oxygen reduces the peak flame temperature, which reduces the rate at which the nitrogen in the air disassociates. As such, there is less monatomic nitrogen available to be oxidized to form ?thermal NOx'. Similarly, if there is less oxygen present, the monatomic nitrogen is less likely to be oxidized (and more likely to react with a second monatomic nitrogen to form diatomic nitrogen). This reduces both the amount of thermal NOx, and the ?fuel NOx' (NOx that is formed by the release of fuel-bound nitrogen). Therefore, increasing the level of excess oxygen will result in higher NOx emissions.

Low-NOx burner (LNB) designs manipulate the stoichiometry within the flame to minimize NOx formation. These designs establish a fuel-rich zone for the initial phase of combustion, and then add air at a later stage in the outer regions of the flame. In the initial phase, there is not sufficient oxygen available to form significant amounts of NOx, and in the secondary phase, the flame is much cooler, which also inhibits NOx formation. However, these burners often operate with CO emission up to 100 ppmvd in the upper part of the load range. At mid loads, the CO begins to increase and at low loads, it may reach 400 ppmvd for a liquid-fired boiler. These lowNOx burners will not be able to achieve CO emissions as low as 2 ppmvd over all operating scenarios.

The requirements of the National Fire Protection Act (NFPA) specify the minimum total air flow at which a boiler can operate, which is independent of the boiler load. This value is commonly 25 or 30 percent of the total air flow. As a result, boilers that are operating at loads less than 25% experience increasing levels of excess air because the fuel flow is decreasing with load, but the air flow remains fixed. The amount of excess air can become sufficiently high that it acts as a heat sink and reduces the flame temperature. The cooling of the flame slows the combustion kinetics, and often produces higher CO emissions. Therefore, low CO emission limits could restrict the minimum load capability of a boiler. Since boilers are often run at minimum load (either in warm standby mode, or due to low steam demand), this results in the boiler 'idling' at a higher load than was previously necessary. An obvious outcome of operating at higher load is the increased fuel costs. Another is the relative increase in greenhouse gas emissions.

The use of CO as a surrogate for the reduction of organic compounds is not new, but that prior use does not justify the dramatic CO reductions proposed here. For example, CO was used as an indicator of combustion efficiency as part of the Interim Status rule for Boilers and Industrial Furnaces (BIFs) that burn hazardous waste. At the time, EPA's research demonstrated that BIF units with CO emissions less than 100 ppmvd were achieving the desired destruction efficiency of the hazardous organics in the waste streams. As mentioned previously, because the chemical kinetics makse CO far more difficult to oxidize than other organic compounds, it is not necessary to drive CO emissions to low levels or to zero to obtain a corresponding minimization of organic emissions.

The data used to support the BIF Interim Status rule documented how the selected level of CO corresponded to minimal emissions of the target compounds. That should be the case for these boiler rules as well. It is not logical to apply the same rules for HAPs to establish a CO floor, when CO is merely the surrogate.

Furthermore, the CO data used to establish the floor may not be representative of normal boiler operation and a low CO limit may not be achievable at all times even by the best performers. Some boilers only produce measurable CO emissions when they are experiencing load variations. The testing that is being used to establish the CO limits was all conducted at steady load. A boiler may have small CO emissions at steady load, but significant emissions as the load varies.

Response: Please see Area Source Boiler preamble for explanation about the relationship at lower emission levels.

Choice of Regulated Pollutants: Dioxin/Furan

Commenter Name: Margaret E. Sheehan
Commenter Affiliation: Energy Justice Network
Document Control Number: EPA-HQ-OAR-2006-0790-1053.1
Comment Excerpt Number: 4

Comment: Information about the Production of Dioxin When Lignin is Burned in Boilers

Wood products release dioxin when they are incinerated in the presence of chlorine. [See Reference 16 in submittal.] Lignin is the organic substance that makes up woody tissue. Burning chlorine in the presence of certain precursors to dioxin, including lignin, releases dioxin into the environment. [See Reference 17 in submittal.] In incinerators, the amount of dioxin formed by burning seems to depend largely on the chlorine content in the waste that is burned. [See Reference 18 in submittal.] The paper and pulp industry use chlorine to bleach paper.

Id. When the paper is incinerated, the chlorine and lignin create dioxin. [See Reference 19 in submittal.] Similarly, burning lumber treated with pentachlorophenol, which the lumber industry uses to preserve wood, creates dioxin. [See Reference 20 in submittal.] Burning wood releases dioxins. [See Reference 21 in submittal.] This fact demonstrates that the burning of wood in incinerators, even when the wood is not processed by the paper and pulp industries, can result in the creation of dioxin.

Dioxin is highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer. [See Reference 22 in submittal.] .Once dioxin has entered the body, it persists a long time because of its chemical stability and its ability to be absorbed by fat tissue, where it is stored in the body. The Department of Human Health and Services determined that it is reasonable to expect dioxin to cause cancer, among many other adverse health effects. [See Reference 23 in submittal.]

Dioxin contamination has far-reaching consequences. A study by the North American Commission for Environmental Cooperation showed that dioxin from United States sources, including the combustion of wood, contaminate Inuit traditional foods such as caribou and fish, and lead to high concentrations of dioxins in Inuit mothers' milk. [See Reference 24 in submittal.]

Response: Please see the Preamble for a discussion on the pollutants included in this rule.

Choice of Regulated Pollutants: Hg

Commenter Name: Charlie Cary
Commenter Affiliation: Biomass Combustion Systems, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1990.1
Comment Excerpt Number: 5

Comment: Recent research indicates that the inorganic salt emissions from high-efficiency biomass combustion are five times less toxic to cells than the emissions from petroleum based PM.1 Yet, EPA has assumed that all particulate emissions from new biomass boilers will emit mercury at harmful levels.[CITATION: Nussbaumer T., Klippel N., Oser M., "Health relevance of aerosols from biomass combustion in comparison to diesel soot indicated by cytotoxity tests," 14th European Biomass Conference, Paris]

Response: Thank you for this comment and information.

Choice of Regulated Pollutants: PM

Commenter Name: John A. Cooper
Commenter Affiliation: Cooper Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-0886.2
Comment Excerpt Number: 1

Comment: 1.0 Introduction
* EPA in Section V (Rationale of This Proposed Rule), Subsection C (What surrogates are we using?) proposes use of PM as a surrogate for HAP metals and mercury vapor as a surrogate for total mercury. CES agrees with the EPA that "The inherent variability and unpredictability of the non-mercury metal HAP compositions and amounts in the fuel have a material effect on the composition and amount of non-mercury metal HAP in the emissions from the boiler." However, for this very reason it should be clear that PM does not meet the court-defined criteria required of a surrogate for HAP metals. As such, CES strongly disagrees with the rationale EPA used to justify this proposed action. CES believes neither PM nor vapor phase mercury meet the court-defined criteria, all three of which must be met, to be used for the proposed surrogate. Thus, CES strongly recommends that the EPA not use these parameters for HAP metal surrogates, but instead require multi-metal CEMS for the reasons discussed below.

2.0 Use of PM as a surrogate for HAP metals no longer appropriate
2.1 Contemporary understanding CISWI supports expected differences in behavior of PM and HAP metals
The variability of PM and HAP metals in Solid waste incinerators is not well understood. However, because of the complexity and variability of the process, it is reasonable to assume that its PM and HAP metal emissions will be at least as complex as that in coal-fired boiler emissions, which are well understood. The behavior of trace metals, including HAP metals in

coal-fired boilers, is well understood based on extensive studies summarized in the above EPA reference as well as others such as “Trace Elements – Emissions from Coal Combustion and Gasification” (Clark and Sloss, 1992), [See DCN:EPA-HQ-OAR-2006-0790-0866.5 for references.] “Fine-Particulate Emissions From Stationary Sources and Control Technologies,” (Pan, 1987) and “Air Pollution Engineering Manual” (Buonicore and Davis, 1992). A clear and consistent picture of the behavior of trace HAP metals in incinerator emissions emerge from a review of this material that includes the flowing key features:

* HAP metals such as Hg, selenium (Se), arsenic (As), cadmium (Cd), lead (Pb), etc. vaporize at high temperatures present in combustion chambers of boilers.
* Downstream of these high temperature zones, the less volatile HAP metals cool to form and/or condense on submicron fine particles that are as a result enriched in HAP metals while the coarse particles are depleted in these metals.
* The more volatile metals (Hg, Se, Ar, Cd, Pb etc.) remain in the vapor phase to varying degree depending on the chemical form, temperature and other potential reactants available in the process stream.
* PM controls have higher removal efficiencies for larger particles resulting in lower removal efficiencies for the fine particle fraction of PM enriched in PM HAP metals.

* ESP and fabric filters have similar overall PM removal efficiencies (about 99%), but fabric filters are superior at controlling fine particulate matter that are enriched in HAP metals and thus should be superior to ESP units at controlling HAP metals
* Partitioning between vapor and PM phases can depend on temperature as noted above as well as such factors as the presence or absence of species either present in the feedstock or added to the process. Examples include the addition of powered activated carbon (PAC) to sequester mercury; addition of chemicals to oxidize elemental mercury to increase removal efficiency in scrubbers; addition of chemicals to inhibit deleterious processes such as corrosion, poisoning of catalyst, etc. The addition of these various chemicals can impact the form and behavior of HAP metals and their removal efficiency, particularly the more reactive and semi-volatile species such as arsenic, selenium and cadmium.

This picture is further supported by a substantial body of research as summarized in the above noted summaries as well as the following specific reports: Beishon et al 1989, Boron and Wan 1990, Chadwick et al 1987, Dale and Chapman 1991, Davis and Pakrasi 1992, Gossman 2007, Gutberlet 1984 and 1988, Hicks 1991, Karlsson 1986, Kauppinen and Pakkanen 1990, Laudel et al 1991, McKenna and Furlong 1992, Meij 1989 and 1992, Meij and Vaessen 1991, Meij and Winkel 1991, Meij et al 1990 and 1991, Meserole and Chow 1991, Morrison 1986, Neme 1991, Obermiller et al 1991, Schifftner and Hesketh 1992, Sligar 1991, Smith 1980, Smith et al 1999, Tumati and Devito 1991, Turner et al 1992, Yokoyama et al 1991. [See DCN:EPA-HQ-OAR-2006-0790-0866.5 for references.]

2.2 PM does NOT meet any of the three Court-defined criteria for HAP metal surrogacy

The EPA’s proposed rule incorrectly continues the use of PM as a surrogate for HAP metal emission limits without reconsidering whether continuing to use this surrogate is still “scientifically reasonable.“ National Lime at 637. The EPA relies on National Lime where the Court upheld the EPA’s use of PM as a surrogate for HAP metals in the original Portland Cement NESHAP promulgated in 1999. In a 2000 case and others, the Court of Appeals

established a three part test for surrogacy based on their earlier ruling in National Lime. Sierra Club v. EPA, 353 F.3d 976 (D.C. Cir. 2004)("Copper Smelter MACT").
All three criteria must be met to use PM as a surrogate for HAP metals. These criteria are:
* "...PM control technology indiscriminately captures HAP metals along with other particulates." (Subsection 3.2.2)
* "...PM control is the only means by which facilities "achieve" reductions in HAP metal emissions..." (Subsection 3.2.3)
* HAP metals are not invariably present in PM emissions from CISWI.
However, despite the Court of Appeal's decision to uphold the use of a surrogate in 2000, the Court has repeatedly cautioned the EPA both in National Lime and more recent cases to reconsider whether PM is an appropriate surrogate for HAP metals. See Natural Resource Defense Council v. EPA, 489 F. 3d 875, 882-883 (D.C. Cir. 2007) ("Brick MACT").
Specifically, the Court has directed EPA to consider whether PM is still a good surrogate in light of the potential impact upon emissions that changes in inputs to the cement manufacturing process can have, especially the possibility of fuel switching. In National Lime the Court states that:

"In considering the role of inputs, the EPA must also assure itself that the fuels and other inputs affect HAP metal emissions in the same fashion that they affect the other components of PM. For example, PM might not be an appropriate surrogate for HAP metals if switching fuels would decrease HAP metal emissions without causing a corresponding reduction in total PM emissions."
National Lime at 639.This latter possibility noted by the Court is clearly the case since reducing HAP metal concentrations from their current levels in feed and fuel to zero would essentially reduce HAP metals to zero in the emissions (reducing HAP metals concentrations by many orders of magnitude) while having essentially no impact on PM emissions. It is clear that the Court intends for the EPA to consider all aspects of the PCM processes including primary input feedstock as well as fuels and additives to reduce such things as corrosion and improve control efficiencies for both PM and vapor phase species like mercury. Clearly, in processes like solid waste incineration where concentrations of hazardous metals in feed materials can vary by many orders of magnitude while PM remains relatively constant, monitoring of PM provides no useful indication of hazardous metals.
It needs to be emphasized that the Court in reaching its conclusion supporting the EPA's use of PM as a surrogate for HAP metals, specifically qualified its support by defining the kind of HAP metal; i.e. non-volatile HAP metals. National Lime at 628 and 637. In addition the EPA used this qualifier in its arguments to the Court (EPA, 2000) and the only way the EPA's justifying statements in its brief (EPA, 2000) could be technically correct is by restricting the discussion to non-volatile HAP metals; i.e. those metals having an insignificant (<<1%) fraction of its mass in the vapor phase at the temperatures of PM control. It needs to be noted that in this current proposal, the EPA has defined the specific metals it is referring to: arsenic, beryllium, cadmium and lead, calling them non-volatile HAP metals. (Section II A) In Section II B it justifies its use of a surrogate (PM) for non-volatile HAP metals referring to the National Lime case. It is thus important to note that the EPA has restricted its reference to non-volatile HAP metals, but the elements it herein defines as non-volatile (arsenic, beryllium, cadmium and lead) have not been

previously referred to as non-volatile by the EPA, nor has the EPA provided herein or else where data that can justify classifying these elements as non-volatile.
On the contrary, the EPA has previously referred to cadmium and lead as semi-volatile HAP metals, arsenic and beryllium as low volatile metals, and published reports supporting this latter classification. (EPA, 2008) In fact the EPA has even referenced tables in its own reports that would suggest that none of these metals could be classified as non-volatile by the above definition. (Tables 13-6 and 13-7, EPA 1998a) In the 18 ESP tests conducted on coal-fired utility boiler emissions, the lowest trapping efficiencies ranged from 94, 27, 0, 93, 34, 95, and 0% for arsenic, beryllium, cadmium, chromium, lead, manganese and mercury while the mean trapping efficiencies were 98, 94, 80, 97,93, 98 and 25% respectively. For fabric filters, the minimum reported trapping efficiencies were 97, 94, 0, 75, 97, 95, and 0% while the mean trapping efficiencies were 99, 99, 72, 94, 99, 98, and 36%, respectively. This EPA data clearly suggests a significant mass fraction of these metals is present in the vapor phase. In addition, there has been a continuing concern for vapor phase arsenic poisoning DENOX catalyst (Gutberlet, 1988). As such, the classification of these elements as non-volatile HAP metals is incorrect, both based on the EPA's own data as well as EPA's previous use of these terms and

the published literature. (Germani and Zoller, 1988; Clark and Sloss, 1992). The above would suggest there is no court support for using PM as a surrogate for low or semi-volatile HAP metals; i.e. arsenic, beryllium, cadmium and lead. However, even if the non-volatile classification were to apply, none of the specific criteria the Court has laid out to guide the EPA are satisfied for all non-mercury HAP metals as will be shown below, thus eliminating any justification for using PM as a surrogate for urban HAP metals. [See DCN:EPA-HQ-OAR-2006-0790-0866.5 for references.]

2.3. HAP metals are NOT invariably present in PM from CISWI

A significant fraction of HAP metals such as Hg, Se, As, Cd, Pb etc. can be found in the vapor phase. As such, they will be removed in PM controls with varying efficiencies as noted above. The fine particle fraction of PM will be enriched in these HAP metals, which in turn is removed in PM controls with lower efficiency than coarse particles. In a process-controlled operation like CISWI, trace species like HAP metals can vary by orders of magnitude in the feed material while major species are controlled in the process and will vary by only a few percent. Thus, even though PM removal efficiency can be relatively constant, minimizing individual HAP metals in emissions will require a complex optimization of feed material, control of processes as well as selection of optimum control technology for both PM and vapor phases. As a result, even though urban HAP metals including Hg, Se, As, Cd, Pb, etc. can be found in PM, their individual concentrations will be highly variable and depend on the above noted conditions.

2.4 PM control technology does NOT indiscriminately capture HAP metals along with other particulates

PM control technology preferentially removes larger particles over fine particles and vapor.
As noted above, HAP metals are expected to be enriched in the fine particle fraction of PM and to have a significant fraction (>1%) of its mass in the vapor phase. This is indeed what was shown in the above noted reference and tables. (EPA 1998a) While the HAP metals exhibited widely varying removal efficiencies (beryllium from 27 to 99%, cadmium from 0 to 98%, lead from 34 to 99%), the PM capture efficiencies varied only from about 96 to 99+%. Therefore, as PM passes through the control systems, larger particles are removed more efficiently then

smaller particles and vapor. In other words, PM control technology does not indiscriminately remove PM, but instead the control technology has a bias in favor of larger non-vaporized particles.

2.5 PM control is NOT the only means by which facilities achieve reductions in HAP metal emissions

While PM control has been one of the leading methods to reduce emissions of HAP metals, it is not the only method as evidence by its comments on waste segregation. As such, the EPA seems to feel there are other means than just PM controls by which facilities can achieve reductions in HAP metal emissions such as waste segregation and additives to improve the capture of PM and vapor phases of HAP metals. Furthermore, the impact of future process modifications on HAP metals cannot be predicted. For example, the addition of catalyst and corrosion inhibitors, and/or additives to oxidize mercury such as halides might have significant impacts on the volatility of other HAP metals. Since the volatility of HAP metal halides is substantially greater than most oxide forms, converting mercury to a halide may convert other HAP metals to their more volatile halide. Individual HAP metal emissions must be monitored to assess the impact of these possible future process modifications.

Thus, none of the Court-defined criteria for using PM as a surrogate for HAP metals are met. Furthermore, the reader is reminded that in the National Lime case, the Court sided with the EPA only in the case of non-volatile HAP metals, none of which are listed by the EPA in this proposal. Now, as demonstrated above, PM is not even an appropriate surrogate for non-volatile HAP metals. That is, monitoring PM is not an appropriate surrogate (substitute) for monitoring each individual HAP metal, nor is setting PM emission limits an appropriate surrogate (substitute) for setting emission limits for each individual HAP metal. Individual HAP metals must be measured directly to understand the impact on HAP metal emissions of various CISWI process and control options.

2.6 Court-defined criteria for PM surrogacy are NOT expected to be met during SSM events

As noted above in Subsection 2.1, this has several key, relevant implications as noted below:

* The only way emissions from SSM events can be included is by making emission measurements on a continuous basis with CEMS so as to include emissions during random malfunction events.
* During these events, emissions, control of these emissions, the chemical state of the emissions and the partitioning between physical phases could and in realistic circumstances would be expected to be different from those during normal operation. Under these conditions, one would not expect the PM surrogacy criteria to be met. On the contrary, the conditions during SSM events are such that the criteria for PM surrogacy established by the Court are even less likely to be met than during normal operating conditions. CEMS need to be able to measure all physical phases of HAP species including mercury PM since a significant amount could be associated with this fraction. (Gossman 2007) [See DCN:EPA-HQ-OAR-2006-0790-0866.5 for references.]

2.7 Direct measurement of HAP metals is essential for the EPA to comply with the spirit and intent of the Clean Air Act.

Subsection 112(d)(3) of the CAA requires the EPA to set standards for existing sources based on the emission averages of the best performing 12% of current facilities. Further, subsection 112(d)(6) requires that the EPA review and revise these standards at least every 8 years. Thus, it

is clear that Congress intended the EPA to periodically adjust emissions standards as industry standards improved. In order for the EPA to accurately revise the standards for HAP metals they need to monitor for HAP metals directly to better understand how the "best performers" reduce HAP metal emissions. That is, the efficacy of various HAP metal emission reduction options cannot be assessed unless each HAP metal is measured because each has unique and wide ranging chemical and physical properties dictating their presence and behavior under various conditions. This will be particularly important if processes and/or chemistry changes through the addition of reactants to facilitate other aspects of the process such as minimization of corrosion and catalyst poisoning, enhancement of collection efficiency of other species like mercury, etc. Failure to monitor HAP metals directly will significantly impair the EPA's ability to revise emissions standards in the future and would not be in keeping with the intent of the CAA to ensure that emissions standards are updated every 8 years based on improvements that the best performers have implemented.

2.8 Direct measurement of HAP metals is required to evaluate residual risks

HAP metals have wide ranging health and environmental impacts. Unless each is monitored directly and continuously, these impacts cannot be fully assessed. Certainly, simply monitoring PM provides essentially no information for assessing these potential health and residual risk impacts. PM is a particularly poor surrogate for assessing the health risks associated with HAP metals such as Hg, As, Pb, Cd, Cr, etc.

In addition, section 112(k)(1) of the CAA encourages the connection between source emissions and ambient exposure to effectively reduce public health risks such as cancer associated with source emissions. In 112(k)(2), congress clearly states its intent to have both the ambient air and source emissions monitored for metals to characterize the source emissions and define the contribution of these sources to public health risks from HAP. Defining and quantifying the contribution of sources to ambient risks is greatly aided by the direct measurement of specific HAP metals as well as other metals that can be provided by the new monitoring methodology noted in Subsection 2.2.

2.9 Congressional mandate in the CAA to use enhanced monitoring

In section 114 of the CAA, congress gives EPA a mandate to require enhanced monitoring (42 U.S.C. 7414 (a) (3)). Major sources are required to use enhanced monitoring such that there is reasonable assurance of HAP control. Clearly, periodic testing does not provide reasonable assurance of control nor does monitoring PM provide reasonable assurance of urban HAP metal control. Similarly, monitoring only the vapor phase of mercury does not provide reasonable assurance of control under all conditions that are now to include SSM events. This is particularly the case when there is a proven and approved technology available that measures all phases of mercury as well as all phases of all urban HAP metals.

Clearly, direct monitoring of all phases of all HAP metals is an enhancement over the monitoring of a surrogate (PM) for some urban HAP metals and one phase of mercury.

To emphasize the importance of requiring this type of enhanced monitoring on all sources, we note an event that was recently recorded in East St. Louis, Illinois. On April 13, 2009 a continuous ambient metals monitor in the vicinity of schools recorded a two hour period in which the average arsenic concentration recorded was 2,300 ng/m3. For perspective, OSHA suggests that no worker should be exposed to arsenic concentrations greater than 2,000 ng/m3

for longer than 15 minutes. Clearly, a nearby source emitted arsenic at much higher concentrations than those measured in the community. These emissions went unrecorded because there was no requirement for the possible source to continuously measure metals in its emissions. Because the winds were changing during this monitoring period, it is uncertain how long the emissions lasted, but if a multi-metals CEMS or fence line monitor had been in place, the problem might have been identified early enough such that the emissions could have been minimized. In addition, had the emissions been more significant, the nearby population could have been alerted had there been a multi-metals CEMS or fence line monitor in place. Clearly, requiring enhanced monitoring is a real and significant issue that the EPA should consider seriously in its comment review.

2.10 Availability of new monitoring technology

As noted above in Subsection 2.2, a new, proven multi-metals CEMS is commercially available and accepted by the EPA for use at a specific hazardous waste incinerator. Thus, use of PM as a surrogate for HAP metals monitoring is no longer needed. [See DCN:EPA-HQ-OAR-2006-0790-0866.5 for references.]

2.11 HAP multi-metals CEMS is the lower cost, simpler option

With the Court ruling requiring the inclusion of emissions from SSM events in emission averages, it will be essential that CEMS be available that can measure emissions of all phases of HAP metals including mercury PM. As such, the use of multi-metal CEMS methods would allow all of the urban HAP metals including mercury and all phases to be continuously monitored with a single CEMS. This option would be simpler, more reliable and have lower initial and on-going costs than the only other option consisting of two CEMS, one for PM and one for mercury vapor. In addition, these multi-metal CEMS can provide emission measurements for over 20 metals including all 11 HAP metals. Measurement of the non-HAP metals might be used for process diagnostics, source apportionment in the ambient environment and other possible applications not yet realized.

EPA suggested using PM as a surrogate would eliminate the cost of performance testing to comply with numerous standards for individual metals. This is no long relevant with the advent of the new multi-metals monitoring methodology (Subsection 2.2) because by monitoring the metals directly in emissions, it is not necessary to conduct the performance tests mentioned by the EPA.

2.12 Public has a right to know HAP metal emissions in plain language

If the EPA has decided that emission of HAP metals is sufficient to require regulation, the public has the right to know what those individual HAP metal emissions are in plain language; that is in a language the public can relate to ambient measurements. The EPA uses different units to define emission limits for different HAP. The EPA should use reasonably common units at least in form and common with typical ambient measurement units such as ng/m3.

3.0 Mercury emission limits should include all mercury phases (PM and vapor)

3.1 CAA specifies mercury NOT vapor phase mercury

It is inappropriate to set emission limits for just vapor phase mercury. Nothing in the CAA says the EPA may set emission limits for only one physical phase of a HAP metal. This is contrary to the intent of the CAA and could result in the omission of a significant fraction of mercury emissions. What the EPA appears to be suggesting is that vapor phase mercury can be used as a

surrogate for total mercury emissions. A review of the Court-defined criteria noted in Subsection 3.2 of this document clearly indicates that vapor phase mercury does not meet these surrogacy criteria.

3.2 Vapor phase mercury does NOT meet the Court-defined criteria for total mercury surrogacy

EPA's own data (EPA 1998a) suggests that about 30% (not insignificant) of mercury is captured in PM controls and over 90% might be captured in PM controls if powdered activated carbon is used to control Hg emissions. Clearly, during SSM events and more specifically during

malfunctions in PM controls, a significant fraction of the Hg mass could be in the PM fraction of emissions, which would be excluded under EPA's current proposal to regulate only the vapor phase of mercury.

Clearly, volatile mercury does not meet the surrogacy criteria to represent total mercury emissions (PM and vapor). That is:

* Mercury vapor is NOT invariably present in industrial incinerators total mercury emissions; i. e. mercury vapor is not a constant fraction of total mercury at various stages of the process and emissions control, but is also found in significant quantities in the PM phase.
* Mercury vapor control technology does NOT indiscriminately capture total mercury emissions
* Mercury vapor control is NOT the only means by which facilities can achieve reductions in total mercury emissions.

Based on the above, CES requests the EPA change its emission limit from one based on vapor phase mercury to one based on total mercury that includes both PM and vapor phases.

3.3 Total mercury can now be measured with proven methods

It is now possible to measure total mercury emissions (all phases including PM) continuously using proven and EPA accepted monitoring methodologies. (Subsection 2.2). Regulating and monitoring total mercury (vapor and PM) would be an enhancement over just regulating and monitoring vapor phase mercury.

This requested change is important and necessary to account for mercury emissions during SSM events. During these events, a significant fraction of mercury emissions might be in the PM fraction. In addition, as noted above, PM-bound Hg is significant during normal CISWI processes including PM control operational cycles as PM trapping efficiencies can change during these cycles.

3.4 Total mercury monitoring represents enhanced mercury monitoring

This would also be consistent with congressional wishes that the EPA require enhanced monitoring where it is appropriate to assure continual compliance with emission limits (Total mercury monitoring is enhanced monitoring over monitoring just one phase of mercury, vapor phase.) This recommended change would benefit the EPA and other stakeholders by providing more complete information assuring compliance and if a multi-metals monitor were used could provide compliance demonstration information for all phases of all urban HAP metals while simultaneously demonstrating compliance with a total mercury emission limit. This monitoring would be simpler and achieved at a lower cost because it would replace two CEMS, mercury vapor and PM. In addition, the plant, agency and public would benefit from the non-urban HAP metals monitored with the same CEMS that might provide diagnostic information to improve plant operation, data on all HAP metals not just for selected HAP metals and source

apportionment information, all at a lower cost than the alternative of using two CEMS providing only two parameters (PM and vapor phase mercury) instead of over 20 metals.

Response: Please see the Preamble for a discussion on this topic.

Commenter Name: Charles Niebling
Commenter Affiliation: New England Wood Pellet
Document Control Number: EPA-HQ-OAR-2006-0790-0836
Comment Excerpt Number: 5

Comment: NEWP understands the usefulness and economy of using CO as a surrogate for Particulate Organic Matter (POM) and PM for metals; however, NEWP believes that these indicators may not be accurate when evaluating emissions from modern high?efficiency biomass combustion systems.
Various research has demonstrated that high efficiency biomass boilers burn with sufficient time, temperature, and turbulence to render particulate emissions into primarily low toxicity inorganic salts and virtually eliminate any volatile organic hydrocarbons. This stands in contrast to the PM emissions from heating oil (diesel) combustion and/or inefficient wood combustion which is predominantly polycyclic organic matter. EPA has assumed that all particulate emissions from new biomass boilers are highly toxic. However, recent research indicates that the inorganic salt emissions from high?efficiency biomass combustion are five times less toxic to cells than the emissions from petroleum based PM. [See submittal for Reference 1]
Based on weak correlation of CO and POMs, the lower toxicity of PM from completely combusted biomass vs. petroleum PM, and the likely overstatement of health impacts in areas of low population density, NEWP believes there is a good basis that the exceptionally strict standards proposed in the rule are unwarranted.

Response: Please see Area Source Boiler Preamble for discussion on these topics.

Commenter Name: Steven Jarvis
Commenter Affiliation: Missouri Forest Products Association
Document Control Number: EPA-HQ-OAR-2006-0790-1477.1
Comment Excerpt Number: 10

Comment: The EPA has cited questionable data for hazardous air pollutants (HAPs), such as mercury and hydrochloric acid (HCL), contained in “clean” unadulterated wood. This data should be reexamined prior to the disqualification of wood as a traditional fuel. European data on these HAP emissions from unadulterated wood does not create significant inorganic emissions during the combustion process, therefore using PM as a surrogate for non-mercury HAPs is unnecessary.

Analysis of bark and stemwood samples collected at 30 locations across the United States revealed that clean woody biomass fuels have potential mercury and HCL emissions considerably lower than the EPA limits for existing boilers.
MFPA requests that the EPA consult other scientific sources , like the National Council for Air and Stream Improvement (NCASI), for more information on the amount of lead, cadmium and mercury in green "clean" woody biomass prior to eliminating wood as a renewable fuel. Wood is a Clean AND Green Fuel! [Footnote 4: Potential Mercury and Hydrochloric Acid Emissions from Wood Fuels. Forest Products Journal 55(2): pages 46-50, February 2005.]

Response: Please see the Preamble for a discussion on this topic.

Commenter Name: David J. Prior
Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 1

Comment: Research to date has shown no correlation between PM2.5 and trace metals.

When burned in a commercial or industrial boiler to produce heat, different blends of petroleum fuels and different wood fuel types can have very different fine particle emission rates due to both the combustion design of the heating system and the fuel composition. Figure 1 below shows the emission rates for various fuels and combustion systems. [See submittal for Figure 1] After natural gas, #2 fuel oil[With respect to these comments, biodiesel should be considered a #2 low sulfur (<500 ppm) or ultra low sulfur fuel if it meets the respective ASTM requirements pertaining to biodiesel. Although biodiesel is different from #2 oil, the emissions performance surpasses that of ultra low sulfur diesel. (Macor, Pavnello, 2008)], or distillate, is the most common heating fuel and has an emission rate of approximately 0.008 lb/mmBtu. The ultra-low, or 15 ppm sulfur #2 heating oil which will be required in New York in July 2012, has a fine particle emission rate of .000099 lb/mmBtu- about the same as the emissions rate for natural gas-fired boilers.[Footnote: McDonald, Roger. 2009. Evaluation of Gas, Oil, and Wood Pellet Fueled Residential Heating System Emissions Characteristics. Brookhaven National Laboratory, Upton, NY. BNL-91286-2009-IR.]]
Number-six oil (also known as #6 residual oil) is commonly used in large buildings and has a fine particle emission rate twice that of a boiler burning #2 fuel oil.

Fine particle emissions from wood can vary substantially depending on the combustion design and fuel properties, especially moisture content. The first bars in Figure 1 are the fine particle emissions from a stoker-type combustion system burning bole chips (wood chips with bark) and mill chips (wood chips without bark). These chips typically have a moisture content of 40%. The fine particle emissions rates from these units are more than 30 times higher than conventional #2 fuel oil and more than 2700 times that of ultra-low sulfur heating oil.

Figure 1 also shows the emissions rate for a two-stage boiler with a high-quality wood pellet having less than 5% moisture content. A two-stage combustion design results in greatly improved combustion conditions. The resulting fine particle emissions rate is approximately 20% of that of a stoker unit burning wood chips but the emissions rate is still 12 and 600 times higher than a boiler burning #2 fuel oil and ultra-low sulfur heating oil respectively.

Trace Metal Composition of Oil and Wood Fuels - Emissions of trace metals were measured in boiler stack tests of wood chip and oil-fired boilers by Northeast States for Coordinated Air Use Management (NESCAUM). The Maximum Achievable Control Technology (MACT) is for 8 metals: Mercury, arsenic, beryllium, cadmium, lead, chromium, manganese, and nickel.[See submittal Table 2 showing emissions for 8 metals.]

Response: Please see Area Source Boiler Preamble for response to suggested changes to the validity of PM as surrogate for metals.

Commenter Name: N/A
Commenter Affiliation: Mercatus Center, George Mason University
Document Control Number: EPA-HQ-OAR-2006-0790-1837.1
Comment Excerpt Number: 3

Comment: All the quantified benefits of this regulation will come from reductions in PM2.5 levels, even though PM2.5 is not specifically regulated. Rather, reductions are expected because "technologies installed to meet ... multiple limits" on particulate matter (a broader group of airborne particles which includes PM2.5) as well as, carbon monoxide, mercury, hydrogen chloride, and dioxins/flurans will also reduce emissions of PM2.5.[Notice of Proposed Rulemaking to Set National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, EPA (2010).]
The benefits from this rule are expected to come from reducing a group of fine-grained airborne pollutants which are not specifically regulated. Particulate matter, which includes PM2.5, is regulated but this does not necessarily mean that the total benefits will be achieved. As was described above, different types of PM2.5 have substantially different health effects. There is also considerable uncertainty about whether or not there are health benefits from reducing larger particulate matter. The study led by Arden Pope—previously mentioned as one of the studies used by EPA to calculate benefits—reports that "[m]easures of coarse particle fraction and total suspended particles were not consistently associated with mortality." [C. Arden Pope III, Richard T. Burnett, and Michael J. Thun et al. "Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution," Journal of the American Medical Association 287, no. 9 (2002):1132–1141.] In other words, only fine-grained particulate matter (PM2.5) is known to increase mortality.

In order to generate the predicted benefits, EPA is relying on reductions in particulate matter not only being even across geography but also even across types of particulate matter (although the agency also predicts that reducing emissions of other pollutants will also reduce levels of PM2.5). Any variation over the type of pollutant reduced increases the uncertainty associated

with benefits. As before, this does not necessarily mean that EPA has overestimated or underestimated benefits, but measuring this uncertainty can help improve policy outcomes.

By contrast, changes in behavior resulting from the rule—such as using more heat or finding technologies that only reduce the regulated pollutant—would reduce overall benefits. EPA predicts that much of the reduction in PM2.5 (the only quantified benefit of the rule) will come from limitations of emissions on other pollutants. Consequently, the overall quantified benefits of the rule are likely to be overstated.

Response: Please see Area Source Boiler Preamble for response to benefits of reductions.

Commenter Name: Richard Rosvold
Commenter Affiliation: Xcel Energy Services, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2259.1
Comment Excerpt Number: 4

Comment: EPA has proposed the use of particulate matter (PM) for use as a surrogate for non-mercury metallic HAPs. These HAP constituents are fuel dependent, and are not affected by the combustion conditions in the boiler. As such, the EPA should allow the option of showing compliance with the non-mercury HAP limits through the use of fuel sampling and analysis. This sampling and analysis could be done by either the end user or the fuel supplier. Relying on fuels analysis from the fuel suppliers would greatly reduce the compliance costs for many companies without compromising environmental protection.

Response: Please see Area Source Boiler Preamble for response to suggested changes to the rule.

Commenter Name: Charlie Cary
Commenter Affiliation: Biomass Combustion Systems, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1990.1
Comment Excerpt Number: 6

Comment: The sample for determining the relationship between particulate emissions and toxic emissions was again extremely small. Since wood is not a homogenous fuel, toxicity levels in fly ash will vary with species and geographic location. Why are these particulate regulations based on a cross Country worse case scenario developed from such a limited data?

Response: Please see the Preamble for a discussion on this topic.

Commenter Name: Barry Christensen

Commenter Affiliation: Occidental Chemical Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2227.1
Comment Excerpt Number: 10

Comment: Establishing and controlling particulate is a practical and effective way to limit the non-mercury metals.

Response: The EPA thanks the commenter for their input.

Other - Rationale for Regulated Pollutants

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 4

Comment: NOx reduction strategies for ozone reduction may be negated if CO limits for HAPs are too low. For example, lime kilns have experienced exceptionally high NOx values (1100 ppm NOx) resulting from CO controls.[See submittal for Figure 1 showing an example of this tradeoff, which is a plot of annual NOx vs. CO emission rates (lb/mmBtu) obtained from stack tests at a paper mill waste fuel incinerator.]

Response: Please see the Preamble for a discussion on this topic.

Commenter Name: David Suess
Commenter Affiliation: DSG Solutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1977.1
Comment Excerpt Number: 15

Comment: Allow facilities to perform HAP(s) testing on the most abundant HAP(s) from the applicable source category as an alternative compliance method in cases where the CO emissions limit is unattainable (i.e. through CO stack testing requirements or CEMS). A site specific HAP(s) limit could be developed from actual testing from a given facility (e.g. the maximum stack test result from the first three tests could be used as the facility's HAP(s) emissions limit). The emissions limit would be maintained in the facility's monitoring plan and available to EPA upon request. This option would allow EPA to obtain actual HAP(s) emissions test data that would help in refining the WebFIRE HAPs emission factors. In addition, instead of requiring capital improvements at facilities, this option would also be inline with the following comment from the proposed background information, "For existing oil-fired area source boilers, we found no add-on control technology being used."

Response: Please see Area Source Boiler Preamble for discussion of changes to the final rule.

Commenter Name: Trent A. Dougherty
Commenter Affiliation: Ohio Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1922.1
Comment Excerpt Number: 9

Comment: The limit for HCL, HG and for CO, are set above the MACT floor for Biomass verses for coal. For instance, the HCL threshold for new biomass boilers is at 0.004 lb/MMBtu verses 0.00006 lb/MMBtu for new pulverized coal boilers. The detrimental health effects from HCL are consistant. It is unwise for the EPA to set a limit higher than the MACT floor for HCL.

Response: Please see Area Source Boiler Preamble for discussion of final rule changes related to this comment.

Rationale for Subcategories

Subcategories: New Suggested Categories

Commenter Name: David Dungate and Scott Nichols
Commenter Affiliation: ACT Bioenergy and Tarm USA
Document Control Number: EPA-HQ-OAR-2006-0790-1472.1
Comment Excerpt Number: 1

Comment: ACT Bioenergy, LLC and Tarm USA manufacture and distribute state-of-the-art biomass boilers having outputs lower than 2 Million Btu/h. We request that EPA create a sub-categorization for this range of commercial boilers and develop initial compliance testing (rather than annual testing) for this boiler subcategory.

Biomass boilers of <2 MMBtu/h are deployed at several thousand “commercial type”applications including: schools, colleges, churches, schools, town halls, highway garages, farms, woodworking shops, federal facilities, and low income housing. Typically, these customers are motivated to invest in wood boiler systems to reduce their energy costs, achieve renewable energy mandates, reduce CO_2 emissions and support local energy self-reliance. Modern high-efficiency biomass boilers include automated control systems to monitor conditions in the boiler and to constantly adjust fuel and air feeding to achieve high-efficiency and exceptionally low emissions.

As proposed, the EPA Area Source Boiler Rule will have a devastating effect on the market for biomass boilers under 2 MM Btu for commercial, industrial, and institutional use. With small

commercial boilers <2 MMBtu/h ranging in price from $15,000-$100,000 and emissions control technologies such as electrostatic precipitators (ESP) at a starting cost of $60,000 these add-on control technologies are too expensive for most customers. In fact, for most installations, the cost of advanced emissions controls, their regular maintenance, and annual emissions testing will double both the capital costs and the operating cost for biomass boiler purchasers and eliminate the economic advantage of locally available, renewable biomass fuel.

Response: See preamble for a discussion of subcategories.

Commenter Name: Michael J. Hagenbarth
Commenter Affiliation: RockTenn
Document Control Number: EPA-HQ-OAR-2006-0790-1473.1
Comment Excerpt Number: 7

Comment: Second, EPA makes no effort to show that the limited data that are available are in any way representative of the population of boilers that will be subject to the rule. Again using the biomass subcategory as an example, the Agency has failed to characterize the wood fired boilers in the database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect HAP emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size. EPA's failure to investigate whether the available data adequately characterize the boilers that will be subject to the Area Source Rule is arbitrary and capricious.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 31

Comment: EPA should establish a subcategory for "limited use" units due to their significant differences from steady-state units. Limited use units have a rated heat input greater than 10 MMBtu/hr with an annual average capacity factor of 10% or less. Many of these units operate for short periods of time during the year and as such may experience relatively little startup, shutdown or malfunction (SSM) events. Because limited use units do not operate regularly, their emissions differ from other boilers operating continuously or operating near their design capacity. EPA has recognized that "units operate most efficiently when operated at or near their design capacity." 75 FR 32023-24. Based on their operating schedule, limited use units do not operate at or near their design capacity.

Additionally, the short operating times of limited use units results in difficulties in effectively controlling emissions. As EPA noted in a 2004 response to comments document, based on the operating schedules of limited use units the agency could not identify a control technology for controlling organic HAP emissions. See EPA, Response to Public Comments on Proposed Industrial, Commercial, and Institutional Boilers and Process Heaters NESHAP, at 67 (Feb. 25, 2004). Considering these differences based on the operating schedule of limited use units, EPA should establish a subcategory for limited use boilers and process heaters. The subcategory should be defined to include units with a capacity utilization factor of 10%, or by a 1,000 hours operating per year threshold.

Furthermore, EPA should adopt a work practices standard for the limited use subcategory. First, EPA has acknowledged that there is no proven control technology for organic HAP emissions from limited-use units. Second, limited use units, such as emergency and backup boilers, cannot be tested effectively due to their limited operating schedules. This is due to the fact that there is often no time to conduct performance tests on a unit operating in a limited capacity and because most EPA test methods require a unit to operate in a steady state. See Proposed 40 CFR § 63.7520(d). Based on existing test methods, limited use units would have to operate for the sole purpose of being subjected to emissions testing. Such a result is counter to the general intent behind the CAA. EPA should therefore use its authority under § 112(h) and adopt a work practices standard for limited use units and not subject the subcategory to emissions monitoring.

Response: See preamble for a discussion of subcategories.

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 2

Comment: We believe that EPA should give more attention to subcategories in the Area Source Rule. In the major source rule EPA subcategorized by boiler type and fuel type and found differences in organic emissions due to the boiler type. However, in the area source rule, EPA has proposed the same emission limits for the organic HAP (i.e., CO) for each fuel type regardless of boiler type. EPA should further subcategorize by boiler type in the Area Source Rule, since it found it appropriate to do so in the major source rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 5

Comment: The level of emissions of HAPs anticipated from well-performing units will differ substantially depending on the fuel that is being combusted. Accordingly, NACAA agrees that the large subcategories identified by EPA in its ICI Boiler MACT proposal – coal-fired, biomass-fired, liquid-fired and gas-fired – are reasonable and warranted by the differences in technology and expected performance, given the nature of the fuel consumed. EPA acknowledges that the properties of the fuel being combusted contribute significantly to the level of HAP emissions. [Footnote: "[B]ased on recently obtained information, we now understand that factors other than the controls (e.g., waste mix and combustion conditions) affect HMIWI performance, and those emission reduction strategies must be accounted for in MACT floor determinations." 73 Fed. Reg. at 72,970, 72,975. See also 74 Fed. Reg. at 51,377-79.] However, the proposed rules fail to properly address this fundamental point in several important ways.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 24

Comment: NACAA supports the development of subcategories in MACT rule development, where such subcategories are based on meaningful differences in anticipated fuels and unit designs. Because NACAA's technical team identified significant differences in the anticipated emission profiles of wood-fired and coal-fired units, the NACAA Model Permit Guidance separated EPA's solid-fuel category into two subcategories, but, seeing no clear technical difference supporting EPA's limited use subcategory, deleted it.

In the vacated ICI Boiler MACT rule, EPA had established four categories – solid-fuel, liquid-fuel, gas-fuel and limited-use boilers. In the 2000 CISWI rule there was but one category – incinerators. The proposed ICI Boiler MACT rule has 11 subcategories while the proposed CISWI rule would have five subcategories. In support of the explosion in the number of subcategories EPA explains the differences in design between, for example, a coal-fired stoker boiler and a coal-fired PC boiler. However, large boilers do not come off an assembly line [Footnote: Even mass-produced automobiles will exhibit design differences within and between models and manufacturers.] and last for up to 50 years. Almost every large boiler will have differences in design from every other large boiler. Even smaller boilers will have differences in design from small boilers produced by other manufacturers. Accordingly, it is insufficient to simply identify design differences. Where EPA seeks to establish additional subcategories it must explain why those differences matter and point to information in the record that supports its conclusion. In particular, we note that EPA's Boiler MACT categories are based on the nature of the fuel that is consumed while the proposed CISWI rule categories are based on the purpose of the combustion, not the fuel. EPA should identify a consistent rationale for establishing new subcategories.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 30

Comment: In the Proposed Boiler MACT Rule, EPA establishes subcategories for units based on CO. CIBO supports such an approach in this Proposed Rule. EPA examined the HAP emissions from a variety of units in the Proposed Boiler MACT Rule and concluded that a "distinguishable difference in performance exists based on unit design type." 75 FR 32017. EPA discussed further that even within basic types of units slightly different designs may "have a larger effect on organic HAP emissions." 75 FR 32017. EPA is proposing to use CO as a surrogate for non-dioxin organic HAP. 75 FR 31899. Therefore, an appropriate amendment to this Proposed Rule would be to recognize different emission standards for the CO surrogate depending on unit design. EPA should recognize the differential capabilities of different units and establish subcategories for coal and biomass boilers based on boiler design.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 29

Comment: EPA has proposed three subcategories of boilers located at area sources. 75 FR 31904. CIBO strongly supports EPA's authority to subcategorize boilers based on the physical state of the fuel burned. CIBO agrees with EPA's conclusion that the "different types of boilers have different emission characteristics which may influence the feasibility and effectiveness of emission control." 75 FR 31904. As stated in CIBO's comments on the Proposed Boiler MACT Rule, EPA has authority to establish subcategories. For a discussion of that authority, please refer to CIBO's comments on the Proposed Boiler MACT Rule. [See DCN: 2006-0790-1783.2 for related comments.]

Response: See preamble for a discussion of subcategories.

Commenter Name: Andrea Grant
Commenter Affiliation: Castle Oil Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1945.1
Comment Excerpt Number: 8

Comment: To reflect more accurately the size and operation of actual smaller boilers in the market, EPA should establish the following subcategories for new and existing boilers and the corresponding obligations:
1. Less than 3 MMBtu/hr;
2. 3 MMBtu/hr to 9.99 MMBtu/hr; and
3. 10 MMBtu/hr and greater.

Response: See preamble for a discussion of subcategories.

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 10

Comment: EPA makes no effort to show that the limited available data are representative of the population of boilers that will be subject to the rule. Again using the biomass subcategory as an example, the Agency has failed to characterize wood fired boilers in the database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design, or load pattern. Each of these important factors can affect HAP emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size. EPA's failure to investigate whether the available data adequately characterize the boilers that will be subject to the Area Source Rule is arbitrary and capricious.

Response: See preamble for a discussion of subcategories.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 14

Comment: Additional sub-categorization for boilers between 10 and 30 mmBtu/hr may be warranted.

Response: See preamble for a discussion of subcategories.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 16

Comment: NESCAUM also recommends that EPA create a “limited use” boiler category, which should include units used for less than 200 hours per year or a boiler that comprises less than 10% of annual use with caveats to ensure that facilities do not aggregate many small boilers to avoid compliance with emission limits. These boilers may represent back-up or start-up boilers and should be exempted only if they use 15 ppm ultra-low sulfur content oil.

Response: See preamble for a discussion of subcategories.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 38

Comment: AF&PA believes that if EPA decides to set emission limits for new and existing source boilers, further subcategorization is required for such a large and divergent category. The current proposal subcategorizes by fuel and, to a limited extent, size. At the very minimum area source boilers would need to be subcategorized by boiler design, as they are in the Major Source Boiler Rule proposal.46 Since the size of the category is so large, additional subcategories will probably be needed as well.

Additional size subcategories are needed since boiler capacity has a large impact in real world operation. An initial consideration for size categories could be to depend on the size classifications established for boilers under the New Source Performance Standards (NSPS). Regarding the size subcategorization decision in the proposal, EPA asked commenters, “We are specifically requesting comment on whether a threshold higher than 10 MMBTU/hr. meets the technical and economic limitations as specified in section 112(h)” [75 FR 31906]. We believe that the technical considerations used to set the NSPS subpart D(c) limits at 30 MMBTU/hr. are more than adequate to justify extending the threshold to that capacity level. There is a strong economic argument to this extension as well. Many small businesses specifically avoided boilers that triggered NSPS thresholds in the past because they could not afford the extra expense of meeting NSPS requirements. Many of these boilers were, nonetheless, above 10 MMBBTU/hr. Thus, expanding the threshold to 30 MMBTU/hr. would proportionately benefit small business operations. It is our recommendation that this subcategory be modified and that the threshold be moved from 10 to 30 MMBTU/hr. for oil and wood fired boilers to reflect the thresholds in the NSPS.

Response: See preamble for a discussion of subcategories.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1

Comment Excerpt Number: 40

Comment: EPA acknowledges in the preamble to the proposed boiler MACT rule that boiler design does impact organic HAP emissions (for which EPA has established CO as the surrogate): "Within the basic unit types there are different designs and combustion systems that, while having a minor effect on fuel-related HAP emissions, have a much larger effect on organic HAP emissions. Therefore, we decided to further subcategorize based on these different unit designs but only in proposing standards for organic HAP emissions" [75 FR 32017].

Another group of units meriting subcategorization is "limited use" boilers. While the prior Boiler MACT rule treated units with average capacity factors of 10% or less separately, the proposed area source and MACT rules do not continue that approach. Instead, EPA presumes that limited use units are just like those operated full-time which burn a similar fuel. Limited use sources operate intermittently and for shorter periods of time (e.g., small package boilers that are only used during outages, backup boilers that run when other units are being inspected or repaired, , boilers needed only when unusually cold weather occurs) . Compared to most boilers, these units spend a far greater percentage of their time starting up and shutting down. As a result, their emissions profiles differ from sources which operate most of the time. Limited use boilers are likely to experience higher CO levels as the boiler heats up due to incomplete combustion. Similarly, many pollution control technologies are either difficult to use or ineffective during startup and shutdown periods and would be cost prohibitive to install and use for only short periods of time during a year. These are just the sort of "class" and "type" distinctions which merit consideration for subcategorization under §112(d)(2).

EPA has broad authority to subcategorize. AF&PA discusses this issue in regard to further subcategorization in our separate comments filed under the major source Boiler MACT rule, which we refer you to (See Section XII, docket EPA-HQ-OAR-2002-0058; we incorporate those comments by reference). We believe the agency should consider further subcategorization in the major source rule and if a choice is made to develop a numeric limit, further subcategorization is imperative in this rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 2

Comment: Duke Energy urges EPA to create a "limited use" category for existing fuel oil-fired auxiliary and plant heating industrial boilers that requires a work practice standard in lieu of an emission standard for major and area sources of HAP.

Many auxiliary and heating boilers at fossil and nuclear electric generation facilities and other industrial facilities have a maximum heat input capacity greater than 10 million Btu/hour and

burn natural gas and/or fuel oil. These units operate infrequently and then for only a limited amount of time to provide steam for startup of other sources, and/or power plant comfort heating during the winter outages when an electric generation unit is not operating. These types of auxiliary and heating boilers typically operate for less than 10% of the hours in a year (less than 876 hours per year). As a result, the HAP emissions from these boilers are exceedingly low and do not pose any risk to public health. EPA has proposed in the IB MACT rule that gas-fired auxiliary boilers will be subject to work practice standards that will require an annual tune up. By contrast, the proposed IB MACT rule would require oil-fired auxiliary boilers to comply with stringent emission limits and demonstrate compliance with those limits by following expensive monitoring requirements. The significant difference in the proposed regulatory requirements for these two types of auxiliary boilers is unnecessary and will not produce environmental benefits. Requiring work practice standards for oil-fired auxiliary boilers (similar to those allowed for existing natural gas ICI boilers) would effectively reduce emissions of HAP for this category of ICI boilers. Expensive ICI boiler replacements, reconstructions, and/or modifications to meet an emission standard will not deliver significant additional HAP reductions and the added expense cannot be justified.

EPA has the authority to create a limited use subcategory of industrial boilers that are operated infrequently because of their specialized nature and use. Section 112(d)(1) of the CAA, which mirrors earlier language found in CAA Section 111(b)(2), allows the Administrator the discretion to distinguish among “classes, types, and sizes of sources” in establishing MACT standards. Indeed EPA has previously created limited use subcategories under Section 112, such as the recent reciprocating internal combustion engine “(RICE”) MACT rule. EPA should exercise its authority to establish a “limited use” category for auxiliary and heating boilers that operate infrequently and only for a specialized use.

Response: See preamble for a discussion of subcategories.

Commenter Name: Jeff A. McNelly
Commenter Affiliation: ARIPPA
Document Control Number: EPA-HQ-OAR-2006-0790-1988.1
Comment Excerpt Number: 4

Comment: A few decades ago a beneficial use of coal refuse was developed with the aid of technological advancements and support from elected officials, governmental agencies, laws, regulations, and private/public investors. This beneficial use was designed to convert large quantities of “legacy” and currently mined coal refuse into alternative electricity ...electricity to meet the energy needs of hundreds of thousands of households and businesses. Removing coal refuse that had lain idle from past mining activities cleared thousands of acres of land, formerly hidden under tons of this “idle fuel”. Converting the coal refuse into energy and utilizing the by-product ash residue to reclaim vacant and damaged abandoned mine lands and streams (back to their natural environmental state and usefulness) are some of the positive effects realized by the development of this new CFB technology and industry.

ARIPPA states that the emission standards identified in the Proposed Rule would not be appropriate for coal refuse-fired CFB operations. In significant part, based upon the data compiled by EPA in support of the Proposed Rule, EPA has not attempted to evaluate emissions from coal refuse-fired CFB EGUs in determining proposed HAP emission standards under the Boiler MACT. For this reason, the emission standards identified in the Proposed Rule are not reflective of achievable emissions for these sources. To the extent that the Boiler MACT could be applicable to coal-refuse fired electric generating units, then EPA should identify a specific source category for such sources and derive emission limitations applicable to such source category in accordance with statutory and regulatory standards for MACT development.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert Klemans
Commenter Affiliation: Florida Electric Power Coordinating Group
Document Control Number: EPA-HQ-OAR-2006-0790-1955.1
Comment Excerpt Number: 4

Comment: EPA Should Consider Other Subcategories for Industrial Boilers, Such As Utility Auxiliary Boilers.
Section 112(d)(1) of the CAA allows the Administrator to distinguish among "classes, types, and sizes of sources" in establishing MACT standards. In providing EPA discretion to create subcategories, 112(d)(1) does not restrict subcategorization to cases where the "class", "type" or "size" factors affected HAP emissions. The provision merely requires EPA to establish regulations for each category or subcategory on the schedules set out in 112. FCG appreciates EPA's effort to create several subcategories in the proposed IB MACT rule. However, EPA should have created additional subcategories. A limited use subcategory should be created for IBs that are operated infrequently or at low capacity because of their specialized nature and use. FCG members operate at least 6 natural gas-fired and 2 oil-fired auxiliary boilers that will be subject to the IB MACT rule because they are not steam generating units that produce electricity. These auxiliary boilers operate infrequently or in a warm standby mode and are used for startup and emergency operations to support the larger electric utility generating units. As a result, the HAP emissions from these auxiliary boilers are very low.
Under the proposed rule, the natural gas-fired auxiliary boilers are subject to work practice standards requiring an annual tune up. By contrast, the proposed IB MACT rule requires oil-fired auxiliary boilers to comply with stringent emission limits and demonstrate compliance with those limits by following expensive monitoring requirements. The distinction between these two different types of auxiliary boilers is unnecessary and does not produce environmental benefits. FCG urges EPA to exempt these operations or create a limited use subcategory for auxiliary boilers subject only to limited work practice standards. The limited use subcategory could have a 10% capacity factor threshold based on 10% of the maximum hourly heat input of the boiler multiplied by 8760 hours per year. Alternatively, distillate oil-fired boilers that operate in a warm standby mode at less than 10mmBtu/hour a majority of the time would also be subject only to work practice standards.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 5

Comment: NHDES recognizes that the variability in the emission limitations between the two rules may be, in part, the result of the difference in sub-categorization of the boiler types in each rule. NHDES notes that there is only one biomass sub-category for area source boilers as opposed to four biomass sub-categories for major source boilers. EPA states in the major source NESHAP that "For the fuel-dependent HAP, we identified five basic unit types as sub-categories... Within the basic unit types there are different designs and combustion systems that, while having a
minor effect on fuel-related HAP emissions, have a much larger effect on organic HAP emissions. Therefore, we decided to further sub-categorize based on these different unit designs but only in proposing standards for organic HAP emissions." NHDES recommends that EPA take the same position for the area source boiler regulations by sub-categorizing based on unit design and developing emission limitations accordingly. Again, the results of this data manipulation should result in consistent emission limitations between identical boilers regardless of location of the boiler.

Response: See preamble for a discussion of subcategories.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 7

Comment: As specified in the MACT Floor Memo for Area Sources, the boiler combustor design was not a factor in developing the subcategories for the MACT floor due to the limited emission data available to calculate a MACT floor limit. However, combustor design subcategorization (dutch oven, fluidized bed, fuel cell, and stroker/grade/other) was considered in the proposed NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters as major sources of HAP. Each subcategory has its own emission limits for CO and dioxin under the proposed NESHAP for major sources. For the Area Sources, EPA has not characterized the wood fired boilers in the database either by size, biomass fuel used (wood, bark, agricultural residue, moisture), the boiler design or load pattern, etc. In order to be consistent, Columbia believes further analysis is required to create combustion design subcategories to reflect representative emission limits for the Area Source boilers.

Response: See preamble for a discussion of subcategories.

Commenter Name: John Huber
Commenter Affiliation: National Oilheat Research Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1831.1
Comment Excerpt Number: 7

Comment: EPA should Properly Categorize Boilers by Size. In a universe of nearly a million boilers, EPA reviewed test data from a very limited universe of large sized boilers. Most of the boilers examined by EPA did not resemble the hundreds of thousands of boilers that are used in commercial or institutional settings that are essentially residential boilers. EPA did not evaluate the emissions of these boilers or determine what the top percentage of these boilers are currently emitting. These small boilers do not have pollution control devices, and thus the emissions for most elements are based on the fuel inputs, and for the polycyclic aromatic hydrocarbons (PAHs, it is also presumably based on the fuel components. However, PAH, total emissions may be affected by the combustion process. NORA in its review of the record for this rulemaking finds no justification for including this class of boilers in the same categories as all boilers, given the range and type of pollution control equipment that can be found on boilers.
Similarly, the mid-range boilers that may be found in apartment houses, hospitals and nursing homes are also dissimilar to the large industrial boilers that were evaluated by EPA. Again, these boilers are not sold with pollution control technologies, and the facilities in which they are installed may not have the space to provide for post combustion scrubbing of emissions.
EPA has not evaluated whether the MACT controls which are suitable for large industrial boilers could be downsized and utilized on this smaller equipment. Until such an evaluation is completed, EPA should not consider including the small and medium sized boilers in this rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 16

Comment: Duke Energy as well as other companies has small natural gas or propane fueled heaters used to warm natural gas and propane prior to their combustion in a combustion turbine. In addition many entities, including small businesses have small boilers used to produce limited amounts of steam. These units are small, typically less than about 25 mmBtu. Many operate only on a limited basis. Because of their size, their use of clean burning fuels such as naturalgas, and their limited operation, these types of units in aggregate produce a very small amount of HAP emissions. As a result, restrictions on these units will produce little or no benefits and would be very difficult to cost- justify. Due to the nature of these units, it is more appropriate forEPA to increase the maximum size of the small source category from 10 mmBtu/hr to 25 mmBtu/hr. Alternatively, EPA should consider creating a separate subcategory for sources from

10mmBtu/hr to 25 mmBtu/hr. In either case EPA should only require work practice standards for these units. EPA clearly has the authority under CAA Section 112 to create subcategories based on size, type and class to consider these cases where there are limited benefits and higher compliance costs that are difficult to justify. In addition EPA has the authority to accommodate these types of flexibility.

Response: See preamble for a discussion of subcategories.

Commenter Name: Caroline Choi
Commenter Affiliation: Progress Energy
Document Control Number: EPA-HQ-OAR-2006-0790-2226.1
Comment Excerpt Number: 1

Comment: EPA Should Consider Other Subcategories for Industrial Boilers, Such As Utility Auxiliary Boilers
Section 112(d)(1) of the CAA allows the Administrator to distinguish among "classes, types, and sizes of sources" in establishing MACT standards. In providing EPA discretion to create subcategories, 112(d)(1) does not restrict subcategorization to cases where the "class", "type" or "size" factors affected HAP emissions. The provision merely requires EPA to establish regulations for each category or subcategory on the schedules set out in 112. Progress Energy appreciates EPA's effort to create subcategories in the proposed rule but requests that EPA create additional subcategories. A limited use subcategory should be created for industrial boilers (IBs) that are operated infrequently or at low capacity because of their specialized nature and use.
For example, electric utilities operate auxiliary boilers that will be subject to the IB MACT rule because they are not steam generating units that produce electricity. Auxiliary boilers operate infrequently or in a warm standby mode and combust either natural gas or distillate fuel. As a result, the HAP emissions from the auxiliary boilers are very low and do not pose a risk to public health.
Under the proposed rule, gas-fired auxiliary boilers would not be subject to the rule's requirements. By contrast, the proposed 1B area source MACT rule requires oil-fired auxiliary boilers to comply with stringent carbon monoxide emission limits and demonstrate compliance with those limits by following testing and monitoring requirements. The distinction between these two different types of auxiliary boilers is unnecessary and does not produce significant health or environmental benefits.
Progress Energy urges EPA to create a limited use subcategory for boilers combusting distillate fuel that would treat those units the same as gas-fired units. The limited use subcategory could have a 10% capacity factor threshold based on 10% of the maximum hourly heat input of the boiler multiplied by 8760 hours per year. Alternatively, distillate oil-fired boilers that operate in a warm standby mode at less than 10 mmBtu/hour a majority of the time would also not be subject to the proposed standards.

Response: See preamble for a discussion of subcategories.

Commenter Name: Cynthia A. Finley
Commenter Affiliation: National Association of Clean Water Agencies
Document Control Number: EPA-HQ-OAR-2006-0790-2260.1
Comment Excerpt Number: 1

Comment: Many utilities practice beneficial reuse of the biogas that is generated during the wastewater treatment process, and this includes using the biogas as a fuel for boilers. The proposed NESHAP should clarify the definition of gaseous fuel boilers to account for boilers that usually operate on biogas but must also use other fuels on certain occasions. In some cases, the design of the boilers may require that oil be used during startups. Fuel oil and other fuels may also be used during periods when biogas is unavailable due to process issues, or when available biogas is insufficient during winter months to provide sufficient thermal energy for plant needs. The amount of biogas available is dependent on a number of factors including the influent wastewater characteristics and can vary significantly even within the course of a day. The proposed definition of gaseous fuel boilers references gas curtailment, which relates to suppliers of natural gas, but does not take into account users of on-site generated biogas, which are subject to limits on the availability of biogas due to the nature of the supply source instead of from suppliers. The definition of gaseous fuel boilers should be expanded to include "boilers using biogas which supplies on an annual average basis at least 90 percent of heat input required by the operation."

Response: See preamble for a discussion of subcategories.

Commenter Name: Ann W. McIver
Commenter Affiliation: BHMM Energy Services, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2254.1
Comment Excerpt Number: 1

Comment: BHMM believes that the use of subcategories is appropriate and supports EPA's decision to identify subcategories in the proposed rule. Combustion design and type of combustor, as well as fuel, influence the emissions produced during combustion. However, BHMM requests that EPA add a subcategory for limited use boilers and process heaters to the previously identified subcategories.
In the 2004 final rule, EPA promulgated a limited use subcategory. This subcategory was defined generally as units with annual average capacity factors less than ten percent (10%). Within the universe of potentially affected units, many are operated as stand-by or redundant capacity. Such units are reserved for use during periods when circumstances mandate the need to provide steam in order to preserve conditions within the distribution system. These boilers are often equipped with coils to maintain internal metal temperatures, as well as boiler drum pressure and temperature, to allow for quick response following the combustion safety purge.
BHMM believes that the justification for the limited use subcategory continues to exist, and that the promulgation of a limited use subcategory will not compromise the environmental benefits associated with this rulemaking.

Response: See preamble for a discussion of subcategories.

Commenter Name: John C. Butler
Commenter Affiliation: Nuclear Energy Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2255.1
Comment Excerpt Number: 1

Comment: On behalf of the nuclear industry, NEI would endorse establishment of a limited use subcategory for auxiliary boilers. These boilers are used infrequently at nuclear stations; typically to provide auxiliary steam in support of reactor startups. As a result, hazardous air pollutant emissions from these auxiliary boilers are exceedingly low and, therefore; do not pose any risk to public health. To the extent emission limits are retained for limited-use units, annual testing requirements should be eliminated and a more flexible testing schedule should be provided that would not require the operation of these units for the sole purpose of testing.

Response: See preamble for a discussion of subcategories.

Commenter Name: Winslow Sargeant
Commenter Affiliation: U.S. Small Business Administration
Document Control Number: EPA-HQ-OAR-2006-0790-2020
Comment Excerpt Number: 2

Comment: EPA Should Have Adopted Additional Subcategories.

SERs recommended that EPA adopt the following subcategories for boilers:

Fuel type (including coal rank, bagasse, biomass by type, and oil by type);
Boiler design type (e.g. fluidized bed, stoker, fuel cell, suspension burner);
Duty cycle;
Geographic location;
Boiler size;
Burner type (with and without low-NOx burners);
Process heaters;
Limited use boilers.

Subcategorization as outlined above was a primary flexibility concern of the SERs during the SBREFA panel. The panel report states that, “SERs commented that subcategorization is a key concept that could ensure that like boilers are compared with similar boilers so that MACT floors are more reasonable and could be achieved by all units within a subcategory using appropriate emission reduction strategies.” [Footnote: SBAR Panel Report at 22.] While the Panel did recognize that the entire list of potential subcategorizations asked for by SERs was not

practicable because of overlap in the categories, EPA should have proposed some additional subcategories as recommended by the panel. EPA has almost complete discretion to establish any subcategories "as appropriate." [Footnote: Section 112(c)(1) of the Clean Air Act. EPA may distinguish among classes, types and sizes of sources within a category. House Report No. 101-490, Part 1 at 328.]

Without the additional subcategories, it increase the cost and difficulty for many small sources to meet emissions standards when they are placed in a category that is driven by the efficiency of very different boiler units running on different fuels, under different duty cycles, and most likely designed for very different purposes. In many cases, forcing boilers into categories where they do not belong will require costly investments to meet standards that are simply not achievable for certain boiler and fuel types, while yielding small or insignificant environmental benefits. In particular, it is very hard to justify why limited use boilers should be subject to the same standards as other boilers. [Footnote: This contrasts strongly with the treatment of the recent MACT standards adopted for limited use reciprocating diesel and spark ignition engines, promulgated by the Agency in 2010, creating a separate category for limited use engines and emergency use engines (e.g engines that run less than 24 hours per year). EPA does not explain the disparate treatment.] EPA did include a "limited use" subcategory for boilers with average capacity factors of 10% or less in the 2004 boiler rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: Scott Davis
Commenter Affiliation: Arizona Public Service Company
Document Control Number: EPA-HQ-OAR-2006-0790-2233.1
Comment Excerpt Number: 2

Comment: 2 Auxiliary Boilers Located at Area Sources

APS believes EPA's determination of GACT for existing oil fired boilers greater than 10 MMBtu/hr is in some cases excessive and impractical. The preamble states when developing GACT standards EPA must consider the cost and economic impact of available control technologies and management practices. Furthermore, EPA states that in some cases, physically measuring emissions from a source may not be practicable due to technological and economical limitations. APS supports this concept and believes that infrequently used boilers located at both nuclear and fossil fuel fired power plants are sources where the proposed GACT standards should not apply.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert Thornton
Commenter Affiliation: International District Energy Association

Document Control Number: EPA-HQ-OAR-2006-0790-2169.1
Comment Excerpt Number: 2

Comment: If EPA adopts numeric emissions limitations, the final rule should include a subcategory for "limited use" units due to their significant differences from steady-state units. “Plant-side” equipment may require the use of liquid fuels to provide for maintenance of natural gas systems during periods that do not constitute emergencies as narrowly defined in the proposed rule. Within the universe of potentially affected units, many are operated as stand-by or redundant capacity, reserved for use during periods when circumstances mandate the need to provide steam in order to preserve conditions within the distribution system. These boilers are often equipped with coils to maintain internal metal temperatures, as well as boiler drum pressure and temperature, to allow for quick response following the combustion safety purge. IDEA recommends that if numeric limits are required instead of a work practice requirement, EPA provide for these sorts of operating scenarios in the final rule by establishing a limited use subcategory for liquid or gas 2 units based on 10% annual capacity factor or 1,000 hours/year as a threshold. These units operate for short periods of time during the year and as such may experience relatively little SSM. The short run times would likely exacerbate the effect of startup/shutdown on 30 day averages. Because limited use units do not operate regularly, their emissions differ from average boilers operating for longer periods of time or near their design capacity.
EPA has recognized that units operate most efficiently when operated at or near their design capacity. Based on their operating schedule, limited use units may or may not operate at or near their design capacity, but if they do it is for limited periods of time. Considering this, limited use units may operate for a greater percentage of their total operating time inefficiently as compared to steady state units operating near design capacity.
In addition, the short operating times of limited use units results in difficulties in effectively controlling emissions. As EPA noted in a 2004 response to comments document , based on the operating schedules of limited use units the agency could not identify a control technology for controlling organic HAP emissions. See EPA, Response to Public Comments on Proposed Industrial, Commercial, and Institutional Boilers and Process Heaters NESHAP, at 67 (Feb. 25, 2004). Considering these differences based on the operating schedule of limited use units, EPA should establish a subcategory for limited use boilers and process heaters. The subcategory should be defined to include units with a capacity utilization factor of 10 percent; or, by a 1,000 hours operating per year threshold.
Furthermore, EPA should adopt a work practices standard for the limited use subcategory for two reasons: (1)EPA has acknowledged that there is no proven control technology for organic HAP emissions from limited use units. (2) Limited use units, such as emergency and backup boilers, cannot be tested effectively due to their limited operating schedules and because most EPA test methods require a unit to operate in a steady state (See Proposed 40 CFR 63.7520(d)).

Response: See preamble for a discussion of subcategories.

Commenter Name: Christopher S. Colman
Commenter Affiliation: Hess Corp.

Document Control Number: EPA-HQ-OAR-2006-0790-2168.1
Comment Excerpt Number: 2

Comment: Boilers need to be further subcategorized by size and (potentially) design. See comments of HOVENSA LLC on this point, filed in the major source Boiler MACT.

Response: See preamble for a discussion of subcategories.

Commenter Name: Winslow Sargeant
Commenter Affiliation: U.S. Small Business Administration
Document Control Number: EPA-HQ-OAR-2006-0790-1950.1
Comment Excerpt Number: 2

Comment: Similarly, EPA rejected small entity representatives' suggestions that the agency create additional subcategories for regulation (including one for limited-use boilers), and that the agency minimize the monitoring and reporting requirements of these rules, and that the agency seek public comment before requiring a mandatory "energy audit" of boilers.

SERs recommended that EPA adopt the following subcategories for boilers: Fuel type (including coal rank, bagasse, biomass by type, and oil by type); Boiler design type (e.g. fluidized bed, stoker, fuel cell, suspension burner); Duty cycle; Geographic location;Boiler size; Burner type (with and without low-NOx burners); Process heaters; Limited use boilers.

Subcategorization as outlined was a primary flexibility concern of the SERs during the SBREFA panel. The panel report states that, "SERs commented that subcategorization is a key concept that could ensure that like boilers are compared with similar boilers so that MACT floors are more reasonable and could be achieved by all units within a subcategory using appropriate emission reduction strategies." [SBAR Panel Report at 22.] While the Panel did recognize that the entire list of potential subcategorizations asked for by SERs was not practicable because of overlap in the categories, EPA should have proposed some additional subcategories as recommended by the panel. EPA has almost complete discretion to establish any subcategories "as appropriate". [Section 112(c)(1) of the Clean Air Act. EPA may distinguish among classes, types and sizes of sources within a category. House Report No. 101-490, Part 1 at 328.]Without the additional subcategories, it increase the cost and difficulty for many small sources to meet emissions standards when they are placed in a category that is driven by the efficiency of very different boiler units running on different fuels, under different duty cycles, and most likely designed for very different purposes. In many cases, forcing boilers into categories where they do not belong will require costly investments to meet standards that are simply not achievable for certain boiler and fuel types, while yielding small or insignificant environmental benefits. In particular, it is very hard to justify why limited use boilers should be subject to the same standards as other boilers. [This contrasts strongly with the treatment of the recent MACT standards adopted for limited use reciprocating diesel and spark ignition engines, promulgated the Agency in 2010, creating a separate category for limited use engines and emergency use engines (e.g engines that run less than 24 hours per year). EPA does not explain the disparate

treatment.] EPA did include a “limited use” subcategory for boilers with average capacity factors of 10% or less in the 2004 boiler rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 3

Comment: We believe that sub-categorization of boilers is required, and that there are sufficient technological differences to warrant the several subclass distinctions of boilers that are recommended for new boilers in these comments.

Response: See preamble for a discussion of subcategories.

Commenter Name: Elizabeth E. Bass
Commenter Affiliation: Tuolumne County
Document Control Number: EPA-HQ-OAR-2006-0790-2250
Comment Excerpt Number: 3

Comment: Consistent with the Small Business Advocacy Review (SBAR) Panel’s recommendation, sub categorization should be implemented for small boilers based on each fuel type. This would ensure that boilers burning similar fuels are treated in a fair manner and are representative of their actual emissions when EPA determines emissions limits or work practice standards.

Response: See preamble for a discussion of subcategories.

Commenter Name: Fred Gordon
Commenter Affiliation: Herman Miller, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2046.1
Comment Excerpt Number: 4

Comment: EPA should take into account the size of the energy recovery unit by using a tiered approach when establishing the NESHAP performance standards, rather than taking a "one size fits all" approach.

The proposed rule provides no differentiation between the emission standards applicable to boilers and process heaters based on the size of the unit, and, in fact, has no lower threshold to

determine the applicability of this rule. As a result every boiler and process heater (i.e., essentially every combustion unit, regardless of size) other than hot water heaters with capacities of less than 120 gallons will be subject to this rule. It is believed large numbers of very small units may potentially be subject to the emission limits, testing requirements, fuel analysis and other provisions of the rule regardless of the environmental impact from the unit.

Clearly, a unit rated at 50 MMBtu/hr or less poses a much smaller environmental impact than does one rated at 10 or 20 times this heat input rate even if a less stringent standard is applied to the smaller unit. Rather than a "one size fits all" classification of all boilers and process heaters, EPA should propose a tiered standard, with a different baseline for the MACT floor defined for smaller emission units. Given the relative contribution of pollutants based on the heat input capacity, separate sub- categories within each of the nine currently proposed categories should be established for those units rated at less than 100 MMBtu/hr. A new baseline for these sources should be established based on relevant emissions data from like-sized units within these sub-categories.

An approach to provide a different set of limits for smaller units has merit and precedent. Given the small number of sources in the small unit category, the overall impact of a relaxed standard for this group subject to the NESHAP standards would be minimal, as the greatest reductions will be made from the larger units. In addition, a higher MACT floor for smaller units in the biomass fuels category would allow these facilities to continue to combust these materials for beneficial heat recovery, reducing the need for fossil fuels without requiring potentially cost-prohibitive upgrades to add-on controls which will have little emissions reduction benefit. Such an approach would be consistent with the thresholds established in the New Source Performance Standard for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR 60 Subpart Dc), which also sets an upper applicability threshold of 100 MMBtu/hr.

Response: See preamble for a discussion of subcategories.

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 4

Comment: EPA's September 13, 2004 Industrial Boiler MACT rule included a "limited-use" subcategory for units with average capacity factors of 10% or less, however the proposed rule does not continue that approach. Instead, it presumes that limited use units are just like those operated full-time which burn a similar fuel. Sealed Air Corporation recommends that the "limited use" subcategory be re-incorporated.

Limited use sources operate intermittently and for shorter periods of time (e.g., small package boilers that are only used during mill outages, a backup boiler that runs when other units are being fixed, or a peaking unit used to supplement electric generation during particularly hot summer days). Compared to most boilers, these units spend a far greater percentage of their time

starting up and shutting down. As a result, their emissions profiles differ from sources which operate in efficient steady-state manners. For example, they are likely to experience higher CO levels as the boiler heats up due to incomplete combustion. Similarly, many pollution control technologies are either difficult to use or ineffective during startup and shutdown periods and would be cost prohibitive to install and use for only short periods of time during a year. These are just the sort of “class” and “type” distinctions which merit consideration for subcategorization under §112(d)(2).

A capacity utilization factor of 10% was chosen for the previous boiler MACT final rule as the best means of defining a limited use unit (69 FR at 55223). This definition is equally appropriate for the current rule. Given the limited and sporadic operation of emergency and backup boilers, as well as the technical infeasibility of imposing emission limitations on these units, the limited use subcategory should require work practices in lieu of emission limits.

Response: See preamble for a discussion of subcategories.

Commenter Name: Sheila C. Holman
Commenter Affiliation: North Carolina Department of Environment and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2222.1
Comment Excerpt Number: 4

Comment: In the proposed rule, the only sub-categorization based on heat input size is a 10 MM Btu/hr threshold. The proposed MACT for existing sources greater than 10 MM Btu/hr includes add-on control devices such as fabric filters, ESPs, sorbent injections systems, etc., which have significant capital and operating costs. The cost and cost-effectiveness (dollars per emission amount reduced) is highly dependent on heat input size, and larger combustion sources are more highly controlled than smaller sources. This fact is manifested by EPA’s New Source Performance Standards Subpart Dc for Industrial Boilers. While it may be technically-feasible to install a wet scrubber on a 250 MM Btu/hr coal fired-boiler, the cost of such control on a 15 MM Btu/hr boiler is not economically feasible for most facilities. To avoid forcing small combustion sources to retrofit add-on controls that have not been demonstrated to be cost effective, NC DAQ recommends using similar heat input size cutoffs with progressively and seas in 40 CFR 60, Subpart Dc: (1) less than 30, (2) 30-100, (3) greater than 100, (with all categories in units of MM Btu/hr, and raising the threshold from 10 to 30 MM Btu/hr as suggested above).

EPA should further subcategorize the MACT standards based on heat input size for solid fuel fired and liquid-fired boilers and process heaters. In order to evaluate and help justify further sub-categorization, EPA should:

1. Size-segregate the source populations,
2. Rank HAP emissions by sources for each size category
3. Identify the emission control technologies in each category,
4. Characterize the extent of existing emission controls in each category,
5. Estimate the cost-effectiveness of adding emission controls for each category.

6. Rank each category's control cost-effectiveness for each HAP.

Response: See preamble for a discussion of subcategories.

Commenter Name: Ben Brandes
Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 4

Comment: Industrial boilers that have specialized uses and are therefore operated less frequently should be listed in a separate subcategory. Such auxiliary boilers are often operated primarily during plant startups, and as such emit very low levels of HAPs. These boilers should be categorized as those with a 10 percent capacity factor for the maximum hourly heat input, and should be subject to a work practice standard under Section 112(h) of the CAA.

Response: See preamble for a discussion of subcategories.

Commenter Name: Abbie Krebsbach
Commenter Affiliation: Montana Dakota Utilities Co
Document Control Number: EPA-HQ-OAR-2006-0790-1975.1
Comment Excerpt Number: 5

Comment: The EPA must properly consider different categories and subcategories of boiler technologies in developing MACT HAPs standards and further evaluate its current database prior to working forward on this rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 6

Comment: For new sources, we believe 4 size classes are warranted based on the technology employed, its application, boiler design parameters and the feasibility of control technologies:
* <1 MMBtu/hr heat input boilers
* >1 MMBtu and < 5 MMBtu/hr heat input
* > 5 MMBtu < 10 MMBtu/hr heat input
* > 10 MMBtu to approximately 50MMBtu/hr heat input.

Distinguishing characteristics of these sizes that warrant these technological subcategories include: For Boilers less than 1 MMBtu
* These systems are generally for smaller retail, commercial or institutional settings, more often than not pellet-based systems, or small commercial cordwood boilers. But for the fact they are used in commercial settings, they are similar to residential units.
* They are manufactured products and are installed based on thermal demand. They are not designed uniquely for each application, but can be thought of most accurately as “appliances,” much like the residential wood and pellet stove market.
* Flue arrangements are not conducive to ensuring standards for laminar flow of flue gases are met and therefore that these systems could even accommodate proper sampling ports, let alone access for periodic flue gas testing.
* They are typically installed by the manufacturer, its representative, or a licensed plumber. There are no on-site technicians or operators for systems of this size.
* There are no operational controls adjustable by the owner that could control or adjust for CO or particulates in the combustion process.
* When in stand-by mode, they are typically restarted through electronic ignition or new fire from a cold start.
* The owner is simply a consumer of a heating system – they are not trained nor capable of making adjustments to the combustion process even if such adjustments were available (they are not). Again, no trained operator personnel are on hand for systems of this size.
* The most appropriate method to ensure these systems meet emission limits and performance standards is through manufacturer testing and certification for each model offered for sale, much like residential wood stoves.

Response: See preamble for a discussion of subcategories.

Commenter Name: Alice Edwards
Commenter Affiliation: Alaska Department of Environmental Conservation
Document Control Number: EPA-HQ-OAR-2006-0790-1926.1
Comment Excerpt Number: 6

Comment: ADEC recommends that boilers used in Alaska be classified as a separate sub—category; that a separate economic analysis be conducted for the sub-category taking into account the unique costs found in Alaska; and that the EPA consider, in light of the costs, a modified regulatory framework for Alaska including a de minimus threshold below which costs do not justify the

proposed regulation. Clearly, a different approach to address health concerns is needed for Alaska.

Response: See preamble for a discussion of subcategories.

Commenter Name: Pamela F. Faggert
Commenter Affiliation: Dominion
Document Control Number: EPA-HQ-OAR-2006-0790-2257.1
Comment Excerpt Number: 7

Comment: The proposed CO emission limits and compliance provisions for large (> I 0 mmBtu/hr) limited use boilers that bum distillate oil are unreasonable. The cost for sources with oil-fired auxiliary boilers to install and maintain the control equipment (and potentially monitoring equipment) necessary to meet the proposed emissions standards would be excessive, particularly for a unit that operates infrequently. In addition, since the demand for an auxiliary boiler to operate is very difficult to forecast, it is almost a certainty that each auxiliary boiler would have to be operated some time during each year for the sole purpose of emission testing. Such an outcome would result in otherwise unnecessary emissions of air pollutants and use of a valuable and not unlimited resource (low sulfur diesel fuel). For these reasons, we recommend that EPA create a separate subcategory for limited use, oil-fired boilers and suggest that the work practice standard proposed for smaller units be applied in lieu of emissions standards. The limited use subcategory should have the 10% capacity factor threshold that EPA applied in the previous (now vacated) Industrial Boiler MACT rule for several limited-use subcategories, including new/reconstructed limited use solid fuels, new/reconstructed limited use liquid fuels, and new/reconstructed of limited use gaseous fuels, and existing limited use solid fuel. While EPA embraced the use limited-use subcategories in the vacated rule, it has not provided any justification for eliminating these subcategories in the proposed rule. To the extent emission limits are retained for limited-use units, annual testing requirements should be eliminated and a more flexible testing schedule should be provided that would not require the operation of these units for the sole purpose of testing.

Response: See preamble for a discussion of subcategories.

Commenter Name: Michael Wagner
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2271
Comment Excerpt Number: 7

Comment: Establish subcategories for coal and biomass boilers similar to those in the proposed rule for boilers at major sources (pulverized coal, stoker boilers, fluidized bed boilers, etc.).

Response: See preamble for a discussion of subcategories.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 7

Comment: For Boilers between 1 MMBtu and 5 MMBtu heat input:
* These systems are typical for schools, public and commercial buildings and are usually larger pellet or small chip-based systems
* The systems are designed for the specific application. Accordingly, flue arrangements can be made to accommodate appropriate testing ports.
* Facilities of this size will usually have janitorial or maintenance staff, but not trained boiler operators. Only rudimentary operational controls are feasible at this scale.
* It is technologically feasible to install back-end pollution control devices, but operationally it is infeasible for this scale system to operate a fabric filter system, and ESP's have not been demonstrated at this scale in the United States.
* BACT (and therefore GACT or MACT) for these systems are annual tune-ups and maintenance (work practices) to ensure their performance, with the possibility of adding High Efficiency Multi-Cyclones (See RSG/BERC Report) as back-end particulate control.
* Stand-by or pilot mode for these systems is to typically maintain a low-fire condition that requires either no CO limit or an alternative CO measure if CO is to be used as a surrogate for HAPs.
* High Efficiency Multi-Cyclone controls will account for between 10 and 25% of project costs at this scale. An ESP or Fabric Filter systems would approach between 30 and 100% of project costs.

Response: See preamble for a discussion of subcategories.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 8

Comment: For Boilers between 5 MMBtu and 10 MMBtu heat input:
* These systems are typically employed in larger schools, governmental buildings or institutional settings.
* Systems of this scale have operational controls and trained operators that can make adjustments to such controls, are typically computer aided and designed with an operator control room.
* As with the boilers of 1-5 MMBtu, stand-by or pilot mode maintains a low-fire condition that requires either no CO limit under these operating conditions or a different measure and limit of CO than that required under full-load operational conditions.
* These systems and their operation are capable of accommodating ESP's or fabric filter APCDs, and the level of trained operators will enable appropriate maintenance of such systems
* Installation of ESP's or Fabric Filters will range typically between 10 and 20% of project costs.

Response: See preamble for a discussion of subcategories.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 9

Comment: For Boilers between 10 MMBtu and 50 MMBtu heat input:
* These systems are most typically heating or cooling multiple buildings, designed for college campuses, industrial parks, institutions with multiple connected buildings and community district energy systems.
* Such systems may also have the need to operate in low-fire pilot or stand-by mode, but increasingly may make use of thermal storage capabilities so that turn-down of boiler load is needed less frequently
* Installation of ESP or fabric filter for particulate control will likely run in the 5-10% of project cost range.
Based on these technological and operational constraints for these different size systems, we recommend the following work practices or emission limits and back-end technologies for these different classes of biomass boilers:[Please see submission for table of suggested emission limits for new boilers by subcategory]

Response: See preamble for a discussion of subcategories.

Commenter Name: Kevin M. Dempsey
Commenter Affiliation: American Iron and Steel Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2061
Comment Excerpt Number: 9

Comment: EPA makes no effort to show that the limited data that are available are in any way representative of the population of boilers that will be subject to the rule. Using the biomass subcategory as an example, the agency has failed to characterize the wood fired boilers in the database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect HAP emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size. EPA's failure to investigate whether the available data adequately characterize the boilers that will be subject to the Area Source Rule is arbitrary and capricious.

Response: See preamble for a discussion of subcategories.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1

Comment Excerpt Number: 9

Comment: EPA makes no effort to show that the limited data that are available are in any way representative of the population of boilers that will be subject to the rule. In the biomass subcategory EPA has failed to characterize the wood fired boilers in the database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size. EPA's failure to investigate whether the available data adequately characterize the boilers that will be subject to the Area Source Rule is arbitrary and capricious. Taken together, the available emissions data are inadequate and inaccurate and, thus, do not reasonably support the proposed standards.

Response: See preamble for a discussion of subcategories.

Commenter Name: Robert G. Hedden
Commenter Affiliation: Oilheat Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2249
Comment Excerpt Number: 11

Comment: A category of boilers between 3 MMBtu/h and 10 MMBtu/h may be appropriate based on EPA's record. However, these boilers cannot be subject to the same standards as large industrial boilers. Instead, if they were to be regulated, work practices would be appropriate.

Response: See preamble for a discussion of subcategories.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 12

Comment: Section 112(d)(1) of the CAA allows the Administrator to distinguish among "classes, types, and sizes of sources" in establishing MACT standards. This subcategorization language mirrors earlier language found in CAA § 111(b)(2). [Footnote: In CAA § 112(c)(1), Congress provided that, to the extent practicable, the categories and subcategories under § 112 "shall be consistent with the list of source categories" under § 111.] In providing EPA discretion to create subcategories, § 112(d)(1) does not restrict subcategorization to cases where the "class", "type" or "size" factors affected HAP emissions. The provision merely requires EPA to establish regulations for each category or subcategory on the schedules set out in § 112. Indeed, EPA has not previously subcategorized under § 111 based solely on emission effects. For example, under § 111 EPA has subcategorized boilers on the basis of size (heat input) or the type

of fuel burned (coal, oil or gas). These subcategorization decisions were based on feasibility and/or cost considerations, not on the level of emissions.

UARG commends EPA for creating a large number of subcategories in the proposed IB MACT rule. However, EPA should have created more subcategories. Historical testing has shown that coal rank has a significant effect on Hg and HCl emissions.

Response: See preamble for a discussion of subcategories.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 13

Comment: A limited use subcategory should be created for industrial boilers that are operated infrequently because of their specialized nature and use.

Response: See preamble for a discussion of subcategories.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 15

Comment: Moreover, coke oven gas is unique among fuels and in any case should not lumped into a Gas 2 subcategory based on emissions data collected for boilers burning other fuels. If coke oven gas-fired boilers and other process gas-fired units are not entirely exempted as argued below and are to be regulated under the Area Source Rule, AISI believes it is necessary for EPA to develop a robust database specific to coke oven gas-fired units and to establish a unique subcategory for those units. Justification for this recommendation is contained in AISI's comments on the proposed Subpart DDDDD rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 20

Comment: GIEC suggests that EPA develop a separate subcategory for "limited use" boilers with no numerical emission limits. In the 2004 Boiler MACT Rule, EPA treated boilers that operated with average capacity factors of 10% or less separately from all other boilers_ Many industrial operations utilize "limited use" boilers for cold startups and intermittently for short periods of time such as for facility outages, or as a backup boiler that runs when other units are being repaired, or a peaking unit used to supplement electric generation during particularly hot summer days. Compared to most boilers, these units spend a far greater percentage of their time starting up and shutting down. As a result, their emissions profiles differ from sources which operate in efficient steady-state manners.

For example, they are likely to experience higher CO levels as the boiler heats up due to incomplete combustion. Similarly, many pollution control technologies are either difficult to use or ineffective during startup and shutdown periods and would be cost prohibitive to install and use, for only short periods of time during a year These are just the sort of "class" and "type" distinctions which merit consideration for subcategorization under Section 112(d)(2) of the Act.

EPA provided a separate category for emergency use engines under the RICE MACT (40 CFR 63 Subpart 7777-March 3, 2010) with work practice standards in lieu of numerical emission limits. GIEC believes EPA should follow a similar path for "limited use" boilers under the final Boiler MACT Rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 21

Comment: Electric utilities that operate auxiliary boilers will be subject to the IB MACT rule because they are not steam generating units that produce electricity. Auxiliary boilers operate infrequently normally during plant startups and combust either natural gas or distillate fuel. As a result, the HAP emissions from the auxiliary boilers are exceedingly low and do not pose any risk to public health.

Under the proposed rule, gas-fired auxiliary boilers are subject to work practice standards requiring an annual tune-up. By contrast, the proposed IB MACT rule requires oil-fired auxiliary boilers to comply with stringent emission limits and demonstrate compliance with those limits by following expensive monitoring requirements. The distinction between these two different types of auxiliary boilers is unnecessary and does not produce environmental benefits.

EPA should create a limited use subcategory for boilers combusting distillate fuel that would subject those units to the same work practice standards as gas-fired units. The limited use subcategory should have a 10% capacity factor threshold. Eligibility for this subcategory would

be determined based on 10% of the maximum hourly heat input of the boiler multiplied by 8760 hours per year.

Response: See preamble for a discussion of subcategories.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 22

Comment: EPA should create a separate subcategory for boilers burning #6 fuel oil.

If EPA retains the approach of setting numerical limits for CO, SOCMA believes that the proposed PM limits for CO (1 ppm for new sources, 2 ppm for existing) are virtually impossible to meet at boilers that burn #6 fuel oil-- as many boilers do, since #6 oil is almost half the price of #2. Such units would face dramatically higher operating costs to switch to #2 fuel oil or natural gas (where gas is available). For large units in continuous service, these costs could amount to multiple millions of dollars a year.

SOCMA understands that all or at least the great majority of boilers in the Agency's MACT floor analysis for oil-fired boilers burn #2 oil, which is easier to combust than #6 fuel oil and will therefore will have lower CO stack gas concentrations. The floor analysis was thus not representative of the levels of performance that is achievable for units burning #6 oil. In order to ensure that the emissions being used to set the floor are representative, EPA should create a separate subcategory for units burning #6 oil. SOCMA would not oppose supplementary data collection by EPA for purposes of establishing CO standards for this subcategory. Indeed, at least one SOCMA member with units that burn #6 oil will be voluntarily conducting CO stack tests to determine its ability to comply with the proposed rule, and SOCMA would be happy to share that data with EPA.

Response: See preamble for a discussion of subcategories.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 28

Comment: A Subcategory Is Needed For Limited Use Units. EPA should establish a subcategory for "limited use" units. While the 2004 Boiler rule treated units with average capacity factors of 10% or less separately, the proposed area source and MACT rules do not continue that approach. Instead, EPA presumes that limited use units are similar to those operated full-time which burn a similar fuel. Limited use sources operate intermittently and for

shorter periods of time (e.g., small package boilers that are only used during outages, a backup boiler that runs when other units are being fixed, or a peaking unit used to supplement supply during peak demands). Compared to most boilers, these units spend a far greater percentage of their time starting up and shutting down. As a result, their emissions profiles differ from sources which operate in efficient steady-state manners. See 75 Fed. Reg. 32023 ("Combustion units operate most efficiently when operated at or near their design capacity. The combustion efficiency tends to decrease as the unit's load (steam production) decreases."). For example, they are likely to experience higher CO levels as the boiler heats up due to incomplete combustion. Similarly, many pollution control technologies are either difficult to use or ineffective during startup and shutdown periods and would be cost prohibitive to install and use for only short periods of time during a year. These are just the sort of "class" and "type" distinctions which merit consideration for subcategorization under 112(d)(2).

Response: See preamble for a discussion of subcategories.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 29

Comment: One additional subcategory that merits consideration is for "limited use" units. While the prior Boiler MACT rule treated units with average capacity factors of 10% or less separately, the proposed rule does not continue that approach. Instead, it presumes that limited use units are just like those operated full-time which burn a similar fuel. Limited use sources operate intermittently and for shorter periods of time (e.g., a backup hospital boiler that runs when other units are being fixed or a peaking unit used to supplement electric generation during particularly hot summer days). Compared to most boilers, these units spend a far greater percentage of their time starting up and shutting down. As a result, their emissions profiles differ markedly from sources which operate in efficient steady-state manners. For example, they are likely to experience higher CO levels as the boiler heats up due to incomplete combustion. Similarly, many pollution control technologies are either difficult to use or ineffective during startup and shutdown periods. These are just the sort of "class" and "type" distinctions which merit consideration for subcategorization under §112(d)(2). Given the limited and sporadic operation of emergency and backup boilers, as well as the technical infeasibility of imposing emission limitations on these units, the limited use subcategory should be limited by work practices in lieu of an emission floor.

The limited use subcategory adopted in EPA's 2004 Boiler MACT final rule should be carried forward to the proposed rule.

The previous version of EPA's Boiler MACT recognized that boilers used for emergencies or as backup boilers should be placed in a subcategory due to the limited and unscheduled nature of their use. See National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters; Final Rule, 69 Fed. Reg. 55218,

55232 (September 13, 2004). EPA recognized that "[t]he boiler database indicates that these infrequently operated units typically operate 10 percent of the year or less," however, "[t]hese limited use boilers, when called upon to operate, must respond without failure and without lengthy periods of startup." Id. Continued recognition of this subcategory is both supported by recent EPA action and practically justified.

Response: See preamble for a discussion of subcategories.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 30

Comment: A limited use subcategory is supported by EPA's recent similar treatment of emergency and black start compression ignition engines.

In March of this year, EPA provided a similar subcategory in its final rule promulgating national emission standards for existing compression-ignition reciprocating internal combustion engines ("CI RICE") with a site rating of less than or equal to 500 brake horsepower. See National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, 75 Fed. Reg. 9648 (March 3, 2010).

In that Rule, EPA recognized that stationary existing CI RICE should be divided into non-emergency and emergency categories "in order to capture the unique differences between these types of engines." Id. at 9650. Like the limited use boilers described in EPA's September 13, 2004 rule, EPA recognized that these emergency CI RICE are required to operate infrequently and for relatively short periods of time and must be kept in working order during prolonged periods of time when they are not operating.

EPA cited as justification for its emergency unit subcategorization an earlier memorandum titled Subcategorization and MACT Floor Determination for Stationary Reciprocating Internal Combustion Engines ?500 HP at Major Sources, Docket No. EPA-HQOAR-2008-0708-0006 (January 21, 2009). See National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, 74 Fed. Reg. 9698, 9705 (March 5, 2009). This memorandum, in turn, incorporated by reference the rationale found in the memorandum Subcategorization of Stationary Reciprocating Internal Combustion Engines ?500 HP, Docket No. EPA-HQ-OAR-2005-0030-0012 (May 15, 2006), which enumerated four reasons for creating a subcategory for emergency CI RICE:

1. Emergency use units are used when electric power from the local utility is interrupted or becomes unreliable. The duration of the power outages is entirely beyond the control of the source, and, when they do occur (except in the case of a major catastrophe) they rarely last more than a few hours, often only a few minutes.

2. Emissions from these units are expected to be low on an annual basis; emissions occur only during emergency situations or for a very short time to perform maintenance checks and operator training. State and local regulators generally have not required emission controls for emergency power/limited use units.

3. Add-on catalytic control devices that are most applicable to reduce HAP from stationary RICE would be less effective on an annual basis for emergency use units, since emergency use units generally operate for brief periods. Therefore, a greater percentage of the emergency use units' operation, as compared to operation of peaking or baseload engines, will occur during catalyst warm-up, when the catalyst's effectiveness will be lower.

4. Emergency use units operate for very few hours per year. A survey conducted by the California Air Resources Board indicated that emergency engines are operated about 30 hours per year. Also, the National Fire Protection Association requires 30 minutes per week (27 hours per year) to maintain and test emergency engines. The recently finalized Airborne Toxic Control Measure in California allows districts to approve up to 100 hours per year for maintenance and testing of emergency engines.
Id. at 5-6. [Footnote: While these criteria focus on an "emergency use" subcategory, it is important to note that the limited duration of the use, not the purpose for using the RICE is the key issue. For example, the same rule also creates a subcategory for "black start" engines (engines used to start a turbine generator), which operate during both "emergency and high demand days." National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters; Final Rule, 69 Fed. Reg. 55218 at 9662.]

These same criteria justify the establishment of a limited use Boiler MACT subcategory. First, limited use boilers, whether used as backup or emergency use boilers, are put into service only during unexpected failures of the main boiler or "when electric power from the local utility is interrupted or becomes unreliable" both of which are events "entirely beyond the control of the source." Id. at 5. Second, because of their limited use during the year, "[e]missions from these units are expected to be low on an annual basis." Id. Third, for this same reason, a greater percentage of a limited use boiler's annual operations will be during startup and shutdown, when emissions controls are less effective. See National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 75 Fed. Reg. at 32023. Finally, like emergency CI RICE, limited use boilers operate for only a small portion of the year, typically "10 percent of the year or less." National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters; Final Rule, 69 Fed. Reg. at 55232.

Like emergency and black start CI RICE, emergency and backup boilers should be placed into a subcategory that recognizes the unique challenges that would be faced monitoring and controlling emissions from these units.

Response: See preamble for a discussion of subcategories.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 31

Comment: Limited use boilers cannot practically demonstrate compliance with standards set relying on continuously operating units.

In addition to the unique operating characteristics of limited use boilers, there are practical reasons for creating a limited use subcategory as well. As noted by Judge Williams in Sierra Club v. EPA, "Section 112(d)(1) authorizes the Administrator to 'distinguish among classes, types, and sizes of sources within a category or subcategory' . . . . [O]ne legitimate basis for creating additional subcategories must be the interest of keeping the relation between 'achieved' and 'achievable' in accord with common sense and the reasonable meaning of the statute." Sierra Club v. EPA, 479 F.3d 875, 884-85 (D.C. Cir. 2007) (Williams, J., concurring).

Without subcategorization for limited use boilers, these infrequently operated units will need to comply with the same emission limits set by units that operate on a continuous bases. As noted above, "combustion units operate most efficiently when operated at or near their design capacity. The combustion efficiency tends to decrease as the unit's load (steam production) decreases." National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 75 Fed. Reg. at 32023. Limited use boilers will therefore be operating for a significantly greater percentage of their time during periods of inefficient operation.

While EPA has already attempted to address this problem through the current MACT floor analysis by addressing the reduced efficiency of load-following units through allowances for variability. [Footnote: See MACT Floor Analysis (2010) for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants – Major Source at 9-10 (April 2010).] this problem is further amplified for limited use boilers, which EPA did not address in its MACT floor analysis, due to EPA's decision to include periods of startup and shutdown in determining compliance with MACT. As found by EPA, this was justified because "the standards that we are proposing are daily or monthly averages. Continuous emission monitoring data obtained from best performing units, and used in establishing the standards, include periods of startup and shutdown. Boilers, especially solid fuel-fired boilers, do not normally startup and shutdown more the [sic] once per day. Thus, we are not establishing a separate emission standard for these periods because startup and shutdown are part of their routine operations and, therefore, are already addressed by the standards." Id. at 32013. [Footnote: Continuous emission monitoring data is not available for all pollutants in the database. To the extent that emission limits are based on stack test data that does not consider SSM events, emission information based on an operator's knowledge and engineering calculations can be used to incorporate SSM variability into the MACT Floor analysis.] Moreover, EPA found that "[p]eriods of startup, normal operations, and shutdown are all predictable and routine aspects of a source's operation." Id. Neither of these findings reasonably

applies to emergency or backup boilers. First, as discussed above, emergency and backup boilers cannot practically make measurements over a monthly average given their limited utilization. Second, emergency and backup uses are by definition neither predictable nor routine.

By their very nature, emergency and backup boilers must spend a larger percentage of time in startup, shutdown, or other reduced-efficiency operating conditions than either base-loaded or load-following units. EPA should not require limited use boilers to comply with standards set by the best operated of these more efficient units.

Response: See preamble for a discussion of subcategories.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 32

Comment: The limited use subcategory should be based on a capacity utilization of 10%.

For CI RICE, "[t]here is no time limit on the use of emergency stationary engines in emergency situations." Id. at 9654. This is a reasonable provision, since an emergency RICE must continue to operate as long as an emergency persists. This provision should similarly apply to limited use boilers. In addition, however, EPA recognized in the final CI RICE MACT rule that these units also need to operate in other, non-emergency situations, including for maintenance and participation in demand response programs. As a result, EPA allocated time within each operating year (100 hours) for emergency CI RICE to operate in non-emergency situations for what EPA referred to as "maintenance checks and readiness testing." Id. at 9654. In addition, EPA allocated 50 hours of each unit's maintenance and readiness time for other non-emergency uses, including at least 35 hours for non-financial uses and up to 15 hours for participation in emergency demand response programs, where the unit would be needed to provide power to a "regional transmission organization or equivalent balancing authority" and the "transmission operator has determined there are emergency conditions that could lead to a potential electrical blackout." Id. Examples of such conditions were also provided by EPA, including "unusually low frequency, equipment overload, capacity or energy deficiency, or unacceptable voltage level." Id.

Given the importance of demand response programs to averting blackouts and other emergencies, the State of Ohio recently went even further, expanding the definition of "emergency" in its permit-by-rule exemptions from MACT for emergency generators less than 50 horsepower to include:

Conditions where a regional transmission organization notifies electric distributors that an emergency exists or may occur and it is necessary to implement emergency procedures for voluntary load curtailments by customers within Ohio, in response to unusually low frequency,

equipment overload, capacity or energy deficiency, unacceptable voltage levels, or other emergency conditions leading to a potential electrical blackout. . . .

Proposed Amendment to OAC 3745-31-03 (June 7, 2010); Executive Order 2010-07S (June 7, 2010) (adopting proposed amendment). As stated by Governor Strickland, "[i]n the event of an electrical grid failure that could result in widespread electrical blackouts, Emergency Load Response Programs allow emergency generator operators to temporarily utilize their generators without the need to obtain a permit to help prevent those blackouts. Allowing the use of emergency generators in such circumstances protects public health and welfare." Executive Order 2010-07S at ¶4. Further, Ohio has exempted all emergency electrical generators operating less than 500 hours per rolling 12-month period from obtaining a permit to install. See Proposed Amendment to OAC 3745-31-03.

For these same reasons, EPA should consider both the necessity of maintenance and readiness testing, as well as participation in emergency demand response programs and other "non-emergency" uses in setting the parameters for a limited use subcategory. While limits based on hours of operation like those used in the CI RICE MACT are one option, another and potentially easier standard to administer would be to rely on capacity utilization. Boilers, unlike RICE, cannot start up or shut down quickly, making it difficult for boiler operators to run a boiler for only a set number of hours. An hours-of-operation limit, therefore, would be less practical than a limit based on capacity utilization. Moreover, as EPA noted in the Proposed Rule, some emissions from boilers are not dependent on operating parameters such as hours operated, but rather on the fuel consumed. See National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, 75 Fed. Reg. at 32017 (discussing fuel-dependent HAP). A capacity utilization factor of 10% was chosen for the previous Boiler MACT final rule as the best means of defining a limited use unit. See National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters; Final Rule, 69 Fed. Reg. at 55223. This definition is equally appropriate for the current rule.

Response: See preamble for a discussion of subcategories.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 70

Comment: The electric utility industry utilizes boilers that burn either natural gas or distillate oil and may be subject to EPA's proposed Subpart DDDDD. These units are called auxiliary boilers ("Aux Boilers") and typically are operated only a limit number of hours (e.g., on the order of 1,000) in a calendar year. An Aux Boiler is used to generate the steam that is necessary to bring a main electric generating unit (EGU) on line. Since many electric utility boilers use various stream-driven equipment (e.g., feed water pumps, induced draft fans, etc.), the units cannot be brought online without an independent supply of steam. If a power plant has only one EGU, then it almost certainly must use its Aux Boiler to bring the main unit online. Power plants that have

multiple EGUs may also have Aux Boilers, but those Aux Boilers are often not needed because of inter-steam piping among the EGUs. That is, an EGU can be brought online utilizing the steam generated in another EGU, which is already online. Such Aux Boilers tend to have very low capacity factors.

As stated above, the electric utility industry burns either natural gas or distillate oil in their Aux Boilers. Natural gas is the fuel of choice, but all power plants do not have access to pipeline natural gas service. Therefore, these plants must rely on distillate oil. For units with limited service, like utility Aux Boilers, EPA's proposed work practice standards for units that burn natural gas may be more than is needed, but it is neither cost prohibitive nor technical infeasible. On the other hand, the proposed compliance provisions appear unreasonable for limited use boilers that burn distillate oi1. [Table 5, 75 FR 32069.] First, Aux Boilers are not going to and should not need to employ control technology to meet the emission limits when burning a clean fuel like ultra-low sulfur diesel (ULSD). Second, because the demand for an Aux Boiler to operate is almost impossible to forecast, it is almost a certainty that each Aux Boiler subject to proposed Subpart DDDDD would have to be operated some time during each year for the sole purpose of emission testing. Such an outcome would constitute very poor public policy because: (1) unnecessary air pollutants would be generated; (2) unnecessary carbon emissions would occur; and (3) a valuable and not unlimited resource (ULSD diesel) would be wasted. Since there is no control technology to verify the performance of, a work practice (boiler tune-up) would be a reasonable approach for limited-use boilers that burn clean fuel.

Response: See preamble for a discussion of subcategories.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 25

Comment: EPA Has The Authority To Subcategorize. CAA 112(c)(1) instructs EPA to establish "categories and subcategories" of sources for regulation under 112. Section 112(d)(1) then further provides that EPA "may distinguish among classes, types and sizes of sources within a category or subcategory" when establishing MACT standards. These provisions vest EPA with the clear authority to group like units for purposes of establishing emissions limitations. EPA's subcategorization decisions, however, must turn on legitimate "class" "type" or size" distinctions as required by 112(d).

The legislative history explains what Congress meant when it authorized EPA to distinguish among sources by "class" "type" or "size." The relevant Senate Report indicates that EPA should:

[T]ake into account factors such as industrial or commercial category, facility size, type of process and other characteristics of sources which are likely to affect the feasibility and effectiveness of air pollution control technology. Cost and feasibility are factors which may be

considered by the Administrator when establishing an emission limitation for a category under Section 112 . . . where a group of sources may share the characteristics of other sources in the category, the Administrator may establish subcategories for such sources.

S. REP. NO. 228, 101st Cong., 1st Sess. 166 (emphasis added).

The language above has two key implications. First, it confirms that Congress' use of the broad concepts of "class" "type" or "size" was meant to allow subcategorization based on (and require consideration of) a broad array of factors. That is particularly true given Congress' open-ended statement that EPA should consider "other characteristics of sources" when grouping them for purposes of establishing emissions limits. Second, this statement confirms that, while cost issues alone may not be sufficient to require subcategorization, costs are relevant to subcategorization decisions. See also, Id. (indicating that subcategorization "wholly on economic grounds" is inappropriate) (emphasis added). By clarifying that individual facilities may not be granted categorical waivers "based on assertions of extraordinary economic effect," id., the Senate Report confirms that the threat of severe economic consequences on a subgroup sharing other common attributes supports subcategorization.(Emphasis added.) [FOOTNOTE: A related House Report confirms that cost implications are relevant to all facets of MACT regulation by providing that "MACT is not intended to require unsafe control measures, or to drive sources to the brink of shutdown." HOUSE REP. NO. 101-490, Part 1, at 328.]

Thus, 112(d)(2) authorizes (and requires) EPA to consider differences in "commercial category, facility size, type of process and other characteristics" that may affect: (1) feasibility of control technology, (2) effectiveness of control technology, and (3) costs of control. Where those factors are present, subcategorization is warranted.

Response: See preamble for a discussion of subcategories.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 26

Comment: EPA Must Subcategorize Sufficiently To Ensure That Emissions Limits Are Consistent With The Statutory Scheme And Achievable. EPA's ability to subcategorize is a key tool in ensuring that MACT floors are achievable. In the Brick MACT decision, Judge Williams wrote about the need to use subcategorization to avoid imposing unreasonable or unachievable MACT floors:
What if meeting the "floors" is extremely or even prohibitively costly for particular plants because of conditions specific to those plants (e.g., adoption of the necessary technology requires very costly retrofitting, or the required technology cannot, given local inputs whose use is essential, achieve the "floor")? For these plants, it would seem that what has been "achieved" under 112(d)(3) would not be "achievable" under 112(d)(2) in light of the latter's mandate to

EPA to consider here. . . . In other words, as applied to some sources, the floor compelled by the statutory language appears to be more stringent than "beyond-the-floor."
If this were all, we might be talking of a statute whose literal words produced a result so "demonstrably at odds with the intentions of its drafters" as to justify judicial surgery. . . . Happily 112 is not such a statute. Section 112(d)(1) authorizes the Administrator to "distinguish among classes, types, and sizes of sources within a category or subcategory," . . . . [O]ne legitimate basis for creating additional subcategories must be the interest of keeping the relation between "achieved" and "achievable" in accord with common sense and the reasonable meaning of the statute.
Sierra Club v. EPA, 479 F.3d 875, 884-85 (D.C. Cir. 2007). Thus, EPA has not only the authority, but also the obligation to create subcategories where limits may be unachievable for certain units.

Response: See preamble for a discussion of subcategories.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 27

Comment: The Clean Air Act provides EPA with discretion to subcategorize based on size, type and class of source.

CAA 112(c)(1) instructs EPA to establish "categories and subcategories" of sources for regulation under Section 112. CAA 112(d)(1) then further provides that EPA "may distinguish among classes, types and sizes of sources within a category or subcategory" when establishing MACT standards. These provisions vest EPA with the clear authority to group like units for purposes of establishing emissions limitations. EPA's subcategorization decisions, however, must turn on legitimate "class" "type" or size" distinctions as required by 112(d).

The legislative history explains what Congress meant when it authorized EPA to distinguish among sources by "class" "type" or "size." The relevant Senate Report indicates that EPA should:

[T]ake into account factors such as industrial or commercial category, facility size, type of process and other characteristics of sources which are likely to affect the feasibility and effectiveness of air pollution control technology. Cost and feasibility are factors which may be considered by the Administrator when establishing an emission limitation for a category under Section 112 . . . where a group of sources may share the characteristics of other sources in the category, the Administrator may establish subcategories for such sources.

S. REP. NO. 228, 101st Cong., 1st Sess. 166 (emphasis added).

That language has two key implications. First, it confirms that Congress' use of the broad concepts of "class" "type" or "size" was meant to allow subcategorization based on (and require consideration of) a broad array of factors. That is particularly true given Congress' open-ended statement that EPA should consider "other characteristics of sources" when grouping them for purposes of establishing emissions limits. Second, this statement confirms that, while cost issues alone may not be sufficient to require subcategorization, costs are relevant to subcategorization decisions. See also, Id. (indicating that subcategorization "wholly on economic grounds" is inappropriate) (emphasis added). By clarifying that individual facilities may not be granted categorical waivers "based on assertions of extraordinary economic effect," id., the Senate Report confirms that the threat of severe economic consequences on a subgroup sharing other common attributes supports subcategorization. [Footnote: A related House Report confirms that cost implications are relevant to all facets of MACT regulation by providing that "MACT is not intended to require unsafe control measures, or to drive sources to the brink of shutdown." HOUSE REP. NO. 101-490, Part 1, at 328.]

Thus, 112(d)(2) authorizes (and requires) EPA to consider differences in "commercial category, facility size, type of process and other characteristics" that may affect: (1) feasibility of control technology, (2) effectiveness of control technology, and (3) costs of control. Where those factors are present, subcategorization is warranted.

Response: See preamble for a discussion of subcategories.

Commenter Name: Wayne York
Commenter Affiliation: Hancock Lumber Company, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2002
Comment Excerpt Number: 7

Comment: It would be reasonable to include an exemption for back-up boilers or other boilers with limited operations. In our case, the back-up boilers are rarely used. For example, one of our back up boilers, with a fuel input capacity of about 90 gallons per hour burning #2 heating oil, actually burned 15 gallons of oil in 2009. Bringing this unit on-line for the sole purpose of conducting a compliance test would actually result in an increase in emissions. The current rule proposal has no exemption for boilers with limited operation (or limited operation using a fuel with an applicable emission limit), and therefore the rule should be amended to include a reasonable exemption for such units.

Response: See preamble for a discussion of subcategories.

Subcategories: Coal

Commenter Name: Ben Brandes

Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 3

Comment: EPA Should Identify More Subcategories of Coal-fueled Boilers

Section 112(d)(1) of the Clean Air Act (CAA) states that, in promulgating regulations establishing emission standards for major sources, the ?Administrator may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing such standards. Section 112(c)(1) also states that, while ?categories and subcategories listed under this subsection shall be consistent with the list of source categories established pursuant to Section 111 of this title, nothing in that statement ?limits the Administrator's authority to establish subcategories under this section, as appropriate.
In coal-fueled industrial boiler units, testing has clearly indicated that coal rank has a significant effect on the emission levels of HCl and mercury. Low-rank coals such as lignite and sub-bituminous coals have higher moisture levels and lower carbon and energy levels, whereas high-rank coals such as bituminous and anthracite colas have lower moisture levels and higher carbon and energy levels. These qualities of the various types of coal have a direct effect on the resulting HCl and mercury emissions of the boilers that use them as feedstock. Therefore, pursuant to Section 112(d)(1), multiple subcategories should be created in the coal-fueled industrial boiler category based upon the particular type of coal combusted by the unit.

Response: See the response to comment EPA-HQ-OAR-2006-0790-2155.1, excerpt 4.

Commenter Name: John Hopewell
Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 4

Comment: It appears that EPA bases the definition of "biomass subcategory," "coal subcategory," "gas - fired boiler," and "oil subcategory" on the fuels that are actually burned; not those that are potentially burned. For example, it appears that EPA woul d not consider a boiler to be in the "oil subcategory" if it did not burn any oil, even if it was physically configured to do so. We suggest that EPA clarify this intent in the definitions by adding the underlined language and deleting crossed out words:
Coal subcategory includes any boiler that actually burns any coal alone or at least 10 percent coal on an annual heat input basis in combination with biomass, liquid fuels, or gaseous fuels. A boiler that does not burn coal even though it has the capability to do so is not included in this subcategory.

Response: The definitions for each subcategory have changed. The definitions of each subcategory do refer to the type of fuel the boiler burns, but the EPA did not include language

about the capability to burn. The coal subcategory includes any boiler that burns any solid fossil fuel and no more than 15 percent biomass on an annual heat input basis.

Commenter Name: John T. Heard
Commenter Affiliation: Virginia Coal Association, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2155.1
Comment Excerpt Number: 4

Comment: Section 112(d)(1) of the Clean Air Act (CAA) states that, in promulgating regulations establishing emission standards for major sources, the "Administrator may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing such standards." Section 112(c)(1) also states that, while "categories and subcategories listed under this subsection shall be consistent with the list of source categories established pursuant to Section 111 of this title," nothing in that statement "limits the Administrator's authority to establish subcategories under this section, as appropriate."
In coal-fired industrial boiler units, testing has clearly indicated that coal rank has a significant effect on the emission levels of HC1 and mercury. Low-rank coals such as lignite and sub-bituminous coals have higher moisture levels and lower carbon and energy levels, whereas high-rank coals such as bituminous and anthracite coals have lower moisture levels and higher carbon and energy levels. These qualities of the various types of coal have a direct effect on the resulting HC1 and mercury emissions of the boilers that use them as feedstock. Therefore, pursuant to Section 112(d)(1), multiple subcategories should be created in the coal-fired industrial boiler category based upon the particular type of coal burned by the unit.
Furthermore, industrial boilers that have specialized uses and are therefore operated infrequently should be listed in a separate subcategory. Such auxiliary boilers are often operated primarily during plant startups, and as such emit very low levels of HAPs. These boilers should be categorized as those with a 10 percent capacity factor for the maximum hourly heat input, and should be subject to a work practice standard under Section 112(h) of the CAA.

Response: EPA has not created separated subcategories based on the type of coal. However, the EPA acknowledges that the type of coal does impact the mercury content and to account for this a fuel variability factor was applied to the Hg MACT floor. Please refer to the Memorandum "Revised MACT Floor Analysis for the Industrial, Commercial, and Institutional Boilers National Emission Standards for Hazardous Air Pollutants – Area Source" in the docket for details on how fuel analysis variability was accounted for.
For area sources, no HCl limit was set for any subcategory. See the Preamble for discussion on a limited use subcategory.

Subcategories: Biomass

Commenter Name: Eric Hiser
Commenter Affiliation: Nucor Corporation

Document Control Number: EPA-HQ-OAR-2006-0790-0839.1
Comment Excerpt Number: 3

Comment: • Please clarify whether a boiler that combusts landfill gas (or similar gaseous fuels derived from landfills or monofills) is considered a "gas-fired boiler" and not in the "biomass category."

Nucor believes that these units are "gas-fired boilers" as defined in proposed 63.11237, but it is aware that EPA has taken the position that gas derived from landfills is "biomass" in other rules and is seeking a clarification that it is not the Agency's intent to regulate landfill gas (or monofill gas, even if derived in whole or part from materials defined as biomass) as "biomass" for purposes of this rule.

Response: The definitions for each subcategory have changed; landfill gas is considered a gas-fired boler. See the Preamble for the definitions of each subcategory.

Commenter Name: Harry Dresser, Jr.
Commenter Affiliation: Maine Energy Systems
Document Control Number: EPA-HQ-OAR-2006-0790-1060.1
Comment Excerpt Number: 3

Comment: Gather current state-of-the-technology data for various fuel and boiler capacity segments and issue standards by segment. "Biomass" as a fuel type is overly broad given the natural segmentations of chips, cordwood, and densi? ed wood pellet fuel, each with its own emissions pro? les. Standards for some segments can reasonably be higher than for other segments. Small pellet boilers can be quite clean and can endure stringent standards, such as those prevalent in the European Union.

Response: See the Preamble for a discussion of the rationale for the subcategories.

Commenter Name: Carolina Dauzat
Commenter Affiliation: Rex Lumber
Document Control Number: EPA-HQ-OAR-2006-0790-0610
Comment Excerpt Number: 4

Comment: Biomass boilers should be evaluated on their own rather than being lumped in with boilers burning a combination of fuels.

Response: The EPA evaluated the proposed subcategory definitions and they have changed. The biomass subcategory includes any boiler that burns at least 15 percent biomass on an annual heat input basis.

Commenter Name: Houston Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0985
Comment Excerpt Number: 41

Comment: EPA should consider a subcategory
for green biomass, which -- since it combusts
differently than dry biomass.

Response: See the Preamble for a discussion of the rationale for the subcategories.

Commenter Name: Jim Hickman
Commenter Affiliation: Langdale Forest Product Company
Document Control Number: EPA-HQ-OAR-2006-0790-1379.1
Comment Excerpt Number: 6

Comment: Limits of biomass boilers should be based on data from units burning only biomass, not a combination of other fuels.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Kerry Flick
Commenter Affiliation: Metso Power
Document Control Number: EPA-HQ-OAR-2006-0790-1490.1
Comment Excerpt Number: 4

Comment: we also suggest that due to the variability in biomass (from a fuel/ash composition. time of harvesting, and regional sourcing standpoint), that consideration be given to making a change to the ruling of the Clean Air Act (CAA) that sets the MACT floor for new units based solely on the "top performer" for each individual pollutant. Suggested changes for MACT floor settings for a new biomass renewable energy plant should be based upon the complete set of measured emissions from only the top "operating" performer in each regional location and for each given biomass classification as defined below, regardless of the combustion technology employed:
Regional location (i.e. Northeast; Midwest; Southeast: Southwest; Northwest; West; and Coastal)

Classification of biomass:

agricultural (crops, dedicated energy crops, animal wastes, and agricultural processing residue);

wood (forest products, logging residue, primary mill residuals, secondary mill residuals, urban wood wastes and wastes from Pulp and Paper manufacturing); and

urban residual (railroad ties, mixed paper, construction and demolition debris, refuse derived fuel, residential municipal solid waste, scrap tires, and yard wastes)

Units tiring multiple classifications of biomass to he subject to the more stringent classification.

Performance from "operating" units should only be used

Pollutant co-dependence must be carefully considered

It is understood that while facilities may not be available at this time, in every region - for every classification, consideration should be given to finalizing an environmental air permit for a given plant based upon the optimized demonstrated performance of the new plant after its first year of operation.

Response: See the Preamble for a discussion of the rationale for the subcategories.

Commenter Name: Douglas J. Fulle
Commenter Affiliation: Oglethorpe Power Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1798.1
Comment Excerpt Number: 8

Comment: OPC's primary concern with the proposed Area Source Rule is our inability to design a new biomass-fired boiler to meet the proposed CO standard. Prior to the issuance of the proposed industrial boiler Area Source Rule, Metso Power was chosen as the supplier for the OPC Warren County bubbling bed fluidized boiler. After the issuance of the proposed industrial boiler Area Source Rule, Metso Power was not willing to guarantee to OPC that their bubbling bed fluidized boiler could meet the proposed EPA emissions limit for the biomass boiler in the Area Source category. Metso Power was willing to guarantee those emission limits during normal operation but not during startup and shutdown operations. No other boiler vendor has been able to provide OPC with a guarantee that they can meet the proposed emissions limits for the biomass boiler in the Area Source category for all operating periods. See the submittal for Metso letter to OPC dated 8/12/J 0, concerning the proposed industrial boiler Area Source Rule, and Metso's inability to provide a boiler that can meet the proposed emissions limits.

This provides clear evidence that the proposed rule is fundamentally flawed as it applies to the type of boiler we intend to construct and operate. Another possible solution to this problem is for EPA to create a subcategory and separately regulate fluidized bed biomass boilers.

The preamble to the proposed rule correctly explains that, "The CAA allows EPA to divide source categories into subcategories when differences between given types of units lead to

corresponding differences in the nature of emission or the technical feasibility of applying emission control techniques." 75 Fed. Reg. at 31903. The preamble goes on to explain that it is necessary to subcategorize by fuel type in this rule because "these different types of boilers have different emission characteristics which may influence the feasibility and effectiveness of emission control." Id. at 31904. Lastly, the preamble explains that, for combustion related HAPs (including CO, which is used as a surrogate for POM in this rule), "The degree of combustion may be greatly influenced by three general factors: time, turbulence, and temperature. These factors are a function of the design of the boiler .... " Id.

The MACT floor memo for the Area Source Rule indicates that the best controlled similar source used to set the proposed CO standard for new biomass area source boilers is a unit that reported information through the U.S. Fuels for Schools Program. Memorandum to Jim Eddinger, from Amanda Singleton, MACT Floor Analysis for the Industrial, Institutional, Commercial Boilers National Emission Standards for Hazardous Air Pollutants -Area Source (April 2010) at Appendix A-I. Although the memo does not explain what type of boiler this is, we believe there is very little likelihood that this boiler is a fluidized bed boiler.

Fluidized bed boilers have markedly different operating and combustion characteristics than other common biomass boiler designs, such as stokers. For example, fluidized bed boilers often are used in situations where the fuel quality is expected to be variable (which is often the case with biomass, which can have widely varying basic properties such as moisture content, and wood types) because the fluidized combustion bed helps the stability and consistency of combustion conditions. This design is in sharp contrast to a stoker, where fuel is piled on a grate and combusted under a forced draft. These differences in design and expected fuel quality provide ample justification for EPA to create a separate subcategory for biomass fired fluidized bed boilers.

Response: See the Preamble for discussion on subcategories and CO limits; biomass boilers do not have CO limits but must perform tune-ups.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 24

Comment: EPA Should Revise the Definition of Biomass Subcategory to Make it Consistent with the MACT Rule.

Dow suggests the following definition for the Biomass subcategory:

Biomass subcategory includes any boiler that burns at least 10 percent biomass, but less than 10 percent coal, on a heat input basis on an annual average, either alone or in combination with liquid fuels or gaseous fuels.

This proposed definition will provide owner/operators with some flexibility if small amounts of biomass need to be combusted in existing boilers.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Daniels W. Duplantis
Commenter Affiliation: Raceland Raw Sugar, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1858.1
Comment Excerpt Number: 2

Comment: Bagasse-fired boilers are insignificant contributors of the hazardous air pollutants regulated under the Proposed Rule, which inappropriately groups bagasse together with wood and wood residue combustion sources. The arbitrary and unreasonable grouping of bagasse with other combustion sources that contribute significantly higher emissions of hazardous air pollutants would place an enormous economic burden on Louisiana sugar mills, while achieving negligible reductions in the emission of such pollutants.

Response: Bagasse boilers are still considered biomass, however the biomass limits have changed. Boilers with heat input capacity less than 10 mmBtu/hr are not subject to emission limits and no biomass boiler has an applicable CO limit. Biomass PM limits are only applicable to new boilers with heat input capacity greater than 10 mmBtu/hr and are based on GACT. See the Preamble for a discussion of the rationale for the subcategories and the floor limits.

Commenter Name: David J. Prior
Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 14

Comment: The Area Source Boiler Rule should specifically include outdoor wood boilers (also known as outdoor wood hydronic heaters) in commercial, industrial, or institutional applications. These units typically exceed the proposed PM emission limit by 10 – 100 times and can exceed the proposed CO emission limit by 100 times. According to the rule a boiler is an enclosed combustion device having the primary purpose of recovering thermal energy in the form of steam or hot water. Due to this, outdoor wood hydronic heaters should fall under the definition whether they are a pressurized vessel or not. Exemptions for whether a boiler is located within or outside of the building envelope should not be given.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 39

Comment: For biomass boilers, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.) should be considered in the subcategorization system. Additionally, the boiler load pattern should be considered. Most industrial boilers experience wide variance in demand as production demands vary, and commercial and institutional boiler demand depends on weather, building occupancy, and other factors.

Response: See the Preamble for a discussion of the rationale for the subcategories and revised limits.

Commenter Name: Mike Comb
Commenter Affiliation: Louisiana Sugarcane Cooperative Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2135
Comment Excerpt Number: 1

Comment: As at all Louisiana sugar mills, Louisiana Sugarcane Cooperative Inc. operates multiple bagasse?fired boilers which fall under the scope of the Proposed Rule as currently written. Bagasse?fired boilers are insignificant contributors of the hazardous air pollutants regulated under the Proposed Rule, which inappropriately groups bagasse together with wood and wood residue combustion sources.

Response: Bagasse boilers are still considered biomass, however the biomass limits have changed. Boilers with heat input capacity less than 10 mmBtu/hr are not subject to emission limits and no biomass boiler has an applicable CO limit. Biomass PM limits are only applicable to new boilers with heat input capacity greater than 10 mmBtu/hr and are based on GACT. See the Preamble for a discussion of the rationale for the subcategories and the floor limits.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281
Comment Excerpt Number: 2

Comment: The Proposed Rule fails to take into account differences between air emissions from the industry's bagasse-fired boilers and wood-fired boilers utilized in other industries. As a result of this arbitrary classification error, the Proposed Rule would require Louisiana sugar mills to

spend enormous amounts on equipment that will not further the EPA's purported goal of reducing hazardous air pollutant emissions.

Response: Bagasse boilers are still considered biomass, however the biomass limits have changed. Boilers with heat input capacity less than 10 mmBtu/hr are not subject to emission limits and no biomass boiler has an applicable CO limit. Biomass PM limits are only applicable to new boilers with heat input capacity greater than 10 mmBtu/hr and are based on GACT. See the Preamble for a discussion of the rationale for the subcategories and the floor limits.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 3

Comment: The majority of the biomass and multi-fuel boilers in Maine are found at electric generating facilities and at pulp and paper facilities. The primary fuel for these boilers is biomass, which is typically a mixture of chipped bark and other wood remnants. Whole tree chips are produced by chipping the entire tree and typically used at the electric generating facilities, while the biomass used at pulp and paper facilities is typically unadulterated wood produced from bark and other tree remnants not used to produce pulp. The biomass maybe produced on site or trucked in. The biomass is usually stored outside in uncovered piles which contribute to moisture variability. Moisture content averages about 50%. Other fuels that the multi-fueled boilers may combust include: natural gas, oil, waste oil, coal, paper, fuel cubes, wood pellets, TDF, and CDW. These fuels do not have the high and sometimes variable moisture content level that is inherent with undried wood fuels.

The burning of wood with high moisture content is intrinsically different than the burning of other fuels and is more complex. Good combustion relies on the fuel mixing well with oxygen present in combustion air with optimal fuel burning occurring when the fuel is dry and either gaseous, liquid, or has a very small particle size. When burning oil or pulverized coal in a boiler, the primary objective is to make the oil droplet or coal particle very small so that it will mix thoroughly with the combustion air. This results in the combustion taking place over the entire surface area of the fuel particle in a short span of time.

Large wood or biomass burning units do not operate this way. The wood is introduced into the boiler in 1 to 2 inch chips which typically enter the boiler via chutes that produce piles of fuel on traveling stoker grates. The boiler has undergrate air providing oxygen which starts the combustion process. Moisture must first be driven off before the wood chips can start to volatilize and pyrolize. Once the moisture is driven off, the wood chip starts to pyrolize into a gaseous state which continues to combust in the upper levels of the furnace or boiler; where additional air is introduced. The amount and variability of moisture in raw wood, its size, and how it is introduced into the boiler results in a very complex combustion process; more complex than the combustion processes of fossil fuels. Uneven fuel distribution, moisture content and fuel chip size do not provide for optimum combustion conditions needed to produce unvarying,

controlled CO emissions. Over the last two decades, the New Source Review process resulted in very tight Best Available Control Technology (BACT) CO limits being imposed on some Maine boilers; subsequently, the Maine DEP discovered that CO is a very difficult pollutant to control in wood fired units and has had to adjust some of these limits upward.

Wood fired fluidized bed boilers tend to have better air to fuel surface contact providing better mixing but do not necessarily create lower CO emissions. We believe the reason for this is because of reduced residence times. In addition, fluidized bed boilers take longer to start up and shutdown compared to other boiler designs.

If EPA chooses to use CO as a surrogate for HAP, EPA should consider treating wood firing boilers and multi-fuel firing boilers with wood and biomass as a separate subcategory. The CO standard for units burning this type of fuel would have to be higher and should take into account the inherent variability encountered when combusting only wood.

Response: See the Preamble for a discussion of the rationale for the subcategories.

Commenter Name: Heather M. Bartlett
Commenter Affiliation: SLR International Corp, Columbia Forest Products
Document Control Number: EPA-HQ-OAR-2006-0790-1963.1
Comment Excerpt Number: 8

Comment: EPA should continue to subdivide biomass boilers into differing combustion system design types (stokers, Dutch ovens, etc.) because the significant differences in these designs affects the controllability of CO, which can not be changed from one design type to another.

Columbia contacted a boiler engineer familiar with the numerous biomass boilers across the country, in hopes of determining what modifications Columbia would be required to perform in order to meet the proposed limits. According to the boiler specialist, there was no honest answer. The best boiler he had tested was operating at 250 ppm CO for an extended period of time. Biomass fuels vary greatly and do not create steady state conditions. In his opinion, a wood fired boiler operating at less than 500 ppm was operating well. The CO is a byproduct of incomplete combustion and reducing the CO in most biomass boilers will require a complete furnace rebuild, for which there is no guarantee that it would then meet the proposed emission limitations.

Response: See the Preamble for discussion on subcategories and CO limits; biomass boilers do not have CO limits but must perform tune-ups.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1

Comment Excerpt Number: 15

Comment: The bagasse-fired boilers operating at Louisiana sugar mills have either "stoker" or "suspension burner/dutch oven" combustion chambers. As illustrated in Table 8, stoker and suspension burner combustion units located at area sources are required to meet considerably lower emission standards than boilers located at major sources. This would result in the absurdity of penalizing area sources not emitting HAP in an amount greater than the major source threshold.

The MACT Floor Analysis document explains that not enough information was collected for boilers at area sources to enable the subcategorization of biomass-boilers by combustion chamber type. This is an unacceptable consequence of EPA's failure to obtain sufficient information to support its Proposed Rule. If EPA chooses to limit its data collection, in spite of having recognized (in the proposed major source MACT rule) that the design type makes a significant difference in establishing "achievable" limits, then the CO emission limits should at least be consistent with boilers located at major sources.

Response: See the Preamble for discussion on subcategories and CO limits; biomass boilers do not have CO limits but must perform tune-ups.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 16

Comment: The Proposed Rule establishes the MACT Floor for thousands of biomass-firing boilers (of varying sizes burning a wide variety of biomass fuels) on the basis of stack test data from a homogenous group of relatively small boilers burning a dry and relatively consistent fuel. By regulating all boilers in excess of 10 MMBtu/hour similarly, without further subcategorization, EPA fails to recognize the inherent vast differences between the operating parameters of a 40 MMBtu/hour wood chip boiler located at a high school and a 400 MMBtu/hour bagasse boiler located at a large industrial facility.

EPA's generalized subcategorization of area source boilers also defies the explicit recommendation of the Small Entity Representatives (SERs) to the Small Business Advocacy Review (SBAR) Panel. The SBAR Panel was convened because the initial screening analysis required under the Regulatory Flexibility Act "indicated a likely significant impact for substantial numbers" of small businesses. 75 Fed. Reg. 31919 (June 4, 2010). The SERs recommended that "EPA should subcategorize based on fuel type, boiler type, duty cycle, and location." Id. The SERs designated bagasse as a specific fuel type and stoker boilers as a specific boiler type. EPA Docket No. EPA-HQ-OAR-2006-0790-0021, p. 22. For its part, the SBAR Panel recommended that EPA "consider the subcategories discussed by the SERs." Id. EPA did not address these recommendations. EPA ignored the SERs' recommendation to subcategorize

by specific fuel and boiler type and create specific categories for bagasse as a fuel and bagasse-fired boilers.

EPA's refusal to differentiate between combustion chamber types, fuel type, and/or boiler size for area source boilers is arbitrary, unreasonable, and an abuse of discretion.

Response: See the Preamble for a discussion of the rationale for the subcategories.

Commenter Name: Melissa Mullarkey
Commenter Affiliation: Recycled Energy Development, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2193.1
Comment Excerpt Number: 2

Comment: RED also suggests EPA adopt a more flexible approach that addresses the diversity of boilers, operations, sectors, and fuels. Such an approach would preserve environmental quality and prevent severe job and productivity losses.

Response: See the Preamble for discussion on subcategories and CO limits.

Commenter Name: Jonathan Wood
Commenter Affiliation: Vermont Agency of Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2248
Comment Excerpt Number: 2

Comment: Additional boiler size categories would also seem appropriate for establishing emissions standards. Currently there is only one category for biomass boilers, so the same emissions standard applies to all new wood fired boilers ranging from the smallest space heating units to the largest electric utility size units. This has resulted in a carbon monoxide limit that the largest units cannot achieve and particulate matter limits that the smallest units cannot afford. The EPA should establish several size categories for biomass boilers. Vermont suggest the following size categories: 1 — 10 MMBTU/hr; 10-30 MMBTU/hr; 30-100 MMBTU/hr and >100 MMBTU/hr. Where possible, these thresholds should follow those already established in the New Source Performance Standards (Subparts Db and Dc).

Response: For the PM limit, which is only applicable to new boilers, the EPA has created additional subcategories based on size and for biomass and liquid boilers there is not a CO limit. See the Preamble for further discussion.

Commenter Name: Per Carlsson
Commenter Affiliation: Scandinavian Cleantech Export Association

Document Control Number: EPA-HQ-OAR-2006-0790-2202.1
Comment Excerpt Number: 3

Comment: To make it economical feasible for small biomass boiler systems to reach low emission limits based upon best performance boilers in the same range by capacity. SCEA's recommendation is to have several subcategories by capacity:
<1.7 MMBtu
>1.7 to 10 MMBtu
>10 MMBtu

Response: All boilers with a heat input capacity less than 10 mmBtu/hr are not subject to emission limits but must perform tune-ups.

Commenter Name: Per Carlsson
Commenter Affiliation: ABioNova
Document Control Number: EPA-HQ-OAR-2006-0790-2147.1
Comment Excerpt Number: 3

Comment: To make it economical feasible for small biomass boiler systems to reach low emission limits based upon best performance boilers in the same range by capacity. AbioNova's recommendation is to have several subcategories by capacity: <1.7 MMBtu, >1.7 to 10 MMBtu, and >10 MMBtu

Defining all boilers less than 10 MMBtu/hr as "Small" Area Source Boilers, per the proposed rule, ignores the differing design characteristics of truly small boilers. EPA is making incorrect assumptions about the capabilities of commercial biomass boilers from 25,000 Btu to 2 MMBtu; this is especially evident when only boilers
>10 MMBtu/hr were used to determine EPA's PM limits, while CO emission limits were developed with boilers >1.6 MMBtu/hr.
A representative dataset of existing (small, i.e. <10 MMBtu/hr) commercial biomass boilers would include units at rural businesses, institutional sites, and farms; they often emit PM at levels in excess of 1.0 lb/MMBtu. Without these and other small-scale commercial boilers included in the dataset, the data is biased towards the subset of the very best performing boilers and is not a representative sample of the actual biomass boiler population. If neccesary look for best performance in the European boiler population for existing small commercial biomass boilers.

Response: For the PM limit, which is only applicable to new boilers, the EPA has created additional subcategories based on size and for biomass and liquid boilers there is not a CO limit. See the Preamble for further discussion.

Commenter Name: John Hopewell

Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 3

Comment: It appears that EPA bases the definition of "biomass subcategory," "coal subcategory," "gas - fired boiler," and "oil subcategory" on the fuels that are actually burned; not those that are potentially burned. For example, it appears that EPA woul d not consider a boiler to be in the "oil subcategory" if it did not burn any oil, even if it was physically configured to do so. We suggest that EPA clarify this intent in the definitions by adding the underlined language and deleting crossed out words:
Biomass subcategory includes any boiler that actually burns any amount of biomass, but no coal, either alone or in combination with liquid fuels or gaseous fuels. A boiler that does not burn biomass even though it has the capability to do so is not inclu ded in this subcategory.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Fred Gordon
Commenter Affiliation: Herman Miller, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2046.1
Comment Excerpt Number: 3

Comment: EPA should include other clean sources of wood residue and wood products, including resinated wood products and paper, in the definition of biomass in the final rule.

The company believes that resinated wood should be included in the definition of biomass fuels. In regard to the resins and adhesives used in engineered wood products, the Company notes that numerous EPA and other regulatory and voluntary standards have had and will continue to have a profound impact on reducing, and in many cases completely avoiding, the use and distribution of materials containing toxic compounds. Wood glues and resins found in today's engineered products contain far fewer hazardous air pollutants (HAPs) and have resulted in reduced HAP usage and product content.

As a result, the reduced HAP content is also reflected in the characteristics of the cut-offs and trimmings, making today's engineered wood cut-offs and trimmings far less of an environmental concern than anytime in history. EPA's focus on lower HAP and HAP alternatives used in adhesive and resin formulations is an appropriate focus at maintaining the environmental improvements desired.

Therefore, if captured at the site where manufactured or initially machined for use in products, these wood by-product residuals provide a clean, renewable fuel that is a desirable alternative to fossil fuel. We believe such materials are more consistent and therefore more manageable than fuels already listed as biomass in the Boiler MACT.

Furthermore, restricting and regulating energy recovery units such as ours, and thereby restricting the use of such beneficial biomass secondary materials, would be counterproductive from an environmental standpoint. It would have devastating consequences on scrap wood recycling and recycling alternatives, and could force manufacturers to avoid reuse and instead simply send these materials to a landfill.
An increase in the disposal of these materials to landfills will also have adverse greenhouse gas implications. Wood products that might otherwise be recycled or reused will be destined to a landfill for disposal. Breakdown in the landfill releases far more potent greenhouse gases when compared to beneficial combustion, and landfill emission control systems may be ineffective at capturing and treating landfill gases.

Similarly, other clean sources of wood-derived and/or cellulosic materials, such as paper, corrugated and clean wood scrap such as damaged palettes should be added to the list of biomass fuels so that these materials can be beneficially re-used as a fuel source under this regulation.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Steven A. Brink
Commenter Affiliation: California Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2026.1
Comment Excerpt Number: 3

Comment: The standards proposed do not consider differences in biomass boiler technology and are not achievable by the current state-of-the-art biomass stoker and fuel cell boilers. The standards need to be reconsidered by using sub-categorization as was done for Major Sources.

Response: See the Preamble for discussion on subcategories and CO limits.

Commenter Name: John M. Irving
Commenter Affiliation: Burlington Electric Department
Document Control Number: EPA-HQ-OAR-2006-0790-2171.1
Comment Excerpt Number: 3

Comment: If it is intended to include biomass electric utility facilities in the Area Source Boiler MACT regulations, there should be an additional biomass subcategory with appropriatestandards for facilities that have a boiler heat input capacity greater than 10 million British thermal units per hour (MMBtu/hr), e.g. have a sub category with standards for boilers with a heat input capacity of 600 MMBtu/hr or greater.

Response: For the PM limit, which is only applicable to new boilers, the EPA has created additional subcategories based on size but did not distinguish between units greater than 30 mmBtu/hr. For biomass and liquid boilers there is not a CO limit. See the Preamble for further discussion.

Commenter Name: Gailyn Messersmith
Commenter Affiliation: Messersmith Manufacturing, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1949.1
Comment Excerpt Number: 4

Comment: The EPA consolidated all biomass fuels into one category. This approach does not recognize the wide variety of biomass fuels that are in use now and ignores future possible sources.

Response: For the PM limit the EPA has created additional subcategories based on size for the PM limits. See the Preamble for a discussion of the rationale for the subcategories.

Commenter Name: Don Kaiser
Commenter Affiliation: Pellet Fuels Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2231
Comment Excerpt Number: 4

Comment: Because the combustion design of area source biomass boilers, including especially biomass boilers with design capacity less than 10 mmBtu/hr, varies widely, this immense gap in EPA's knowledge means that EPA has no way to manage the risk that units of a particular combustion design would drive EPA's MACT "floor" determination to such stringent levels as to foreclose the use of other designs, however economically valuable those other designs might be. The classic example is emissions data from gas-fired boilers driving the MACT/GACT emission standards for coal-fired boilers, an obviously unacceptable dynamic. One way to manage that risk is further subcategorization, a technique EPA used in its parallel proposal for major source biomass boilers and heaters, where it established four biomass subcategories: stokers, fluidized bed, suspension burners/Dutch ovens, and fuel cells. 75 Fed. Reg. 32006, 32066, Table 1. But, as acknowledged by EPA, that sort of targeting is impossible for area source biomass boilers given the present record. Without the ability to subcategorize among biomass boilers, EPA has no rational basis for setting numerical standards at all, especially for biomass boilers below 10 mmBtu, as to which EPA has practically no data at all.

Response: See the Preamble for discussion on subcategories and CO limits; biomass boilers and all boilers with heat input capacity less than 10 mmBtu/hr do not have CO limits but must perform tune-ups.

Commenter Name: Sheila C. Holman
Commenter Affiliation: North Carolina Department of Environment and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2222.1
Comment Excerpt Number: 5

Comment: EPA should further subcategorize biomass on the basis of green (or wet) and dry fuels. NC DAQ test data show that PM emissions from dry wood (<20% moisture) combustion can be up to 20-50% higher than emissions from the combustion of green wood. Some fraction of this PM is likely to be POM. In North Carolina, dry wood is burned in smaller boilers (<50 MM Btu/hr) in wood working industries, including furniture manufacturing. Green wood combustion sources include larger boilers (>250 MM Btu/hr) in lumber mills and pulp and paper plants that are more highly controlled. NC DAQ thinks that the dry wood-fired sources and green wood-fired sources are sufficiently different based on emissions and level of control to warrant additional sub-categorization.

Response: For the PM limit the EPA has created additional subcategories based on size for the PM limits. See the Preamble for a discussion of the rationale for the subcategories.

Commenter Name: Ted Michaels
Commenter Affiliation: Energy Recovery Council
Document Control Number: EPA-HQ-OAR-2006-0790-1951.1
Comment Excerpt Number: 5

Comment: If EPA chooses to adopt numeric carbon monoxide emission standards it should first subcategorize area source biomass units based on combustor type.
EPA has proposed to subcategorize area source boilers into coal-fired boilers, biomass-fired boilers and oil-fired boilers. EPA notes that "The CAA allows EPA to subdivide source categories into subcategories when differences between given types of units lead to corresponding differences in the nature of emissions or the technical feasibility of applying emission control techniques." (75 FR 31903). The universe of biomass boilers includes various combustor types, each with its characteristic design, emission characteristics and emission control technique feasibility. Combustor types include fixed grate stokers, traveling grate stokers, rocking grate stokers, bubbling fluidized bed combustors, circulating fluidized bed combustors and suspension burners. Different combustor types have distinct CO emission characteristics, recognized in both permit limitations and actual emissions. The following table presents permit limits and CO emissions as measured by certified CEMS at three Covanta Energy Corporation biomassto-energy facilities. The tables shows the distinct differences among the plants. [See submittal for table.]

In the Area Source Boiler rule, EPA should further subcategorize biomass combustors by type for setting CO standards. Precedence for subcategorizing to set CO limits is found in EPA's Large Municipal Waste Combustor (MWC) MACT rule which subcategorizes MWCs into 13 different combustor types, including a distinction between bubbling and fluidized bed combustors. (71 FR 27335, Table 3). EPA should be able to obtain design specific CO data to set

floors; EPA's excuse for not subcategorizing "there is not enough data to further subcategorize according to combustor design" (ERG Floor Memorandum at page 4) should not become the burden of the regulated community.

Response: See the Preamble for discussion on subcategories and CO limits; biomass boilers do not have CO limits but must perform tune-ups.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 7

Comment: EPA grouped all biomass boilers at area sources into a single subcategory. Thus CO test data for several small institutional boilers burning rather dry wood fuels were combined with CO test data from much larger utility units that burned essentially wet or natural wood fuels (? 50% moisture). Further, only short-term EPA Method 10 data from single or multiple stack tests yielding one to 3 data points were used to compute the limits. CO emissions from units that fired dry wood residues such as sanderdust in suspension burners were treated in the same way as emissions from burning wet wood fuel burned on a grate or in a fluidized bed combustor. Such a limited amount of short-term data from a handful of units cannot possibly represent the spectrum of emissions that will occur over the long term from the wide variety of existing wood-fired boilers. Since EPA developed the GACT limit using the same methodology as was used for MACT limits (average of top 12% performers), putting all biomass boilers in a single subcategory grossly mischaracterizes the boiler population that would be subject to GACT limits. It appears that a large fraction of boilers in this subcategory will be simply unable to meet the proposed CO limit no matter what level of boiler combustion optimization is attempted.

Response: See the Preamble for discussion on subcategories and CO limits; biomass boilers do not have CO limits but must perform tune-ups.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 14

Comment: Fuel should be defined as clean biomass from wood or agricultural sources. No sub-categorization of fuel type is warranted. We understand that wood-product residues such as saw dust and other such clean wood-derived materials would be considered within this "biomass" definition. If this is not correct, then the definition should be sure to accommodate such sources of material.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 16

Comment: EPA should adopt much clearer definitions of biomass and solid waste in order to encourage the use of renewable and alternative energy sources. This would not only be consistent with the direction of national energy policy, but also would avoid the need for numerous case-by-case determinations and the inevitable and unavoidable inconsistencies that will result.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 27

Comment: EPA Should Subcategorize By Boiler Type For CO. If EPA intends to set numerical standards for CO in this rule, subcategories based on boiler design should be established under both the coal and biomass boiler subcategories, similar to the approach used in the proposed boiler major source rule. EPA acknowledges in the preamble to that rule that boiler design does impact organic HAP emissions (for which EPA has proposed CO as the surrogate):
"Within the basic unit types there are different designs and combustion systems that, while having a minor effect on fuel-related HAP emissions, have a much larger effect on organic HAP emissions. Therefore, we decided to further subcategorize based on these different unit designs but only in proposing standards for organic HAP emissions." [75 Fed. Reg. 32017]

The proposed coal boiler CO limits for area sources are less stringent than the proposed MACT limits for major sources and the proposed limit would seem to be achievable by most area source coal boilers. However, the biomass boiler CO limits for area sources are more stringent than the proposed biomass boiler CO limits for major sources, which is not appropriate. Based on information being compiled by other permitting agencies and trade associations and being submitted in separate comments to this docket, these proposed limits will not be achievable for many types of biomass boilers. If EPA continues on the path of setting numeric standards for CO from coal and biomass boilers, the same boiler design considerations should be made under the area source rule as EPA is making under the major source rule. The same boiler design characteristics influence emissions for boilers located at area sources as those that influence

emissions from boilers at major sources. EPA should review and consider additional data on boiler design before setting CO limits for solid fuel area source boilers.

Response: See the Preamble for discussion on subcategories and CO limits.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 45

Comment: EPA Should Correct The Gap In Coverage Caused By The Proposed Current Definitions Of Biomass And Coal-Fired Boilers. EPA has proposed definitions for biomass and coal boilers as follows:[75 Fed. Reg. 31930-31931]

Biomass subcategory includes any boiler that burns any amount of biomass, but no coal, either alone or in combination with liquid fuels or gaseous fuels.

Coal subcategory includes any boiler that burns any coal alone or at least 10 percent coal on an annual heat input basis in combination with biomass, liquid fuels, or gaseous fuels.

Defining the subcategories in this manner creates a gap in coverage for a boiler that may burn less than 10% coal and more than 90% biomass. Based on the language in the preamble[75 Fed. Reg. 31904], we believe it was EPA's intent to include a 10% coal firing allowance in the biomass subcategory:

"The biomass fuel subcategory includes units burning any biomass but not more than 10 percent coal on an annual fuel heat input basis." Therefore, EPA should revise the biomass subcategory definition to be consistent with the Boiler MACT and allow up to 10 percent coal firing.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Wayne York
Commenter Affiliation: Hancock Lumber Company, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2002
Comment Excerpt Number: 10

Comment: EPA should clarify whether wood gasifiers are considered to burn biomass or gas. In these units, the fuel is gaseous at the time of combustion, and therefore may meet the definition of burning gas.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Subcategories: Oil

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 10

Comment: If a boiler burns oil its emissions are a result of oil combustion and the emissions have nothing to do with gas curtailment. If a boiler has the capability of oil back up it should fall in the oil category.

Response: The EPA disagrees with the commenter and determined it is appropriate to include provisions for periods of liquid use for gas-fired boilers.

Commenter Name: Thomas A. Nyquist
Commenter Affiliation: Princeton University
Document Control Number: EPA-HQ-OAR-2006-0790-1764.1
Comment Excerpt Number: 1

Comment: Princeton's Cogeneration system and Auxiliary boilers fire natural gas as the primary fuel, approximately 95% of total operation, with No. 2 fuel oil and biodiesel used as backup fuels. However, even though natural gas is the primary fuel for the boilers, in reviewing the proposed regulation, Princeton's concluded that the Auxiliary boilers could be considered "existing oil units" based on the following definition of "gas-fired boiler:"

"... any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year." (Proposed definition at 40 CFR 63.11237)

Princeton University suggests the definition of "gas-fired boiler" is overly prescriptive, does not allow time for routine plant maintenance and downtime of gas systems, provides insufficient timeframes for testing, and thus places a large burden on the Cogeneration plant if the Auxiliary boilers are regulated as "existing oil units."

Response: The EPA thanks the commenter for their input, but the EPA has determined it is not necessary to change the definition of gas-fired boiler. Please note that for boilers classified in the oil subcategory the final rule does not include limits for existing oil boilers.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 23

Comment: Similarly, EPA Should Revise the Definition for the Oil Subcategory as Follows:

Oil subcategory includes any boiler that burns at least 10 percent liquid fuels on a heat input basis on an annual average. Gas boilers that burn liquid fuel during periods of gas curtailment, gas supply emergencies, or for periodic testing of liquid fuel are not included in this definition.

Response: The EPA has changed the definition of the oil subcategory appropriately. Oil subcategory includes any boiler that burns any oil and is not in either the biomass or coal subcategories. Gas boilers that burn liquid fuel during periods of gas curtailment, gas supply emergencies, or for periodic testing of liquid fuel are not included in this definition.

Commenter Name: Andrea Grant
Commenter Affiliation: Castle Oil Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1945.1
Comment Excerpt Number: 6

Comment: Section 112 (d)(1) of the Clean Air Act provides EPA with authority to divide the oil-fired boiler source subcategory into additional subcategories to reflect differences between given types of units that lead to corresponding differences in the nature of emissions or the technical feasibility of applying emission control techniques. When such separate subcategories are created, the MACT standard is then established separately for each subcategory. See "Guidelines for MACT Determinations under Section 112(j) Requirements," page 3-21.

An examination of the data from boilers reviewed to determine the proposed MACT floor standard for oil-fired boilers shows that the 15 units had heat input capacity of between 33 and 399 MMBtus/hr. These boilers are far larger than those generally installed and operating in commercial and institutional facilities. In fact, 9 of the 15 had over 100 MMBtus/hr, and about 6 had capacity at or above 200 MMBtus/hr. The smallest boiler reviewed in determining the MACT floor had a capacity of 33 MMBtus/hr. In addition, these units were individual boilers, not a combination of boilers. They have significant physical, combustion, fuel and operating characteristics different from the boilers in apartments, retail shops, or critical care facilities. Thus, without further testing and analysis, there is no reason to believe that these units are an appropriate sample by which to set MACT standards for smaller units.

Therefore, to ensure that like boilers are compared with similar boilers so that MACT standards are more reasonable and could be achieved by all units within a subcategory, EPA should revise its MACT analysis based on the inclusion of additional oil-fired subcategories of sources.

Response: The liquid subcategory was not further subcategorized, see the Preamble for a discussion of the rationale. Please also note that liquid boilers are not subject to any MACT limits, and only new boilers with heat input capacity greater than 10 mmBtu/hr are subject to PM GACT limits.

Commenter Name: David J. Prior
Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 7

Comment: Given the range of heating fuels and the significant differences in fine particle emission rates, boilers should be regulated based on fuel type. Oil systems should be subcategorized based on specific fuel- #2, #4, #6.

When burned in a commercial or industrial boiler to produce heat, different blends of petroleum fuels and different wood fuel types can have very different fine particle emission rates due to both the combustion design of the heating system and the fuel composition. Figure 1 below shows the emission rates for various fuels and combustion systems. [See submittal for Figure 1] After natural gas, #2 fuel oil[With respect to these comments, biodiesel should be considered a #2 low sulfur (<500 ppm) or ultra low sulfur fuel if it meets the respective ASTM requirements pertaining to biodiesel. Although biodiesel is different from #2 oil, the emissions performance surpasses that of ultra low sulfur diesel. (Macor, Pavnello, 2008)], or distillate, is the most common heating fuel and has an emission rate of approximately 0.008 lb/mmBtu. The ultra-low, or 15 ppm sulfur #2 heating oil which will be required in New York in July 2012, has a fine particle emission rate of .000099 lb/mmBtu- about the same as the emissions rate for natural gas-fired boilers.[Footnote: McDonald, Roger. 2009. Evaluation of Gas, Oil, and Wood Pellet Fueled Residential Heating System Emissions Characteristics. Brookhaven National Laboratory, Upton, NY. BNL-91286-2009-IR.]]
Number-six oil (also known as #6 residual oil) is commonly used in large buildings and has a fine particle emission rate twice that of a boiler burning #2 fuel oil.

Fine particle emissions from wood can vary substantially depending on the combustion design and fuel properties, especially moisture content. The first bars in Figure 1 are the fine particle emissions from a stoker-type combustion system burning bole chips (wood chips with bark) and mill chips (wood chips without bark). These chips typically have a moisture content of 40%. The fine particle emissions rates from these units are more than 30 times higher than conventional #2 fuel oil and more than 2700 times that of ultra-low sulfur heating oil.

Figure 1 also shows the emissions rate for a two-stage boiler with a high-quality wood pellet having less than 5% moisture content. A two-stage combustion design results in greatly improved combustion conditions. The resulting fine particle emissions rate is approximately 20%

of that of a stoker unit burning wood chips but the emissions rate is still 12 and 600 times higher than a boiler burning #2 fuel oil and ultra-low sulfur heating oil respectively.
Newly Enacted Legislation Will Significantly Reduce Fine Particle (PM2.5) Emissions from Oil-fired Boilers.

Fine particle emissions from distillate fuels are primarily sulfates formed from high amounts of sulfur in the fuel (BNL, 2009)[footnote: McDonald, Roger. 2009. Evaluation of Gas, Oil, and Wood Pellet Fueled Residential Heating System Emissions Characteristics. Brookhaven National Laboratory, Upton, NY. BNL-91286-2009-IR.] New York has recently enacted aggressive legislation (A 10108/ S 1145-c) that prohibits the sale of #2 home heating oil used in the state containing more than 15 parts per million (ppm) of sulfur. This legislation, signed into law by Governor Paterson (Chapter 203 of the Laws of 2010), significantly reduces the sulfur content of this fuel from approximately 2,500 parts per million (ppm) to 15 ppm. Environmental benefits include a reduction of the fine particle (PM2.5) emission rate from #2 fuel oil fired boilers of more than 98% and a significant reduction of SO2 (BNL, 2009).

In addition, the New York City Council voted to reduce the amount of sulfur in #4 fuel oil in New York City to 1500 ppm and will also require 2% biodiesel in all #2 home heating oil starting in October 2012 (Int 0194-a-2010).

Response: The liquid subcategory was not further subcategorized, see the Preamble for a discussion of the rationale.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 1

Comment: The Boiler MACT Area Source proposed regulation defines gas-fired boiler as follows:
Gas-fired boiler includes any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.
INVISTA supports EPA's proposed regulation that exempts natural gas fired units from being subject to this regulation. However, the above Gas-fired Boiler definition appears to significantly limit liquid firing for gas-fired boilers, even beyond that provided in the Boiler MACT. Given that the units subject to the Area Source MACT are operated similarly to those units subject to the Boiler MACT, with the same operational needs for fuel flexibility, EPA should include a defined amount of fuel oil firing outside of curtailments, emergencies, and testing. As recommended for the Boiler MACT proposed regulation the concept of an annual capacity factor to limit oil consumption could be added to the definition as shown below.

This proposed approach is similar to that used in the New Source Performance Standards, Subpart Db, 40 CFR 60.41b. At 40 CFR 60.42b(f), the term “annual capacity factor” is used to limit the applicability of an emission limit. Specifically, EPA should define “annual capacity factor” and replace the phrase “heat input basis on an annual average.” INVISTA proposes the following text.
Recommended Text in 63.11237, Definitions:
Annual capacity factor means the ratio between the actual heat input to a unit subject to this subpart, as applicable, during a calendar year and the potential heat input to the unit had it been operated for 8,760 hours during a calendar year at the maximum steady state design heat input capacity. In the case of units that are rented or leased, the actual heat input shall be determined based on the combined heat input from all operations of the affected facility in a calendar year. Gas-fired boiler includes any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year. Non-gaseous fuels are limited to no more than 10% of the unit’s annual capacity factor. (40CFR63.11237; 75 FR 31931)
To ensure consistency of definitions, a similar change should be incorporated into the “oil subcategory” definition.

Recommended Text in 63.11237, Definitions:
Oil subcategory includes any boiler that does not burn any solid fuel and burns any liquid fuel either alone or in combination with gaseous fuels. Gas boilers that burn liquid fuel during periods of gas curtailment, gas supply emergencies, or for periodic testing of liquid fuel, or liquid fuel up to 10% of the unit’s annual capacity factor are not included in this definition. (40CFR63.11237; 75 FR 31932)

Response: The EPA thanks the commenter for their input, but did not deem it necessary to include capacity factor in the definition of the oil subcategory.

Commenter Name: David Suess
Commenter Affiliation: DSG Solutions, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1977.1
Comment Excerpt Number: 16

Comment: The proposed regulation needs to be clarified for units that are permitted to fire fuel oil, but have not fired fuel oil regularly recently or do not regularly fire fuel oil at a level greater than 50% of the boiler’s rated load. A concern of ours is whether or not a unit that has not fired oil in years or does not operate regularly over the 50% load threshold would be subject to the rule or required to install CO CEMS with the possibility of never having to use the CO CEMS data.

We recommend including language to the applicability section for units that are permitted to fire a fuel like fuel oil, but have not fired that fuel recently. Requiring boilers that are permitted to fire a fuel that is regulated under this proposed rule, but historically only fires natural gas should

not be required to show compliance with this rule. Instead, an ongoing analysis should be performed and if the gas fired boiler definition is no longer satisfied (e.g. the boiler would satisfy the oil subcategory and would be subject to the role at a later date). Under this situation additional timelines for existing boilers would need to be included within the regulation.

We recommend updating the definitions of gas fired boiler, adding additional language to the rules applicability section and also including a more thoughtful applicability analysis for requiring the installation of CO CEMS.

Response: The CO limits for oil boilers along with all CO CEMS requirements are not included in the final rule. The definitions for each subcategory have also been revised; see the Preamble for further discussion of the changes.

Commenter Name: John Huber
Commenter Affiliation: National Oilheat Research Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1831.1
Comment Excerpt Number: 16

Comment: 5. Section 63.11237 defines liquid fuel meaning "petroleum, distillate oil, residual oil, any form of liquid fuel derived from petroleum, on-spec used oil, and biodiesel." EPA's prescriptive assignment of biodiesel as a liquid fuel, whether in neat form or in blends is without scientific basis. Biodiesel is a structurally different fuel than the family of hydrocarbon-based fuels otherwise listed. Biodiesel is non-petroleum based and consists of monoalkyl esters of natural fats and oils. It is made by transesterification of animal fat or vegetable oil used either independently or blended with petrodiesel. It is regulated as a monoalkyl ester, not a hydrocarbon.
With regard to emission considerations for carbon monoxide (CO), particulate matter (PM), polycyclic aromatic hydrocarbons (PAH) and mercury, biodiesel emits dramatically lower amounts of each of these compounds. According to the U.S. EPA in a report title "A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions," the use of pure biodiesel compared to conventional diesel fuel reduces CO by 48%, PM by 47%, and PAH by 80%. There are zero mercury emissions. It is the only alternative fuel to have a complete evaluation of emission results and potential health effects submitted to the U.S. EPA under the Clean Air Act Section 211 (b).
When considering existing oil-fired units, the use of biodiesel where it has not been used before will reduce all emissions named in the proposed rule. To date, virtually no oil-fired boilers are using biodiesel. Since there have been no reductions from the use of biodiesel to date, there is no reason to include biodiesel in the list of current liquid fuels. Further, it provides an effective, efficient way to reduce emissions in a manner that is minimally burdensome to the industry or their customers.

Response: Biodiesel is still in the liquid subcategory as it is a liquid fuel; however, existing liquid units are not subject to emission limits while new liquid units are only subject to PM GACT limits.

Commenter Name: Dan H. Williams
Commenter Affiliation: Sealed Air Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2228.1
Comment Excerpt Number: 12

Comment: The standard, as proposed, does not distinguish between or categorize emission limitations or equipment based upon types of fuel oils. It is established that No. 2 fuel oil combusts very differently the No. 6 fuel oil. How can the proposed rule create a MACT floor for emission limitations for individual pollutants, using surrogate parameters, and vastly different fuel types?

Response: The liquid subcategory was not further subcategorized, see the Preamble for a discussion of the rationale. Please also note that liquid boilers are not subject to any MACT limits, and only new boilers with heat input capacity greater than 10 mmBtu/hr are subject to PM GACT limits.

Commenter Name: John Hopewell
Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 2

Comment: EPA Needs to Streamline Fuel Definitions Between Boiler Rules.In the companion proposal for Major Boiler Source, EPA defines the “liquid fuel subcategory” to include only those sources that combust more than 10% liquid fuel:Liquid fuel subcategory includes any boiler or process heater of any design that burns more than 10 percent liquid fuel and less than 10 percent solid fuel, on an annual heat input basis.

However, in the Area Source NESHAP, EPA defines the “oil subcategory” to include all sources that burn any liquid fuel: Oil subcategory includes any boiler that does not burn any solid fuel and burns any liquid fuel either alone or in combination with gaseous fuels. Gas boilers that burn liquid fuel during periods of gas curtailment, gas supply emergencies, or for periodic testing of liquid fuel are not included in this definition.

EPA should be consistent and allow up to 10% liquid fuel combustion on in a “gas-fired boiler”. We suggest adding the language that is underlined and deleting crossed out words.
Gas-fired boiler includes any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel, or burns less than 10 percent liquid fuel on an annual heat input basis.

Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

Oil subcategory includes any boiler that does not burn any solid fuel and burns any liquid fuel either alone or in combination with gaseous fuels if the liquid fuel comprises more than ten percent on an annual heat input basis. Gas boilers that burn liquid fuel during periods of gas curtailment, gas supply emergencies, or for periodic testing of liquid fuel are not included in this definition.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: Michael A. Zapkin
Commenter Affiliation: Eastman Kodak Company
Document Control Number: EPA-HQ-OAR-2006-0790-2170.1
Comment Excerpt Number: 5

Comment: Boiler Tuning for fuel fired boilers with low-NOx burners to meet the CO standard will result in increased NOx emissions.

Kodak operates three oil-fired boilers at the Eastman Gelatine facility. Each of these boilers is equipped with low-NOx burners. These burners were specifically installed as an emission control technology for NOx and are tuned to meet stringent NOx permit limits based on manufacturer's specifications. Specifically, the combustion temperatures are kept low for lowNOx operation, which results in higher CO levels. EPA has provided no evidence that low NOx boilers emit more HAPs due to normal operation which results in a higher CO level. Tuning for low CO will require operation of the boilers at higher temperatures with corresponding increases in NOx emissions which will likely exceed current permit limits.

EPA has nearly unfettered discretion to create subcategories as appropriate. The CAA provides ample authority for EPA to distinguish among groups of sources within a source category or subcategory in setting a MACT standard. The statute provides that EPA "may distinguish among classes, types and sizes of sources within a category or subcategory" when establishing MACT standards. 42 U.S.C. § 7412(d)(I). Low NOx burners are a particular type of burner installed in locations where NOx control is required that have different CO emissions characteristics than other burners. For these reasons Kodak requests that EPA establish a separate CO limit for liquid fired area source boilers equipped with low NOx burners.

Response: Biomass boilers are not subject to CO limits, so it was not necessary to create a separate subcategory.

Commenter Name: John Hopewell

Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 6

Comment: It appears that EPA bases the definition of "biomass subcategory," "coal subcategory," "gas - fired boiler," and "oil subcategory" on the fuels that are actually burned; not those that are potentially burned. For example, it appears that EPA woul d not consider a boiler to be in the "oil subcategory" if it did not burn any oil, even if it was physically configured to do so. We suggest that EPA clarify this intent in the definitions by adding the underlined language and deleting crossed out words:
Oil subcategory includes any boiler that does not actually burn any solid fuel and actually burns any liquid fuel either alone or in combination with gaseous fuels if the liquid fuel comprises more than ten percent on an annual heat input basis . Gas boilers that burn liquid fuel during periods of gas curtailment, gas supply emergencies, or for periodic testing of liquid fuel are not included in this definition. A boiler that does not burn oil even though it has the capability to do so is not included in this subcategory.

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Commenter Name: John Hopewell
Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 7

Comment: In Table 1 toSubpart JJJJJJ, EPA establishes emission limits for each boiler subcategory. However, these emission limits do not specify the type of fuel to which each standard is applicable. This could create compliance problems for any source that does not burn 100% of the fuel for which it was listed.
For example, one of our member companies has a boiler that burns either #2 Fuel Oil or Natural Gas. The boiler would be classified as an existing source in the "oil subcategory" because the fuel oil is used for more than just periods of gas curtailment. Table 1 lists the CO emission limits to which the boiler would be subject. Presumably, the emission data upon which the limits are based was collected, and therefore the emission limits apply only when the boiler is burning 100% oil. Neither Subpart JJJJJJ nor 40 CFR §63.7 provisions clarify this point. The CO emission rate for natural gas is higher than the rate for #2 fuel oil. 7 Therefore, the boiler could exceed the CO emission rate if it is monitoring (either CEMS or stack test) while burning naturalgas. This was clearly not the intent of the regulation. EPA sho uld clarify that the emission limits in Table 1 are applicable only while the source is burning a majority of the fuel type for which it was listed. Example language is shown below.

§ 63.11212 What stack tests and procedures must I use for the performance tests? (c)(1) Mercury emission tests: You must conduct stack tests at the maximum normal operating load while

burning the type of fuel or mixture of fuels that have the highest content of mercury, and you must demonstrate initial compliance based on thes e tests.

(2) Particulate Matter, Carbon Monoxide emission tests: You must conduct stack tests at the maximum normal operating load while burning the maximum concentration of the type of fuel applicable to the category to which the boiler is assigned. Coal Subcategory: Coal; Biomass Subcategory: Biomass; and Oil Subcategory: Liquid fuel

Response: The definitions for each subcategory have been revised; see the Preamble for further discussion of the changes.

Subcategories: Combination Fuel Units

Commenter Name: Eric Hiser
Commenter Affiliation: Nucor Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-0839.1
Comment Excerpt Number: 2

Comment: Nucor requests that EPA provide further clarification on the scope of the exclusion in the final rule. Specifically:

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Please clarify whether a boiler that fires propane as a backup fuel is considered a "gas-fired boiler" as defined in proposed 63.11237 and, if so, whether such firing is subject to the 48 hour limit.

Nucor believes that propane fired units should be considered "gas-fired boilers" and not subject to the proposed NESHAP because the fuel is gaseous at the time of combustion and has characteristics very similar to natural gas. Nucor requests this clarification in the final rule.

Response: Please see the Preamble for the definition of gas-fired boiler and requirements for units burning backup fuels.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 22

Comment: EPA Should Modify the Definition of "Gas- Fired Boilers" to Include Boilers that Burn Less Than 10% Liquid Fuels on an Average Annual Heat Input Basis.

The definition of "gas-fired boiler" is too restrictive for small sources and does not represent GACT. Specifically, the proposed rule classifies any existing boiler that burns even a small amount of oil as an oil-fired unit subject to a stringent carbon monoxide limit of 2 ppmv. Area source sites need additional flexibility to combust fuel oils on a limited basis without boilers being classified under the Existing Oil subcategory.

The proposed area source rule is more stringent than the proposed MACT standards for boilers at major sources. Specifically, §63.7575 defines gas fired units as "Unit designed to burn gas 1 (NG/RG) subcategory includes any boiler or process heater that burns at least 90% natural gas and or/refinery gas on a heat input basis on an annual average."

Therefore, EPA must provide at least the same exclusion for boilers at area sources that burn less than 10% oil or other fuels on a heat input basis. Based on the above reasoning, we recommend that the definition for Gas-Fired boiler in §63.11237 be revised as follows:

"Gas – fired boiler includes any boiler that burns at least 90 percent gaseous fuels on a heat input basis on an annual average, and a boiler that burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1689.1, Comment Excerpt Number: 7.

Commenter Name: Thomas A. Nyquist
Commenter Affiliation: Princeton University
Document Control Number: EPA-HQ-OAR-2006-0790-1764.1
Comment Excerpt Number: 3

Comment: Princeton reviewed the preambles to both the major source and area source proposals to better understand EPA's rationale for the source category definition. Both preambles acknowledge that boiler design is dependent in part on the type of primary fuel being burned, and that design impacts the degree of combustion. Further, EPA concludes that boilers emit different type and quantity of HAP based on the design, as well as the type of fuel burned. In both the major and area source preamble, EPA points to these facts as the rationale for identifying subcategories of boilers based on unit design and primary fuel use. The area source rule identifies three subcategories based on fuel use: boilers designed to burn coal, boilers designed for biomass firing, and boilers designed for fuel oil. The major source rule identifies eleven subcategories, compared to the area source rule's three, and further differentiates between different boiler design types and gas-fired units. Although the rationale for establishing subcategories is consistent between the two rule proposals, there is a notable difference between how natural gas fired boilers are defined in each rule. As stated earlier, in the area source rule, natural gas units are defined very narrowly. In the major source rule, units designed to burn natural gas ("gas 1) are more broadly defined as:

"...any boiler (or process heater) that burns at least 90 percent natural gas (and/or refinery gas) on a heat input basis on an annual average."

Based on our review, Princeton suggests that the definition of gas-fired boiler in the area source rule match the definition of "Unit designed to burn gas 1 (NG/RG) Subcategory" in the proposed ICI Boiler regulation for major sources of HAP. This would provide facilities, such as Princeton, with operational flexibility while still limiting the environmental impact from liquid fuels.

The revised phrasing also allows Princeton the opportunity to do routine, as well as, emergency maintenance and testing on the gas compressor and other fuel-gas supply system components in excess of the proposed 48 allowable hours. Certainly, the applicability criteria for area sources of HAP should not be more restrictive than the criteria for major sources. Princeton's proposal would also eliminate confusion as to what conditions qualify as periods of natural gas curtailment.

Response: Please see the Preamble for final subcategory definitions.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 6

Comment: Small sites that are area sources of hazardous air pollutants (HAP) should have the flexibility to use liquid fuel or fuel oils on a limited basis without these sources being classified as a unit that combusts oil. A boiler that uses less than 10% liquid fuel or fuel oil on an annual average heat input basis should not be classified as a New Oil or Existing Oil Boiler. Dow believes that making such an adjustment to this rule will better align the area source rule with the major source MACT rule in subpart DDDDD for boilers and heaters, which uses a 10% heat input criterion to classify a number of sources. In addition, allowing this additional flexibility in the final rule will result in a negligible emission increase of HAPs from these boilers at area sources. Dow suggests changes to the definitions later in this comment package that reflect this comment.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1689.1, Comment Excerpt Number: 7.

Commenter Name: Robert H. Colby and G. Vinson Hellwig
Commenter Affiliation: National Association of Clean Air Agencies (NACAA)
Document Control Number: EPA-HQ-OAR-2006-0790-2022.1
Comment Excerpt Number: 7

Comment: While the MACT floors are calculated based on the fuel consumed during the test, the EPA section 112 proposal sets out a different test for determining which limit would apply to a particular unit in the future. EPA calls this test a "designed to combust" test, asserting that the limits will apply depending on the nature of the fuel that a unit is designed to combust. However, any unit that burns a fuel must be "designed" to combust that fuel and units that combust multiple fuels are, in fact, designed to combust each of those fuels. Under the proposal, the applicability of different limits is based on whether a source has combusted a prescribed amount of a type of fuel, not necessarily the fuel it combusts during a compliance test, and not the fuel that might be expected to dominate its current emissions profile. Thus, a unit would be "designed to combust" coal if at some unspecified time it generated at least 10 percent of its annual heat input from coal. EPA's proposal continues with a tiered system where, if the source did not burn 10 percent coal, it would look to see if it burned more than 10 percent biomass, and if it did, it would be subject to the biomass limits. If a source burned less than 10 percent solid fuel and any liquid fuel at all, it would be subject to the limits for liquid-fired units (even if it obtained 99.9 percent of its heat input from natural gas). Under this scheme a unit would be a coal-fired unit, [Footnote: The proposal does not set out how the percentage of annual heat input is to be determined, but sources will need to know in advance of the commencement of a given year which limits apply to operations during that year.] subject to the emission limitations based on the emission profile of coal-burning units, even if today it is burning 100 percent biomass. This would result in a situation where the CO limit is unattainable at the source, while the mercury and hydrogen chloride (HCl) limits are overly lax. This scheme also unfairly affects those who co-fire natural gas and oil, since the combustion of any oil at all would remove the exemption from emission limitations that EPA proposes for natural gas-fired units.

The proposal does not set out a rationale for this new approach or why the procedures set out in the vacated rule to address fuel mixtures are inadequate. NACAA recommends that MACT limits be established for each major category of fuels and that the procedures found at 40 CFR 63.7530 be used to address fuel mixtures.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1689.1, Comment Excerpt Number: 7.

Commenter Name: Michael Bradley
Commenter Affiliation: The Clean Energy Group
Document Control Number: EPA-HQ-OAR-2006-0790-1689.1
Comment Excerpt Number: 7

Comment: We request that EPA clarify the applicability provisions to account for units that may drop below 90 percent natural gas-fired during occasional years with substantial natural gas curtailments beyond the control of the facility. Changing categories on an annual basis based on factors beyond the facility's control is impractical for both sources and regulators. Thus, the Clean Energy Group recommends that EPA amend the definition of oil-and gas-fired units to use the same threshold as Part 75 of the Acid Rain Program regulations; namely, a three-year rolling average with no one year less than 85 percent gas-fired. [Footnote: 40 CFR 72.2(2) states that

gas-fired for the purposes of part 75 means "the combustion of: (i) natural gas or other gaseous fuel (including coal-derived gaseous fuel) for at least 90.0 percent of the unit's average annual heat input during the previous three calendar years and for at least 85.0 percent of the annual heat input in each of those calendar years; and (ii) fuel oil, for the remaining heat input, if any.] In addition to preventing year-to-year variation, using the existing threshold would prevent some units from being categorized differently by different programs.

Response: See preamble for a response to comment on revisions to subcategories.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 8

Comment: EPA'S SUBCATEGORIES ARE UNLAWFUL AND ARBITRARY.
EPA proposes to establish separate emission standards (or work practice standards) for area source boilers that burn coal, oil, and biomass. As noted above, EPA does not even acknowledge the existence of area source boilers burning secondary materials as fuel, whether such secondary material is a waste or not. Perhaps aware that subcategorizing based on fuel type would be unlawful, the agency attempts to portray its subcategories as based on "design." The agency states that it is proposing separate standards for units "designed to fire coal," "designed to fire oil," and "designed to fire biomass." 75 Fed. Reg. at 31904. Regardless of what their "design" might be, however, boilers fit into EPA's subcategories based on what they actually choose to burn. Thus, units that burn greater more than ten percent coal are subject to standards for units "designed to burn coal," units burning "any" biomass but not more than ten percent coal are subject to standards for units "designed to burn biomass," and "[t]he oil subcategory includes all remaining boilers." [2 Although EPA's preamble describes biomass units as those burning "any" biomass and less than ten percent coal, 75 Fed. Reg. at 31904, its proposed regulation defines the biomass subcategory as "any unit that burns any amount of biomass, but no coal, either alone or in combination with liquid fuels or gaseous fuels," 75 Fed. Reg. at 31930.

Response: See the preamble for how EPA modified the subcategories.

Commenter Name: N/A
Commenter Affiliation: Sierra Club, Earth Justice, Clean Air Task Force, Natural Resources Defense Council
Document Control Number: EPA-HQ-OAR-2006-0790-1982.1
Comment Excerpt Number: 9

Comment: Although EPA may distinguish between different classes, types, and sizes of source in setting standards under § 112(d), the agency may not distinguish on other bases. Further, when

the agency does set separate standards for different sources in a category, the agency must must offer a reasoned justification for the subcategories it has chosen. See, e.g., Northeast Maryland Waste Disposal Authority v. EPA, 358 F.3d 936, 947-950 (D.C. Cir. 2004)(remanding a decision to subcategorize in setting MACT standards because the Agency had not properly justified its subcategorization scheme).
Here, EPA has set different standards for sources that are not actually of a different class, type or size. EPA defines a unit "designed to burn coal" as one that actually burns some other fuel for up to ninety percent of its heat input. Even more absurdly, EPA defines as "designed to burn biomass" any unit that burns "any" biomass at all – a definition that would sweep in units burning fuel that consists almost entirely of something other than biomass. And EPA defines as "designed to burn oil" any unit that burns no biomass and no more than ten percent coal, regardless of whether its remaining fuel is oil or not. In attempt to support these divisions, EPA makes the truly preposterous argument that "[b]oiler systems are designed for specific fuel types (e.g. coal, biomass, or oil) and will encounter problems if a fuel with characteristics other than those originally specified is fired." 75 Fed. Reg. at 31904. The agency goes on to claim that boilers attempting to burn fuels other than that for which they were designed may not be able to achieve "full load," may have to make "extensive changes," and may have reduced efficiency. Id.

Plainly, even EPA does not believe the nonsensical arguments it advances. EPA's proposed subcategories envision that boilers will burn fuels other than those for which they are designed. Boilers "designed to fire coal" may derive up to ninety percent of their heat input from other fuels. Boilers "designed to fire biomass" may derive virtually all of their heat input from other fuels. And boilers "designed to fire oil" may burn anything they like so long as it does not contain any biomass or more than ten percent coal. Such subcategories allow and even encourage fuel switching and thus completely belie the absurd notion that they actually contain units of a different class, type, or size.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1982.1, Comment Excerpt Number: 8.

Commenter Name: James P. Brooks
Commenter Affiliation: Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1915.1
Comment Excerpt Number: 17

Comment: The Maine DEP has several multi-fuel boilers that do not fit into EPA's proposed categories of units burning coal, biomass, or oil. These units burn biomass and oil, and small amounts of coal (less than 10% of annual heat input). We recommend that EPA carefully review the proposed subcategories and provide additional detail where necessary to ensure that all multi-fuel boilers are appropriately addressed.

Response: We have also adjusted the definition for each fuel subcategory to account for the combustion of secondary materials. The definitions have been clarified to specify that the fuel subcategories are based on the fuel that the boiler is designed to combust, rather than the actual fuel that the boiler is combusting.

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 19

Comment: EPA proposes allowing a facility to use up to 10% of an alternative fuel that a boiler is "designed" to burn without having to comply with the appropriate emission limit. NESCAUM finds this language problematic for several reasons. First, we suggest that EPA change the word "designed" to "permitted" to burn. While a unit may be designed to burn certain fuels, a state may have placed limitations on fuel use within a permit. Second, we have concerns with the 10% fuel use limit, as it creates significant enforcement issues. Without detailed requirements for tracking, recordkeeping, and reporting, the 10% limit will be difficult for enforcement staff to verify. Third, facilities' use of the different fuels may vary from year to year, which leads to different emission limits from year to year. States would be unclear as to how to determine which emission limits would apply and when. Fourth, there are questions about what limits would apply when a boiler is simultaneously burning more than one fuel. NESCAUM recommends that EPA modify the rule to state that if a facility combusts more than one fuel type, it must meet the lowest applicable emission limit for the fuel types actually burned.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1689.1, Comment Excerpt Number: 7.

Commenter Name: Edward J. Wilusz
Commenter Affiliation: Wisconsin Paper Council
Document Control Number: EPA-HQ-OAR-2006-0790-2133
Comment Excerpt Number: 3

Comment: EPA must adjust the proposed subcategories to properly accommodate the unique characteristics of combination boilers.
Within certain industry sectors, boilers are commonly used that co-fire coal in an amount greater than 10% heat input basis with at least 10% biomass. These "combination boilers" that simultaneously burn coal and biomass have different emission profiles than units that burn coal or units that burn biomass. As a result, combination boilers do not fit cleanly into either the coal-fired boiler subcategory or the biomass-fired boiler subcategory. To better accommodate the actual performance of combination boilers, we recommend that EPA adjust the proposed subcategory for combination boilers so that they belong to the coal subcategory for purposes of regulating the fuel-based HAP (i.e., metals/PM, HAP acid gases, and mercury) and the biomass

subcategory for purposes of regulating the combustion-based HAP (i.e., CO (as a surrogate for organic HAPs) and dioxins/furans).

As the rule is currently proposed, boilers that burn more than 10% coal with biomass will be classified in the coal subcategory; however, most such boilers will not be able to meet the coal subcategory CO emission standard for organic HAPs due to the substantial amount of biomass that they burn. Biomass fuels are more variable than coal and typically contain significantly more moisture than coal. As a result, it is more difficult to control combustion conditions in combination boilers than in boilers combusting only coal, which means that CO emissions from combination boilers often will be unavoidably greater than from a comparable coal-fired boiler. This makes the coal subcategory an inappropriate choice for establishing standards for combustion-based HAP. Regulating combustion-based HAP from combination boilers under the biomass subcategory makes more sense because combination boilers will perform more like biomass-fired boilers with regard to the combustion related HAPs.

On the other hand, biomass typically has lower levels of metals, halogens, and mercury than coal. As a result, regulating the fuel-related HAPs from combination boilers under the biomass subcategory would be inappropriate because the amount of co-fired coal would in many cases prevent combination boilers from meeting the standards for fuel-based HAPs. For this reason, it makes more sense to regulate fuel-based HAP emissions from combination boilers under the coal subcategory.

Response: See the preamble for how EPA modified the subcategories.

Commenter Name: Sarah E. Amick
Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 4

Comment: In the event that EPA decides to establish numeric emissions limitations for oil fuel boilers, we recommend that the oil subcategory should be based on whether oil is the predominant fuel (i.e. is a boiler burning greater than 50% oil). We recommend that EPA classify boilers based on predominant use of a particular fuel. We also recommend using the past calendar year as the basis, with appropriate consideration of potential changes in subcategory.

Response: See preamble for a response to comment on subcategories.

Commenter Name: Charles B. Jones, III
Commenter Affiliation: Georgia Traditional Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1923.1
Comment Excerpt Number: 11

Comment: Expanding more on the proposed restriction to use fuel oil just during natural gas curtailments, GTMA believes that defining a source as an oil boiler when it bums oil for reasons other than only during a gas curtailment is problematic. Even if the intent of being permitted to bum oil in a gas boiler is only as a backup during a gas curtailment, at some point the diesel fuel will have to be burned as it becomes aged and replaced with fresh fuel if there is not a gas curtailment in several years (and this is a distinct reality). This would void the gas boiler exemption and make the rule applicable to such a source. We believe that the trigger for a gas boiler (non-covered source) to become an oil boiler should be based more appropriately on a 10% threshold of oil burned based on total fuel annual heat input, consistent with the definition of a coal boiler under the proposed rule.

Response: Please see the Preamble for final subcategory definitions.

Commenter Name: Robert W. Glowinski
Commenter Affiliation: American Wood Council
Document Control Number: EPA-HQ-OAR-2006-0790-1930.1
Comment Excerpt Number: 3

Comment: If EPA chooses to use CO as a surrogate for HAP, EPA should consider treating wood firing boilers and multi-fuel firing boilers with wood and biomass as a separate subcategory. The CO standard for units burning this type of fuel would have to be higher and should take into account the inherent variability encountered when combusting only wood.

Response: See preamble for a response to comment on multi-fuel firing boilers.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 4

Comment: The definition of gas-fired boilers includes those units burning gaseous fuels, which by further definition includes process gases (e.g., coke oven gas). However the definition of gas-fired boiler is qualified by stating that gaseous fuels cannot be combined with any liquid fuel except during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuels. Without clarification of that definition, the exemption for gas fired boilers is potentially negated.
While coke oven gas boilers are primarily designed to burn coke oven gas, usually with natural gas as a back-up or supplemental fuel, they are sometimes supplemented with liquid fuels when the supply of coke oven gas from the coke oven process is interrupted due to operational difficulties or reduced operations necessitated by business conditions or when steam demands elsewhere in the plant cannot be met by the available coke oven gas supply to the boilers. It is not clear from the definition of gas-fired boiler whether the terms gas curtailment and gas supply

emergencies pertain to commercial natural gas supplies or can be interpreted to include occasions of curtailment and supply deficiencies from the process supplying the gas. In the absence of clarifying language in the definition, the occasional use of liquid fuel would place these boilers into a category that requires stringent emission limits, the installation of costly emission control equipment, and testing, monitoring and recordkeeping obligations. Accordingly, we seek an amended definition that allows supplemental fuels to be used in these circumstances.
If the qualification of liquid fuel usage remains in the definition of gas-fired boiler, we suggest adding further clarifying language that is contained in the definition of a waste heat boiler in the proposed Subpart DDDDD applicable to boilers at major sources. Waste heat boilers are exempt from that rule. (Blast furnace gas - a process gas that is recovered for its heat value just as is coke oven gas - is also exempt under that rule.) The waste heat boiler definition in the proposed rule for boilers at major sources is limited to units designed to use no more than 50% of the total heat input capacity of the unit with supplemental burners. We believe that the environmental and energy conservation benefits of using coke oven gas are comparable to the use of waste heat and that the same provisions for using supplemental fuels should apply to units intended to utilize coke oven gas. Accordingly, applying the same rationale, we urge EPA to modify the gas-fired boiler exemption to include those units designed to use supplemental fuels up to 50% of the total heat input capacity of the unit.

Response: Please see the Preamble for final subcategory definitions.

Commenter Name: Sheila C. Holman
Commenter Affiliation: North Carolina Department of Environment and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2222.1
Comment Excerpt Number: 8

Comment: EPA specifically solicits comment on this proposed action from State and local officials on page 31922.

Achievement of the more stringent biomass-firing CO emission limits may not be feasible when co-firing coal with any appreciable quantity of biomass materials, such as wood chips or wood pellets, in a boiler or process heater. The proposed wood-firing CO emission limits, particularly for smaller units with no adjustment for co-firing, would discourage, if not effectively prohibit, co-firing biomass with coal as a renewable energy alternative to fossil fuel combustion. This prohibition is in conflict with current energy, environmental, and economic programs and policies to encourage biomass combustion as an alternative to fossil fuel combustion to reduce greenhouse gas emissions and dependency on foreign oil. EPA should provide prorated emission limits for CO from biomass and coal cofired units that would be based on the percentage of total heat input from each fuel fired.

Response: EPA is charged with regulating industrial, commercial, and institutional boilers and process heaters and many industrial boilers use biomass as a fuel. Consequently, we must

regulate these units under this rule. We believe that the final rule should not discourage the beneficial use of renewable energy sources such as biomass.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 15

Comment: No allowance for secondary fuel (other than oil or gas for cold start-up) is suggested for biomass. If there are other emission limits for other sources of fuel, they should be proportionally applied to the boiler based on the proportion of the fuel used.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 4.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 36

Comment: Within certain industry sectors, boilers are commonly used that co-fire coal in an amount greater than 10% heat input basis with at least 10% biomass. These “combination boilers” that simultaneously burn coal and biomass have different emission profiles than units that burn coal or units that burn biomass. As a result, combination boilers do not fit cleanly into either the coal-fired boiler subcategory or the biomass-fired boiler subcategory. To better accommodate the actual performance of combination boilers, we recommend that EPA adjust the proposed subcategory for combination boilers so that they belong to the coal subcategory for purposes of regulating the fuel-based HAP (i.e., metals/PM, HAP acid gases, and mercury) and the biomass subcategory for purposes of regulating the combustion-based HAP (i.e., CO (as a surrogate for organic HAPs) and dioxins/furans).

As the rule is currently proposed, boilers that burn more than 10% coal with biomass will be classified in the coal subcategory; however, most such boilers will not be able to meet the coal subcategory CO emission standard for organic HAPs due to the substantial amount of biomass that they burn. Biomass fuels are more variable than coal and typically contain significantly more moisture than coal. As a result, it frequently is more difficult to control combustion conditions in combination boilers than in boilers combusting only coal, which means that CO emissions from combination boilers often will be unavoidably greater than from a comparable coal-fired boiler. This makes the coal subcategory an inappropriate choice for establishing standards for combustion-based HAP. Regulating combustion-based HAP from combination boilers under the biomass subcategory makes more sense because combination boilers will perform more like biomass-fired boilers with regard to the combustion related HAPs.

On the other hand, biomass typically has lower levels of metals, halogens, and mercury than coal. As a result, regulating the fuel-related HAPs from combination boilers under the biomass subcategory would be inappropriate because the amount of co-fired coal would in many cases prevent combination boilers from meeting the standards for fuel-based HAPs. For this reason, it makes more sense to regulate fuel-based HAP emissions from combination boilers under the coal subcategory. Notably, if owners or operators of combination boilers anticipate difficulty complying with the proposed CO standard, they may have to switch away from biomass and burn more coal to be able to comply with the coal subcategory emission standards. This unintended consequence of replacing biomass with coal is contrary to national energy and climate policy, which encourages the use of more renewable biomass fuel.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2133, Comment Excerpt Number: 3.

Commenter Name: Ann W. McIver
Commenter Affiliation: BHMM Energy Services, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-2254.1
Comment Excerpt Number: 2

Comment: In the preamble discussion, it appears that the EPA intended to provide that a natural gas-fired boiler that receives less than 10% of the annual heat-input from liquid fuels would be considered a natural gas-fired boiler for purposes of the regulations, and thus only subject to the annual tune-up requirements. However, the language found in the regulation appears to restrict the use of liquid fuels to periods of testing or supply curtailment.
Unfortunately, it is possible to envision operating scenarios where "plant-side" equipment may require the use of liquid fuels to provide for maintenance of natural gas systems during periods that do not constitute emergencies as narrowly defined in the proposed rule. BHMM requests that EPA provide for these sorts of operating scenarios in the final rule by clearly providing that greater than 10% of the annual heat input for a combustion unit must come from liquid fuel before the requirements contained in that subcategory apply.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1925.1, Comment Excerpt Number: 78.

Commenter Name: John Hopewell
Commenter Affiliation: American Coatings Association
Document Control Number: EPA-HQ-OAR-2006-0790-2062.1
Comment Excerpt Number: 5

Comment: It appears that EPA bases the definition of “biomass subcategory,” “coal subcategory,” “gas - fired boiler,” and “oil subcategory” on the fuels that are actually burned; not those that are potentially burned. For example, it appears that EPA woul d not consider a boiler

to be in the “oil subcategory” if it did not burn any oil, even if it was physically configured to do so. We suggest that EPA clarify this intent in the definitions by adding the underlined language and deleting crossed out words:
Gas-fired boiler includes any boiler that actually burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel, or burns less than 10 percent liquid fuel on an annual heat input basis. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year. This includes any boiler that burns only gaseous fuels even though it may have the capability to burn non -gaseous fuels.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-1918.1, Comment Excerpt Number: 4.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 78

Comment: Gas Fired Boilers Should Include Boilers Burning Liquid During Periods Of Gas Curtailment And Boilers That Burn At Least 90% Gas. In proposed 63.11237, EPA defines a gas-fired boiler as “any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.” ACC supports the allowance for liquid firing during periods of curtailment for these boilers, as facilities need the flexibility to continue to operate during periods when natural gas supply is interrupted. However, we believe that the gas-fired boiler definition should be expanded to allow for additional operational flexibility. EPA has been consistent throughout the boiler rule proposals to use 10% fuel use as a way to subcategorize and as a threshold for movement from one subcategory to another. For example the coal subcategory includes units that burn at least 10% coal with other fuels. Therefore, it logically follows that included in the gas subcategory should be any unit that burns at least 90% gas and 10% or less of any other fuel. This change would give some flexibility and relief to facilities that burn oil in these types of boilers for more than 48 hours per year, but less than 10% of the time. We recommend that EPA revise the definition of gas-fired boiler and oil fired boiler subcategory to indicate that a boiler can still be classified as a gas-fired boiler if it burns gaseous fuels with up to 10% of any other fuel.

Response: See the preamble for how EPA modified the subcategories.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1

Comment Excerpt Number: 79

Comment: The Definition Of Natural Gas Should Be Revised To Be Consistent With The NSPS Definition. The definition of natural gas proposed in 63.11237 includes only the prior NSPS definition, not the 2009 NSPS Subparts Db and Dc revisions. The natural gas definition for these rules should be consistent and this rule should, therefore, also include the following: "(3) A mixture of hydrocarbons that maintains a gaseous state at ISO conditions. Additionally, natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 34 and 43 megajoules (MJ) per dry standard cubic meter (910 and 1,150 Btu per dry standard cubic foot)."

Response: Please see the Preamble for final definition of natural gas.

Work Practices

Tune-Up Requirements

Commenter Name: N/A
Commenter Affiliation: N/A
Document Control Number: EPA-HQ-OAR-2006-0790-0067.1
Comment Excerpt Number: 5

Comment: The proposed NESHAP includes several requirements for facilities to perform boiler tune ups and energy efficiency audits. The USEPA should be cautioned in using this approach because, even though tune ups can result in lower CO emissions and higher fuel efficiency, tune ups can also increase NOx emissions. These emissions are the result of higher air to fuel ratios causing higher flame temperatures. The figure below demonstrates this principle. The figure was obtained from the automotive industry so the absolute emission concentrations will be different for coal fired boilers, but the principle of increased NOx emissions with lower CO and Hydrocarbon (HC) emissions is the same for most combustion processes (http://www.autoshop101.com). [See submittal for figured provided by commenter] If the boiler tune ups do not consider NOx emissions along with CO, then the result may be higher NOx emissions which would be detrimental to air quality. In addition, sources that increase their NOx emissions in order to comply with the proposed CO limit may be required to purchase additional NOx credits in order to comply with other sections of the CAA. Did USEPA consider these other expenses in its financial analysis of this proposed rule? Section VI, Summary of the Impacts of This Proposed Rule, makes no mention that these additional expenses were considered. USEPA needs to re-evaluate the impacts of this proposed rule and consider the impacts that greater NOx emissions will have on environmental quality and compliance costs.

Response: EPA disagrees with the commenter. The requirement is to optimize CO, rather than minimize, and the optimization can consider NOx.

Commenter Name: Dorris Bender
Commenter Affiliation: City of Independence Water Pollution Control Department
Document Control Number: EPA-HQ-OAR-2006-0790-0351
Comment Excerpt Number: 1

Comment: The City of Independence Water Pollution Control Department owns and operates an existing oil-fired boiler with heat input capacity less than 10 million Btu per hour, used for building heat. Emissions of criteria pollutants from this boiler are below thresholds established by the state of Missouri for emissions inventory reporting.
§63.11222. We do not object to the proposed requirement to conduct a tune-up of the boiler biennially, but we do have concerns about implementation.
Paragraph (b)(5) specifies that the tune-up measure the concentration in the effluent stream of carbon monoxide (CO) in parts per million, by volume, dry basis (ppmvd), before and after the adjustments are made. Our boiler is not equipped to measure effluent stream gases, and we doubt that gas monitoring capability is typically provided for small industrial, commercial and institutional boilers.

Paragraph (b)(6)(i) requires an annual report containing the concentrations of CO in the effluent stream in ppmvd, and oxygen in percent dry basis, measured before and after the adjustments of the boiler. This would entail measuring oxygen and moisture content in the effluent stream in addition to CO. Since the tune-ups would be biennial, the proposed rule is unclear regarding the period of time for which CO and dry oxygen concentrations would need to be measured for the annual report.
Compliance with the above would require installation of sampling ports and platform for accessing the exhaust stack for either an annual or biennial performance test or installation of a continuous emissions monitor (CEM) for CO, oxygen and percent moisture. This would be a burdensome requirement for small boilers. Further, it is inconsistent with section V.D of the preamble to the proposed rule, which provides the following rationale for requiring work practice standards for smaller boilers:
"This indicates that the annual costs for testing and monitoring alone would have a significant adverse economic impact on these facilities. The severity of the economic impact would depend on the size of the facility. For small institutional (schools) and commercial (farms) facilities the costs would be prohibitive. This analysis is discussed in the memorandum "Cost-to-Sales Analysis of Testing and Monitoring Costs" located in the docket. Based on this analysis, pursuant to CAA section 112(h), EPA is proposing that it is not feasible to enforce emission standards for area source boilers having a heat input capacity of less than 10 MMBtu/h because of the technological and economic limitations described above. Thus, a work practice, as discussed below, is being proposed to limit the emissions of mercury and CO (as a surrogate for POM) for existing area source boilers having a heat input capacity of less than 10 MMBTU/h."
If it is not feasible to enforce emission standards for small boilers due to monitoring and testing costs and technological limitations, then it is also not feasible to require monitoring and testing in conjunction with the proposed biennial tune-up work practice standard.

Response: EPA agrees that the measurements do not need to be conducted on a dry basis, and that language has been removed from the rule so that the types of portable monitors mentioned by the commenter, as well as other portable monitors, can be used in the tune-up process

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Commenter Name: David Meierhenry
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-0414.1
Comment Excerpt Number: 4

Comment: 63.11222(b) specifies what the tune-up needs to entail and includes in (b)(5) measuring CO and in (b)(6)(i) measuring oxygen. The EPA should clarify that, for the tune-ups, these gases do not have to measured using EPA Reference Methods. Boiler service personnel typically have access to reliable handheld gas meters for measuring combustion gases. Since they will only be tuning to manufacturer's specifications and not demonstrating compliance with an emissions limit, the use of reference methods should not be required.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response to this comment.

Commenter Name: Cynthia Finley
Commenter Affiliation: National Association of Clean Water Agencies
Document Control Number: EPA-HQ-OAR-2006-0790-0838.1
Comment Excerpt Number: 2

Comment: NACWA also agrees with EPA that work standards are appropriate for small boilers, rather than emissions limits, and EPA's proposed requirement for conducting a tune-up of the boiler every two years is reasonable. However, NACWA does have some concerns about how this requirement would be implemented.

Response: EPA appreciates the commenter's input. Please see the preamble and rule for changes made to the work practices requirements.

Commenter Name: Norman Bujold
Commenter Affiliation: Cleaver Brooks
Document Control Number: EPA-HQ-OAR-2006-0790-0392.1
Comment Excerpt Number: 9

Comment: TUNE UP

Tune-up limits adjustments to those in accordance with procedures supplied by the manufacturer or an approved specialist to optimize combustion efficiency. EPA assumes 1% efficiency improvement with tune-up- that would require average decrease in O2 of 2%. There is a conflict in the proposed rule in that it requires minimizing CO emissions though in order to minimize CO emissions, it is very likely that excess air will need to be increased considerably higher than required for optimum combustion efficiency, leading to inefficiency, higher fuel usage and increased emissions.

Response: EPA disagrees with the commenter. The requirement is to optimize CO, rather than minimize, and the optimization can consider changes to other operating parameters, such as those mentioned.

Commenter Name: Charles Niebling
Commenter Affiliation: New England Wood Pellet
Document Control Number: EPA-HQ-OAR-2006-0790-0836
Comment Excerpt Number: 13

Comment: Based on this approach, the initial and interim recommended limits and practices include:
Initial independent third party certification test for biomass boilers to prove compliance. Once a boiler (or range of boilers) is tested, that boiler would be approved for installation until a change was made in the boiler design;
Work practice standard for biomass boilers, consisting of an annual boiler tune-up according to manufacturers' specifications.

Combined with the revised limits above, initial emissions testing and work practice standards for maintenance will ensure that clean-burning boilers are installed and that they consistently achieve high emission standards. NEWP believes that superior emission performance can be best achieved and be cost effective over the long-term with on-site tune-ups rather than onerous annual emission testing requirements for boiler owners. The proposed annual tune-up of boilers to meet manufacturers' specifications is consistent with typical manufacturers' recommendations for regular maintenance and is consistent with what the EPA has proposed for existing Area Source Boilers.

Response: EPA appreciates the commenter's input. Please see the preamble and rule for changes made to the work practices requirements.

Commenter Name: Harry Dresser, Jr.
Commenter Affiliation: Maine Energy Systems
Document Control Number: EPA-HQ-OAR-2006-0790-1060.1
Comment Excerpt Number: 2

Comment: Allow laboratory type certi? cation of boilers of designed input capacity of less than 1,000,000 BTU/hour with required annual servicing to manufacturers' speci? cations. This is a more manageable system for the many small boilers that will heat small business and institutional facilities.

Response: Because manufacturer's specifications may not be available for all units and because of unique design considerations that may impact a given units ability to meet the specific tune-up requirements, the rule language in has been amended to read:

(i) As applicable, inspect the burner, and clean or replace any components of the burner as necessary;

(ii) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications if available;

(iii) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly.

(iv) Optimize total emissions of carbon monoxide. This optimization should be consistent with the manufacturer's specifications if available.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 7

Comment: The proposed Table 2 to subpart JJJJJJ requires that existing units with a heat input capacity of less than 10 million Btu per hour conduct a tune-up of the boiler biennially as specified in 40 CFR 63.11222. Section 63.11222(b)(5) requires measuring the concentration in the effluent stream of carbon monoxide in parts per million, by volume before and after the adjustments are made. The requirement to measure CO before and after the adjustments are made is problematic for the following reasons:

#1 - Some of these small boilers (i.e., < 10 MMBTU/Hr sources) are not designed with appropriate air emission testing ports. Thus the owner or operator will be forced to make costly modifications to stacks and effluent piping systems to conduct testing per EPA test methods.

#2 - EPA does not specify in the proposed regulation whether portable CO analyzers are acceptable or if Reference Method 10 must be used to make these measurements, thus there will be confusion as to which measurement options can be used. At a minimum, EPA should clarify that the use of portable instruments to measure CO is acceptable for the tune-up measurements for boilers regardless of heat input capacity.

#3 - Some of these small boilers only operate on a high demand basis, thus the number of operating hours per year may be limited, which further complicates the requirements to conduct CO testing.

#4 - Many of these small boilers are located at sites have limited manpower compared to our larger major stationary sources to manage, coordinate, and execute the task of CO emission testing before and after the adjustments are made.

EPA should either set the frequency for the tune-up at once every five years or, as an alternative, remove the requirements to measure the concentration of CO in the effluent stream before and after the adjustments are made for these < 10 MMBTU/Hr sources. At a minimum, EPA should clarify that the use of portable instruments to measure CO is acceptable for the tune-up measurements for boilers regardless of heat input capacity.

Response: The EPA agrees that CO measurements can be done with handheld monitors that should add little expense to a tune-up program. Please see the Preamble and rule for current language regarding the tune-up and testing requirements for small units.

Commenter Name: Lisa Beal
Commenter Affiliation: Interstate Natural Gas Association of America
Document Control Number: EPA-HQ-OAR-2006-0790-1919.1
Comment Excerpt Number: 12

Comment: EPA should clarify scheduling requirements and provide additional flexibility for annual and biennial tune-ups.

For work practice standards, schedule requirements for tune-ups are specified in §63.7515(e). Specifically, each annual tune-up must be conducted between 10 and 12 months after the previous tune-up. Similar timing for sources subject to biennial tune-ups is not addressed. EPA should revise §63.7515(e) to provide flexibility and address biennial tune-up timing.

In some cases, an operator may have cause to conduct a tune-up more frequently that required by the rule. INGAA believes that it is unnecessary and counter-productive for the rule to specify a minimum time of 10 months on the periodicity for annual tune-ups, as long as the maximum allowed interval is met. If a source, for whatever reason (e.g., scheduling conflicts) wants to conduct an annual tune-up sooner than 10 months after the most recent tune-up, that flexibility should be allowed. In addition, the section appears to inappropriately reference §63.7520 (which addresses stack test requirements) rather than §63.7540 for tune-up requirements. Accordingly, INGAA recommends revisions to §63.7515(e) to address this issue for both annual and biennial tune-ups, with proposed revisions provided here as strikethrough for deleted text and new text bold and underlined:

"(e) If you are required to meet an applicable work practice standard, you must conduct annual performance tune-ups according to §63.7540(a)(10) or (11)§ 63.7520. Each annual tune-up must be conducted between 10 and no later than 12 months after the previous tune-up. Each biennial tune-up must be conducted no later than 24 months after the previous tune-up."

Response: Please see the Preamble and rule for current tune-up requirements.

Commenter Name: Russell A. Wozniak
Commenter Affiliation: The Dow Chemical Company
Document Control Number: EPA-HQ-OAR-2006-0790-1766.1
Comment Excerpt Number: 25

Comment: EPA Should Modify the Definition of Tune-up to Reflect That it is a Process and not a Procedure.
In the proposed rule, Section § 63.11237 defines tune-up as:

Tune-up means adjustments made to a boiler in accordance with procedures supplied by the manufacturer (or an approved specialist) to optimize the combustion efficiency.

The boiler tune-up is a process, not a procedure. The combustion specialist knows how to adjust hardware or combustion control elements in order to improve combustion efficiency and maintain safety. That knowledge is based on training and experience consistent throughout the industry. There are so many variables involved in the adjustments that it would be near impossible to have written procedures to cover all possible tune-up adjustments. The specialist evaluates the "as found" condition of the equipment, and then applies his/her knowledge of appropriate adjustments to improve its performance.

The section on demonstrating continuous compliance recognizes that tuning is a process because section 63.11222(b) paragraphs (1) through (6) lists elements to be covered during the tune-up process (e.g., burner inspection, flame pattern, air to fuel ratio).

Likewise, the definition for tune-up should eliminate references to procedures.

Dow proposes the following revisions to section 63.11224(c):

(2) You must keep records to document conformance with the work practices, emission reduction measures, and management practices required by§ 63.11215 as specified in paragraphs (c)(2)(i) through (iv) of this section.

(i) (original) Records must identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer’s specifications to which the boiler was tuned.
(i) (proposed) Records must identify each boiler, the date of tune-up, and a description of combustion adjustments made to meet the manufacturer’s specifications.

In addition, we propose the following change to the definition of Tune-Up:

(original) Tune-up means adjustments made to a boiler, in accordance with procedures supplied by the manufacturer's representative or an approved specialist to optimize the combustion efficiency.
(proposed) Tune-up means adjustments made to a boiler, in accordance with industry combustion practices, that is performed by the manufacturer's representative or an approved specialist to optimize the combustion efficiency.

Response: Please see DCN EPA-HQ-OAR-2006-0790-1060.1, excerpt 2 for the current language regarding tune-up requirements.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 34

Comment: EPA has relied on its authority under CAA § 112(h) to impose a work practice standard in lieu of MACT emission limits. EPA is proposing tune-ups as the work practice standard for the control of HAP emissions. 75 FR 31901. While as a general matter CIBO supports EPA's exercise of its § 112(h) authority to impose work practice standards in lieu of emission limits, we recommend the following changes to the proposed tune-up requirements.

In the Proposed Rule, the tune-up requirements are defined in such a way to reduce CO emissions without any consideration of efficiency and costs. 75 FR 31928. Specifically, the Proposed Rule requires units to "minimize total emissions of CO consistent with the manufacturer's specifications." 75 FR 31928. This practice generally requires increasing excess air, flue gas temperature, costs, and even overall HAP emissions while decreasing efficiency by increasing the dry gas loss (higher flue gas flow rates at higher temperature carry more heat out the stack). Additionally, lowering CO emissions for many units will result in an increase of NOx emissions. CIBO recommends that EPA amend the rule so that tune-ups also consider optimizing efficiency, limiting increases of NOx, and ensuring safety, not only on minimizing CO. In fact, the "Tune-up" definition (75 FR 31932) correctly states "to optimize the combustion efficiency." CIBO recommends that EPA amend the rule so that tune-ups address optimizing efficiency, limiting increases of NOx, and ensuring safety, not focusing only on minimizing CO.

Furthermore, EPA should acknowledge that portable combustion analyzers are acceptable for use in tune-ups.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0067.1, excerpt 5 for a response to optimizing CO, and DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for the EPA's response to protable monitors.

Commenter Name: Robert D. Bessette

Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 35

Comment: EPA has proposed that units conduct tune-ups biennially. If a unit is not operated for a period of time, EPA should provide that tune-ups be relative to elapsed operating time.

Response: Please see Preamble for current language regarding tune-up requirements.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 36

Comment: Tune-up is defined in the Proposed Rule as "adjustments made to a boiler in accordance with procedures supplied by the manufacturer (or an approved specialist) to optimize the combustion efficiency." 75 FR 31932 (emphasis added). This definition limits the ability of an owner/operator to make adjustments to those that are done in accordance with procedures supplied by manufacturers or approved specialists. EPA should revise this to allow the owner/operator to establish and conduct appropriate procedures independent of this outside certification process. Many facilities have in-house specialists who are well-qualified to conduct optimization adjustments on units. In fact, in-house specialists have site specific information compared to the generic, and possibly in appropriate recommendations a manufacturer might provide. Some steps listed in the 63.11222(b) tune-up procedure may not be directly applicable to some units, therefore, all steps should be noted to be used when appropriate for the specific unit. Generic procedures recommended by manufactures and "approved specialists" will not always result in the appropriate adjustments and EPA should recognize the resources currently available in-house at many facilities.

Response: Please see DCN EPA-HQ-OAR-2006-0790-1060.1, excerpt 2 for the current language regarding tune-up requirements.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 37

Comment: As currently proposed, EPA’s tune-up requirements are unworkable for certain units to which they apply. EPA should amend the work practice standards to reflect these discrepancies. Specifically, the tune-up procedures require owners and operators to inspect "the system controlling the air-to-fuel ration, and ensure that it is correctly calibrated and functioning properly." 75 FR 31928. This requirement is simply inapplicable to units that utilize metered

fuel-air control systems with continuous excess air (O2) control where combustion is optimized continuously. On these units, EPA should recognize that system inspections, equipment calibrations, and operational checks are sufficient to ensure the system is "calibrated and functioning properly." Flexibility is what is needed, and EPA should incorporate in the tune-up requirements room for sources modify procedures as needed to optimize units.

Response: EPA agrees with the commenter that air-to-fuel ratio controllers were not envisioned as a requirement for all units. Therefore, EPA is amending the language in §63.7540(a)(10)(iii) to read: Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly. EPA has changed some of the language regarding tune-ups to increase the flexibility of the requirements. Regarding the specific comment, units that continuously optimize the air-to-fuel ratio would satisfy the language, even as proposed, through a system inspection, equipment calibration, and operational check (as suggested by the commenter as an appropriate method of meeting the requirement).

Commenter Name: Gordon Erickson
Commenter Affiliation: Alaska Ship and Drydock, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1479
Comment Excerpt Number: 2

Comment: Regarding the proposed Area Source Boiler MACT Rule for affected small (<10mmbtu/hr) existing coal/oil/biomass fired boilers, I would suggest that the biennial tune up required under 63.11222 not require CO and oxygen monitoring because the monitoring would be unnecessarily expensive and would not be utilized to accomplish any published air emissions limits under subpart JJJJJJ.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response to this comment.

Commenter Name: Britt S. Fleming
Commenter Affiliation: Auto Goup
Document Control Number: EPA-HQ-OAR-2006-0790-1916.1
Comment Excerpt Number: 4

Comment: Work Practice Requirements in § 63.7540(a)(10) Should Allow for Handheld Analyzers.
The requirement in proposed § 63.7540(a)(10)(v) to measure the CO concentration in the effluent stream before and after adjustments are made to the unit does not appear to allow for the use of handheld analyzers and should be revised to allow for such flexibility. Current industry practice is to perform a tune-up or combustion safety audit using a handheld analyzer, and boiler manufacturers do not recommend the use of EPA reference test methods when tuning a boiler. Requiring sources to perform a full blown EPA test method for purposes of measuring CO in the

effluent stream is not appropriate as it would be costly, require more time to perform, and would not provide additional or more useful real time information/data.

Other state regulatory agencies have allowed sources to use portable analyzers for purposes of complying with regulatory limits for boilers and process heaters.
Specifically, the Bay Area Air Quality Management District (BAAQMD) Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (Regulation 9-7) allows for the use of a portable analyzer and includes a portable analyzer protocol. Given that portable analyzers are recognized as reliable by state permitting authorities, the Auto Group recommends that EPA amend the language in § 63.7540(a)(10)(v) to include the following underlined text:

(v) Measure the concentration in the effluent stream of CO in parts per million, by volume, dry basis (ppmvd), before and after the adjustments are made using a handheld analyzer or similar device or other method;

Not only will this amendment provide greater flexibility, but it will also reduce the costs associated with the tune-up requirement. Tune-up costs can range from $2,500/boiler for a handheld analyzer versus $6,500-8,200/boiler for a full EPA test method. The additional cost of a full EPA test method is not justified given that handheld analyzers are just as effective in measuring CO emissions. have been recognized by state permitting authorities as appropriate tools for doing so.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response to this comment.

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 4

Comment: For purposes of the industrial boiler area source rule, EPA should establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury because mercury is a fuel dependent HAP and "[f]uel usage can be reduced by improving the combustion efficiency of the boiler."3 Similarly, EPA asserts that, "A boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multiclones but would also reduce emissions of organic HAP."4 Thus, a requirement for affected boilers to be periodically tuned up is justified.

Response: Please see the Preamble for current tune-up requirements.

Commenter Name: Christian Richter and Jeff Hannapel
Commenter Affiliation: American Foundry Society
Document Control Number: EPA-HQ-OAR-2006-0790-1857.2
Comment Excerpt Number: 4

Comment: As explained in these comments, EPA has ample authority and justification to establish work practice standards instead of numeric emissions limitations for boilers covered by this rule.

Response: Please see the Preamble for current tune-up requirements.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 7

Comment: Subpart JJJJJJ, Table 2, Item 1 requires facilities with an oil affected unit to complete biennial tune-ups. 75 FR 31932.

Note that at many facilities, the possibility exists for an affected unit to be in the site's Title V operating permit, even if it does not run during a biennial period. In this case, the intent of the requirement would be met if a unit is allowed to conduct the required tune-up during the next biennial period in which the unit operates. Without this modification (see below), a site could be required to start an affected unit for the sole purpose of conducting the tune-up. Unit startups and shutdowns present the greatest safety risk to plant personnel. Adding startups and shutdowns, therefore, could increase the overall safety risk at these plants. Accordingly, INVISTA suggests that the language in Item 1 of Table 2 be modified as follows:
Recommended Text at Table 2, Item 1:
Conduct a tune-up of the boiler in each rolling biennial period in which the unit operates as specified in § 63.11222

Response: Please see Preamble for current tune-up requirements.

Commenter Name: Stephen E. Woock
Commenter Affiliation: Weyerhaeuser Company
Document Control Number: EPA-HQ-OAR-2006-0790-1984.1
Comment Excerpt Number: 7

Comment: Rationales similar to those that support EPA's decision to exclude gas boilers apply well to biomass boilers. Biomass is a "clean" fuel relative to coal and other fossil fuels. Biomass-fired boilers typically have far lower emissions than a comparable, well-controlled coal-fired

boiler. And as noted earlier, biomass combustion is an important tool in reducing the greenhouse gas footprint of energy production due to the net-neutral cycling of atmospheric CO_2, through incorporation of its carbon into plant matter and recycling of the carbon as CO_2 when biomass is combusted. These rationales provide justification for EPA reassessing its treatment of biomass combustion emissions under area source NESHAP. We urge EPA to consider adopting work practice approaches (e.g. tune-ups) instead of setting numerical emission limits to ease the disincentives EPA has created for biomass fuels.

Response: Please see the Preamble for current tune-up requirements.

Commenter Name: Robert L. Garfield
Commenter Affiliation: Food Industry Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1835.1
Comment Excerpt Number: 7

Comment: EPA should also establish annual tune-up work practice as the MACT standard for biomass boilers. For example, in the forest products industry alone, the estimated cost of complying with the proposed HAP emissions limitations for biomass boilers is $3.3 billion. This is an extraordinary cost that, in the context of the forest products industry, equals or exceeds the magnitude of the economic burden that EPA predicts for the Gas 1 subcategory. Similarly severe economic impacts are expected in other industry sectors where biomass boilers are widely use, such as the furniture, sugar, and agricultural products industries. Thus, there is strong economic justification for prescribing work practice standards for biomass boilers in lieu of numeric emissions limitations.

Response: Please see the Preamble for current tune-up requirements.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 8

Comment: When conducting the tune-up, the owner is required to minimize CO emissions consistent with the manufacturer's specifications.

Many combustion units have manufacturer's specifications. However, older units may not have written manufacturer's specifications available. In these cases, best practices have been developed by combustion unit experts. It is important to allow the use of these best practices when tuning older units.

Recommended Text at 63.11222(b)(4):

Minimize total emissions of CO consistent with the manufacturer's specifications, where available, or consistent with unit-specific best practices for operation of the unit;

Response: Please see DCN EPA-HQ-OAR-2006-0790-1060.1, excerpt 2 for a response to this comment.

Commenter Name: Renee Lesjak Bashel
Commenter Affiliation: Small Business Environmental Assistance Programs, SBEAP
Document Control Number: EPA-HQ-OAR-2006-0790-2195.1
Comment Excerpt Number: 8

Comment: Recommendation: Instead of biennial tune-ups for units 10 MMBTU/hr or less, set a trigger based on
hours of operation of the unit.

Smaller operations can have a boiler that they do not use often. Requiring them to conduct a tune up at
a set time period can be costly in relation to their use of the unit. Setting the trigger for requiring a
tune up based on hours of operation, similar to changing your car's oil every 3,000 miles, would account
for level of use. After an initial tune-up, have the following tune-up fall based on manufacturer's specifications or after 17,000 hours of operation or five (5) years, whichever comes first.

Response: Please see Preamble for current tune-up requirements.

Commenter Name: Stephen E. Woock
Commenter Affiliation: Weyerhaeuser Company
Document Control Number: EPA-HQ-OAR-2006-0790-1984.1
Comment Excerpt Number: 9

Comment: EPA also proposed a biennial boiler tune-up as a work practice in lieu of any other emission limits for existing boilers that have <10 mmBtu/hr heat input capacity and are burning biomass, oil or coal. We agree with this approach for these boilers, although as noted in comment 2 of this section, we believe this same approach should apply to all area source boilers.

Response: : Please see the Preamble for current language regarding tune-up requirements.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 9

Comment: When conducting the boiler/process heater tune-up, the owner is required to measure the CO and oxygen concentrations before and after the tune-up.

There is no language addressing how this measurement should be completed. We request specific language to provide clarity and certainty of compliance obligations. When boiler/process heater tune-ups are conducted handheld instruments are often used by the boiler/process heater experts. Specifying that handheld instrumentation is acceptable to meet this requirement would provide the necessary clarification and would meet the intent of this provision. Requiring a complete Method 10 test, on the other hand, would add significant additional cost without any additional improvement in the tune-up results. Such testing would require mobilization of a stack testing firm before the tune-up and after the tune-up in order to meet the requirement.
Recommended Text at 63.11222(b)(5):
Measure (using handheld combustion gas analyzers or other measurement instrumentation) the concentration in the effluent stream of CO in parts per million, by volume, dry basis (ppmvd), before and after the adjustments are made.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response to this comment.

Commenter Name: Walter Tyler
Commenter Affiliation: Invista
Document Control Number: EPA-HQ-OAR-2006-0790-1936.1
Comment Excerpt Number: 10

Comment: For boilers or process heaters less than 10 million Btu per hour, a biennial tune-up is required.
Comment #10: Given the current economic climate, units of this size may not be operated, even within a biennial period. INVISTA recommends the following clarification to address this operational reality.
Recommended Text at Table 2, Item 1:
Conduct a tune-up of the boiler during each biennially period in which the unit operates as specified in § 63.11222.

Response: Please see Preamble for current tune-up requirements.

Commenter Name: David J. Prior

Commenter Affiliation: New York State Energy Research and Development Authority, NYSERDA
Document Control Number: EPA-HQ-OAR-2006-0790-1913.2
Comment Excerpt Number: 13

Comment: An annual boiler tune-up should be required.

Response: Please see Preamble for current tune-up requirements.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 44

Comment: We see some value in having occasional tune-ups for boilers in the 5-10 MMBTU/hr size range, though not the extensive and non-typical tune-ups proposed. We comment on the specific requirements of the tune-up proposal in our next item. Rather, we suggest what is typically done by the sources for which EPA collected data and which State rules require is a visual inspection of the equipment to confirm controls are operating properly, that draft controls are set properly and that there is no unusual burner fouling or firebox problems and possibly, as some state rules require, a check that the boiler is operating at an excess air level that assures good combustion efficiency and safe operation.

Response: Please see DCN EPA-HQ-OAR-2006-0790-1060.1, excerpt 2 for a response to this comment.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 45

Comment: We have the following comments on the specifics of the proposed tune-up work practice. Additional detail on these items is contained in Section V of our comments on the major source proposal, [See DCN: EPA-HQ-OAR-2002-0058-2960.1 for comments] which also proposes to require this same tune-up work practice.

We believe proposed §63.11222(b)(1) to (3) reflect typical boiler tune-up activities. However, the (b)(1) burner inspection may involve shutdown of the boiler, an atypical requirement. Thus, we believe (b)(1) should include a delay provision allowing delay until the boiler can be shutdown without impacting the steam or hot water consumers.

Proposed §63. 63.11222(b)(3) requires “Inspect the system controlling the air-to-fuel ratio, and ensure that it is correctly calibrated and functioning properly” Some boilers only have manual stack and/or burner air control. Adding automatic air-to-fuel controls, as this requirement might be interpreted to require, is a very large, unjustified cost for boilers that do not have it. No such step was considered in the record. We therefore recommend this requirement be reworded as follows: “Inspect the draft control and burner air control systems to ensure they are operating properly. Inspect the system controlling the air-to-fuel ratio, if any, and ensure that it is correctly calibrated and functioning properly.”

Proposed §63.11222(b)(4) and (5) are not typical tune-up requirements and do not reflect MACT or GACT and their significant costs and negative impact on emissions are not reflected in the rulemaking record. These paragraphs should not be finalized.

As we point out in Comment V.4 of our comments on the major source proposal [See DCN: EPA-HQ-OAR-2002-0058-2960.1 for comments], State tune-up requirements require minimization of NOx or optimizing combustion efficiency, not minimizing CO. Thus, these subparagraphs do not reflect the MACT floor and would violate the State tune-up requirements for minimizing NOx and optimizing combustion efficiency. Additionally, the tune-up requirement conflicts with the proposed energy assessment work practice requirements, because tuning a boiler for minimum CO increases energy consumption, in direct conflict with the energy assessment directive to decrease energy consumption.

Both paragraphs require that the source have or contract for CO and O2 monitors and (b)(5) requires a performance test quality moisture measurement on the stack gas. Costs and burdens for these measurements not totally reflected in the record since it appears the significant cost of the moisture measurements, accessing the stack and performance test burdens were not included in EPA estimates. Additionally, as EPA points out in its §112(h) justification for these work practices, access to small stacks to allow such measurements isn?t even feasible for many boilers. It is arbitrary and capricious for EPA to require a stack test where the Agency has already determined such testing is not feasible.

It is also worth realizing that the only reason for a moisture measurement is to put the CO measurement on a dry basis, which is unnecessary for the purpose of comparing CO measurements over a short time. Having this measurement on a dry basis is only important if absolute values are needed for comparing a measured value against an emission limit.

If the draft control on a boiler is working properly, as (b)(3) confirms, and there are no burner problems or problems with the flame pattern, as (b)(1) and (2) confirm, there is no justification for measuring CO, since CO will be very low when these items are operating properly and because these are the things you would check and correct if CO were high. Furthermore, the mass of CO emissions and POM emissions that might be reduced from a liquid-fired boiler is insignificant. These CO measurement requirements should be removed. If they are not removed they must be justified versus the NOx emissions increase they will engender and the rule must specifically override State requirements to minimized NOx and optimize combustion efficiency.

Proposed §63.11222(b)(6) requires maintaining a record of the type and amount of fuel used over the 12 months prior to the annual adjustment. However, the tune-up is a biennial activity for these small boilers, so "annual" should be changed to "biennial" and "12 months" should be changed to "24 months". The need for this record is also unclear. There is probably some reason for confirming that the boiler has not fired a feed that would change its subcategory, but since boilers subject to the tune-up requirement do not have to meet an emission limit, there is no justification for requiring a record of the amount of fuel used.

Response: EPA agrees with the commenter about impractical tune-up tasks involving shut-down. As long as owners/operators complete the parts of the tune-up that can be completed, they can postpone impractical requirements until the next scheduled or unscheduled outage.
Please see DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response to the monitoring comments. Please see DCN EPA-HQ-OAR-2006-0790-1783.1, excerpt 37 for a response to this comment. Please see the Preamble for discussion about the recordkeeping and timing of the tune-up requirements.

Commenter Name: Matthew Todd and David Friedman
Commenter Affiliation: American Petroleum Institute (API) and National Petrochemical and Refiners Association (NPRA)
Document Control Number: EPA-HQ-OAR-2006-0790-2025.1
Comment Excerpt Number: 46

Comment: If the CO minimization portion of the tune-up is maintained, the following changes are needed to reflect EPA's description of this work practice, the Agency cost and burden estimate, to make the CO adjustment practical, and not to have it result in increased NOx and other emissions.

i. It should be clarified, in regulatory language, that the CO is only to be minimized to the extent the adjustments do not increase NOx emissions or firing or cause flame impingement or flame instability, that portable CO and O2 analyzers are acceptable and that these tests are not performance tests. Further, it should be made clear that the tuning is to be done at a single representative operating rate. Neither the rulemaking record nor combustion principals justify multipoint tune-ups.

ii. The moisture measurement and correction requirements should be dropped. For a short term adjustment situation, unit firing and stack conditions will not change enough for the stack moisture to vary significantly. Comparing CO measurements on a wet basis, before and after adjustment, is more than adequate to reflect the impact of adjustments. The Method 4 moisture tests called for in the present proposal would impose a more than $10,000 cost per tune-up, a cost not considered in the Agency cost and burden analyses.

iii. The oxygen measurement and correction should be specified to be based on either an O2 CEMS reading, if the unit has one, or measurement using a portable monitor. It should be made clear that a Method 3 oxygen measurement is not required.

iv. All suggestions that the tune-up is a performance test should be removed.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0067.1, excerpt 5 for a response to this comment. Please see DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response to the monitoring comments.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 82

Comment: AF&PA believes that management or work practices such as tune ups and best combustions practices should become the basis for the GACT standard for Area Source Boilers. Consequently, it is important that EPA review and, we believe, revise the requirements for these practices. Proposed §63.11222 contains the specific tune-up work practice requirements for existing boilers. We have the following comments on the specifics of the proposed tune-up work practice. AF&PA believes proposed §63.11222(b)(1)-(3) reflect typical tune-up activities. Many jurisdictions require annual boiler inspections for safety reasons and boilers are often spared or can be shutdown when weather conditions are mild. Some jurisdictions require such inspections as part of a NOx minimization effort. However, not all boilers can be readily shutdown. The proposed (b)(1) and (2) burner inspections could require such a shutdown, since burners are not always retractable and cannot always be inspected or cleaned with the unit in service. In those cases where the boiler is not spared or cannot be shutdown without impacting steam or process heat consumers this requirement should allow for delaying the burner inspection until the unit can be shutdown without impact. Potential unit and process shutdowns were not considered in evaluating the tune-up emissions impacts, costs or burdens and are not justified. EPA should clarify that boilers need not shutdown to accomplish the required inspections or to clean burners. For units that do not shut down for extended periods of time, scheduling flexibility must be provided so that tune-ups can be done in association with normal inspection/overhaul schedules. For example, in the GHG Reporting rule, EPA allows for postponing initial or subsequent calibrations until the next scheduled maintenance outage (40 CFR 98.3(i)(6), 74 Fed. Reg. 56381). A similar approach should be used for scheduling of tune-ups on equipment which does not lend itself to an annual frequency.

Response: Please see DCN EPA-HQ-OAR-2006-0790-2025.1, excerpt 45 for a response pertaining to shut downs for tune-ups.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 83

Comment: Proposed §63.11222 (b)(3) requires "Inspect the system controlling the air-to-fuel ratio, and ensure that it is correctly calibrated and functioning properly." This wording presumes an automatic air-to-fuel ratio controller, but those may not be present on all units. Where metered fuel/air control systems with O2 trim are installed, there is no real need for periodic "tune-ups" since combustion is continually optimized. Rather, burner/combustion system inspections, control equipment calibrations, and operational checks are all that should be needed to verify proper operation. EPA should reword the management or work practice requirements so that sources have flexibility to adapt procedures as most applicable and appropriate for specific sources.

Many units only have automatic draft control and individual, manual burner air control. For smaller units, draft control may be manual. Adding automatic air-to-fuel controls, as this requirement might be interpreted to require, is a very large, unjustified cost for units that do not have it, because it requires adding a forced draft combustion air system and perhaps an induced draft system. No such step was considered in the record and it is not justified.
EPA should reword §63.11222(b)(3) as follows:
"Inspect the draft control and burner air control systems to ensure they are operating properly. Inspect the system controlling the air-to-fuel ratio, if any, and ensure that it is correctly calibrated and functioning properly."

Response: Please see DCN EPA-HQ-OAR-2006-0790-1783.1, excerpt 37 for a response to the air-fuel-ratio comment.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 84

Comment: Proposed §63.11222(b)(4) and (5) are not typical tune-up requirements for boilers and do not reflect MACT. State tune-up requirements require minimization of NOx, not CO. Thus, these subparagraphs do not reflect potentially applicable State requirements and would violate State tune-up requirements for minimizing NOx. Additionally, the tune-up requirement conflicts with the proposed energy assessment requirements, because tuning a boiler for minimum CO generally requires increasing excess air, which increases energy consumption, in direct conflict with the energy assessment directive to decrease energy consumption.

If the draft control on a boiler is working properly, as §63.11222(b)(3) confirms, and there are no mechanical problems with the flame pattern, as §63.11222(b)(2) confirms, there is no justification for measuring CO, since CO will be very low when these items are operating

properly and because these are the things you would check and correct if CO were high. These CO measurement requirements should be removed. If they are not removed they must be justified versus the NOx emissions increase they will engender and the rule must specifically override State requirements to minimize NOx. The O2 level in a boiler also must consider draft limitations, flame impingement, and flame stability to assure a safe, reliable and efficient operation, and these conditions are not recognized in the EPA tune-up procedure.

If burner/control adjustment relative to CO emissions is maintained in the tune-up procedure, the following changes are needed to reflect EPA's description of this management or work practice, the Agency cost and burden estimate, to make the CO adjustment practical, and not to have it result in increased NOx and other emissions.

1. It should be clarified, in regulatory language, that the CO is only to be minimized to the extent the adjustments do not increase NOx emissions, decrease unit combustion efficiency, cause flame impingement or flame instability, or cause other safety issues, and that portable CO and O2 analyzers are acceptable, and that these tests are not performance tests. Further, it should be made clear that the tuning is to be done at a single representative operating rate. Neither the rulemaking record nor combustion principles justify multipoint tune-ups, especially when some units basically operate at a fixed rate.

2. For a short term adjustment situation, unit firing and stack conditions will not change enough for the stack moisture to vary significantly. Comparing CO measurements on either a wet or dry basis, before and after adjustment, is more than adequate to reflect the impact of adjustments.

3. The oxygen measurement should be specified to be based on either an O2 CEMS reading, if the unit has one, or measurement using a portable emissions monitor. It should be made clear that a Method 3 oxygen measurement is not required.
EPA should not finalize proposed §63.11222(b)(4) and (5). If these requirements are maintained, they should be simplified and clarified as discussed in items 1 – 3, above and EPA must specifically over-ride State tune-up requirements to minimize NOx and/or O2.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response to the monitoring comments, and DCN EPA-HQ-OAR-2006-0790-0067.1, excerpt 5 for a response to the CO/NOx comments.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 85

Comment: The definition of "Tune-up" is provided at §63.11237. It correctly stipulates "optimize the combustion efficiency," whereas language noted above in §63.11222(b) requires "minimize total emissions of CO," which as noted above is an incorrect approach to a tune-up

and will lead to lower efficiency and higher net total emissions. As indicated above, EPA needs to correct language in §63.11222(b). In addition, the "tune-up"
definition implies that use of an approved specialist could be required. EPA needs to recognize that many companies have in-house resources who are already well qualified, and already do perform adjustments to burner systems. Continued use of these resources must be supported.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0067.1, excerpt 5 for a response to the monitoring comments.

Commenter Name: Robert P. Strieter
Commenter Affiliation: The Aluminum Association
Document Control Number: EPA-HQ-OAR-2006-0790-1838.1
Comment Excerpt Number: 1

Comment: EPA includes in the proposed rule Work Practice requirements for many non-gas-fired boilers located at area sources. The work practices proposed include the completion of a biennial boiler tune-up to insure operating efficiency[1 For Boilers with a heat capacity less than 10 million Btu per hour] and the completion by a third party energy efficiency assessment [2 For Boilers with a heat capacity equal or greater than 10 million Btu per hour]. The proposal needs to further clarify that gas-fired boilers are not subject to the subpart in 63.11195(e).

Response: Please see the Preamble for current language regarding the units subject to the rule.

Commenter Name: Robert P. Strieter
Commenter Affiliation: The Aluminum Association
Document Control Number: EPA-HQ-OAR-2006-0790-1838.1
Comment Excerpt Number: 2

Comment: The Aluminum Association supports Work Practices for insuring superior emissions performance through proper burner maintenance, but believes that the compliance requirements and deadlines provided in the proposal should be revised to reduce the burden and better address potential contractor shortages for the assessments required.

Response: Please see the Preamble for current language regarding the work practices requirements.

Commenter Name: Katherine Fry
Commenter Affiliation: SierraPine Composite Solutions
Document Control Number: EPA-HQ-OAR-2006-0790-2272
Comment Excerpt Number: 4

Comment: The GACT standard for area source industrial boilers should consist of work practices rather than numeric emissions limitations.

In situations where the use of GACT is authorized (as it is here), 12(d)(5) on its face authorizes EPA to establish "standards or requirements .... which provide for the use of generally available control technologies or management practices." (Emphasis added). In other words, when setting standards based on GACT, EPA is expressly authorized to establish work practices instead of emissions limitations. There is no need under the express terms of 112(d)(5) for EPA to make a showing under 112(h) in order to set work practice standards. This interpretation is supported by the legislative history of 1126 and is reflected in numerous existing GACT standards.
For purposes of the industrial boiler area source rule, EPA has ample justification to establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury because mercury is a fuel dependent HAP and "[flue' usage can be reduced by improving the combustion efficiency of the boiler." Similarly, EPA asserts that, "A boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multiclones but would also reduce emissions of organic HAP." Thus, a requirement for affected boilers to be periodically tuned up is amply justified.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Matthew Markee
Commenter Affiliation: IN Group Companies
Document Control Number: EPA-HQ-OAR-2006-0790-1965.1
Comment Excerpt Number: 6

Comment: EPA should propose a work practice standard in lieu of numerical emission limitations for CO.

Response: Please see the Preamble for information on the current emission.

Commenter Name: Gary Melow
Commenter Affiliation: Michigan Biomass
Document Control Number: EPA-HQ-OAR-2006-0790-1917.1
Comment Excerpt Number: 12

Comment: We also note that the proposed rule requires a biennial "tune-up" for boilers over 10 MMBtu/hr, including biomass boilers. "Tune-up" is defined in the proposed rule as "adjustments made to the boiler in accordance to procedures supplied by the manufacturer (or an approved specialist) to optimize combustion efficiency" (63.11237). In essence, our power plant boilers are tuned-up all the time and a separate biennial tune-up requirement is not appropriate for us. .

Additionally, we ask for the definition of an “approved specialist” and wonder who approves the specialist. We believe a more frequent tune-up requirement (annually or semiannually) for small boilers rather than the proposed biennial schedule, would accomplish the goal of assuring optimal combustion conditions without an actual CO emission limitation being imposed.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: J. Michael Geers
Commenter Affiliation: Duke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-1861.1
Comment Excerpt Number: 14

Comment: In the Continuous Compliance Requirements of 63.7540, EPA proposes to require that certain source categories perform an annual tune-up. EPA should recognize that some sources are routinely operated continuously for long periods at a time and do not schedule a yearly routine maintenance outage. Since conducting a tune-up requires inspection and maintenance of internal components, the unit must be shut-down. An annual tune-up in some cases would therefore force the shutdown of a unit at a potentially significant economic loss to the owner. To prevent this situation, EPA should allow a source the ability to seek a waiver or extension from the local permitting agency to allow sources to perform a tune-up on a less frequent basis that fits with the source’s operations.

Response: Please see DCN EPA-HQ-OAR-2006-0790-2025.1, excerpt 45 for a response pertaining to shut downs for tune-ups.

Commenter Name: Pamela F. Faggert
Commenter Affiliation: Dominion
Document Control Number: EPA-HQ-OAR-2006-0790-2257.1
Comment Excerpt Number: 2

Comment: We support EPA’s approach to establish work practice standards in lieu of emission limits for small « 10 mmBtu/hr) units. We also support EPA’s proposed requirement for biennial tune-ups under the work practice standards as opposed to the annual requirements proposed in the major source HAPs rulemaking. We offer the following recommendations to further improve the functionality of these work practices:
EPA should provide additional flexibility and/or alternatives to the proposed tune-up requirements. BP A shouid aiiow the option for operator-defined procedures rather than sole reliance on manufacturer’s specifications.
EPA should provide clarification that CO measurements for tune-ups are not related to any CO emission standard in the rule.

EPA should also clarify the CO methods that are allowed under the rule (for example, the same options as for CO performance tests - Reference Method or ASTM portable method or operator-defined portable analyzer method).

Response: Please see DCN EPA-HQ-OAR-2006-0790-1060.1, excerpt 2 for a response pertaining to work practice standards, DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response about portable analyzers.

Commenter Name: Eric Trauner
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2286
Comment Excerpt Number: 2

Comment: And also re: tune-up expectations, more clarification is needed on methods to be used when assessing exhaust gases for CO content, and more clarity is needed on expectations for such a periodic report.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0351, excerpt 1 for a response about portable analyzers.

Commenter Name: Chris V. Isaacson
Commenter Affiliation: Alabama Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2060
Comment Excerpt Number: 3

Comment: The GACT standard for area source industrial boilers should consist of work practices rather than numeric emissions limitations.

In situations where the use of GACT is authorized (as it is here), 112(d)(5) on its face authorizes EPA to establish "standards or requirements .... which provide for the use of generally available control technologies or management practices." (Emphasis added). In other words, when setting standards based on GACT, EPA is expressly authorized to establish work practices instead of emissions limitations. There is no need under the express terms of 112(d)(5) for EPA to make a showing under 112(h) in order to set work practice standards. This interpretation is supported by the legislative history of 112 [Footnote: See, S. Rep. No. 101-228, 101st Cong. 1st sess. 171-172 (GACT is to encompass "methods, practices and techniques which are commercially available and appropriate for application by the sources in the category ....").] and is reflected in numerous existing GACT standards. [Footnote: See, e.g., 72 FR 16636, 16639 et seq. (Apr. 4, 2007) (describing methods of determining GACT for 7 area source categories).]

For purposes of the industrial boiler area source rule, EPA has ample justification to establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury because mercury is a fuel dependent HAP and "[fuel usage can be reduced by improving the combustion efficiency of the boiler." [Footnote: 75 FR 31906.] Similarly, EPA asserts that, "A boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multiclones but would also reduce emissions of organic HAP. [Footnote: 75 FR 31906 at 31908.] Thus, a requirement for affected boilers to be periodically tuned up is amply justified.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Trent A. Dougherty
Commenter Affiliation: Ohio Environmental Council
Document Control Number: EPA-HQ-OAR-2006-0790-1922.1
Comment Excerpt Number: 3

Comment: Further, we support inclusion of a biennial boiler tune-up requirement in the rule for applicable small (less than 10 million Btu input per hour) boilers as a means to enhance energy efficiency (and specifically combustion efficiency) and reduce toxic HAP emissions. We suggest clarification as to whether the proposed rule would require tune-up solely of the combustion systems of boilers or of the entire boiler (or furnace) system. We recommend the broader form of tune-up, which would allow additional efficiency measures to be addressed beyond combustion control.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 4

Comment: EPA should require only a one time tune-up for smaller boilers and process heaters.

Manufacturers recommends that EPA require only a one time tune-up for smaller boilers and process heaters with rated heat input less than 2 million British Thermal Units (BTUs). Currently, both the South Coast Air Quality Management District and Antelope Valley Air Quality Management District exempt boilers and process heaters with a rated heat input less than or equal to 2 million BTUs per hour from having their burners tuned. Because of the small size of these units, the cost burden of regular tune-ups far outweighs any environmental benefit that may be achieved.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 4

Comment: Before addressing new boilers, we'd like to take a moment to acknowledge the generally appropriate treatment of the existing boilers in these proposed rules. As far as existing sources are concerned, we support EPA's requirement for biennial tune-ups with no retrofit of control technologies for systems <10 MMBTU.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Cynthia A. Finley
Commenter Affiliation: National Association of Clean Water Agencies
Document Control Number: EPA-HQ-OAR-2006-0790-2260.1
Comment Excerpt Number: 5

Comment: The proposed rule requires that the biennial tune-up "measure the concentrations in the effluent stream of CO in parts per million, by volume, dry basis (ppmvd), before and after the adjustments are made." In addition, the facility must maintain and potentially submit an annual report that contains "the concentrations of CO in the effluent stream in ppmvd, and oxygen in percent dry basis, measured before and after the adjustments of the boiler" and "the type and amount of fuel used over the 12 months prior to the annual adjustment." These requirements to measure effluent stream gases are inconsistent with EPA's reasoning for establishing work practice standards rather than emissions limits for small boilers. EPA states in the proposed rule that the standard methods for measuring emissions of mercury, carbon monoxide (CO), and particulate matter (PM) are not applicable for sampling stacks with a diameter less than 12 inches, which are generally found on boilers with a capacity less than 10 MMBtu/h. In addition, many of these small boilers would require expensive modification to install sampling ports and a platform to access the stack. Since it is not feasible to require emissions limits due to the technological limitations of monitoring and testing, as well as the costs of necessary modifications to perform the tests, it is also not feasible to require emissions testing as part of the biennial tune-up.

Response: EPA disagrees. The CO measurements can be done with handheld monitors that should add little expense to a tune-up program.

Commenter Name: Wayne J. Galler
Commenter Affiliation: Georgia Industry Environmental Coalition, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1997.1
Comment Excerpt Number: 5

Comment: GACT Standard Should Consist of Work Practices. In situations where the use of GACT is authorized (as it is here), 112(d)(5) authorizes EPA to establish 'standards or requirements .... which provide for the use of generally available control technologies or management practices.' In other words, when setting standards based on GACT, EPA is authorized to establish work practices instead of emissions limitations. There is no need under the express terms of 112(d)(5) for EPA to make a showing under 112(h) in order to set work practice standards. This interpretation is supported by the legislative history of 112 [See, S. Rep. No. 101-228, 101st Cong. 1st sess. 171-172 (GACT is to encompass "methods, practices and techniques which are commercially available and appropriate for application by the sources in the category ....").] and is reflected in numerous existing GACT standards.[See, e.g., 72 FR 16636, 16639 et seq. (Apr. 4, 2007) (describing methods of determining GACT for 7 area source categories)..]

For purposes of the industrial boiler area source rule, EPA has ample justification to establish a work practice for all relevant HAPs requiring periodic tune-up of affected boilers. As EPA explains in the proposal, this approach is appropriate for mercury, because mercury is a fuel dependent HAP and "[f]uel usage can be reduced by improving the combustion efficiency of the boiler [75 FR 31906]. Similarly, EPA asserts that "A boiler tune-up requirement would potentially result in the same non-mercury metallic HAP reduction as a PM emission limit based on performance of multiclones but would also reduce emissions of organic HAP".[75 FR 31908]. Thus, a requirement for affected boilers to be periodically tuned up is sufficiently justified.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: John T. Heard
Commenter Affiliation: Virginia Coal Association, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2155.1
Comment Excerpt Number: 5

Comment: Boilers and process heaters that burn refinery gas and natural gas emit very low levels of HAPs. As a result, emissions from these units pose little risk to public health and safety. EPA has, therefore, proposed to set a work practice standard for existing gas-fired ("Gas 1") industrial boilers and process heaters, rather than specific emissions limitations. Integrated Gas Combined Cycle (IGCC) units employ the use of a gasifier to convert coal into gas and then remove impurities from the resulting gas before combusting it in a gas turbine. This process of removing impurities from coal-derived gas results in emission levels of particulate matter, sulfur dioxide, and mercury from IGCC units that compare to those of other gas-fired units. Therefore, such coal-derived gas should he added to the Gas 1 category of fuels, and IGCC units should be subject to work practice standards rather than strict MACT floors. Applying such a standard

would also incentivize the development of IGCC technology, which, with additional research, development and deployment, could become a promising option for reducing CO_2 emissions in coal-fired industrial boilers and process heaters.

Response: Please see the Preamble for information on the definition used for gaseous fuels, and regulations for gas-fired units.

Commenter Name: Marilyn Crockett
Commenter Affiliation: Alaska Oil and Gas Association
Document Control Number: EPA-HQ-OAR-2006-0790-2212.1
Comment Excerpt Number: 5

Comment: AOGA is very concerned about the overall ongoing cost and associated control cost effectiveness of EPA's proposed biennial tune-up requirements for existing boilers less than 10 MMBtu/hr. Without a de minimis threshold, the requirement applies to any boiler regardless of size. Small distillate fired boilers in the size range of 0.5 to 3.0 MMBtu/hr are commonly used throughout Alaska. As proposed, 63.11222 establishes a significant set of inspection and tuning requirements, and also requires measurements of CO and O2 in the stack gas.
Based on EPA's published emission factors (AP-42), total potential HAP emissions from distillate boilers are 0.01 tpy per MMBtu/hr of input capacity. What reduction in HAP does EPA reasonably expect from the tune up procedure? Assuming a 10% reduction, HAP emissions would be reduced by 0.001 tpy/MMBtu/hr. AOGA does not believe that EPA has adequately evaluated the owner/operator cost, HAP emission reductions, and associated cost effectiveness that can be expected by conducting these specific tune-up requirements on small boilers.
EPA's mandate that boilers be tuned to minimize CO may also be inconsistent with already applicable requirements such as NOX BACT limits, good air pollution control practices, or manufacturer's recommended operating conditions.
AOGA encourages EPA to consider replacing the proposed biennial tune-up requirements with a simpler work practice standard where good combustion practice is ensured by a requirement to maintain boiler tuning according to the manufacturer's specifications or an appropriate operator's maintenance plan. We also encourage EPA to consider a de minimis size threshold, e.g., 2.0 MMBtu/hr, where no requirements apply based on the very low emission rates of such units.

Response: Please see the Preamble for current language regarding work practice requirements, and DCN EPA-HQ-OAR-2006-0790-1060.1 excerpt 2 for information on following manufacturer's specifications.

Commenter Name: Keith M. Krom
Commenter Affiliation: AT&T, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2243
Comment Excerpt Number: 6

Comment: EPA should clarify that the proposed annual adjustment requirement is biennial EPA has proposed work practice standards for existing boilers under 10 MMBtu/hr. Specifically, proposed section 63.11222 provides that owners and operators of such boilers must "conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (6) of this section." This language is consistent with the preamble discussion on the topic. Subsection 63.11222(b)(6)(iii), however, provides that affected sources must "maintain on-site and submit, if requested by the Administrator, an annual report containing the ... type and amount of fuel used over the 12 months prior to the annual adjustment." (Emphasis added.) This latter provision suggests that adjustments are required annually. It appears that this is a mistake, and thus AT&T requests that EPA correct the final rule to indicate the tune-ups are required biennially, not annually.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Richard Rosvold
Commenter Affiliation: Xcel Energy Services, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2259.1
Comment Excerpt Number: 7

Comment: Biennial tune ups are excessive, especially for liquid fueled boilers with low hours of operation. These units burn relatively cleanly and generally do not become "out of tune" this quickly. We suggest a tune up frequency of once every five years for units burning distillate oil and biodiesel.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: George M. Israel
Commenter Affiliation: Georgia Chamber of Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-1996.1
Comment Excerpt Number: 7

Comment: I strongly encourage you to correct this problem by carefully tailored standards that protect against the ill effects of air toxics, while not unnecessarily discouraging the construction of much needed renewable biomass boilers. This can be accomplished by using a 30-day averaging period instead of the proposed 24-hour or simply use the same “work practices” approach applied to gas-fired boilers already include in the proposed rule.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Keith M. Krom
Commenter Affiliation: AT&T, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2243
Comment Excerpt Number: 8

Comment: EPA should revise the biennial tune-up requirements to allow for maintenance to be performed pursuant to procedures developed by the owner/operators
EPA has proposed work practice standards for existing boilers under 10 MMBtu/hr. Specifically, proposed section 63.11222 provides that owners and operators of such boilers must "conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (6) of this section." Proposed paragraphs (2) and (4) require that owners and operators "Inspect the flame pattern and make any adjustments to the burner necessary to optimize the flame pattern consistent with the manufacturer's specifications;" and "Minimize total emissions of CO consistent with the manufacturer's specifications", respectively. AT&T has concerns that older existing boilers may not have readily accessible manufacturer specifications, and copies of manufacturer specifications may not be available from the manufacturer if the company is no longer in business. Additionally, AT&T has concerns that, even where manufacturer specifications are available, older boilers will not have provisions in the manufacturer specifications specifically for minimizing total emissions of CO. Typically, boilers routinely undergo preventative maintenance, and this maintenance is performed based on industry standard protocols and best practices on maintenance. Therefore AT&T requests that paragraphs (2) and (4) be amended to include work performed pursuant to "manufacturer's specifications or according to procedures developed by the owner/operators based on industry standard protocols or best practices."

Response: Please see the Preamble for current language regarding work practice requirements, and DCN EPA-HQ-OAR-2006-0790-1060.1 excerpt 2 for information on following manufacturer's specifications.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 9

Comment: Work practice alternatives should be implemented for all Area Source boilers instead of annual stack testing. Stack testing by an independent 3rd party should be conducted at boiler installation to prove that the system can perform to manufacturer and permit standards. Thereafter boiler tune-ups will maintain system performance.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Myra C. Reece
Commenter Affiliation: South Carolina Department of Health and Environmental Control
Document Control Number: EPA-HQ-OAR-2006-0790-1859.1
Comment Excerpt Number: 14

Comment: Clarify If The Use Of Existing Boiler Inspection Programs Satisfy Tune-Up Requirements
In the preamble, the EPA states that it has obtained information on units that reported using good combustion practices as part of the information collection effort, and that the data obtained indicates that units typically conduct tune-ups per state regulations and permits (75 FR 31907). While states like South Carolina already have a periodic boiler inspection program in place (implemented and enforced by a separate state agency), it appears from our survey of various states that the focus of those state required inspections is predominantly safety oriented and not efficiency based. Consequently, air-to-fuel ratios, the minimization of carbon monoxide (CO) emissions, and the measurement of CO in the effluent stream may not be a part of typical state's tune-up inspections. The EPA should provide clear guidance in the rule on whether the existing safety boiler inspection programs are adequate to satisfy the proposed tune-up requirements.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Myra C. Reece
Commenter Affiliation: South Carolina Department of Health and Environmental Control
Document Control Number: EPA-HQ-OAR-2006-0790-1859.1
Comment Excerpt Number: 15

Comment: If the EPA decides to retain the requirement that sources having to comply with tune-up requirements must measure (CO) concentration in the effluent stream and must maintain on-site and submit to the administrator, if requested, an annual report containing this and other tune-up information as specified, the rule should specify the methodology to be used in measuring CO concentration.

Response: : Please see DCN EPA-HQ-OAR-2006-0790-0351 excerpt 1.

Commenter Name: Myra C. Reece
Commenter Affiliation: South Carolina Department of Health and Environmental Control
Document Control Number: EPA-HQ-OAR-2006-0790-1859.1
Comment Excerpt Number: 17

Comment: The EPA proposes the continuous compliance requirement of biennial tune-ups for all boilers, regardless of the heat input capacity. It appears that only boilers with a heat input capacity of less than 10 million Btu per hour to be required to have biennial tune-ups. The EPA

should clarify in 63.11222(b) and Table 2 of the rule which boilers are required to have biennial tune-ups.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 17

Comment: Combined with the revised limits above, initial emissions testing and work practice standards for maintenance will ensure that clean-burning boilers are installed and that they consistently achieve high emission standards. BTEC believes that superior emission performance can be best achieved and be cost effective over the long-term with on-site tune-ups rather than onerous annual emission testing requirements for boiler owners. The proposed annual tune-up of boilers to meet manufacturers' specifications is consistent with typical manufacturers' recommendations for regular maintenance and is consistent with what the EPA has proposed for existing Area Source Boilers.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: W. Randall Rawson
Commenter Affiliation: American Boiler Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1897.1
Comment Excerpt Number: 17

Comment: Comments Related to Boiler Tune-up Requirements
ABMA acknowledges the proposed requirements for boiler tune-ups set forth in proposed 40 C.F.R. §63.11223. While maintenance, repair and tune-up of boilers and combustion equipment in the >400,000 Btu/hr sector do have characteristics in common, ABMA notes that every boiler system is different depending on overall design, operational characteristics and use. Each boiler system in this sector is designed to a specific application; "cookie-cutter" designs do not apply to the non-residential boiler sector. Given such variability in design and operation, and the very real issue of safety as it pertains to (1) doing work with highly technical combustion systems and (2) operating those systems post-tune-up, it is important for tune-ups to be conducted by companies and personnel with the highest standards of technical training and practical expertise in addressing issues of maintenance, repair and optimization of boiler systems. The manufacturers of boilers, burners, or boiler components are a logical source of expertise, as are representatives and boiler repair companies that have documented arrangements with manufacturers. Further, tune-ups should be conducted in accordance with manufacturer guidelines and recommendations in order to preserve technical warranties and guarantees.

Response: Please see DCN EPA-HQ-OAR-2006-0790-1060.1 excerpt 2 for information on following manufacturer's specifications.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 21

Comment: Ethan Allen also specifically requests that EPA confirm whether the energy assessment required by the proposed rule is, with respect to units with a heat input capacity greater than 10MMBtu/hr, in addition to or in lieu of the boiler tune-up requirement. Ethan Allen refers EPA to 75 Fed. Reg. 31,908 in which the agency states that it is "proposing GACT for HAP other than mercury and POM to be a management practice requiring the implementation of a boiler tune-up program." Ethan Allen understands this statement to apply to boilers above and below 10MMBtu/hr for the control of PM (as a surrogate for urban metals). However, at 75 Fed. Reg. 31,932, EPA's "Table 2" suggests that only units with a heat input capacity below 10MMBtu/hr are required to conduct a tune-up. Ethan Allen contacted EPA for clarification and was told that the boiler tune-up was not applicable to boilers with a heat input capacity of greater than 10 MMBtu/hr, but that it was expected that the units would conduct a boiler tune-up in order to meet the proposed CO limits. This appears to conflict with the agency's statement regarding GACT for urban metals in the preamble to the proposed rule and requires further clarification.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 25

Comment: Units that supplement fossil fuels with Comparable Fuels should be exempt from Table 2 MACT emission limits.

In its RCRA regulations, EPA has established specifications for comparable fuels in Table 1 to 40 C.F.R. § 261.38. These fuel specifications address virtually all of the constituents regulated under EPA's proposed area source boiler rule, including:

Arsenic
Beryllium
Cadmium
Chromium
Manganese

Mercury
Nickel
Lead
Hexachlorobenzene
2,3,7,8 TCDD

They also include limits for tens of hydrocarbons and other organics whose complete or incomplete combustion might give rise to 2,3,7,9-TCDF, PAHs or POM. Importantly, they also include minimum Btu and viscosity limits to ensure effective combustion.

Since the comparable fuels program requires compliance with specifications at or below constituents' levels in liquid fuels, EPA should exempt existing area source boilers burning comparable fuels from the Table 2 emission limits and subject them to the less burdensome work practices program.

Response: Please see the Preamble for discussion on unit exemptions.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 58

Comment: Tune-Up Requirements Are Inappropriate And Need To Be Modified. Proposed 63.11222(b) contains the specific tune-up work practice requirements for existing boilers subject to work practice and management practice standards. We have the following comments on the specifics of the proposed tune-up work practice.

ACC believes proposed 63.11222(b)(1)-(3) reflect typical boiler inspection and tune-up activities. Proposed 63.11222(b)(3) requires the area source to "Inspect the system controlling the air-to-fuel ratio, and ensure that it is correctly calibrated and functioning properly." This wording presumes an automatic air-to-fuel ratio controller, but those may or may not be present.

Where metered fuel/air control systems with O2 trim are installed, there is no real need for periodic "tune-ups" since combustion is continually optimized. Rather, burner/combustion system inspections, control equipment calibrations, and operational checks are all that should be needed to verify proper operation. EPA should reword the work practice requirements so that sources have flexibility to adapt procedures as most applicable and appropriate for specific sources.

Response: Please see DCN EPA-HQ-OAR-2006-0790-1060.1 excerpt 2 for information on following manufacturer's specifications, and DCN EPA-HQ-OAR-2006-0790-1783.1 excerpt 37 for information on air-to-fuel ratios.
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Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 59

Comment: Proposed 63.11222(b)(4) and (5) are not typical tune-up requirements for boilers and do not reflect GACT. States that have tune-up requirements require minimization of NOx, not CO. Thus, these subparagraphs do not reflect the state requirements and would violate the state tune-up requirements for minimizing NOx, because as CO decreases, NOx increases. Additionally, the tune-up requirement conflicts with the proposed energy assessment work practice requirements, because tuning a boiler for minimum CO generally requires increasing excess air, which increases energy consumption, in direct conflict with the energy assessment directive to decrease energy consumption.

If the fuel/air control on a boiler is working properly, as (b)(3) confirms, and there are no mechanical problems with the flame pattern (in cases where it is visible), as (b)(2) confirms, there is little latitude to adjust for CO. These CO minimization and measurement requirements must be justified in consideration of the NOx emissions increase they will engender and the rule must specifically override state requirements to minimize NOx, or be modified as indicated below.

The O2 level in a boiler also must be set considering draft limitations, flame impingement, and flame stability to assure a safe, reliable and efficient operation, and these conditions are not recognized in the EPA tune-up procedure.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0067.1 excerpt 5 for information on tune-up requirements and DCN EPA-HQ-OAR-2006-0790-1783.1 excerpt 37 for information on air-to-fuel ratios.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 65

Comment: The Proposed Definition Of Energy Assessment Is Too Broad And Is Inconsistent With Other Sections Of The Proposed Rule.
For area sources with an affected boiler with heat input of 10 MM Btu/hr or greater, EPA has proposed as beyond-the-floor control technology an “energy assessment,” characterized in the preamble as an “in-depth energy study identifying all energy conservation measures appropriate for a facility given its operating parameters.” 75 Fed. Reg. at 31896.

Proposed 63.11237 defines an energy assessment as an "in-depth assessment of a facility to identify immediate and long-term opportunities to save energy, focusing on the stream and process heating systems which involves a thorough examination of potential savings from energy efficiency improvements, waste minimization and pollution prevention, and productivity improvement."

The definition is too broad because this proposed rule regulates boilers only, it does not include process heaters, and it appears to establish obligations beyond the boiler source. The definition requires the assessment to consider waste minimization, pollution prevention and productivity improvements independent of their impact on facility energy considerations. This definition seems to require facilities to look beyond "air" and into other media such as solid waste and water consumption, which is beyond the scope of this air rule.

Response: Please see the Preamble for current language regarding the Energy Assessment requirements.

Commenter Name: Wayne York
Commenter Affiliation: Hancock Lumber Company, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2002
Comment Excerpt Number: 8

Comment: The proposed rule specifically requests comments on whether the cut-off for a facility needing a biennial tune-up or annual RM testing should be higher than 10 MMBtu/hr. We strongly believe that the threshold should be higher. A limit of 30 MMBtu/hr would seem much more reasonable, as it would narrow the focus of the most complex testing requirements to larger facilities with greater annual emissions, and likely with more financial and technical resources to implement the rule requirements. As allowed under the Clean Air Act Section 112(h), a work-practice standard for boilers less than 30 MMBtu/hr instead of the proposed MACT standard would be justified, as it seems impracticable to enforce the emissions standards due to technical and economic limitations.
The requirement for biennial tune-ups under 40 CFR 63.112222(5), states that the CO concentration in the effluent stream must be measured on a dry basis. As the CO concentration measurement is being made only to serve as a basis for comparison of the emissions before and after tune-up, there is no need to specify the basis for the measurement, other than that the before and after measurements need to be made on the same basis. By specifying a dry basis, EPA is unnecessarily limiting the methodology to be used, potentially resulting in unnecessary compliance costs.

Response: Please see DCN EPA-HQ-OAR-2006-0790-0351.1 excerpt 1 for information on CO monitoring.

Other - Work Practices

Commenter Name: Houston Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0985
Comment Excerpt Number: 30

Comment: After each grinding season ends, our mills shut down and begin a nine-month tune-up process. Because equipment malfunctions during the grinding season, can result in tremendous loss to a sugar mill as well as -- as well as to Louisiana sugar farmers. Nearly every piece of equipment undergoes an extensive inspection, maintenance and repair program to prepare for the next season. In contrast, boilers and associated emission controlled equipment at non-seasonal industries may run continuously for years before going through a turnaround to conduct the kind of thorough and comprehensive maintenance activities that each sugar mill goes through annually. The boilers operating at Louisiana mills are equipped with a minimum of multiple cyclone dust collectors. A large majority of boilers are also fitted with hydro scrubbers, achieving an average particulate matter control efficiency above 90 percent. The extensive inspection and maintenance process is conducted annually to ensure that boilers and associated control devices will continue to operate as efficiently as possible throughout the grinding season. The League recognizes the value in continuing to conduct these maintenance activities as a condition of meeting the de minimis exemption, the League proposes that a maintenance and repair program similar to that described above be made mandatory, along with appropriate recordkeeping and reporting requirements.

Response: Please see the Preamble for current language regarding the work practice requirements.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 38

Comment: In addition, 63.11222(b)(6)(iii) requires maintaining an annual report to include the type and amount of fuel used over the 12 months prior to the annual adjustment. There are two issues with this requirement:

First, this rule stipulates biennial tune-ups for specific affected sources, not annual.

Second, this implies that fuel metering is required for every boiler subject to tune-up requirements. There is no justification for a requirement to have individual boiler fuel use meters or other data since actual fuel use for a boiler is immaterial for documentation of a tune-up. The only requirement should be for identification of the fuel type used in the boiler over the prior operating period and the fuel type used during the tune-up. If for some reason EPA deems it justified to require the quantity of fuel combusted, it should be adequate to use whatever total site fuel use or subset of boilers fuel quantity data is available, such as from billing records, delivery receipts, tank level drop, common fuel meter, or other available data.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 2

Comment: NHDES strongly supports adoption of timely final regulations in order to achieve the benefits to public health that will result from the regulations. In keeping with that desired outcome, we would recommend that EPA consider including provisions in the regulation that not only require effective emission limits for CO, but also a combustion efficiency component to ensure that combustion efficiency, and not just CO emission rates, be improved. NHDES would recommend that for existing units, EPA require annual tune-up and testing of combustion efficiency and for new units, EPA require that the manufacturer of the units certify that they meet efficiency standards along with an annual tune-up requiremen

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 2

Comment: The rationale that supports the proposed approach for the Gas 1 subcategory applies equally well to biomass boilers and, therefore, provides ample support for adopting work practices instead of numeric emissions limitation for biomass boilers. For example, in the forest

products industry alone, the estimated cost of complying with the proposed HAP emissions limitations for biomass boilers is $3.3 billion. This is an extraordinary cost that, in the context of the forest products industry, equals or exceeds the magnitude of the economic burden that EPA predicts for the Gas 1 subcategory. Similarly severe economic impacts are expected in other industry sectors where biomass boilers are widely use, such as the furniture, sugar, and agricultural products industries. Thus, there is strong economic justification for prescribing work practice standards for biomass boilers in lieu of numeric emissions limitations.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Myra C. Reece
Commenter Affiliation: South Carolina Department of Health and Environmental Control
Document Control Number: EPA-HQ-OAR-2006-0790-1859.1
Comment Excerpt Number: 16

Comment: Tune-up is defined as "adjustments made to a boiler in accordance with procedures supplied by the manufacturer (or an approved specialist) to optimize the combustion efficiency." "Approved specialist" must be defined in order to determine who can establish procedures to optimize the combustion efficiency in absence of manufacturer's recommendations. We believe the EPA should retain the authority to determine whether an individual qualifies as an "approved specialist' and should provide a clear process for these individuals to be approved.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Daniel Moss
Commenter Affiliation: Society of Chemical Manufacturers and Affiliates
Document Control Number: EPA-HQ-OAR-2006-0790-2018.1
Comment Excerpt Number: 21

Comment: EPA should set work practice standards.

CAA Section 112(h) allows EPA to set work practice standards in any case where it is not feasible to prescribe or enforce an emission standard for a HAP. SOCMA believes that this provision applies even under EPA's interpretation of Section 112(c)(6). We also submit that this provision is applicable to controlling POM emissions from boilers. As the comments of the American Chemistry Council (ACC) explain:

There is no reliable correlation between organics destruction and removal efficiency below about 100 ppm CO; and
Boiler manufacturers are not willing to guarantee CO emission levels within even an order of magnitude of 2 ppm.

Given these challenges, it would make sense for EPA simply to set work practice controls for organics emissions from area source boilers.

Response: Please see the Preamble for current language regarding work practice requirements.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 33

Comment: The MACT floor for limited use boilers should be maintenance work practices because emission limitations are infeasible.

As stated in the Clean Air Act, "if it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard for control of a hazardous air pollutant or pollutants, the Administrator may, in lieu thereof, promulgate a design, equipment, work practice, or operational standard, or combination thereof, which in the Administrator's judgment is consistent with the provisions of subsection(d) or (f) of this section. 42 U.S.C. 7412(h). While the D.C. Circuit Court of Appeals has ruled that EPA cannot set floors of "no control," the court also affirmed EPA's authority under CAA 112(h) to use work-practice standards instead of emission floors where "measuring emission levels is technologically or economically impracticable." Sierra Club v. EPA, 479 F. 3d 875, 884 (D.C. Cir. 2007). Given the limited and sporadic operation of emergency and backup boilers, as well as the technical infeasibility of imposing emission limitations on these units, the limited use subcategory should be limited by work practices in lieu of an emission floor.

In the recently promulgated CI RICE MACT, EPA set work practices including regularly scheduled maintenance and the cataloging of hours of operation to ensure compliance with relevant emission limits for emergency use engines. See National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, 75 Fed. Reg. at 9655-56. As stated by EPA, "EPA believes that work practices are appropriate and justified for this group of stationary engines because the application of measurement methodology is not practicable due to technological and economic limitations." Id. at 9556. As further stated by EPA:

[U]sing these procedures would increase the required number of hours of operation of the engine beyond the routinely scheduled reliability testing and maintenance operation, thereby increasing emissions. While emergency engines have periods of operation for scheduled maintenance and reliability testing, those periods are usually several hours shorter than the number of hours that would be required to run the necessary emissions tests under subpart ZZZZ.

Id. at 9661. Similarly, as stated in the memorandum entitled Existing Stationary Non-Emergency CI RICE Less Than 100 HP and Existing Stationary Emergency CI RICE Located at Major

Sources and GACT for Existing Stationary CI RICE Located at Area Sources (February 15, 2010) cited in EPA's final rule:

For existing stationary CI emergency engines located at major sources, EPA determined it is not feasible to prescribe or enforce an emission standard because the application of measurement methodology to this class of engine is impracticable due to the technological and economic limitations. Emergency engines typically only operate during emergencies or during periods of routine testing and maintenance. EPA determined that application of the emissions measurement methodologies during either of these periods is not practicable. It is impracticable to test emissions from stationary CI emergency engines during periods of routine testing and maintenance using the test procedures specified in the rule because it would increase the required number of hours of operation of the engine beyond the routinely scheduled reliability testing and maintenance operation, thereby increasing emissions. While emergency engines have periods of operation for scheduled maintenance and reliability testing, those periods are usually several hours shorter than the number of hours that would be required to run the necessary emissions tests under subpart ZZZZ.

EPA also excluded black start units from HAP emission regulations in the CI RICE MACT rule. While these units operate whenever a turbine generator starts, and therefore are not limited to emergency operations, EPA nonetheless recognized the importance of exempting these units from numeric HAP standards, finding that "the short time of operation for these engines (10–15 minutes per start) makes application of measurement methodology for these engines using the required procedures, which require continuous hours of operation, impracticable. Requiring numerical emission standards for these engines would actually require substantially longer operation than would occur normally in use, leading to greater emissions and greater costs." National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, 75 Fed. Reg. at 9662.

It is worth noting that these exceptions were not created because the emissions generated have no impact on the environment. As EPA found, "[t]he majority of stationary CI engines are used for emergency purposes. EPA has estimated that 80 percent of stationary CI engines are emergency engines and EPA has taken steps in the final rule to reduce the burden on owners and operators of these engines." National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, 75 Fed. Reg. at 9658. Rather, the basis for promulgating work practices in lieu of emission standards is the impracticality of prescribing or enforcing an emission standard. See 42 U.S.C. 7412(h).

Emergency and backup boilers, like emergency and black start CI RICE, are operated for only short periods of time and cannot feasibly be tested pursuant to EPA standards. Work practices should therefore also serve in lieu of emission monitoring and control technology for emergency and backup boilers. For example, under 40 C.F.R. 63.7545(d) of the Proposed Rule, a Notification of Intent must be submitted at least 30 days before any performance test. See National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 75 Fed. Reg. at 32006. As a result, even if a limited use boiler were operated for an entire month after an unplanned start, there would be no time to conduct the necessary performance tests. In addition, most test methods

require steady state conditions that may not be achieved during limited use operations and, once a steady state has been reached, would require the boiler to continue operating at steady state for enough time to conduct the three 4-hour test runs required by the proposed rule for most compliance tests. See Proposed 40 CFR 63.7520(d). [Footnotre: Even during regular operation, a limited use boiler would still need to operate for at least 12 hours in steady state condition in order to accommodate the variability attendant in these performance tests. See National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 75 Fed. Reg. at 32033 (stating that EPA selected a 12 hour averaging period for demonstrating continuous compliance "to reflect operating conditions during the performance test to ensure the control system is continuously operating at the same or better level as during a performance test demonstrating compliance with the emission limits").] Similarly, EPA is proposing that boilers and process heaters with heat input capacities greater or equal to 100 MMBtu/hr "demonstrate that average CO emissions, on a 30-day rolling average, are at or below the proposed CO limit." National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 75 Fed. Reg. at 32034. This averaging period is essential to accommodating expected data variability, including SSM events. See, e.g. National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters; Final Rule, 69 Fed. Reg. at 5521. See Response to Public Comments on Proposed Industrial, Commercial, and Institutional Boilers and Process Heaters NESHAP at 102 (rejecting a 24-hour averaging period because a 30-day rolling average "accounts for the variability in fuel characteristics (e.g., moisture, Btu content, mixture) that occur for solid fuel-fired boilers and process heaters"). Without the ability to test for 30 continuous days or thereabouts, a limited use boiler could not reasonably be expected to meet the same emission limits due to their reduced ability to accommodate data variability and operators cannot adequately determine compliance with numeric emission limits.

The result would be a marked inability to practically measure emissions without operating these units for significant periods of time for the sole purpose of conducting emissions testing. As with the recently regulated emergency CI RICE, this would result in a new increase in emissions through the very effort to control emissions from these units. See National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, 75 Fed. Reg. at 9655-56. Work practices are therefore the most feasible control for limited use boilers and should be adopted in the new rule.

Response: Please see the Preamble for EPA's opinion regarding limited use units.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 34

Comment: Limited use waste heat boiler.

Manufacturers request that EPA require work practices for limited use waste heat boilers. Waste heat boilers use heat extracted from other industrial processes and combust fuel only for a very small duration on an annual basis. For the vast majority of the time, waste heat boilers do not burn alternative fuel at all. For waste heat boilers that primarily use waste heat for their total annual operation, the performance testing requirement (§63.7510 and §63.7520) is unreasonably costly and burdensome. Therefore, the final rule should not require performance testing requirements for limited use boilers that combust liquid fuel less than 10% of the time on an annual basis. The application of work practice standards, is more reasonable and appropriate.

Response: Please see the Preamble for EPA's opinion regarding limited use units.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 35

Comment: EPA should subcategorize the proposed liquids subcategory into light liquids and heavy liquids and apply work practice requirements to the clean-burning light liquids subcategory. It is unfair to have distillate units set the floor for heavy oil units. Oil is an expensive fuel compared to gas or coal, and oil is usually only used because gas in not available. For remote locations without access to natural gas (such as islands and Alaska), EPA should only require a work practice for oil units, as EPA proposed for gas-1 for the same reasons EPA cited there. In the Turbine NSPS rule EPA provided some relief for remote locations. For the heavy oil subcategory, only a PM limit is warranted beyond a work practice.

Response: Please see the Preamble for current language regarding PM requirements.

Inventory Analysis

Inventory: Source Data of Affected Units

Commenter Name: Arlington Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0396
Comment Excerpt Number: 66

Comment: Right now we have no idea what the universe of incinerators, boilers are across this county. Even thinking about some of the small ones are –- I think it's estimated that 180,000 of these may be out there; and we don't know exactly what they're burning. We don't know what

the control technologies are there. We don't know what the impacts are in communities across the country.

Response: EPA appreciates the commenters input. In creating the boiler rule, EPA has requested information from industry, considered commenter input and revised the final rule based on our analysis of existing and new data submitted during the public comment period. The rule is based on the information available.

Commenter Name: John Huber
Commenter Affiliation: National Oilheat Research Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1831.1
Comment Excerpt Number: 3

Comment: In our review of Energy Information Administration Data, they indicate that nearly 2.5 billion gallons of #2 distillate is burned in commercial heating. However, that gallonage includes a significant amount of low sulfur fuel and ultra-low sulfur fuel. These two controlled distillates are required for off-road and on-road vehicles but are not required for stationary source units. In our estimates of emissions, we removed those two volumes, and ended up with total gallonage sold for commercial heating of approximately 1.2 billion gallons. In EPA source materials for hazardous air pollutants, the gallonage estimates for this fuel exceed 3.3 billion gallons. Thus, reductions in emissions from this source category even without further corrections may be overstated by 300 percent.

Response: Refer to response for Document Control Number: EPA-HQ-OAR-2006-0790-2249, Comment Excerpt Number: 3.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 11

Comment: The Draft Area Source Boiler Rule may affect close to 1.3 million boilers, the majority of which have not been regulated to date (<10 mmBtu/hr). As a result many non-traditional sources such as churches, schools, hotels, apartments, restaurants, and health care facilities will now be affected by EPA rulemaking. It is estimated that less than 1percent are industrial boilers, 47 percent are commercial boilers, and 53 percent are institutional boilers.

Response: See preamble for response.

Commenter Name: Robert G. Hedden

Commenter Affiliation: Oilheat Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2249
Comment Excerpt Number: 3

Comment: We feel you have overestimated the extent of boilers' of less than 10 MMBtu/h contribution to the problem. In NORA's review of Energy Information Administration Data, they indicate that nearly 2.5 billion gallons of #2 distillate is burned in commercial heating. However, that gallonage includes a significant amount of low sulfur fuel and ultra low sulfur fuel. These two controlled distillates are required for off-road and on-road vehicles but are not required for stationary source units. In our estimates of emissions, we removed those two volumes, and ended up with total gallonage sold for commercial heating of approximately 1.2 billion gallons. In EPA source materials for hazardous air pollutants, the gallonage estimates for this fuel exceed 3.3 billion gallons. Thus, reductions in emissions from this source category even without further corrections may be overstated by 300 percent. The confluence of reduced emissions from every gallon burned, and reduced volumes dramatically decreases this small category's contribution to meeting this goal, and we believe the reduction is to a level, which is probably equivalent to rounding error.

Response: Please see Preamble for the changes made to requirements for units under 10 MMBtu/hr.

Other - Inventory of Affected Units

Commenter Name: Charles Niebling
Commenter Affiliation: New England Wood Pellet
Document Control Number: EPA-HQ-OAR-2006-0790-0836
Comment Excerpt Number: 3

Comment: There was no data on systems burning non?woody biomass fuels such as corn stover and grasses. Non?woody biomass fuels are common throughout the world, and are becoming more prevalent in the U.S. Multiple federal programs, including the Biomass Crop Assistance Program, support the development of a robust domestic energy crop infrastructure. Non?woody fuels are part of the nation's renewable energy future, and EPA cannot sensibly regulate what it has not measured.

Response: The EPA requested and welcomes input from industry.

New Data or Corrections to Existing Data

New Data Submissions

Commenter Name: Arthur N. Marin
Commenter Affiliation: Northeast States for Coordinated Air Use Management, NESCAUM
Document Control Number: EPA-HQ-OAR-2006-0790-2137.1
Comment Excerpt Number: 11

Comment: Elemental analyses of fuel oils recently conducted by NESCAUM indicate that emissions from #2 distillate oil are significantly lower in mercury and other trace metals than EPA's AP-42 emission factors would otherwise suggest. Trace metals were measured in various petroleum products sampled in the Northeast, including #6 residual fuel oil, #2 distillate oil, ultra-low sulfur heating oil, and bio-diesel. Table 1 contains the trace metal results for #2 distillate oil and #6 residual oil, which are presented as input-based emission rates. [See submittal for Table 1.]

Based on NESCAUM's fuel sampling work, the more refined petroleum products have a different composition and are lower in nickel (Ni) and vanadium (V) than the heavier #6 residual oil. The fuel sampling also found very low levels of mercury (Hg) in petroleum products, and underscored the need for EPA's National Emissions Inventory to be updated for several metals, including mercury, nickel, and vanadium. Furthermore, based on compliance data, when burned in a commercial or industrial boiler to produce heat, different blends of petroleum can have very different fine particle emission rates due to the combustion design of the heating system and the fuel composition.

The bar chart of Figure 2 shows the particulate matter (PM) emission rates for different combustion systems and fuels used in heating equipment based on analysis conducted recently by the New York State Energy Research and Development Authority (NYSERDA). [See submittal for Figure 2.] Currently, #2 distillate oil is the most common fuel for heating in the Northeast, after natural gas, and has a PM emission rate of approximately 0.008 lb/mmBtu. Ultra-low, or 15 ppm, sulfur heating oil has a PM emission rate of 0.000099 lb/mmBtu, about the same as the emissions rate for natural gas-fired boilers. Number 6 residual fuel oil is commonly used in large buildings and has PM emission rate twice that of a boiler burning #2 distillate oil.

Based on these data, NESCAUM believes that EPA can achieve its emission targets by regulating ultra-low sulfur #2 distillate oil with the same regulatory strategy EPA proposed for natural gas.

Response: The fuel analysis data could not be attributed to any specific facility, and thus has not been processed into the EPA database.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 36

Comment: We are providing data with these comments from Bioenergy Facilities in Michigan (Appendix 4). We are also providing data sent to us from the Maine Department of Environmental Protection (MDEP) in Appendix 3. Additionally, data from area sources were provided to EPA in Phase 1 of its ICR survey. There are several wood-fired boilers with CEMS located at area sources. According to the ICR Phase I survey responses; the following biomass fired units have CO CEMS and thus these data are available to EPA for evaluation:[EPA Emission Database for the NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters; 2010; http://www.epa.gov/ttn/atw/boiler/boilerpg.html.]
a. MEBoralexAshland
b. MEBoralexFortFairfield
c. MEBoralexShermanStacyville
d. MEGreenvilleSteamCo
e. MEWorcesterEnergy (Boilers 1, 2 and 3)
f. MIGraylingGeneratingStation
g. MIVikingEnergyMcBain

We believe there are many other boilers with similar data. There are other wood-fired boilers at non-major sources in California, New Hampshire, New York, and Vermont that were not covered by the Phase I survey, but that have CO CEMS data. Appendix A-1 of the Floor Memo includes permit limits for two of these units – Bridgewater Power and Ryegate Power – but CEMS data were not obtained for either unit. To our knowledge, all units with CEMS at area sources have rated heat input capacities over 100 MMBTU/hr. and would thus be required to use CEMS data to demonstrate compliance with the proposed 160 ppm daily average limit. The Biomass Power Association maintains a list of bioenergy sources that includes the sources listed above and others that may have CO CEMS data[Http://www.usabiomass.org/docs/USA%20Biomass%20National%20Map%2010_01_09.pdf]. Again, to truly incorporate normal variability into their analysis, we believe EPA should obtain and analyze one year of hourly CO data for all these CEMS units to examine long-term emission rates and short-term variability.

Response: This data has been entered into the EPA database.

Commenter Name: Cheryl Johncox
Commenter Affiliation: Minneapolis Neighbors for Clean Air
Document Control Number: EPA-HQ-OAR-2006-0790-1971
Comment Excerpt Number: 3

Comment: A study published in Science [Friedli, Hans & Radke, Lawrence. Mercury in Smoke from Biomass Fires. (Sep. 2001). Science.Retrieved from http://www.mindfully.org/Air/Mercury-Smoke-Biomass.htm] casts doubt on the reliability of emissions estimates from biomass incineration and suggests that biomass emissions of mercury can be higher than emissions from coal. The study shows a complete release of mercury

contained in litter and green vegetation fuel that is different and higher than releases reported for some coal and biomass burning. The study suggests the higher releases of mercury are connected to regional differences in mercury concentrations in vegetation that coincide with the known highest dry/wet deposition rates in the northeastern and northwestern United States. Burning biomass with unknown mercury concentrations poses a high health risk to local populations, particularly the most vulnerable, including the youth, the infirm, and the elderly.

In its Summary of Annual Costs, table 3, EPA [Environmental Protection Agency. (2010). National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Summary of Annual Costs, Table 3. Retrieved from http://www.epa.gov/ttn/atw/boiler/fr04jn10ap.pdf] projects the number of existing area source biomass units affected by the proposed regulation to be 10,958, and estimates that about 200 new area source biomass boilers will come online during 2010-2013. However, industry data suggest that EPA has significantly underestimated the number of major source biomass boilers that will be built in the coming years. Many of these existing and new biomass boilers are in urban or other highly populated areas, such as in Toledo, Ohio, [09-1042-El-REN First Energy Bay Sshore Unit #1 http://dis.puc.state.oh.us/CaseRecord.aspx?CaseNo=09-1042-EL-REN] and emissions from these facilities can be considerable. For instance, two “area source” facilities proposed in Massachusetts (Pioneer Renewable Energy, a 47 MW plant proposed in Greenfield, MA, and Palmer Renewable Energy, a 38 MW construction-and-demolition debris burning plant in Springfield, MA) will each emit more mercury per MWh than the 146 MW Mount Tom coal plant in Holyoke, MA, which has been mandated to clean up its emissions under state mercury control rules.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Kevin F. Biernacki
Commenter Affiliation: Veolia Energy North America
Document Control Number: EPA-HQ-OAR-2006-0790-2273
Comment Excerpt Number: 3

Comment: To help aid the CO emission limit development process, we have attached hourly CO CEMS data from four of our boilers (K1 – K4). K1, K2 and K4 are each rated at 500 mmbtu/hr, while K3 is rated at 600 mmbtu/hr. If needed, Veolia Energy North America is available to provide further CO emissions data to help in the development of more representative CO emission limits.

[See DCN: EPA-HQ-2006-0790-2273.1 for pdf version of data and DCN: EPA-HQ-2006-079-2273.2 for data in Excel.]

Response: This data has been processed into the EPA database and will be used in future analyses.

Commenter Name: James P. Brooks
Commenter Affiliation: State of Maine Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2006-0790-1941.1
Comment Excerpt Number: 6

Comment: Maine DEP is submitting this data to supplement the information EPA is collecting for the Boiler MACT and the Commercial and Industrial Solid Waste Incineration standards development. Enclosed is a report explaining our findings as well as a CD which includes all of our data.

The Maine DEP is concerned that EPA's dataset may be incomplete in regards to the types of boilers predominantly in Maine and to the types of fuels burned by these boilers. We are also concerned that EPA may develop standards that do not take into account the NOx controls required for many of the Maine facilities and the effect that controlling for CO, which inversely affects NOx, as well as other pollutants.

The Maine DEP sent data collection requests to the larger wood and multi-fuel fired boiler owners in Maine requesting stack tests targeting NOx, PM, VOC and CO as well as 30 days of CO and NOx CEM data. Facilities that supplied us with 30 days of data were asked to provide average fuel composition during that time period. Additional information, such as seasonal information, heat input, and percent oxygen, was requested to note trends based on the types of fuels being fired, steam load, and seasonality. Stack testing data comparing CO and VOC emissions was also requested. Not all facilities are required to continuously monitor CO and NOx, therefore, some facilities only submitted stack testing data. All CO data was accepted and reviewed even if the data was from non-certified monitors, such as CO monitors used for boiler control. Please note, the Maine DEP reviewed the data for trends and the amount of CO variation and not for the development of specific emission standards. Stack tests targeting NOx, PM, VOC and CO were also requested. Unfortunately, the Maine DEP did not request moisture content data to coincide with the emission data collected. Table 1 lists what information was submitted. Table 2 lists Boiler information. [See submittal for Tables 1 and 2.]

Response: This data has been entered into the EPA database.

Commenter Name: Christopher Recchia
Commenter Affiliation: Biomass Energy Resource Center
Document Control Number: EPA-HQ-OAR-2006-0790-2008.1
Comment Excerpt Number: 1

Comment: In 2008, BERC worked to understand the state of emissions and technology from this scale of boilers and sponsored the report developed by the Northeast States for Coordinated Air Use Management (NESCAUM) entitled "controlling emissions from wood boilers" in which control technologies, costs and emission results were presented for US and European boilers of this type. Additionally, we recently completed a report in partnership with Resource Systems

Group (RSG, Inc.) for the USFS Western Leadership Coalition entitled "Emission Controls for Small Wood-Fired Boilers" in which data from emission testing around the country was summarized, again along with technology assessment and costs, with an added discussion of best management work practices. We believe the RSG/BERC report is the most up-to-date work available to guide BACT, MACT or GACT for these sources. We've attached this report to these comments. In general, the RSG/BERC report shows a wide range of technologies and emission results for boilers of this size, and emphasizes good combustion practices (work practices) for CO control and the successful use of fabric filter devices or ESP's for larger systems in this class.[See submittal EPA-HQ-OAR-2006-0790-2008.2.doc]

Response: This data has been accounted for in area source MACT floor analyses.

Commenter Name: Thompas P. Balf
Commenter Affiliation: Campus Cortium for Environmental Excellence
Document Control Number: EPA-HQ-OAR-2006-0790-1657.1
Comment Excerpt Number: 15

Comment: Our members suggest that there is a much broader spectrum of >10MM BTU/hr oil-fired boilers on campus than those tested by EPA to develop this MACT standard. It is our understanding that this regulation was developed based on the performance of 68 existing oil firing units and 46 new oil firing units, all of which were major sources. Our experience on campus, which often includes older boilers, is that older oil-fired boilers can only achieve a 2 ppm CO emissions level with pollution control equipment, which is contrary to the Agency's opinion (page 31908) that no add-on control technology is necessary to achieve the emission limits.

We would ask that the Agency test additional existing oil firing units that are not major sources for the purpose of confirming that they can meet the lower standards without additional pollution control equipment. We would be happy to assist the Agency by asking our membership, and other higher education institutions, to provide available hourly CO data. We do not have this data at this time.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 19

Comment: Comparisons with existing emissions limits
While EPA was unable to access data on smaller US boilers, much data as well as information on emissions regulations are available from many European countries and the European Union.

Europe, which has traditionally implemented stricter environmental standards than the US, has employed widespread AWC technologies for decades. Emissions data is also available in the AP-42 database. This database is maintained by EPA and is currently used by state air quality permitting agencies as a basis for decisions on the adequacy of boiler emissions controls. Table 4 compares the emissions limits from the draft area source rule to current limits from Europe and from the AP-42 database.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Data Corrections

Commenter Name: Sheldon Schultz
Commenter Affiliation: Yanke Energy
Document Control Number: EPA-HQ-OAR-2006-0790-0837
Comment Excerpt Number: 3

Comment: The basis for the 160 ppm at 7% oxygen level is flawed. Inclusion of school boilers that are typically less than 10 MMBtu/hr input is one key flaw in the analysis establishing the level. An additional problem with the school boilers is that they are not biomass boilers in the typical sense; the design is more of an incinerator with heat recovery.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1957.1, Excerpt Number 66.

Commenter Name: Los Angeles Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0397
Comment Excerpt Number: 34

Comment: We note in the database that although fully one-third of the biomass power industry is in California, only one of our plants was included in the database. We would like a much more thorough explanation of how the best performing or even the plants in the database were selected.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 10

Comment: At least one of the reported test data sets contains an error in the assumed f-factor used for converting reported emissions in units of 'lb/mmBtu' to units of 'ppmvd @ 3% O2'. The average reported CO emissions for the wood-fired Thompson Falls boiler is 67 ppmvd @ 3% O2. In their calculations, EPA notes that they applied an average f-factor based on all the reported f-factors in the Fuels for Schools data. RMB recalculated the average emissions (21 ppmvd @ 8.4% O2) based on the reported stack O2 concentration during the test. The recalculated average emissions were 29 ppmvd @ 3% O2. This discrepancy is likely caused by an error in EPA's assumed f-factor, although the magnitude of the discrepancy suggests that there may additional problems associated with this data set.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Houston Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0985
Comment Excerpt Number: 37

Comment: The Agency has done an inadequate job of verifying data quality. There is data used in the analyses for both rules that look suspect to a knowledgeable individual, and there are some clear errors such as the inclusion of data from a boiler reportedly burning only heavy oil in the floor analysis for biomass.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Houston Public Hearing Transcript
Commenter Affiliation: See transcript for detailed list of commenters
Document Control Number: EPA-HQ-OAR-2006-0790-0985
Comment Excerpt Number: 39

Comment: It is likely that many more errors exist in other places. Rules should not be promulgated on suspect data, and EPA should halt these proceedings until a thorough data validation has been completed. Most boilers burning biomass burn only biomass.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Carolina Dauzat
Commenter Affiliation: Rex Lumber
Document Control Number: EPA-HQ-OAR-2006-0790-0610
Comment Excerpt Number: 3

Comment: The EPA needs to use all available information and pursue additional data collection in an effort to set limits based on good information rather than the limited data these rules appear to be based.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Michael J. Hagenbarth
Commenter Affiliation: RockTenn
Document Control Number: EPA-HQ-OAR-2006-0790-1473.1
Comment Excerpt Number: 8

Comment: Third, the emissions dataset includes obvious errors that, if fixed, would have a significant impact on EPA's determination of the MACT floor and MACT standards. For example, several of the boilers used to determine the MACT floors have rated capacities of less than 10 mmBtu/hr. However, these units would not be subject to numeric emissions limitations under the Area Source Rule. Because EPA must determine existing source MACT standards based on emissions data from sources in the category or subcategory being regulated, emissions data from the small boilers cannot be used in setting emissions standards under the Area Source Rule.
Taken together, the available emissions data are inadequate and inaccurate and, thus, do not reasonably support the proposed standards.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Rob Barton and Ralph Roberson
Commenter Affiliation: Southern Company
Document Control Number: EPA-HQ-OAR-2006-0790-1978.1
Comment Excerpt Number: 8

Comment: The commenter recommends that EPA conduct a more thorough investigation of the data quality. At a minimum, EPA should perform an outlier check of all reported test data, including outliers within each reported test and outliers between tests for units that reported multiple tests. EPA could then exclude such test data or perform a further investigation to confirm whether the data is truly an outlier.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Joe Fierst
Commenter Affiliation: Wausau Paper
Document Control Number: EPA-HQ-OAR-2006-0790-1488.1
Comment Excerpt Number: 6

Comment: Wausau Paper's Rhinelander mill stoker boilers are considered by EPA to be top performers for mercury, Looking at the mercury data that EPA used for the Rhinelander mill reveals that EPA inappropriately applied the wrong statistical technique for Rhinelander's "non-detect" mercury data,

Response: No specific corrections to the data were specified, so no changes were made to the specified data.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 8

Comment: Coal Fired Units- Hg Top 12% Performers (2 units)

MASaintGobain - EU-523-01- 1958 vintage 207MMBtu/hr PC boiler with baghouse, common stack with 3 gas fired boilers. Only one emission test run at 1E-6 lb/MMBtu is listed in the emission test spreadsheet (unknown if that is the average of three runs, but in any case, there is no intrarun variability possible. No emission test report is provided. 10 coal samples over 2007-08 averaged 38 ppb Hg, giving average equivalent Hg of 3.6 lb/TBtu.

Response: An emission test report was requested from the facility on October 6, 2010. The facility submitted a test report, which was reviewed. The initially reported value was the average of three test runs conducted on March 8, 2006. The test report contained run-level data, which was processed into the EPA database in place of the three run average.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 9

Comment: WIBlountGeneratingStation - Boiler 8- 1957 vintage pulverized coal fired boiler, 400Mpph steam capacity. This is a NAICS 221 electric utility generating plant and should not be used for establishing area source ICI boiler Hg floor limits. This facility has 3 coal fired boilers

that were firing at 540MM, 598MM, and 274MMBtu/hr during emissions testing. There is no conceivable way this is an area source facility.

Response: It has been confirmed that this facility is a major source of hazardous air pollutant (HAP) emissions, and thus it's data will not be used in future area source analyses.

Commenter Name: Douglas J. Fulle
Commenter Affiliation: Oglethorpe Power Corporation
Document Control Number: EPA-HQ-OAR-2006-0790-1798.1
Comment Excerpt Number: 9

Comment: There are numerous errors and inadequacies in EPA's emissions database. If these problems are not corrected, and if the corrected data are not then used to recalculate the MACT floors and corresponding proposed standards, the final rule will be insupportable. For example, as explained above, 3-hour stack tests are conducted under normal operating conditions, which means that they do not reflect the differing emissions characteristics of startup and shutdown periods. The corresponding CO CEMS data support, rather than refute, the conclusion that CO emissions vary by load and that emissions during startup and shutdown cannot reasonably be accommodated by a standard based on emissions data from periods of normal operation.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Robert D. Bessette
Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 10

Comment: Liquid Fired Units- CO Top 12% Performers (15 units)- (investigation of only the top 2 units- inadequate time to investigate other top performers)

NJRebtex - Superior Boiler- (top performer)- 1997 vintage 25MMBtu/hr natural gas/No.4 Oil fired firetube boiler. CO data from 2005 emission test- only one run showed 0.05 ppm @ 7% O2 with operation at 5.1% O2 at full load. The other 2 runs listed 0 ppm; EPA only used the single run data point and corrected to 3% O2. No emissions test report provided, so no way to identify the calibration upscale span relative to the ability to read CO at under 1 ppm.

Response: We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes. We believe the changes resolve the commenters issue.

Commenter Name: Robert D. Bessette

Commenter Affiliation: Council of Industrial Boiler Owners, CIBO
Document Control Number: EPA-HQ-OAR-2006-0790-1783.1
Comment Excerpt Number: 11

Comment: WAEmeraldKalama -U-17-1979 vintage 30MMBtu/hr package watertube boiler firing natural gas and distillation bottoms. Single test run data reported for 2006 in lb/hr and converted to 0.151 ppm @3%O2 by EPA. No emission test report provided. However, that run as listed on the emissions data spreadsheet identifies the boiler as burning natural gas only; therefore, that unit is not appropriate for use in setting the liquid fired unit floor.

Response: The specified data corrections have been processed in the EPA database.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 52

Comment: Summaries of stack test reports were available for Thompson Falls and Council from the Fuels from Schools Program Report referenced in the ERG memo. The Thompson Falls test results listed in Appendix F-1 of the Floor memo are 0.037, 0.031, and 0.028 lb./hr., which agree with the test report. However, the test report also shows the runs in ppm - 23.9, 20.3, and 17.7, with O2 levels averaging 8.4%. The average of 66.5 ppm at 3% O2 in the ERG table is not in agreement with the test report. The Council, ID test report lists only values in lb./hr. and lb./MMBTU. It is not apparent how these were converted to ppm at 3% O2 by ERG since use of the F-factors method would give lower concentrations. These mistakes bring into question the basic data quality used to determine the MACT Floor.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Christian Richter and Jeff Hannapel
Commenter Affiliation: American Foundry Society
Document Control Number: EPA-HQ-OAR-2006-0790-1857.2
Comment Excerpt Number: 5

Comment: In addition, the emissions information on which the proposal is based is limited, inaccurate, and not representative of the population of boilers covered by the rule. Unless EPA substantially augments and improves these data, the standard will not be supported by the underlying record.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Jeffery S. Hannapel
Commenter Affiliation: National Association for Surface Finishing
Document Control Number: EPA-HQ-OAR-2006-0790-1840.1
Comment Excerpt Number: 6

Comment: The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. The data are inadequate to support the proposed standards, especially with regard to the proposed existing source numeric standards. When setting MACT emissions limitations, the statute requires EPA to determine MACT according to the "available" emissions information. This requirement does not, however, excuse EPA from using its resources and information gathering authority to obtain enough data to characterize sufficiently the units that will be subject to the rule. The Agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed Boiler GACT standards.

The emissions data have several significant flaws. First, the amount of data is wholly inadequate. By its own admission, EPA has collected very little emission data, including:
no emission data for POM for any subcategory, no mercury emission data for the liquid subcategory, mercury emission data for only 9 coal boilers and 2 biomass boilers, no state regulations or permit data for mercury or POM, and only limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers).

EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid), so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. Of course, for purposes of setting the existing source standard, EPA uses data from the top 12 percent of units for which data are available, which in this case represents an even smaller fraction of the units. So, EPA proposes to set a standard applicable to thousands of boilers based on data from less than 0.1 percent of the units in the subcategory.

EPA makes no effort to show that the limited data that are available are in any way representative of the population of boilers that will be subject to the rule. As an example, the Agency has failed to characterize the wood fired boilers in the database either by their size, the type of biomass fuel used (e.g., wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect HAP emissions. EPA's failure to assess whether the available data adequately characterize the boilers that will be subject to the proposed Boiler GACT is arbitrary and capricious.

Consequently, the available emissions data are inadequate and inaccurate and, therefore, do not reasonably support the proposed standards in the Boiler GACT.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: William C. Scott
Commenter Affiliation: Collum's Lumber Products, LLC
Document Control Number: EPA-HQ-OAR-2006-0790-1796.1
Comment Excerpt Number: 9

Comment: EPA should use all of the available data and get additional data, if needed, to avoid setting limits for thousands of boilers based on data from only a few. In some cases, the proposed limits are based on only one or two data points, and there are apparent errors in various data sheets.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Bill Perdue
Commenter Affiliation: American Home Furnishings Alliance, AHFA
Document Control Number: EPA-HQ-OAR-2006-0790-1970.1
Comment Excerpt Number: 11

Comment: The emissions dataset includes obvious errors that, if fixed, would have a significant impact on EPA's determination of the MACT floor and MACT standards. For example, several of the boilers used to determine the MACT floors have rated capacities of less than 10 mmBtu/hr. However, these units would not be subject to numeric emissions limitations under the Area Source Rule. Because EPA must determine existing source MACT standards based on emissions data from sources in the category or subcategory being regulated, emissions data from boilers less than 10 mmBtu/hr cannot be used in setting emissions standards under the Area Source Rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Paul Noe
Commenter Affiliation: American Forest and Paper Association, AF&PA
Document Control Number: EPA-HQ-OAR-2006-0790-1939.1
Comment Excerpt Number: 37

Comment: We do not believe EPA did an adequate job collecting a sufficient quantity of useful data to characterize this subcategory. Long term data are critical, since CO is known to exhibit large temporal variability. We believe EPA should obtain CEMS data and use them if numerical limits will be included in the final rule.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Brad Hunter
Commenter Affiliation: GreenWood Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2099.1
Comment Excerpt Number: 2

Comment: GWR feels there are a number of flaws with the EPA's analysis including the use of a poor data set that does not reflect the relates of small boilers.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: John Huber
Commenter Affiliation: National Oilheat Research Alliance
Document Control Number: EPA-HQ-OAR-2006-0790-1831.1
Comment Excerpt Number: 4

Comment: EPA in its supporting documentation for this rulemaking indicates that there are 168,000 boilers that will be affected by this rule. NORA has no strong contradictory evidence, but believes that the appropriate number is probably closer to 1 million. This estimate is based on interviews with several leading retail oil dealers, wherein they estimated the number of commercial or institutional customers as 10 to 20 percent. This translates into approximately 1 million units in the heating oil sector.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: John C. deRuyter
Commenter Affiliation: DuPont
Document Control Number: EPA-HQ-OAR-2006-0790-1964.1
Comment Excerpt Number: 4

Comment: It appears that emissions tests are not available for at least some of the top performers. That makes verification of data quality problematic. Based on what was seen for the Boiler/Process Heater Major Source MACT rule, it is likely that similar problems have occurred with the area source rule. It is imperative that every set of data used for determining a MACT Floor is carefully reviewed for quality assurance, quality control, and for identification and correction of errors if that can be done. EPA simply must do this to have a defensible outcome.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services

Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 6

Comment: NHDES is concerned about the limited data used for setting the emission limitations in the area and major source regulations. In the case of data availability, NHDES recommends that EPA utilize certified stack test data submitted by the states via the National Association of Clean Air Agencies (NACAA) to develop a more robust data set when developing emission limits.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Bill Thomas
Commenter Affiliation: Shuqualak Lumber Company
Document Control Number: EPA-HQ-OAR-2006-0790-1948.1
Comment Excerpt Number: 7

Comment: It appears there are also many errors in the data sets that were used. Finally, we are concerned about the quality of all the data used for establishing the MACT floors. Has any of the data been validated independently, or by EPA? What if data was flawed/poorly reported/contained errors/was misinterpreted? Should this be the basis of industry-changing regulations?

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Jim Simon
Commenter Affiliation: American Sugar Cane League
Document Control Number: EPA-HQ-OAR-2006-0790-2281.1
Comment Excerpt Number: 7

Comment: (1) Reliance on AP-42 Emission Factors for POM (as 7-PAH)

Bagasse-fired boilers are currently considered area sources for POM (as 7-PAH) due to reliance on old and inadequate AP-42 emission factors. EPA itself noted that both industry and regulators complain that emissions factors are out dated and "not representative of a particular source category." 75 Fed. Reg. 31903 (June 4, 2010).

AP-42 includes an emission factor for POM (uncontrolled), expressed as 0.001 pounds/ton of "wet, as-fired bagasse." This factor is based on a test conducted in 1976 at a single sugar mill in Hawaii. That mill's boilers combusted oil or bagasse or both. Gilmore Sugar Manual, 1975, p. 168. Thus, it is likely that the POM emissions measured in Hawaii resulted from oil combustion -- and no boiler in Louisiana combusts oil. The sugar mills in Louisiana utilize AP-42 to estimate

emissions, and are therefore obligated to calculate and include POM emissions in their Title V permits, even though they may only emit negligible POM (as 7-PAH).

Response: The final rule does not set emission limits for POM. We refer the commenter to the preamble to the final rule for changes made since proposal.

Commenter Name: Robert E. McKenna
Commenter Affiliation: Motor and Equipment Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1920.1
Comment Excerpt Number: 9

Comment: In light of extensive data sourcing and quality problems, EPA's standards are arbitrary and capricious. We believe the data that EPA gathered to support these rules reflects bias, is incomplete, and is fundamentally flawed. EPA's data collection efforts to support these rules were biased toward so-called "top performing facilities." EPA directed its information requests to units that it had reason to believe were the better performing units in each subcategory. This tainted sample has resulted in proposed standards that are inordinately stringent, not representative of the overall subcategories to which they apply, and not in accord with the legal standards.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Edward J. Wilusz
Commenter Affiliation: Wisconsin Paper Council
Document Control Number: EPA-HQ-OAR-2006-0790-2133
Comment Excerpt Number: 10

Comment: The emissions database includes numerous fundamental flaws that compromise the MACT floor analysis that is based on these data.
Given the limited comment period that has been provided on the Industrial Boiler MACT proposal, it simply has not been possible to conduct a thorough data quality assessment on EPA's entire emissions data base. EPA's failure to provide adequate time for an appropriate assessment of the data violates the Agency's obligation to provide a full and fair opportunity for public comment on the proposed rule. Within these severe time constraints, we conducted a spot check of 100 stack test reports and associated information from top performers in order to assess the quality of the data the Agency relied upon in calculating the MACT floors that underlie the proposed rule.

This spot check revealed numerous data errors – many of which, if corrected, would have a material impact on the stringency of EPA's calculated MACT floors and associated proposed standards. To name just a few, there was: (1) widespread inconsistency in the data reported under the Phase I and Phase II ICRs, such as entirely different methods of determining and reporting

“non detects”; (2) inconsistent reporting of dioxin/furan emissions testing results; (3) inconsistent and incompatible PM emissions testing methods; and (4) mischaracterization of boiler types, such as including a coal-fired boiler in the biomass subcategory. The number and magnitude of the errors provide clear evidence that the database is fundamentally flawed and that any standard derived from the database does not have adequate factual support.

To resolve this problem, EPA must conduct a thorough review of the database, correct or eliminate the flawed data, recalculate the MACT floors and associated proposed standards, and provide a new opportunity for public comments (including sufficient time for commenters to conduct their own comprehensive review of the data).

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 12

Comment: RMB has not conducted an assessment of the data quality used in the development of the proposed Area Source IB-MACT emissions standards. However, our review of the ICR database that was used in the development of the proposed Major Source IB-MACT emissions standards suggests that EPA did not adequately review the ICR emissions data prior to conducting the MACT floor analysis. We suspect that there are similar problems with the data used to develop the area source emissions standards. In fact, we have even less confidence in the area source data because it includes data from a non-EPA sanctioned program (U.S. Forestry Fuels for Schools and Beyond Program).
As a starting point for revising the proposed rule, RMB recommends that EPA conduct a more thorough investigation of the data quality. At a minimum, EPA should perform an outlier check of all reported test data, including outliers within each reported test and outliers between tests for units that reported multiple tests. EPA could then exclude such test data or perform a further investigation to confirm whether the data is truly an outlier.

Response: We used the best available data to us to set limits. We have continuously requested data from sources throughout the 3 years we have been developing the rule. WE have specifically requested additional information in the NPRM. We used all available and usable data to set the limits and estimate impacts.

Commenter Name: Robert R. Scott
Commenter Affiliation: New Hampshire Department of Environmental Services
Document Control Number: EPA-HQ-OAR-2006-0790-1952.1
Comment Excerpt Number: 13

Comment: In order to refine both the emission limits and averaging times, EPA should collect SSM data from CEMs installed at the facilities previously included in the MACT ICR.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Sarah E. Amick
Commenter Affiliation: Rubber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1918.1
Comment Excerpt Number: 13

Comment: The emissions dataset includes obvious errors that, if fixed, would have a significant impact on EPA's determination of the MACT floor and MACT standards. For example, several of the boilers used to determine the MACT floors have rated capacities of less than 10 mmBtu/hr. However, these units would not be subject to numeric emissions limitations under the Area Source Rule. Because EPA must determine existing source MACT standards based on emissions data from sources in the category or subcategory being regulated, emissions data from the small boilers cannot be used in setting emissions standards under the Area Source Rule. Taken together, the available emissions data are inadequate and inaccurate and, thus, do not reasonably support the proposed standards.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 14

Comment: At least one of the reported test data sets contains an error in the assumed f-factor used for converting reported emissions in units of 'lb/mmBtu' to units of 'ppmvd @ 3% O2', The average reported CO emissions for the wood-fired Thompson Falls boiler is 67 ppmvd @ 3% 02. In their calculations, EPA notes that they applied an average f-factor based on all the reported f-factors in the Fuels for Schools data. RMB recalculated the average emissions (21 ppmvd @ 8.4% O2) based on the reported stack O2 concentration during the test. The recalculated average emissions were 29 ppmvd @ 3% 02. This discrepancy is likely caused by an error in EPA's assumed f-factor, although the magnitude of the discrepancy suggests that there may additional problems associated with this data set.

Response: We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes.

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 15

Comment: Some of the data in EPA's MACT floor analysis spreadsheets indicates that units were co-firing gas during the emissions test. Gas co-firing introduces a low bias in the emissions for non-gas subcategories because emissions are averaged with a lower HAP-containing fuel. This bias can be significant depending on the gas firing rate and relative difference in pollutant concentration. This was a significant issue identified in our review of the Major Source IB-MACT ICR data. While the ICR data contains fuel-related information to confirm gas co-firing, there is insufficient data available in the Fuels for Schools data to confirm whether co-firing was also conducted during the reported emissions test.
RMB recommends that EPA verify whether the reported test data includes periods of gas co-firing and either exclude such data or adjust the data accordingly to remove the gas-firing bias. This would result in an emissions pool for each subcategory where the emissions are based on the equivalent of 100% combustion of the fuel type for that Subcategory.

Response: We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes. We believe the changes resolve the commenters issue.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research
Document Control Number: EPA-HQ-OAR-2006-0790-2140.1
Comment Excerpt Number: 6

Comment: RMB has not conducted an assessment of the data quality used in the development of the proposed Area Source IB-MACT emissions standards. However, our review of the ICR database that was used in the development of the proposed Major Source IB-MACT emissions standards suggests that EPA did not adequately review the ICR emissions data prior to conducting the MACT floor analysis. We suspect that there are similar problems with the data used to develop the area source emissions standards. In fact, we have even less confidence in the area source data because it includes data from a non-EPA sanctioned program (U.S. Forestry Fuels for Schools and Beyond Program).
As a starting point for revising the proposed rule, RMB recommends that EPA conduct a more thorough investigation of the data quality. At a minimum, EPA should perform an outlier check of all reported test data, including outliers within each reported test and outliers between tests for units that reported multiple tests. EPA could then exclude such test data or perform a further investigation to confirm whether the data is truly an outlier.

Response: We used the best available data to us to set limits. We have continuously requested data from sources throughout the 3 years we have been developing the rule. WE have specifically requested additional information in the NPRM. We used all available and usable data

to set the limits and estimate impacts. We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes.

Commenter Name: Gailyn Messersmith
Commenter Affiliation: Messersmith Manufacturing, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1949.1
Comment Excerpt Number: 1

Comment: The EPA's data set that was used to establish best of class CO and PM emission limits is very small and does not give a true picture of the wide variety of sizes and types of biomass boilers currently in operation or about to be commissioned.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Sheila C. Holman
Commenter Affiliation: North Carolina Department of Environment and Natural Resources
Document Control Number: EPA-HQ-OAR-2006-0790-2222.1
Comment Excerpt Number: 1

Comment: Minimum Data Quality Standards for Setting MACT Floors as Applied to GACT

EPA specifically solicits comment on this proposed action from State and local officials on page 31922.
Many of the same issues that were noted for the Major Source Rule also influence the setting of the MACT floor as it applies to potential GACT sources that fire oil, coal or biomass. MACT standards are quantitatively based on available emission test data to calculate the MACT floors and set emission limits. The actual numerical values of the standards are sensitive to the particular set of emission data collected and treated for each subcategory and pollutant. Given the sensitivity, it is reasonable to expect that by now EPA would have defined some form of minimum available data quantity/quality requirements in establishing standards to assure their basis is sufficiently rigorous, accurate, and representative. EPA is quite experienced in setting quality assurance (QA) requirements for industry to meet for enforcing emission standards, [Footnote: 40 CFR Part 60, Appendices B and F.] but so far is hesitant in setting its own QA requirements for developing emission standards.

The language in the Proposed Boiler GACT preamble is silent on EPA's use of any QA requirements applied to set subcategory emission standards. Interestingly, EPA requested comments on other related data quality issues in setting emission floors, including:

1. Approaches suitable to account for measurement variability in establishing the floor emission limit when based on measurements at or near the method detection level (MDL).

2. Whether there is a more appropriate approach to account for variability in the MACT floor analyses when there are emissions data from a limited number of units in the subcategory.

3. Whether EPA should consider reading the intent of the CAA to allow consideration of 5 sources rather than 12% when there is a source category with greater than 30 sources, but the EPA only has data for less than 30 sources.

Rather than wait until parts of the rule are challenged on insufficient available data-related issues, NC DAQ suggests EPA develop and use a set of data QA requirements and standard operating procedures (SOPs) upon which more defensible emission standards can be established. The data set QA requirements and SOPs should include:

- Minimum quantity of sources with data necessary to set a valid floor,
- Minimum percent of affected source population with data necessary to set a valid floor,
- SOP for treating MDL data in lieu of otherwise valid data, e.g., raising values that are below the MDL
to 3-times the MDL.

- SOP for handling data at or near the MDL.
- SOP for handling CEMS data.
- SOP for setting the floor where there are data for less than 30 affected sources, but where the affected source population exceeds 30 sources.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Per Carlsson
Commenter Affiliation: Scandinavian Cleantech Export Association
Document Control Number: EPA-HQ-OAR-2006-0790-2202.1
Comment Excerpt Number: 2

Comment: EPA's data set is incomplete and inaccurate regarding available technologies, boiler sizes.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Christy Sammon
Commenter Affiliation: Southeastern Lumber Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-1954.1
Comment Excerpt Number: 2

Comment: The data sets that EPA has used to support the rulemakings are fatally flawed.

A far less than complete review of the data set provided for the major source rule reveals apparent errors when compared to the stack test reports for facilities included in the data set. It can only be assumed that an adequate data quality review was not accomplished due to the time constraints imposed by the court mandate to publish these rules. EPA cannot promulgate rules based upon flawed or incorrect data.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Al Hankins, Jr.
Commenter Affiliation: Hankins Lumber Company, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1841.1
Comment Excerpt Number: 3

Comment: We are also concerned that EPA's survey that produced the new MACT floor did not include boilers or process heaters from non-major HAP facilities. We are aware of several boilers in our area that fire similar (biomass) fuels to ours, have similar capacities, and operate in the same industry, but were not included in EPA's survey. It seems that leaving those facilities out further biases the results of EPA's survey by only collecting data from the "best" and "biggest", rather than the typical in the category.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: Abbie Krebsbach
Commenter Affiliation: Montana Dakota Utilities Co
Document Control Number: EPA-HQ-OAR-2006-0790-1975.1
Comment Excerpt Number: 3

Comment: Due to time constraints, EEI reported that it was only able to conduct a spot check of approximately 100 of the stack test reports that the EPA used to determine the Area Source Boiler MACT Rule standards. EEI found that some of the data in the reports were erroneous, rendering the EPA's proposed standards inaccurate. Due to these findings, Montana-Dakota believes the EPA should further evaluate the data it is using for the Area Source Boiler MACT Rule standards and should allow more time for industry to review the data.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: C.A. Vandersteen
Commenter Affiliation: Louisiana Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2246
Comment Excerpt Number: 4

Comment: EPA should assure that its emissions databases are representative of all units and operating periods, and that its standards encompass the practical capabilities of controls and the variability in operations, fuels, raw materials and emission performance across the many regulated sectors.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: Martin Lunde
Commenter Affiliation: Citizen
Document Control Number: EPA-HQ-OAR-2006-0790-2065.1
Comment Excerpt Number: 5

Comment: Absence of data on smaller boilers and various biomass fuel types

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 5

Comment: Out of EPA's estimated total population of 10,958 biomass boilers, the Maximum Achievable Control Technology (MACT) CO and PM limits were determined by only 65 boilers (0.6%) and 20 boilers (0.2%), respectively. The biomass boilers that achieve the PM standard are not the same boilers that achieve the CO standard. The six biomass boilers in the dataset that are able to meet the Generally Achievable Control Technology (GACT) standard for PM have an average CO emission of 1,164 ppm, which is more than 11 times higher than the proposed CO limit for new boilers. The eight biomass boilers in the dataset that are able to meet the MACT standard for CO have an average PM emission of 0.23 lbs/MMBtu, which is more than seven times higher than the permitted PM limit (See Table 1 and 2 of submittal).

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: Per Carlsson
Commenter Affiliation: Scandinavian Cleantech Export Association
Document Control Number: EPA-HQ-OAR-2006-0790-2202.1
Comment Excerpt Number: 5

Comment: Defining all boilers less than 10 MMBtu/hr as “Small” Area Source Boilers, per the proposed rule, ignores the differing design characteristics of truly small boilers. EPA is making incorrect assumptions about the capabilities of commercial biomass boilers from 25,000 Btu to 2 MMBtu; this is especially evident when only boilers
>10 MMBtu/hr were used to determine EPA’s PM limits, while CO emission limits were developed with boilers >1.6 MMBtu/hr.
A representative dataset of existing (small, i.e. <10 MMBtu/hr) commercial biomass boilers would include units at rural businesses, institutional sites, and farms; they often emit PM at levels in excess of 1.0 lb/MMBtu. Without these and other small-scale commercial boilers included in the dataset, the data is biased towards the subset of the very best performing boilers and is not a representative sample of the actual biomass boiler population. If neccesary look for best performance in the European boiler population for existing small commercial biomass boilers.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1914.1, Excerpt Number 7.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2198.1
Comment Excerpt Number: 6

Comment: RMB has not conducted an assessment of the data quality used in the development of the proposed Area Source IB-MACT emissions standards. However, our review of the ICR database that was used in the development of the proposed Major Source IB-MACT emissions standards suggests that EPA did not adequately review the ICR emissions data prior to conducting the MACT floor analysis. We suspect that there are similar problems with the data used to develop the area source emissions standards. In fact, we have even less confidence in the area source data because it includes data from a non-EPA sanctioned program (U.S. Forestry Fuels for Schools and Beyond Program).

As a starting point for revising the proposed rule, RMB recommends that EPA conduct a more thorough investigation of the data quality. At a minimum, EPA should perform an outlier check of all reported test data, including outliers within each reported test and outliers between tests for units that reported multiple tests. EPA could then exclude such test data or perform a further investigation to confirm whether the data is truly an outlier.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Patrick J. Medvecz
Commenter Affiliation: Wausau Paper Corp
Document Control Number: EPA-HQ-OAR-2006-0790-2283
Comment Excerpt Number: 6

Comment: Wausau Paper's Rhinelander mill stoker boilers are considered by EPA to be top performers for mercury. Looking at the mercury data that EPA used for the Rhinelander mill reveals that EPA inappropriately applied the wrong statistical technique for Rhinelander's "non-detect" mercury data.

Response: The National Council for Air and Stream Improvement (NCASI) conducted an independent review of the specified mercury data and provided corrected emission values based on the proper detection limit method. The corrected values have been processed into the EPA database.

Commenter Name: Christopher S. Colman
Commenter Affiliation: Hess Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2168.1
Comment Excerpt Number: 6

Comment: The database is limited in the information it provides on smaller sources and oil (particularly residual fuel oil) sources. There are design differences that will make it impossible for these units to meet standards that are based on the performance of large major source units, which in many cases will have had add-on controls not cost effective for area source units.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 7

Comment: EPA's rush to comply with the unrealistic rulemaking schedule it agreed to in the IB MACT rulemaking has resulted in obvious and multiple flaws in the proposed MACT standards. EPA does not appear to have conducted its own quality assurance analysis of the ICR stack testing data. Even a cursory review of the IB MACT data by RMB Consulting revealed several important problems with EPA's analysis of the ICR data.

The EPA identified the ASEA Boiler No. 1 owned and operated by Archer Daniels Midland as the best performing coal-fired unit with respect to PM emissions. EPA reports filterable PM emissions for this unit of 0.0002 lb/MBTU. An examination of the test report shows that filterable PM using Method 29 is reported as 0.0002 lb/MBTU, but the report also lists filterable PM2.5 emissions of 0.0096 lb/MBTU. These results make no sense because filterable PM2.5 emissions are a subset of total filterable PM emissions. At least one of these two values must be incorrect. The total filterable PM value of 0.0002 lb/MBTU seems more suspect because that

level of PM emissions is (1) unprecedented in a coal-fired boiler and (2) at or below the quantification level of a gravimetric method, even for a 4-hour sampling run.

Response: The test report for this test was reviewed. It was found that the filterable PM values were from a combined Method 5/29 test. A separate OTM 27/28 train was conducted, and the PM2.5 values were taken from it. The filterable PM values reported with the OTM 27/28 train were much higher than the Method 5/29 train, thus the reason for the much larger PM2.5 values. The validity of both values were confirmed, but they should not be compared to each other because they were not measured concurrently.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 7

Comment: The proposed rule is inconsistent with existing standards used by state agencies and by European countries. While EPA was unable to access data on smaller US boilers, much data as well as information on emissions regulations are available from many European countries and the European Union. Europe, which has traditionally implemented stricter environmental standards than the US, has employed widespread Advanced Wood Combustion system technologies for decades. Emissions data is also available in the AP-42 database which is maintained by EPA and is currently used by state air quality permitting agencies as a basis for decisions on the adequacy of boiler emissions controls. In the absence of strict emissions limits, current biomass installations have particulate matter (PM) emissions levels below current AP-42 data for general available control technology (GACT) and equal to or below Europe's strictest policies.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Kyle Gibeault
Commenter Affiliation: Biomass Thermal Energy Council, BTEC
Document Control Number: EPA-HQ-OAR-2006-0790-1914.1
Comment Excerpt Number: 7

Comment: Defining all boilers less than 10 MMBtu/hr as "Small" Area Source Boilers, per the proposed rule, ignores the differing design characteristics of truly small boilers. EPA is making incorrect assumptions about the capabilities of commercial biomass boilers from 25,000 Btu to 2 MMBtu; this is especially evident when only boilers >10 MMBtu/hr were used to determine EPA's PM limits, while CO emission limits were developed with boilers >1.6 MMBtu/hr.

Also, there was no data on systems burning non-woody biomass fuels such as corn stover and grasses. Non-woody biomass fuels are common throughout the world, and are becoming more

prevalent in the U.S. Multiple federal programs, including the Biomass Crop Assistance Program, support the development of a robust domestic energy crop infrastructure. Non-woody fuels are part of the nation's renewable energy future, and EPA cannot sensibly regulate what it has not measured.

A representative dataset of existing (small, i.e. <10 MMBtu/hr) commercial biomass boilers would include units at rural businesses, institutional sites, and farms; they often emit PM at levels in excess of 1.0 lb/MMBtu. Without these and other small-scale commercial boilers included in the dataset, and without a diversity of biomass fuel types, the data is biased towards the subset of the very best performing boilers and is not a representative sample of the actual biomass boiler population.

Response: We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes. We believe the changes resolve the commenter's issues. We incorporated any new data that was usable into the MACT floor analysis. However, we did not have data necessary to develop MACT floors for additional subcategories.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 8

Comment: The EPA identifies an example Dominion Generation's Possum Point Power Station auxiliary boiler No. 1. as the 11th best performing oil-fired unit with regard to carbon monoxide ("CO") emissions. However, the test report clearly states that the Dominion unit only fires natural gas. The unit does not belong in the liquid fuel subcategory, much less as a best performing unit that is used to set the MACT floor for that subcategory.

Response: The specified data corrections have been processed in the EPA database.

Commenter Name: John T. Heard
Commenter Affiliation: Virginia Coal Association, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2155.1
Comment Excerpt Number: 8

Comment: Given the limited comment period that has been provided on the Industrial Boiler MACT proposal, it simply has not been possible to conduct a thorough data quality assessment on EPA's entire emissions data base. EPA's failure to provide adequate time for an appropriate assessment of the data violates the Agency's obligation to provide a full and fair opportunity for public comment on the proposed rule. Within these severe time constraints, we conducted a spot check of 100 stack test reports and associated information from top performers in order to assess

the quality of the data the Agency relied upon in calculating the MACT floors that underlie the proposed rule.
This spot check revealed numerous data errors — many of which, if corrected, would have a material impact on the stringency of EPA's calculated MACT floors and associated proposed standards. To name just a few, there was: (1) widespread inconsistency in the data reported under the Phase I and Phase II ICRs, such as entirely different methods of determining and reporting "non detects"; (2) inconsistent reporting of dioxin/furan emissions testing results; (3) inconsistent and incompatible PM emissions testing methods; and (4) mischaracterization of boiler types, such as including a coal-fired boiler in the biomass subcategory. The number and magnitude of the errors provide clear evidence that the database is fundamentally flawed and that any standard derived from the database does not have adequate factual support.
To resolve this problem, EPA must conduct a thorough review of the database, correct or eliminate the flawed data, recalculate the MACT floors and associated proposed standards, and provide a new opportunity for public comments (including sufficient time for commenters to conduct their own comprehensive review of the data).

The inability to reasonably ascertain which units will actually be used in setting the final Industrial Boiler MACT standards prevents commenters from developing meaningful comments on the emissions database and on EPA's manipulation of the data that ultimately will be used to set the standard.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Jay C. Moon
Commenter Affiliation: Mississippi Manufacturers Association
Document Control Number: EPA-HQ-OAR-2006-0790-2000
Comment Excerpt Number: 8

Comment: In light of extensive data sourcing and quality problems, EPA's standards are arbitrary and capricious. We believe the data that EPA gathered to support these rules reflects bias, is incomplete, and is fundamentally flawed. EPA's data collection efforts to support these rules were biased toward so-called "top performing facilities." EPA directed its information requests

to units that it had reason to believe were the better performing units in each subcategory. This tainted sample has resulted in proposed standards that are inordinately stringent, not representative of the overall subcategories to which they apply, and not in accord with the legal standards.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Lee B. Zeugin

Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 9

Comment: The No. 4 Vaporizer at the DAK Americas plant in Moncks Corner, South Carolina, is the unit identified as the best performing oil-fired unit for CO emissions. The narrative section of that unit's test report states that the CO concentration was essentially zero throughout the test runs. EPA used an average CO concentration of 0.0515 ppm [Footnote: The number of significant figures reported by EPA indicates a level of scientific certainty that finds no support in the test report.] for its analysis of this unit's test data. RMB Consulting's examination of the raw, 1-minute CO data revealed that at least half of the values were negative concentrations, suggesting either zero drift and/or calibration issues. RMB Consulting also observed that the CO analyzer was operated on a 0 to 500 ppm range and was calibrated with cylinder gases having concentrations of 231 and 484 ppm. In order to make credible measurements at the extremely low levels reported, the CO analyzer should have been operated on a 0 to 10 ppm range with a nominal calibration gas concentration of 5 ppm. The low-level CO concentrations reported are simply not credible given the way the CO analyzer seems to have been operated.

The fact that RMB Consulting was able to identify such obvious errors in a very limited review of the IB MACT database raises troubling questions about EPA apparent blind acceptance of the ICR test data given time limitations. This rush to use the ICR data without thorough review and analysis is exactly the problem UARG envisioned when it challenged the consent decree schedule EPA agreed to follow in the EGU MACT rulemaking. EPA needs to conduct a thorough QA review of the IB ICR data and only after that review repropose IB MACT limits.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1957.1, Excerpt Number 66.

Commenter Name: Michael Hutcheson
Commenter Affiliation: Ameren Corp.
Document Control Number: EPA-HQ-OAR-2006-0790-2012.1
Comment Excerpt Number: 9

Comment: Ameren reviewed the stack test data in the database for the liquid fuel and gas fueled subcategories and found several instances of poorly reported or obviously erroneously reported data used to develop MACT floors. It was also found that the boilers used to establish the MACT floors were not representative of the boiler population as a whole and should not be used to establish MACT standards for the subcategory. The issues with the reported data used to establish the MACT floors are detailed below.
i. The Conemaugh Plant in New Florence reported a PM sample run (no. 2) which is 1/4 the value of other 2 runs and appears to be an outlier.
ii. The Milan Army Ammunition Plant in Tennessee reported data from a boiler less than 15 MMBtu/hr with no control and this data was used to establish MACT floor for PM and Hg as a best controlled source. The PM data included a non-detect value which indicates a problem with the stack test run. The data for Hg was based on several fuel sample analyses even for a single

source at the plant but an Hg stack test of that source was not performed and the source could therefore not be in the best controlled 12 %. The source is uncontrolled burning diesel fuel and the HG floor and variability analysis utilized 29 fuel sample data points at reported at below the same method detection limit. This data skews the variability analysis as it encompasses almost half of the data used to establish variability. The dioxin/furan data from this source was not used to establish the floor but also appears to be flawed as the source reported no detection limits even though the data ranked no. 4 and the 3 sources ranked ahead were all reported as DLL and all but one source after it reported dioxin/furan results as BDL or DLL except 1 (out of 17 boilers).

iii. The GP plant in Green Bay Wisconsin reported PM values for a boiler rated at 95 MMBtu per hour firing wastewater sludges. This source should not be used to establish MACT floor for sources firing fuel oils because based on the definition proposed for solid wastes, no other facility could utilize the sludges from this plant as a fuel without being subject to the incinerator MACT. Additionally, the US EPA selectively chose the lowest test out of three from this source. If the US EPA is going to utilize test data from a source to establish a standard, it must use all stack test data from that source.

iv. The Cherokee Pharm plant in Pennsylvania was used to establish the PM MACT floor based on a 1998 test burning a combination of NG and fuel oil with no indication of the relative percentages of each. US EPA needs to establish that the majority fuel was not NG or at least establish the relative percentages of fuels. Ameren believes that it is improper for the MACT floor for liquid fuels to be based on source test which utilized any amount of NG or other gaseous fuels as they will bias the results and are not reflective of liquid fuel fired boilers. In addition, the source reported both the filterable and total PM as the same value. This is obviously an error and may indicate under reporting of total PM or over reporting of filterable PM.

v. The Milliken plant in Dewey, South Carolina was used to establish the PM, Hg, HCL and dioxin/furan MACT floors. The data from this plant is based on a boiler burning Anhydrides Waste in a boiler rated at 10.5 MMBtu/hr. No other facility in the nation could utilize this fuel, and as a result, it is improper to utilize the results from this facility as a basis for establishing MACT standards for the entire country. The boiler is uncontrolled and obtains the maximum degree of emission reduction solely by virtue of burning a byproduct fuel which is unavailable to all other facilities. The data from this plant should be put into an “other/byproduct fuels” subcategory which establishes limits for non-petroleum based fuels. In addition, the information in the database indicates the particulate results used to establish the MACT floor were based on method OTM 27 which measures PM10 or PM2.5 emissions even though the data was reported as PM. The results of the particulate fractions testing are being compared against sources who are reporting PM filterable data based on US EPA method 5 and is therefore biased low. This testing methodology is different than that required under the standard, results in biased low data and is also different than all other methods used to establish the PM MACT floor and therefore should be excluded from the analysis.

vi. The GP plant in Duluth, MN was used to establish the Hg floor based on data from a boiler rated at 43 MMBtu/hr and firing #6 fuel oil with no controls. The stack test data indicates that the results are below detectable limits.

vii. The FPL Energy Wyman Plant in Maine is a 72 MMBtu/hr #6 fuel oil fired boiler without controls used to establish the MACT floor for Hg even though the Facility reported relatively high PM emission rates while simultaneously reporting very low Hg. Fuel samples taken during the test resulted in Hg levels on the order of 10-5 #/MMBtu and stack test results were on the order of 10-8 #/MMBtu. This is a loss of 99% of the Hg in the fuel at the stack in a unit with no

controls. Detection limit values were not reported and because reported levels are at or below the limit of detection for other tests, it is likely the values are representative of method detection limits and not actual detections of Hg in the stack samples. Because Hg disappears into the ether between the fuel and stack and the suspect manner for which the data for Hg is from stack test is reported, the use of this data is suspect. US EPA should not use data from this Facility for establishing the MACT floor without a thorough quality assurance analysis of the data. Additionally, the US EPA appears to have erred by using the stack test data from this plant and multiple fuel analysis data points from this Facility. In essence, even though the US EPA had fuel variability data from this source, it ignored that data potentially due to the very high Hg values reported. If US EPA is going to maintain that this source is a top performer for Hg, it must use the fuel variability data collected from this source to establish the UPL as it has done with other sources in the top 12 %.

viii. The Cognis plant in Il Boiler 1 is a 67.3 MMBtu/hr boiler burning bioliquids and NG with no controls. Because the biofuels which put this unit in the liquid subcategory are not available at other facilities, it is inappropriate to utilize this facility's boiler emission data for the MACT floor analysis for sources burning commercially available petroleum liquids. Other problems with use of data from this Facility include that the MACT floor includes data from both Boiler 2 and Boiler 1 at the Facility as separately ranked sources even though only one boiler was tested (Boiler 1) and the values for ranking are based on the fuel sample analysis for the boilers. The sample analysis, however, is not representative of the fuel combusted in the boiler as the boilers are dual fuel as they combust a mixture of the bio liquid and NG. The sample data is only representative of the liquid portion of the fuel and is therefore not representative of stack emissions. Because the fuel sample analyses were ND, both values for Boiler 1 and Boiler 2 were the same, resulting in the same ranking for both units. This is improper for establishing the MACT floor. MACT floor data needs to be based on stack test data because it must represent the "maximum degree of emission reduction achievable". Basing the MACT floor on a combination of stack and fuel sample data is not representative of the degree of emission reduction which is achieved from any combustion controls and is therefore biased. Additionally, the animal fats liquid fuel tested has a relatively high higher heat value and is therefore prone to obtaining lower detection limits from fuel sampling on #/heat input basis. This biases the BDL results from this Facility falsely indicating the Hg may be lower relative to other sources then it actually is on a heat input basis.

ix. The Boeing facility in Ridley Park, Pennsylvania tested a 42 MMBtu/hr boiler burning #6 fuel oil with no controls. All results from these tests were non-detect and this boiler ranked as achieving the maximum degree of emission reduction achievable based on the low Hg detection limits during the stack test of this unit.

x. The Consolidated Edison 59th St. Station in New York, NY is a 180 MMBTu/hr boiler burning No. 6 fuel oil with a fabric filter and sorbent injection controls. This Facility reported Hg emissions as above detection limit values at the level of 0.15 #/tBtu. This is an order of magnitude lower than normal detectable levels of Hg and is therefore suspect. Ameren believes this source may have incorrectly calculated the method detection limits for the testing performed.

xi. The SD Warren plant in Somerset, Maine was used to establish the Hg floor for Hg. The US EPA indicates in a Table in appendix C-2 to the memorandum on the MACT floor analysis that test data from a Package boiler at the site was used to establish the MACT floor. Based on appendix C-5, the data is from fuel testing of mixed fuels at the site. However this data is not available in the emissions database in the docket and does not correspond to any emissions

testing at the facility. In other reporting for the site, the source reported non detect data at 1/2 the method detection limit. This is contrary to the instructions for reporting in the ICR and as a result all data from the facility is suspect and should be thoroughly quality assured. In addition, US EPA should not be using data not reported in the emissions test database for the docket. The data can not be adequately reviewed and commented upon without seeing the unadulterated data prior to US EPA manipulations.

xii. The Electric Boat facility in Connecticut reported Hg data on EMU 17 which is a 7 MMBtu/hr boiler reportedly burning no. 4 fuel oil with no air pollution control equipment. The source is not large enough to even consider for the proposed source category which is boilers > 10 MMBtu/hr, is not, and cannot be representative of the emissions from larger boilers on the order of hundreds of MMBtu/hr. In addition, the source indicates that four (4) hg runs were performed based on test run numbering; however, one run was not included in the database. The Facility also provided data on a single fuel sample (Sample 1) which was attributed to two emission units and that single sample analysis was used twice to establish the MACT floor. The MACT floor should not include data from the Electric Boat facility as it is not representative of source category and the misreported data needs to be deleted from the database. This source was also included in the MACT floor for dioxin/furan testing. Because of its size it should not be used to establish the MACT floor for D/F.

xiii. The US Steel Gary Works in Indiana reported Hg emissions from a 500 MMBtu/hr boiler with no controls burning 13 % fuel oil and 87 % blast furnace gas and natural gas. This source is not representative of the liquid fuels subcategory as it is primarily fueled using by-product gases. In addition, the fuel testing of the fuel oil during the test indicates that No. 4 fuel oil was sampled and analyzed, however, test data indicates that No. 6 fuel oil was burned. This discrepancy and the fact that liquid fuels are not the primary fuels should disqualify the data from this source from being used to establish the MACT floor.

Response: The specified data corrections have been processed in the EPA database.

Commenter Name: John Donahue
Commenter Affiliation: Sappi Fine Paper North America
Document Control Number: EPA-HQ-OAR-2006-0790-2210.1
Comment Excerpt Number: 9

Comment: The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. In short, the data are utterly inadequate to support the proposed standards – especially with regard to the proposed existing source numeric standards. When using a § 112(d) approach to standard setting, the statute requires EPA to determine MACT according to the “available” emissions information; however, this does not excuse EPA from using its resources and information gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The Agency’s failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: Scott Manley
Commenter Affiliation: Wisconsin Manufacturers and Commerce
Document Control Number: EPA-HQ-OAR-2006-0790-2258.1
Comment Excerpt Number: 9

Comment: Despite the decade and a half long process that lead to the proposed rules, the Agency based the standards on a relatively minute pool of relevant data. This is best demonstrated by the fact that EPA is faced with the question of what to do about subcategories of over 30 sources where data is so limited that the top 12% is represented by only one or two sources. 75 Fed. Reg. 32022. Given that the Clean Air Act requires
EPA consider at least five sources in such a situation, the ultimate solution to this concern would have been to have collected more data in the first place.

Response: We used the best available data to us to set limits. We have continuously requested data from sources throughout the 3 years we have been developing the rule. WE have specifically requested additional information in the NPRM. We used all available and usable data to set the limits and estimate impacts.

Commenter Name: John Donahue
Commenter Affiliation: Sappi Fine Paper North America
Document Control Number: EPA-HQ-OAR-2006-0790-2210.1
Comment Excerpt Number: 10

Comment: The emissions data have three basic problems. First, the amount of data is wholly inadequate. Per the floor memo [EPA-HQ-OAR-2006-0790-0049], EPA has collected very little emission data:
* no emission data for POM for any subcategory,
* no mercury emission data for the liquid subcategory,
* mercury emission data for only 9 coal boilers and 2 biomass boilers,
* no state regulations or permit data for mercury or POM,
* limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers)
EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid)[EPA-HQ-OAR-2006-0790-0037], so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. Of course, for purposes of setting the existing source standard, EPA uses data from the top 12% of units for which data are available, which in this case represents an even smaller fraction of the units. So, EPA proposes to set a standard applicable to thousands of boilers based on data from less than 0.1% of the units in the subcategory. This data record is facially insufficient.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: John Donahue
Commenter Affiliation: Sappi Fine Paper North America
Document Control Number: EPA-HQ-OAR-2006-0790-2210.1
Comment Excerpt Number: 11

Comment: EPA makes no effort to show that the limited data that are available are in any way representative of the population of boilers that will be subject to the rule. Again using the biomass subcategory as an example, the Agency has failed to characterize the wood fired boilers in the database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect HAP emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size. EPA's failure to investigate whether the available data adequately characterize the boilers that will be subject to the Area Source Rule is arbitrary and capricious.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: John Donahue
Commenter Affiliation: Sappi Fine Paper North America
Document Control Number: EPA-HQ-OAR-2006-0790-2210.1
Comment Excerpt Number: 12

Comment: The emissions dataset includes obvious errors that, if fixed, would have a significant impact on EPA's determination of the MACT floor and MACT standards. For example, several of the boilers used to determine the MACT floors have rated capacities of less than 10 mmBtu/hr. However, these units would not be subject to numeric emissions limitations under the Area Source Rule. Because EPA must determine existing source MACT standards based on emissions data from sources in the category or subcategory being regulated, emissions data from the small boilers cannot be used in setting emissions standards under the Area Source Rule. The available emissions data are inadequate and inaccurate and, thus, do not reasonably support the proposed standards.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Ben Brandes
Commenter Affiliation: National Mining Association
Document Control Number: EPA-HQ-OAR-2006-0790-1980.1
Comment Excerpt Number: 12

Comment: The Emissions Database Includes Numerous Fundamental Flaws That Compromise the MACT Floor Analysis That is Based on These Data. Given the limited comment period that has been provided on the Industrial Boiler MACT proposal, it simply has not been possible to conduct a thorough data quality assessment on EPA's entire emissions data base. EPA's failure to provide adequate time for an appropriate assessment of the data violates the Agency's obligation to provide a full and fair opportunity for public comment on the proposed rule. Within these severe time constraints, we conducted a spot check of approximately 100 stack test reports and associated information from top performers in order to assess the quality of the data the Agency relied upon in calculating the MACT floors that underlie the proposed rule.
This spot check revealed numerous data errors – many of which, if corrected, would have a material impact on the stringency of EPA's calculated MACT floors and associated proposed standards. To name just a few, there was: (1) widespread inconsistency in the data reported under the Phase I and Phase II ICRs, such as entirely different methods of determining and reporting ?non detects; (2) inconsistent reporting of dioxin/furan emissions testing results; (3) inconsistent and incompatible PM emissions testing methods; and (4) mischaracterization of boiler types, such as including a coal-fueled boiler in the biomass subcategory. The number and magnitude of the errors provide clear evidence that the database is fundamentally flawed and that any standard derived from the database does not have adequate factual support.
To resolve this problem, EPA must conduct a thorough review of the database, correct or eliminate the flawed data, recalculate the MACT floors and associated proposed standards, and provide a new opportunity for public comments (including sufficient time for commenters to conduct their own comprehensive review of the data).

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Martin T. Booher
Commenter Affiliation: Ethan Allen Interiors, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-1974.1
Comment Excerpt Number: 14

Comment: As discussed below, Ethan Allen ultimately believes that EPA should not establish emissions standards for biomass- and oil-fired boilers. However, should EPA conclude that emission limits are necessary, it is imperative that the agency collect additional emissions and economic data prior to establishing CO emissions standards for biomass- and oil-fired boilers so that the agency can properly: (1) Develop a MACT floor that is consistent with legal precedent and representative of what the best performing 12 percent of similar sources in each category is actually achieving (including a demonstration that 6% of each source category can meet the existing source standard); and (2) Consider more representative economic data to inform its analysis of appropriate beyond-the-floor requirements.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 16

Comment: The emissions data on which EPA relies are scant, inaccurate, and not representative of the population of boilers that will be subject to the rule. In short, the data are inadequate to support the proposed standards – especially with regard to the proposed existing source numeric standards. The statute requires EPA to determine MACT according to the "available" emissions information; however, this does not excuse EPA from using its resources and information gathering authority to obtain enough data to adequately characterize the units that will be subject to the rule. The agency's failure to collect sufficient information is arbitrary and capricious and compromises the validity of the proposed standards.
The emissions data have three basic problems. First, the amount of data is wholly inadequate. Per the floor memo [EPA-HQ-OAR-2006-0790-0049] , EPA has collected very little emission data:
* no emission data for POM for any subcategory,
* no Hg emission data for the liquid subcategory,
* Hg emission data for only 9 coal boilers and 2 biomass boilers,
* no state regulations or permit data for Hg or POM,
* limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers)
EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid)[EPA-HQ-OAR-2006-0790-0037], so the small amount of data collected is representative of the performance of less than 1 percent of these boilers. Of course, for purposes of setting the existing source standard, EPA uses data from the top 12% of units for which data are available, which in this case represents an even smaller fraction of the units. So, EPA proposes to set a standard applicable to thousands of boilers based on data from less than 0.1% of the units in the subcategory. This data record is facially insufficient.

Response: We used the best available data to us to set limits. We have continuously requested data from sources throughout the 3 years we have been developing the rule. WE have specifically requested additional information in the NPRM. We used all available and usable data to set the limits and estimate impacts. We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 17

Comment: EPA makes no effort to show that the limited data that are available are in any way representative of the population of boilers that will be subject to the rule. Using the biomass subcategory as an example, the agency has failed to characterize the wood fired boilers in the

database either by their size, the type of biomass fuel used (wood, bark, agricultural residue, moisture level, etc.), the boiler design or load pattern. Each of these important factors can affect HAP emissions. By way of contrast, in the proposed major source industrial boiler MACT rule, which has far fewer affected facilities than the Area Source Rule, the biomass boilers were subcategorized for design and size. EPA's failure to investigate whether the available data adequately characterize the boilers that will be subject to the Area Source Rule is arbitrary and capricious.

Response: See response for DCN EPA-HQ-OAR-2006-0790-2007, Excerpt Number 16.

Commenter Name: Bruce A. Steiner
Commenter Affiliation: American Coke and Coal Chemicals Institute
Document Control Number: EPA-HQ-OAR-2006-0790-2007
Comment Excerpt Number: 18

Comment: The emissions dataset includes obvious errors that, if fixed, would have a significant impact on EPA's determination of the MACT floor and MACT standards. For example, several of the boilers used to determine the MACT floors have rated capacities of less than 10 MMBTU/hr. However, these units would not be subject to numeric emissions limitations under the Area Source Rule. Because EPA must determine existing source MACT standards based on emissions data from sources in the category or subcategory being regulated, emissions data from the small boilers cannot be used in setting emissions standards under the Area Source Rule. Taken together, the available emissions data are inadequate and inaccurate and, thus, do not reasonably support the proposed standards.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1925.1, Excerpt Number 20.

Commenter Name: Jim Griffin
Commenter Affiliation: American Chemistry Council
Document Control Number: EPA-HQ-OAR-2006-0790-1925.1
Comment Excerpt Number: 20

Comment: EPA Cannot Set Numerical Emission Limits Without First Gathering More Data. EPA relied on a very small amount of data to develop the proposed standards. As disclosed in the preamble and in its floor memo, EPA-HQ-OAR-2006-0790-0049, EPA has very little emission data:
- no emission data for POM for any subcategory,
- no mercury emission data for the liquid subcategory,
- no surrogate for mercury, but CO as a surrogate for POM
- mercury emission data for only 9 coal boilers and 2 biomass boilers,
- no state regulations or permit data for mercury or POM,
- a few State permits with CO limits for coal, oil and wood-fired boilers,

- limited emissions data for CO (5 coal boilers, 30 wood boilers, and 68 oil boilers)

EPA has estimated that there are almost 183,000 existing area source boilers at 92,000 facilities (3,710 coal, 10,958 biomass, and 168,003 liquid), EPA-HQ-OAR-2006-0790-0037 so the small amount of data collected is representative of the performance of a very small fraction of existing area source boilers.

Response: We used the best available data to us to set limits. We have continuously requested data from sources throughout the 3 years we have been developing the rule. WE have specifically requested additional information in the NPRM. We used all available and usable data to set the limits and estimate impacts. We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes.

Commenter Name: Alicia Oman
Commenter Affiliation: National Association of Manufacturers
Document Control Number: EPA-HQ-OAR-2006-0790-2234.1
Comment Excerpt Number: 20

Comment: EPA's data is rife with errors.

As our members and other organizations review the data underlying EPA's proposed rule, we continue to identify notable errors that renders the data utterly unreliable and thus in violation of Clean Air Act standards. This include errors in fuel and boiler categorizations, errors in calculation of detection limits, errors in measurement techniques that render test results invalid, and others. Fundamentally, failure to correct such data errors will result in arbitrary and capricious rulemaking.

Errors have been found in data from sources that EPA has identified as "top performers." Errors in "top performer" data is particularly problematic, because that data are the foundation for EPA's calculation of MACT floors that will apply to all sources in the same subcategory emitting that pollutant. Specific examples of such data errors are specifically detailed in comments by others, but include: a top performer in the Gas 2 subcategory actually burns petroleum coke and not coke oven gas; the CO limit for biomass stoker boilers was based on top performer data from a suspension burner that was misclassified as a stoker; the dioxins/furans limit for biomass stoker boilers and coal fluidized boilers was based on data that had been reported on a Toxic Equivalency Quantity (TEQ) basis and was mistakenly corrected to its TEQ value a second time, resulting in values an order of magnitude lower; the Hg limit for biomass boilers was based on data that did not follow the required Method 29 procedures, where the source has recently asked EPA to remove data from the database.

To resolve this problem, EPA must conduct a thorough review of the database, correct or eliminate the flawed data, recalculate the MACT floors and associated proposed standards, and provide a new opportunity for public comments (including sufficient time for commenters to conduct their own comprehensive review of the data). Finalizing the proposed standards with

these underlying errors would render the standards immediately indefensible. See e.g., Columbia Falls Aluminum Co. v. EPA, 139 F.3d 914, 923 (D.C. Cir. 1998) ("An agency's use of a model is arbitrary if that model "bears no rational relationship to the reality it purports to represent.").

Response: See response for DCN EPA-HQ-OAR-2006-0790-2140.1, Excerpt Number 6.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 65

Comment: UNSOUND EMISSION TEST DATA
In one or more public forums, EPA staff acknowledged that it performed little, if any, quality assurance on the stack testing database. Even a cursory examination of EPA's IB MACT database verifies the absence of quality assurance. For example, EPA identified the ASEA Boiler No. 1 owned and operated by Archer Daniels Midland (ADM) in Des Moines, IA as the best performing coal-fired unit with respect to PM emissions. For this unit, EPA lists filterable PM emissions to be 0.0002 lb/106 Btu.13 However, when we examine the ADM test report, we not only find the 0.0002 lb/106 Btu value for PM from the Method 29 filter analysis, but we also observe that ADM reported average filterable PM2,5 emissions to be 0.0096 lb/106 Btu. Of course, filterable PM2,5 is a subset of total filterable PM emissions. For a well-controlled source like this ADM boiler, PM2,5 might be 50 to 60 percent total filterable PM emissions. However, there is no conceivable way to reconcile total filterable PM emissions being X50 times less than filterable PM2.5 — at least one of the two PM averages must be incorrect. Certainly, the 0.0002 value should be considered suspect because that measurement would (1) reflect an unprecedented PM concentration and (2) be at or below the quantification level of the gravimetric method, even for 4-hour sampling runs.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1957.1, Excerpt Number 7.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 66

Comment: We felt the need to examine some of the underlying data that EPA used to support a CO emission limit of 1 ppm by volume for oil-fired units. A CO emission limit of 1 ppm certainly grabs your attention, especially when you realize that the national ambient air quality limit (NAAQS) for CO is 9 ppm for an 8-hour average.`` We cannot identify or think any other instance in EPA's 40-year history where the Agency has proposed to set an emission limit that is considerably lower than a NAAQS, which in and of itself is protective of public health and welfare.I5 EPA identified the No. 4 Vaporizer owned and operated by DAK Americas in

Moncks Corner, SC as the best performing oil-fired unit with respect to CO emissions. According to the narrative in the test report, the CO concentration was essentially zero throughout the test runs.16 For its analysis, EPA used an average CO concentration equal to 0.0515 ppm (note the significant figures). We examined the raw (1-minute) CO data and observed that at least half of the values were negative concentrations, suggesting either zero drift and/or calibration issues. We also observed the CO analyzer was operated on a 0 to 500 ppm range and was calibrated with a cylinder gases having concentrations of 231 and 484 ppm, respectively. If one wanted to make credible measurements in the range claimed by the test contractor, the CO analyzer should have been operated on a 0 to 10 ppm range with a nominal calibration gas concentration of 5 ppm. Given the way the CO analyzer appeared to have been operated, such low-level CO concentrations are simply not credible. [See submittal for references.]

Response: We used the best available data to us to set limits. We have continuously requested data from sources throughout the 3 years we have been developing the rule. WE have specifically requested additional information in the NPRM. We used all available and usable data to set the limits and estimate impacts. We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes.

Commenter Name: Lee B. Zeugin
Commenter Affiliation: Utility Air Regulatory Group
Document Control Number: EPA-HQ-OAR-2006-0790-1957.1
Comment Excerpt Number: 67

Comment: EPA identified Auxiliary Boiler No. 1 owned and operated by Dominion Generation's Possum Point Power Station as the 11th best performing oil-fired unit with respect to CO emissions. The problem is, as the report clearly states, the Dominion unit only fires natural gas. The Dominion unit does not belong in the liquid fuel subcategory, much less the pool of MACT floor units.

Response: The specified data corrections have been processed in the EPA database.

Emission Data Standardization Techniques

Commenter Name: Bob Perry
Commenter Affiliation: FirstEnergy Corp
Document Control Number: EPA-HQ-OAR-2006-0790-1959.1
Comment Excerpt Number: 13

Comment: At least one of the reported CO test data sets using EPA Reference Method 10 (RM-10) is within the range of uncertainty for the test method. The accuracy for most nondispersive

infrared analyzers (NDIR) is approximately ±5 percent of span after calibration. The average reported CO emissions for the Thompson Falls wood-fired boiler is 20.6 PPM using an analyzer span value of 600 PPM. The accuracy of RM-10 in this case is ±30 PPM. These test runs should be treated as "non-detect" values. RMB recommends that EPA screen the remaining MACT floor data to determine whether similar problems exist for other test data.

Response: We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes. We believe the changes resolve the commenter's issue.

Commenter Name: Arthur Blazer
Commenter Affiliation: Council of Western State Foresters
Document Control Number: EPA-HQ-OAR-2006-0790-1962.1
Comment Excerpt Number: 6

Comment: In establishing Generally Available Control Technologies (GACT) limits for boilers 10 mmBtu/hr or less in size, the EPA states that, all PM test data were taken from boilers "greater than 10 mmBtu/h in size." In other words, while filters may be GACT for boilers greater than 10 mmbtu/hr, filters are not GACT for boilers less than 10 mmbtu/hr. We recommend EPA review the report commissioned by the Western Forestry Leadership Coalition entitled, "Emission Controls for Small Wood Boilers" for more information on smaller systems. The report can be found at: http://www.rsginc.com/emission-controls-for-small-wood-fired-boilers/

Response: We have revised the final standards and we refer to the preamble to the final rule for a discussion of the changes. We believe the changes resolve the commenters issue.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research
Document Control Number: EPA-HQ-OAR-2006-0790-2140.1
Comment Excerpt Number: 8

Comment: At least one of the reported test data sets contains an error in the assumed f-factor used for converting reported emissions in units of 'lb/mmBtu' to units of 'ppmvd @ 3% O2'. The average reported CO emissions for the wood-fired Thompson Falls boiler is 67 ppmvd @ 3% O2. In their calculations, EPA notes that they applied an average f-factor based on all the reported f-factors in the Fuels for Schools data. RMB recalculated the average emissions (21 ppmvd @ 8.4% O2) based on the reported stack O2 concentration during the test. The recalculated average emissions were 29 ppmvd @ 3% O2. This discrepancy is likely caused by an error in EPA's assumed f-factor, although the magnitude of the discrepancy suggests that there may additional problems associated with this data set.

Response: The specified data corrections have been processed in the EPA database.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2198.1
Comment Excerpt Number: 8

Comment: At least one of the reported test data sets contains an error in the assumed f-factor used for converting reported emissions in units of 'lb/mmBtu' to units of 'ppmvd @ 3% O2'. The average reported CO emissions for the wood-fired Thompson Falls boiler is 67 ppmvd @ 3% O2. In their calculations, EPA notes that they applied an average f-factor based on all the reported f-factors in the Fuels for Schools data. RMB recalculated the average emissions (21 ppmvd @ 8.4% O2) based on the reported stack O2 concentration during the test. The recalculated average emissions were 29 ppmvd @ 3% O2. This discrepancy is likely caused by an error in EPA's assumed f-factor, although the magnitude of the discrepancy suggests that there may additional problems associated with this data set.

Response: The specified data corrections have been processed in the EPA database.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2198.1
Comment Excerpt Number: 9

Comment: Potential Negative Bias in Reported Emissions Due to Natural Gas Co-firing

Some of the data in EPA's MACT floor analysis spreadsheets indicates that units were co-firing gas during the emissions test. Gas co-firing introduces a low bias in the emissions for non-gas subcategories because emissions are averaged with a lower HAP-containing fuel. This bias can be significant depending on the gas firing rate and relative difference in pollutant concentration. This was a significant issue identified in our review of the Major Source IB-MACT ICR data. While the ICR data contains fuel-related information to confirm gas co-firing, there is insufficient data available in the Fuels for Schools data to confirm whether co-firing was also conducted during the reported emissions test.

RMB recommends that EPA verify whether the reported test data includes periods of gas co-firing and either exclude such data or adjust the data accordingly to remove the gas-firing bias. This would result in an emissions pool for each subcategory where the emissions are based on the equivalent of 100% combustion of the fuel type for that subcategory.

Response: See response for DCN EPA-HQ-OAR-2006-0790-1959.1, Excerpt Number 15.

Commenter Name: Rob Barton
Commenter Affiliation: RMB Consulting and Research, Inc
Document Control Number: EPA-HQ-OAR-2006-0790-2198.1
Comment Excerpt Number: 10

Comment: The MACT floor for existing units for Hg (coal only) and CO (all fuel types) are calculated based on one or more data sets that contain less than three test runs. In order for a test result to be considered "achieved" it should contain at least three, valid test runs, which is the same criterion used to determine compliance with the proposed emissions standards. In some cases, the floor calculations include a single test run for a particular unit. RMB recommends eliminating all data sets containing less than three test runs from the emissions floor analysis.

Response: We have revised our estimates based on the provided input.

Other - New Data/Corrections to Existing Data

Commenter Name: Steven A. Brink
Commenter Affiliation: California Forestry Association
Document Control Number: EPA-HQ-OAR-2006-0790-2026.1
Comment Excerpt Number: 6

Comment: Biomass Thermal Energy Council shows that EPA has assumed that all particulate emissions from new biomass boilers are very toxic. However recent research indicates that inorganic salt emissions are five times less toxic than petroleum-derived PM (Nussbaumer T., Klippel N., Oser M., "Health Relevance of Aerosols from Biomass Combustion in Comparison to Diesel Soot Indicated by Cytotoxity Tests," 2005).

Response: We thank the commenter for their input.