MEMORANDUM

To: MM2A Project Files

From: Lisa Conner, Office of Air Quality Planning and Standards, Sector Policies and Programs Division, Policy and Strategies Group

Date: August 2020

Subject: Documentation of the illustrative emissions analysis for the rule "Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act"

1. Overview and Introduction

This memo provides an illustrative assessment of potential impacts associated with HAP emissions in response to the MM2A rule to inform our analysis of benefits or disbenefits that is presented in the RIA. As has been discussed at length in final rule's documentation of the MM2A database and cost analysis, the assessment of facility response to the rule is uncertain due to the voluntary nature of the action, and many other factors that are specific to each facility. In this assessment, to illustrate the impacts of each regulatory scenario we make assumptions in order to characterize the potential response and impacts, and clearly state how those assumptions impact the outcome of the assessment. In addition to approximating the response to the MM2A rule, we present information regarding potential changes in HAP emissions.

The assessment of facility participation in the MM2A action is transferred from the facility count assessment in the memo titled *Documentation of the Data for Analytical Evaluations & Summary of Industries Potentially Impacted by the Final Rule "Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act*" (Hereafter referred to as "the MM2A database memo"). The facility count and the estimates of cost savings for facilities correspond with the emissions assessment presented here, however, in several source categories we determine in the assessment that there will be a cost savings with no impact on emissions.

In addition, we received public comments stating that our analytical assessment should be expanded to include an evaluation of the entire major source NESHAP program rather than the subset of the source categories presented at proposal. Some commenters suggest through analyses submitted with their public comments, that every source with actual emissions below the major source threshold (MST) will reclassify, and every source will increase emissions to the maximum level permissible as an area source (*i.e.*, up to 10 tpy of a single HAP or 25 tpy of a combination of HAP). The EPA disagrees with this characterization of impacts for several reasons.

First, the decision to reclassify to area source status is not a mandate and depends on many factors specific to the facility such as the ability to sustain emissions below the MST and not risk unintentionally emitting above the MST. To ensure facilities sustain emissions below the MST, they are likely to create operating plans that include a compliance margin (*i.e.*, operate at a reasonable level below the MST to guarantee they maintain area source status). Second, the

choice to reclassify would be pursued only if the action is a financial return to the company that weighs the costs of preparing for the reclassification action and the benefits of not having to comply with one or more major source NESHAP. If it is not advantageous from a business perspective for the source to undergo reclassification, they will not seek a change in status in response to MM2A, thus not all facilities below the MST will reclassify. A third analytical reason to not presume all facilities will emit up to the MST is the consideration that many industries and areas of the country have other federal or state regulations the effect of which will continue to limit HAP emissions after a source reclassifies to area source status. Finally, there are economic limitations on production levels that can impact the level of potential emission changes. To the extent that a source's emissions correlate with the level of production and the level of competitiveness in the markets it is in, a source will face competition and limitations associated with industry growth (which is linked to how much the product is demanded by consumers) that will create rigidity in a source's efforts to increase production and hence emissions. All of these factors will reduce opportunities to increase emissions to the maximum level permissible under area source status. Therefore, simply assuming all facilities will increase emissions (sometimes by more than 100x their current levels) is inaccurate and must be evaluated to properly characterize the response to the MM2A final rule and its impact on HAP emissions. We recognize that the commenters' analyses demonstrate the concern for emission changes in response to MM2A, and so the assessment for the final rule warrants an expansion from the approach used at proposal.

At proposal, the EPA reviewed the reclassification actions of 34 sources that reclassified after January 2018. For the review of these reclassifications, the EPA evaluated the PTE and conditions set in permits prior and post reclassification to assess the potential for emission changes associated with the reclassification of the sources. For the final rule, the EPA expanded the analysis to include the reclassifications of 35 additional sources. The analysis and results of the EPA's review of these 69 reclassifications is detailed in the Technical Support Memorandum "*Review of Reclassification Actions for the Final Rulemaking "Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act"* available in the docket of this rulemaking. The EPA's findings from the permit review and emission evaluation are that sources that had reclassified to area source status, in most cases, achieved and maintain area source status by operating the emission controls or continuing to implement the practices they used to comply with the major source NESHAP requirements.

In addition to the review of actual reclassification actions above, the EPA also prepared an illustrative analysis for six source categories at proposal to evaluate the potential emission impacts if facilities in those six categories were to reclassify to area source status under the MM2A rule. In the illustrative analysis of the six source categories, we reviewed a sample of operating permits in six source categories that represent a variety of industrial operations in the NESHAP program, including: coatings, heavy industry, chemicals, and energy. For these industries, we also evaluated control technologies employed to reduce HAP emissions and considered other regulations that may continue to apply to the source and how those regulations would impact HAP emissions.

For the final MM2A rule, we have updated the assessment conducted at proposal for the six source categories and expanded our assessment to numerous additional source categories in response to public comments (thus we assessed 72 categories in total). We identify several source categories that are not likely to experience a change in emissions as a result of MM2A (65 categories in total). We also conduct an in-depth analysis of potential changes in emissions upon reclassification for many source categories where we have information. We also review the updated operating permits for a variety of industrial processes to interpret likely response to the final MM2A rule.

Findings:

Overall, out of the 114 source categories in the major source NESHAP program, we evaluated the potential emission impacts for 72 source categories in total. We determined that 65 source categories will not change HAP emissions as a result of the MM2A rule.[1] After consideration of the information and data available for this analysis, we found that approximately 7.9 percent of the facilities in the primary scenario (or 3.1 percent of all facilities evaluated in the 72 source categories) assessed with data from available RTR modeling files in the MM2A database could increase emissions as a result of the MM2A rule. Under alternative scenario 2, we determined that some facilities operating between 75 and 125 percent of MST could decrease emissions as a result of the MM2A rule. In most cases the change in emissions is modest and limited by the factors discussed above. For those facilities, the total potential emission increase under the primary scenario ranges from about 919 tpy to 956 tpy of combined HAP.[2] These estimates apply to industrial source categories and assumes that facilities in the coatings sector will not reformulate their coatings to a higher HAP content. However, under an alternative set of assumptions in the coatings sector discussed in section 3.B of this memo, we add to the range presented above a potential increase in emissions from 0 tpy to 302 tpy of combined HAP to reflect the findings from one of the reclassification permits reviewed by the EPA that shows one facility could possibly increase emissions. The total range of emissions increase is, therefore, 919 tpy to 1,258 tpy. Under alternative scenario 2, the MM2A rule could potentially reduce emissions by about 183 tpy.

[1] Some of the notable source categories that are not likely to change emissions as a result of MM2A include: Dry Cleaners, Integrated Iron and Steel Production, Municipal Solid Waste Landfills, Portland Cement Manufacturing, and Coal- and Oil-Fired Electric Utility Steam Generating Units.

[2] In addition, some facilities analyzed in the primary scenario have an estimated PTE that is above the MST, yet their actual emissions are well below 75 percent of the MST. These facilities might opt to reclassify by taking a limit on their PTE down to a level below the MST. This reduction in emissions can be viewed as foregone emissions under PTE. The foregone allowable emissions totals a reduction of about 193 tpy. Therefore, the net change in emissions for the seven source categories is a net increase of 726-763 tpy.

2. Determining Source Categories for the Emissions Assessment

The most accurate evaluation of the impact on emissions from the MM2A rule would require the latest detailed information about each source. Unfortunately, there are no known databases that continually compile and update the facility status and detailed information about these facilities, such as the PTE and limitations on emissions from other regulatory, technological, economic specifications. To obtain detailed facility data for this rulemaking would require a massive Information Collection Request (ICR) under CAA section 114 to be sent to the 7,000 or more facilities in the major source NESHAP program. Such an effort would be overly burdensome and resource intensive, very costly to industry and the public, and time prohibited (notwithstanding that any action to reclassify is completely voluntary).[3] Another option is to obtain and evaluate Title V permits for each major source, however, such a system currently does not exist nationwide and, therefore, this option is also resource prohibitive.[4] Therefore, to evaluate the facilities operating in the major source NESHAP program under CAA section 112, we subdivide the analysis into the following segments using information available for each source category:

(A) identify source categories that are not likely to be impacted by the MM2A final rule,

(B) identify source categories that will not change emissions for regulatory, technical, or economic reasons in response to the MM2A final rule,

(C) for source categories that may have emission impacts, conduct an in-depth evaluation of data specific to each facility and source category, and

(D) for source categories without readily available detailed facility data, we approximate the magnitude of potential impacts using broad assumptions and extrapolation or transfer of general information from a variety of sources.

3. Characterization of Affected Industries

As a good approximation of current facility characterization, we compiled all available data files used in recent Residual Risk and Technology Review (RTR) rulemaking efforts. For many of the RTR files, the EPA created a detailed file to characterize facilities in the source category and their emissions for the purpose of assessing residual risk after compliance with the major source NESHAP. The data files are commonly referred to as the "RTR modeling file(s)" since the data is used to model risk and assess residual health risk to the public after compliance with CAA

[3] Based on past experience issuing CAA section 114 surveys, we note that it could take up to 3 years to prepare a section 114 notice, undergo review by OMB, issue a public notice, and gather the data.

[4] In March 2020, EPA released the Electronic Permitting System for use by all states and EPA Regions. EPA is currently working with individual states to gradually adopt the system through direct entry or connecting to existing state electronic systems. In the future after full adoption of the system, the Electronic Permit System will serve as a repository for all title V permits issued nationwide that are sent to EPA for review.

section 112 maximum achievable control technology (MACT) standards. At the time of this analysis, the EPA had the necessary data to evaluate 74 source categories.

There are many factors the EPA took into consideration in assessing the potential emission impacts from the various NESHAP source categories if facilities in these source categories were to reclassify to area source status. These include the consideration of backstop measures from regulatory and technological limits, as well as limitations on growth for economic reasons. As for regulatory reasons, the EPA assessed, if sources were to reclassify, whether they would be subject to the same NESHAP requirements as before reclassification; whether new area source NESHAP requirements will be applicable and how they impact emissions; whether there are NSPS requirements that control emissions at the same levels as the major source NESHAP requirements; and whether there are PSD/NSR/SIP requirements the effect of which we presume will continue to control HAP emissions to the same extent. As for the technological and economic reasons, the EPA reviewed whether the technology changes that have reduced emissions and could be reversed if sources were to reclassify to area source status. This includes, but is not limited to, changes in coating/adhesive formulations, fuel combustion technologies, and some level of backstop for emissions from add-on control technologies. Commenters stated that there are also other factors that will prevent emissions increases, including environmental management systems with which sources are engaged that require them to identify environmental impacts, to set performance objectives, to implement standards for training and work practices, to audit implementation of such standards, and to take corrective action when deviations occur. Other commenters also mentioned that many sources are also required to meet Leadership in Energy and Environmental Design standards that incentivize efficient operations to minimize waste and energy usage, Occupational Safety and Health Administration requirements that protect workers from exposures to HAP and other pollutants, and toxics release inventory requirements. The commenters pointed that these regulatory requirements continue to apply even if the source reclassifies, providing additional incentives for sources to not increase emissions. The EPA agrees with the commenters that environmental management systems, even though they are voluntary and not regulatory in nature, will also provide additional incentives for some sources to maintain compliance with environmental legal obligations and not increase emissions.

Using these assumptions, the EPA determined 39 source categories are not impacted by the MM2A rule as detailed in the MM2A Database memo.[5] We also determined that an additional 26 source categories (or a total of 65 source categories) will not experience emission changes if they opt to reclassify under MM2A. For the remaining source categories for which the EPA had in-depth RTR modeling file data, we then proceeded to estimate potential emission changes for sources with actual emissions at or below our illustrative analytical scenarios. This memo focuses the analysis on the primary scenario that includes sources with actual emissions below 75 percent of MST (which also includes sources under alternative scenario 1 with actual

[5] *Documentation of the Data for Analytical Evaluations & Summary of Industries Potentially Impacted by the Final Rule "Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act*".

emissions below 50 percent of MST)[6], and the incremental effect of sources operating in alternative scenario 2 with emissions between 75 and 125 percent of the MST (*i.e.*, incremental from the primary scenario to alternative scenario 2).

A. Source Categories Anticipated to Have No Change in Emissions due to MM2A

Table 1 presents the source categories that based on the EPA's review of the facilities included in the MM2A database, will not change HAP emissions as a result of MM2A. The EPA determined that the source categories under segment (A) are not impacted by the MM2A rule and facilities will not seek reclassification to area source status. Detailed information regarding the source categories not impacted by the MM2A rule is detailed in the MM2A Database memo. The EPA does not assign the cost of reclassification to these source categories. In addition, for the source categories under segment (B) of this analysis, the EPA determined that while some facilities may have the potential to seek reclassification and estimated the cost of reclassification in the cost analysis[7] (hereafter referred to as "the Cost Analysis Memo"), the EPA determined that some facilities will not experience emission changes as a result of reclassification. Detailed assessments to characterize the potential for emission changes are provided for several source categories in Appendix A of this memo.

[6] Some commenters on the proposed rule stated that the compliance margin assumed by the EPA of 25 percent in the primary scenario is too large, and the EPA should analyze impacts at 90 percent of the MST. See the cost memo in section 2 for more information regarding the EPAs reasoning for not assessing regulatory impacts at 90 percent of the MST.

[7] See "Documentation of the compliance cost savings analysis for the final rulemaking "Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act"" (Eastern Research Group, Inc., August 2020)

Table 1. Source Categories Determined to Have No Change in Emissions Under the MM2A Rule

Source Categories Not Impacted by MM2A	Part 63 Subpart	Reasoning for Source Category Not Impacted by MM2A				No Emission Change
		Major/Area NESHAP the same	No sources in category	No NESHAP standard applicable	Emissions too High to reclassify	
Acetal Resins (GMACT I)	YY				✓	
AMF (Acrylic/Modacrylic Fibers)	LLLLLL				✓	
Asphalt Roofing	LLLLL		✓			
Cellulose Products Manufacturing	UUUU			✓		
Coke Ovens: Charging, Top Side, and Door Leaks	L				✓	
Coke Ovens: Pushing, Quenching, & Battery Stacks	CCCCC				✓	
Commercial Sterilizers	O	✓				
Cyanide Chemicals (GMACT II)	YY	✓				
Decorative Chromium Electroplating	N	✓				
Dry Cleaners	M	✓				
Dry Cleaners	M	✓				
Ethylene Production	YY				✓	
Ferroalloys	XXX				✓	
Friction	QQQQQ				✓	
GMACT-HF	YY	✓				
Halogenated Solvent Cleaning	T	✓				
Hard Chromium Electroplating	N	✓				
Hazardous Waste Combustors	EEE	✓				
Hydrogen Fluoride (GMACT I)	YY				✓	
Integrated Iron and Steel	FFFFF				✓	

Iron and Steel Foundries (Major Sources)	EEEEE				✓	
Lime Manufacturing	AAAAA				✓	
Magnetic Tape	EE		✓			
Mercury Cell Chlor-Alkali Plants	IIIII	✓				
Municipal Solid Waste Landfills	AAAA	✓				
Nutritional Yeast	CCCCC				✓	
Other Chromium Electroplating-Chromic Acid Anodizing	N	✓				
Phosphate Fertilizer	BB				✓	
Phosphoric Acid	AA				✓	
Portland Cement	LLL	✓				
Primary Copper	QQQ		✓			
Primary Lead-facility closed	TTT	✓				
Primary Magnesium Refining	TTTTT				✓	
Secondary Lead	X	✓				
Spandex (GMACT II)	YY			✓		
Taconite Iron Ore Processing	RRRRR				✓	
Turbines	YYYY			✓		
Utility NESHAP	UUUUU	✓				
Wool Fiberglass	NNN				✓	
Source Categories with No Emission Change						
Aerospace - Privately Owned / Aerospace - federal government owned	GG					✓
Asphalt Processing	LLLLL					✓
Auto and Light Duty Truck	IIII					✓
Boat Manufacturing	VVVV					✓
Fabric	OOOO					✓

Flexible Foam Production	III					✓
Large Appliances	NNNN					✓
Leather	TTTT					✓
Metal Can	KKKK					✓
Metal Coil	SSSS					✓
Metal Furniture	RRRR					✓
Mineral Wool	DDD					✓
Misc. Metal Parts	MMMM					✓
Miscellaneous Coating Manufacturing	HHHHH					✓
Paper and Other Web Coatings: Surface Coating	JJJJ					✓
Plastic Parts	PPPP					✓
Plywood and Composite Wood Products	DDDDD					✓
POTW	VVV					✓
Primary Aluminum	LL					✓
Pulp and Paper Combustion Sources	MM					✓
Reinforced Plastic Composites	WWWW					✓
Secondary Aluminum	RRR					✓
Shipbuilding	II					✓
Vegetable Oil	GGGG					✓
Wood Building Products	QQQQ					✓
Wood Furniture	JJ					✓

Note: See section 3.B for discussion regarding the permit review finding that one source out of 69 reclassification actions that uses coatings in their manufacturing process might increase emissions after becoming an area source. We reflect the potential for emission increases under an alternative set of assumptions for the coatings sector.

B. Characterizing Potential Emission Impacts for Remaining Source Categories in the MM2A database

The remaining source categories in the MM2A database with facilities that have actual emissions below the thresholds of the illustrative analytical scenarios described in the Cost Analysis Memo. To gain more understanding of the magnitude of impact across the source categories, we can further subdivide them into groupings defined by the number of facilities in each source category in the primary scenario as shown in Table 2 below. The first grouping includes industries in the major source program that have only one or two facilities affected (up to 5 facilities). This grouping was reviewed by the EPA source category technical leads who know a great deal about individual facilities when the number of facilities is small. The second grouping includes industries with fewer than 35 facilities in the primary scenario. This group requires more speculation on the part of the EPA source category technical leads, but they continue to have extensive knowledge on many of the facilities within these categories. Using readily available information in the RTR project files along with the RTR modeling files, the technical leads provide insights to the regulatory, technological, and economic conditions that would influence a facility's response to the MM2A rule. The characterization of each industry for which we were able to obtain information from an EPA source category technical lead is provided in Appendix A. The third grouping includes large industrial categories many affected facilities in which knowledge of the individual facilities is less likely, but modeling conducted by the EPA can inform the assessment.

Finally, the industries in the coatings sector have similar features to enable a grouping. We also combine boat manufacturing and reinforced plastic composites into the fourth grouping because they also have similar characteristics as the coatings sector. This grouping includes 18 source categories that constitute more than 60 percent of the total number of facilities potentially impacted under the MM2A rule. This grouping along with the permit review of facilities that have reclassified since January 2018 provide a thorough assessment of the coatings sector.[8] We evaluated the likely response to MM2A for a subset of the coatings sector at proposal. For the final rule, we provided the MM2A database of information to the EPA source category technical leads for further input. The conclusion is the same as at proposal – that the source categories in this sector use formulations that are low-HAP and the majority of facilities are unlikely to reformulate at a substantial cost to increase HAP. In addition, most reclassifications completed in 2018 and 2019 are in the coatings sector and our review shows that almost all continue to have as an enforceable condition after reclassification the use of low-no HAP coating formulations. Because all but one of the reclassified coatings facilities did not change emissions, we also include an alternative set of assumptions to evaluate the potential for some emission increase reflecting actions similar to the single facility whose permit reflect a potential for coatings emission increases.

Section C describes the methods used to estimate changes in emissions. In general, the change in emissions is measured as the difference between PTE with compliance with the major source

[8] *Review of reclassification actions for the rule "Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act."*

NESHAP and 75 percent of the MST (the maximum emissions assumed with a compliance margin for the primary scenario). Where the EPA does not have information on the PTE, we are estimating the potential change in emissions as the difference between actual emissions and 75 percent of the MST. Therefore, we measure increases or decreases to the 7.5/18.75 tpy level. However, in some cases it is inappropriate to assume changes from minimal amounts of HAP (i.e. less than 1 tpy) up to a maximum of 7.5/18.75 tpy as it represents a 100-times to 1000-times increase in emissions (and production to the extent that production and emissions correlate). Given the production capacities at existing facilities[9] along with economic constraints on growth, it is highly unlikely a facility would seek to increase emissions (and hence production) by 100-times to 1000-times. Most mature industries will not experience tremendous economic growth, and some may experience a declining rate of production that impacts growth. Therefore, we assume a conservative measure of increase for facilities operating at very low levels of HAP of 10-times (*e.g.*, a facility operating at 0.5 tpy with not information on PTE would increase to 5 tpy). The measure for emission change in these instances could be higher or lower, but we selected 10-times to demonstrate a conservatively high level of potential emissions increase.

In addition, we measure the change in emissions based on a characterization of the primary source category under which the facility is associated. For facilities that comply with multiple major source NESHAP, we characterize the facility's emissions response based on the primary industrial activity of the facility. This assumption ignores the potential for changing HAP emissions from other emission points at the major source (i.e., combustion engines, boilers, process vents, and other manufacturing operations in the facility). This assumption adds to the litany of uncertainties associated with any assessment of the MM2A rule and further supports the selection of the compliance margin assumed in our analysis. The more operations that exist at a facility (i.e., the complexity), the more facilities will want to build in a reasonable compliance margin to maintain area source status. Overall, owners and operators of major sources that opt to apply for reclassification will weigh the benefits and costs of changing operations that affect their emissions and will select the lowest-cost opportunities to sustain their emissions below the MST including a reasonable compliance margin for the facility.

Our analysis of impacts from MM2A includes a reasonable compliance margin at which the Agency has greater confidence that all sources analyzed could maintain their area source status if they opt to reclassify. The selection of this compliance margin not only relates to the performance of HAP control technologies, but also incorporates the factors above that limit a sources ability to change emissions – the regulatory, financial, and economic considerations in determining whether to reclassify.

Table 2 presents the number of facilities in source categories considered for evaluation in the emissions analysis. The table includes all source categories considered for review, however, we were unable to conduct a detailed assessment of emission changes for the following categories: Brick, Pesticide Active Ingredients, Pharmaceuticals, Polycarbonates, Polyether Polyols, the source categories of Polymers and Resins, OSWRO, and Wood Building Products.

[9] Modifications to a facility to increase capacity would face new source standards or PSD limits.

We present both the total number of facilities and the incremental number of facilities assessed across the analytical threshold scenarios. As can be seen by Table 2, most facilities in the MM2A database have actual emissions well below the MST, and many are below 50 percent of the MST.

Table 2. Incremental Number of Facilities by Source Category Across Illustrative Analytical Scenarios[10]

Source Category	Total Major Source Facilities in Source Category	Total Number of Facilities Included in Emissions Analysis	Incremental Number of Facilities Across Illustrative Analytical Scenarios		
			Alternative 1	Primary Scenario	Alternative 2
Group I: Source Categories with Fewer than Five Facilities Included in Emissions Analysis					
Asphalt Processing	8	1	1	0	0**
HCl Production	19	5	4	0	1
Leather	4	3	2	0	1
PAI (Pesticide Active Ingredient Production)*	18	5	2	2	1
Polycarbonates*	4	1	0	1	0
Vegetable Oil	88	2	1	1	0
Wet Formed Fiberglass Mat	7	5	2	2	1
Group II: Source Categories with Five or More Facilities, But Fewer than 40 Facilities Included in Emissions Analysis					
Engine Test Cells/Stands	59	28	25	1	2
OSWRO*	38	25	17	4	4
Polymers & Resins Source Categories (15 source categories)*	75	14	9	1	4
PEPO (Polyether Polyols Production)*	23	7	6	1	0
Pharmaceuticals*	26	10	2	4	4
Plywood and Composite Wood Products	233	82	13	12	57

[10] Facilities listed under alternative scenario 1 are included in the assessment of emission changes under the primary scenario. Facilities listed under alternative scenario 2 are incremental to those listed in the primary scenario and are evaluated based on that incremental number of facilities.

Source Category	Total Major Source Facilities in Source Category	Total Number of Facilities Included in Emissions Analysis	Incremental Number of Facilities Across Illustrative Analytical Scenarios		
			Alternative 1	Primary Scenario	Alternative 2
POTW	10	7	6	1	0
Secondary Aluminum	52	7	5	1	1
Site Remediation*	102	26	20	1	5
Steel Pickling	51	42	35	2	5
Wood Building Products	50	31	26	4	1
Group III: Source Categories with 40 or More Facilities					
Brick*	74	55	41	6	8
Marine Vessel Loading	152	99	85	5	9
Miscellaneous Organic Chemical Manufacturing (MON)	197	50	22	11	17
Organic Liquids Distribution (Non-Gasoline) (OLD)	178	65	53	4	8
Refineries (2 Source Categories)	142	27	20	4	3
Group IV: Source Categories in the Coatings Sector, plus Reinforced Plastic Products and Boat Manufacturing					
Aerospace - Privately Owned and Federal Government Owned	144	124	106	12	6
Auto and Light Duty Truck	43	13	2	3	8
Fabric	43	28	22	2	4
Large Appliances	10	7	6	1	0
Leather	4	3	2	0	1
Metal Can	5	4	2	1	1
Metal Coil	48	37	31	4	2
Metal Furniture	16	14	9	1	4
Misc. Metal Parts	368	291	200	33	48

Source Category	Total Major Source Facilities in Source Category	Total Number of Facilities Included in Emissions Analysis	Incremental Number of Facilities Across Illustrative Analytical Scenarios		
			Alternative 1	Primary Scenario	Alternative 2
Miscellaneous Coating Manufacturing	43	24	16	1	7
Paper and Other Web Coatings: Surface Coating	171	68	46	9	13
Plastic Parts	125	67	38	15	14
Printing and Publishing	172	113	91	10	12
Shipbuilding	84	62	16	34	12
Wood Building Products*	50	31	26	4	1
Wood Furniture	333	252	201	23	28

*Note: The source category characterization for these source categories can be found in Appendix A. We were unable to evaluate the following categories in-depth: Brick, Pesticide Active Ingredients, Pharmaceuticals, Polycarbonates, Polyether Polyols, the source categories of Polymers and Resins, OSWRO, Site Remediation, and Wood Building Products.

**There is one facility in alternative scenario 2 under Asphalt Processing, which also has activities as a petroleum refinery. Therefore, we do not include the facility as impacted under Asphalt Processing for alternative scenario 2. The Refineries Emission Model indicates that any refinery that is above the MST will not be able to reduce to below the 10/25 (See the source category characterization for Refineries below for more information), therefore, will not opt to reclassify.

C. Estimation of Emission Impacts for Source Categories with Sufficient Information

To evaluate the potential response to the MM2A rule, we characterize technologies and processes employed, regulatory limitations, PTE, and likelihood of emission increases by considering the following questions:

- Are the facilities identified in each illustrative analytical scenario likely to reclassify to area source status?
- If they reclassify, would they change how they operate and increase or decrease emissions?
- What technologies do they employ, and will it be permissible to scale back the use of these technologies after reclassification?
- What other regulatory provisions may limit the ability to increase emissions?

As discussed in the other documentation for this rule, there are numerous uncertainties in determining whether a facility will seek reclassification under the MM2A rule. The decision to reclassify is voluntary and conditions are specific to each individual facility. With regard to determining a change in emissions, if a facility were to reclassify the main factor determining any potential emissions increases is whether a facility could adjust the types of control technology, formulations, and process controls used to comply with the major source NESHAP requirements upon reclassifying. Specific considerations include:

• Compliant Materials: We considered that pollution prevention measures (*e.g.*, process changes or switches to low-HAP surface coatings) as not adjustable. Source categories employing those measures as their compliance strategy for the applicable major source NESHAP could not readily increase or decrease emissions.

• Add-on Control Equipment

i) Non-adjustable Controls: We considered particulate controls for inorganic HAP (*e.g.*, fabric filters, electrostatic precipitators) as not adjustable. Source categories employing those measures as their compliance strategy for the applicable major source NESHAP could not readily increase or decrease emissions.

ii) Adjustable Controls: For adjustable controls (*e.g.*, caustic scrubbers, RTOs), our analysis considered two different sets of assumptions. The first derives from the findings of our permit review presented above (sources continue to use the same compliance strategy before and after reclassification, and add-on controls are not adjusted to decrease control efficiency after the source is reclassified). The alternative set of assumptions addresses the potential emissions impact if sources taking PTE limitations were to be allowed to change the operating parameters of adjustable add-on control upon reclassifying.

We made the following assumptions for the illustrative emissions analysis given the plausibility that sources that reclassify might be allowed by their permitting authority to change the operating parameters of adjustable add-on control technologies once they become area sources.

- It is assumed that facilities that utilize compliant materials (*i.e.,* low-HAP coatings) will not increase emissions.
- For a source category employing adjustable control technology, emissions could potentially increase for facilities with actual emissions below 75 percent of the MST.
- The baseline measure of emissions for the calculation of an emission change is determined as the facility's maximum allowable emissions under the major source NESHAP because facilities are permitted to emit up to the maximum level permissible and remain in compliance with the NESHAP regardless of the MM2A rule. Often this is represented by the PTE, but in some circumstances the maximum allowable emissions from the RTR modeling files are used.
- Where we are unable to obtain a measure of the maximum allowable emissions under the NESHAP or PTE, we estimate the change in emissions from actual emissions documented in the MM2A database, which will overestimate the change in emissions.
- Under the analysis of the primary scenario, a potential increase in emissions was calculated for facilities operating an adjustable control technology in the following manner:
    - For sources with only a single HAP reported in the MM2A database and an adjustable control, the emission increase is calculated as the difference between 7.5 tpy (or 75 percent of the MST for a single HAP) and the estimate of the single largest HAP emissions.
    - Otherwise, the potential emissions increase was estimated as the larger difference between 18.75 tpy and the estimate of total HAP emissions and between 7.5 tpy and the single HAP emissions.

Some commenters on the proposed rule suggest through analyses submitted with their public comments, that every source with actual emissions below the major source threshold (MST) will reclassify, and every source will increase emissions to the maximum level permissible as an area source (i.e., up to 10 tpy of a single HAP or 25 tpy of a combination of HAP). This characterization of impacts is not accurate for several reasons. First, the decision to reclassify to area source status is not a mandate and depends on many factors specific to the facility such as the ability to sustain emissions below the MST and not risk unintentionally emitting above the MST. The choice to reclassify would be pursued only if the action is a financial return to the company that weighs the costs of preparing for the reclassification action and the benefits of not having to comply with one or more major source NESHAP. If it is not advantageous from a business perspective for the source to undergo reclassification, they will not seek a change in status in response to MM2A, thus not all facilities below the MST will reclassify. Also, to ensure facilities sustain emissions below the MST, they are likely to create operating plans that include a compliance margin (i.e., operate at a reasonable level below the MST to guarantee they maintain area source status). Another analytical reason to not presume in our emission analysis that all facilities will emit up to the MST is the consideration that many industries and areas of the country have other federal or state regulations the effect of which will continue to limit HAP emissions after a source reclassifies to area source status. Finally, there are economic limitations on production levels that can impact the level of potential emission changes. To the extent that a source's emissions correlate with the level of production and the level of competitiveness in the markets it is in, a source will face competition and limitations associated with industry growth

(which is linked to how much the product is demanded by consumers) that will create rigidity in a source's efforts to increase production and hence emissions. All of these factors will reduce opportunities to increase emissions to the maximum level permissible under area source status. Therefore, simply assuming in our emission analysis that all facilities will increase emissions (sometimes by more than 100x their current levels) is inaccurate and must be evaluated to properly characterize the response to the MM2A final rule and its impact on costs and HAP emissions.

Also, we measure the change in emissions based on a characterization of the primary source category under which the facility's is associated. For facilities that comply with multiple major source NESHAP, we characterize the facility's emissions response based on the primary industrial activity of the facility. This assumption ignores the potential for reducing or increase HAP emissions from other emission points at the major source (*i.e.*, combustion engines, boilers, process vents, and other manufacturing operations in the facility).[11] This assumption adds to the litany of uncertainties associated with any assessment of the MM2A rule. Owners and operators of major sources that opt to apply for reclassification will weigh the benefits and costs of changing operations that affect their emissions and will select the lowest-cost opportunities to sustain their emissions below the MST including a reasonable compliance margin for the facility.

For the coatings sector, while the majority of facilities that have reclassified since January 2018 will have no change in emissions as determine by a review of their permits, we found one case in which there could be a potential for a change in emissions relating to the coatings sector. Details of the review of each facility's emission requirements after reclassification are included in the memo *Review of reclassification actions for the rule "Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act."* Because it is plausible for one facility out of the 69 included in our review to increase emissions according to their permit, we are incorporating an alternative set of assumptions in our conclusions of emissions impacts as well. We reviewed 69 operating permits for the sources that reclassified since January 2018 and found that over 65 percent of the sources operate in the coatings sector (46 out of the 69 sources). In the coatings sector, 40 out of the 46 reclassified facilities used reformulation for compliance prior to reclassification and 13 percent used add-on control technologies to comply with their major source NESHAP.

The one facility that we found to have a potential emission increase in coatings emissions requested approval to change from a no-HAP coating to the purchase of a low-HAP coating after they were reclassified to area source status for another source category. The primary business function of the establishment is fabrication of metal transformers, and coating the unit is one element of the process. Therefore, this source would not be accounted for in the MM2A database

[11] It should be noted that the determination of potential emission changes focuses on the primary source category of business operations at each facility. Facilities with emission points in multiple source categories will employ a combination of measures to maintain area source status at the lowest cost. Therefore, an indication of no emission change in the primary source category of the business operation would not preclude the source from increasing emissions from another source category. This analysis does not evaluate these secondary level determinations of potential emission changes when a source operates in multiple source categories.

as a coating facility, but rather as electrical equipment manufacturing. We continue to affirm that at most facilities with coatings as their primary business classification that reformulated their product under MACT to reduce emissions will continue to utilize similar formulations and not increase HAP. However, to account for the potential of some sources purchasing an alternative coating from a coatings vendor that results in increased emissions, we have included in our estimates a range of outcomes that incorporates this possibility. In this alternative outcome, we assume that 1 of 40 coatings sector facilities change the formulation used in their process after reclassification, representing 2.5 percent of all coatings facilities (along with the boat manufacturing and reinforced plastics facilities) incurring a change in HAP content of coatings from no HAP to HAP containing coatings. This results in an estimate of 27 coatings facilities (22 from surface coatings and 5 from Boat Manufacturing and Reinforced Plastic Composites) that increase their HAP emissions after reclassifying. For this analysis, we take five random samples of 27 facilities representing 2.5 percent of the coatings facilities in the MM2A database with emissions below 75 percent of the MST. We then averaged the results to ensure the results are not skewed by a single sample. We also assume that if the total HAP and single HAP emissions for a facility were each less than 1 tpy, the emissions increase would be only 10 times the actual emissions. For other facilities, we assumed the facility would increase emissions up to 18.75 tpy of total HAP. The total estimated increase from 27 coating facilities would be 302 tpy of HAP. The average increase per facility that increased emissions would be about 11.2 tpy of HAP.

Finally, to assess the potential for emission reductions, the illustrative emission analysis assumes that facilities with emissions between 75 and 125 percent of the MST, regardless of the existing control employed for meeting the major source NESHAP standards, would need to decrease emissions to 7.5 tpy of a single HAP and 18.75 tpy of combined HAP to reclassify to area source status.

D. Source Category Characterizations and Findings

At proposal, the EPA characterized the response to MM2A for a sample of six source categories that represented a variety of industrial processes in the major source NESHAP program. Based on public comments requesting the EPA expand the analysis to include all source categories in the program, we have expanded the detailed source category characterization of response to the MM2A final rule. Appendix A presents a summary characterization for each of the source categories we were able to evaluate in-depth for the final rule. Each summary characterizes the regulatory, technical and economic options that form our understanding of how facilities in the source category will respond to the MM2A rule, including engineering considerations of operations at the facility, control technologies employed, and magnitude and direction of emission changes from a baseline of the maximum allowable emissions under the MACT standard or the facilities PTE limits set in operating permits.

Where possible, we conduct detailed modeling to assess the PTE and the potential change in emissions. This level of analysis was viable for the refining industry and is presented in more detail below.

When detailed modeling is not available, we attempt to review each facility's operating permit within a source category to determine the PTE allowable in the baseline. In many cases, we obtained only a portion of operating permits for facilities in the source category. If we were able to obtain the permits for all impacted facilities, we conduct a detailed assessment for each individual facility and answer the questions above to determine the response to the regulation.

Then, for some source categories, the EPA source category technical lead with known expertise in the industry from the assessments of the RTR and technology review provided an overview of the industry and in some cases of each individual facility to determine how they might respond to the MM2A final rule. In these cases, we are not able to define PTE through modeling or permit review. Therefore, we calculate the change in emissions as 18.75 tpy (or 10 times the actual emissions) minus the actual emissions of total combined HAP listed in the MM2A database.

1. Utilizing Industry Sector Emission Modeling

Refineries

For the two Refineries source categories, we ran the Refineries Emission Model (REM) used in recent rulemakings. The Refinery Emission Model (REM) is an Access database model used to characterize hazardous air pollutant (HAP) emissions from all processes typically present at a petroleum refinery.[12] The REM provides source characteristics and HAP emission estimates for each of the following emission sources:

- Process heaters and boilers
- Flares/thermal oxidizers (includes marine vessel loading emissions)
- Wastewater collection and treatment systems
- Cooling towers
- Fugitive equipment leaks
- Tanks (both storage and process tanks)
- Truck and rail (product) loading operations
- Catalytic reforming unit (CRU) catalyst regeneration vents
- Catalytic cracking unit (CCU) catalyst regeneration vents
- Sulfur recovery units (SRU) or sulfur plant vents.

The REM model is updated frequently with current data and has received considerable public review during rulemaking efforts on the Refinery Sector Rule for air toxics issued in 2015. It presents each facility's PTE under the respective NESHAPs (*i.e.*, the baseline of what is permissible under the MACT standards) and calculates the potential increase in emissions as the difference from the MACT maximum level of emissions permissible and the 75 percent

[12] Source: *Petroleum Refinery Source Characterization and Emission Model for Residual Risk Assessment.* Report prepared by Research Triangle Institute for the U.S. Environmental Protection Agency, 2002. Available at: https://www3.epa.gov/ttn/chief/efpac/protocol/refinery_RR_model_documentation_Final.pdf

threshold level of emissions (i.e. 18.75 tpy). We then calculate the change in emissions as the difference between 18.75 tpy minus PTE. This represents the potential change in emissions from the maximum level permitted in the baseline and post-regulation level of emissions from the illustrative MM2A primary scenario which incorporates the compliance margin discussed above (*i.e.*, at 75 percent of the MST). For facilities where we are unable to calculate PTE, we assume an emission change based on the difference between 18.75 tpy and the actual emissions in the MM2A database, or 10 times emissions in a limited number of cases.

In addition, some facilities identified in the MM2A database in the primary scenario have an estimated PTE in the REM that is above the MST, yet their actual emissions are well below 75 percent of the MST. These facilities might opt to reclassify by taking a limit on their PTE down to a level below the MST. For these facilities, we calculate the reduction in PTE that the facility must take to modify their PTE to down to 18.75 tpy. This reduction in emissions can be viewed as foregone emissions under PTE. Actions taken to lower PTE are highly dependent on the actions of the permitting authority and the facilities' demonstration of emission limits needed to ensure they can sustain emissions below the MST. For the 24 facilities in the MM2A database in the two source categories that represent refineries, the total potential increase in emissions is about 113 tpy, and foregone allowable emissions under some facilities current PTE down to the 18.75 tpy totals a reduction of about 205 tpy. Therefore, the net change in emissions for the refining source categories if all 24 facilities reclassify is a net reduction of 92 tpy. The EPA determined that no facilities in the alternative scenario 2 will opt to reclassify due to limited availability of additional control options to reduce emissions below the MST.

Table 3. Estimation of Potential Emission Change for the Petroleum Refinery Source Categories in the Primary Scenario

Refinery Facility Name	Best Total HAP Estimate in MM2A Database (tpy)	Refineries Emission Model PTE Total HAP (tpy)	Potential Emission Increase (tpy)	Forgone Allowable Emissions under PTE down to the 75% of the MST (tpy)
AGE Refining & Manufacturing	13.35	24.90	0.00	
Eagle Springs Refinery	6.29	7.40	11.35	
Navajo Refining Co. – Lovington	2.91	NA	15.84	
Silver Eagle Refining – Evanston	17.06	13.90	4.85	
CITGO Refining & Chemicals Co., LP	2.59	NA	16.16	
ConocoPhillips - Santa Maria	3.35	NA	15.40	
Greka Energy	1.21	19.86	0.00	-1.11
VALERO - Wilmington (Asphalt Plant)	2.35	13.42	5.33	
KERN Oil & Refining Company	11.25	36.11	0.00	-17.36
San Joaquin Refining Company, Inc.	8.25	37.06	0.00	-18.31
Lunday-Thagard Oil Co.	0.67	17.46	1.29	
CITGO Asphalt Refining Company	10.89	16.04	2.71	
BP Exploration (Alaska) Inc.	6.53	14.06	4.69	
ConocoPhillips - Kuparuk Plant	3.71	16.03	2.72	
Petro Star Inc. - North Pole	1.23	20.21	0.00	-1.46
Petro Star - Valdez Refinery	1.05	52.60	0.00	-33.85
Edgington Oil Company	0.56	NA	5.64	
Big West Oil LLC (prev. Shell Oil Products US)	0.84	NA	8.37	
Flint Hills Resources Alaska, LLC	15.42	87.86	0.00	-69.11
Calumet Lubricants Co. LP – Princeton	5.85	17.98	0.77	
Ergon Refining, Inc.	10.91	17.37	1.38	
Goodway Refining, LLC	0.35	6.34	12.41	
Calcasieu Refining Co.	14.42	82.19	0.00	-63.44
Somerset Refinery	1.19	14.86	3.89	
Total			**112.79**	**-204.64**

2. Updated Illustrative Analysis of Source Categories Reviewed at Proposal

Hydrochloric Acid Production

We reviewed operating permits and found that under one set of assumptions for our illustrative analysis, we could expect them to operate scrubbers to control emissions from HCl and Cl_2 at the same control level as MACT, *resulting in no potential increases* in emissions due to the reclassification.

Under a second set of assumptions for our illustrative analysis, we reviewed whether these four facilities could potentially be allowed to adjust the operating parameters to achieve less than 99 percent reduction of HCl and Cl_2.

Two facilities have requirements in their permits that would prevent changes in operating parameters for HCl control or would require the continued use of a scrubber. Therefore, we assume the control technology will serve as a backstop for emissions and it is unlikely that they will change emissions as a result of reclassification.

However, under an alternative set of assumptions we calculate an emission change if one assumed the level of control is less than 99 percent.

- One facility has a permit limit on annual HCl emissions that is at least as stringent as the NESHAP; this state requirement would prevent any potential for changes to the operating parameters of the add-on controls. Based on this review, we would expect no emissions increases if this facility were to reclassify.
- One facility according to their 2016 permit, will no longer be manufacturing HCl and will be only storing purchased HCl and the HCl storage tanks will be vented to an HCl scrubber. The facility is also subject to the HON.

Permit reviews for another two facilities show no other requirements that would limit emissions or that require capture and control systems that could serve as backstops, so we calculate a change in emissions for these facilities. We calculate an emission change if one assumed the level of control is less than 99 percent.

In conclusion, for the analysis of the primary scenario, we determine that there might not be an emission increase for this source category. Under another set of assumptions, we determined that if these four facilities were to reclassify and we assume HCl and Cl_2 are controlled at a lower percentage reduction (less than 99 percent control), emissions could increase by a total of 8.39 tpy for a single HAP or 22.31 tpy for combined HAP.

We estimate one additional facility in alternative scenario 2. Based on this review, we would expect some emissions decrease (0.7 tpy for a single HAP, 0.07 tpy total combined HAP) from this facility if it was to reclassify. As noted above, facilities will consider the costs to reduce emissions as part of their decision to reclassify. We examine this in our analysis of the

alternative scenario 2 as applied to several source categories. This analysis can be found in the RIA for the proposal.

Organic Liquids Distribution (OLD Non-Gasoline)

The technology basis of the major source NESHAP standard for storage tanks is a floating roof or closed vent system and control device (combustion, scrubber, or adsorber) with a 95 percent reduction; for transfer racks, it is a closed vent system and control device (combustion) with 98 percent destruction; for equipment leaks, it is an LDAR work practice; and for transport vehicles, it is a vapor tightness or vapor collection certification work practice.

The MM2A database indicates 178 facilities in the OLD source category, and many are subject multiple NESHAP. Based on our methodology to reduce double counting of facilities that are subject to multiple NESHAP, 99 of those OLD facilities are counted in the MM2A database under OLD instead of another NESHAP and 79 are associated with another source category for the MM2A analysis (*e.g.*, HON, MON, MCM,[13] coating and printing)**.**

Of the 99 OLD facilities identified, 23 facilities are also subject to NSPS 40 CFR part 60 subpart Kb ("Standards for Volatile Organic Liquid Storage Vessels, Including Petroleum Liquid Storage Vessels, for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984.") and some could also be subject to state or local VOC standards if located in ozone nonattainment areas.

We estimate 57 of the OLD facilities in the primary scenario and a subset of 12 of these 57 facilities are subject to NSPS subpart Kb, which would limit the ability to increase emissions.

Consistent with the findings of our permit review, under one set of assumptions for our illustrative analysis, if these sources were to reclassify we could expect them to operate the combustion devices to control emissions from organic HAP from tanks and transfer racks at the same level as prior to reclassification, resulting in no potential increases in emissions due to the reclassification.

Under a second set of assumptions for our illustrative analysis, we reviewed whether these 57 facilities could be allowed to adjust the operating parameters to achieve less than 98 percent destruction of organic HAP. First, we determined which of these 57 facilities are in ozone nonattainment areas. We then reviewed the permits for a sample of six facilities located in ozone nonattainment areas to assess whether there are existing state rules or other permit conditions that could prevent the facility from increasing emissions if the facility obtained area source status.

Based on the permit review, at the 75 percent threshold three facilities would not be expected to increase emissions because they are subject to state rules or permit requirements that directly or indirectly affect HAP emissions. For the remaining 54 facilities, if these facilities were to

[13] HON = Hazardous Organic NESHAP (subparts F, G, H, and I), MON = Miscellaneous Organic NESHAP (subpart FFFF), and MCM = Miscellaneous Coatings Manufacturing NESHAP (subpart HHHHH).

reclassify and the permit required organic HAP control at a lower percentage reduction (rather than 95-98 percent control), there could be a potential emission increase of 659 tpy (for combined HAP). However, if the NSPS subpart Kb acted as a backstop for 12 of these facilities, the potential for emissions increases would be reduced to 480 tpy (for combined HAP), a difference of 179 tpy of HAP. Another consideration, however, is that a portion of HAP emissions (21 percent) at OLD facilities is from transfer racks and equipment leaks, which are not regulated by the NSPS subpart Kb. Therefore, at the 12 facilities subject to NSPS subpart Kb, transfer racks and equipment leaks may represent about 37 tpy of the potential HAP increase (*i.e.*, 21 percent of 179 tpy), and this increase would not be prevented by NSPS subpart Kb. Therefore, the potential HAP emissions increase could be slightly higher because there is no NSPS backstop on emissions from transfer racks, equipment leaks, or wastewater operations. In conclusion, we estimate a total potential emission increase from the OLD source category in a range from 480 – 517 tpy.

The MM2A database includes eight facilities in alternative scenario 2. Based on this review, we would expect some emission decreases (18 tpy for combined HAP) from these facilities if they were to reclassify.

Surface Coating of Metal Cans

The technology basis of the major source NESHAP standard is a combination of low-HAP coatings and add-on controls (*e.g.*, thermal oxidizers). Some facilities may be subject to NSPS subpart WW (beverage can surface coating) and could be subject to state rules based on CTG.

Based on the MM2A database, five facilities are subject to this NESHAP, and three facilities in the primary scenario. We review the operating permits for all three facilities and determined they use thermal oxidizers to comply with the NESHAP and they are required to capture and control VOC separate from the NESHAP requirements. If these facilities reclassified, the state requirements would necessitate them to continue to operate the control technologies as they have done in the past. Based on this review, we would expect no emissions increases from these facilities if they were to reclassify.

We estimate one facility in alternative scenario 2 and could potentially reclassify. Based on this review, we would expect some potential for emission decreases (4 tpy for combined HAP) from this facility it opted to reclassify. As noted above, facilities will consider the costs to reduce emissions as part of their decision to reclassify. We examine this in our analysis of the alternative scenario 2 as applied to several source categories. This analysis can be found in the RIA for the final rule.

Surface Coating of Miscellaneous Metal Parts and Products

The technology basis of the major source NESHAP standard is low-HAP coatings for all subcategories (except magnet wire, for which the standard is based on the use of a catalytic oxidizer that is part of the curing oven and is integral to the process).

Facilities in this source category are not subject to an NSPS, but they may be subject to state rules based on 1978 and 2008 CTGs. Facilities that are area sources may be subject to the area source NESHAP standard for paint stripping and miscellaneous surface coating operations (subpart HHHHHH).

Based on the MM2A database, 368 facilities are subject to this NESHAP. We estimate 233 facilities in the primary scenario. Compliance with major source NESHAP can be demonstrated by (1) compliant coatings; (2) an emission rate without add-on controls; or (3) an emission rate with add-on controls. We reviewed the permits from 107 major source facilities and determined that a majority of the facilities are using the first and second compliance options, and approximately 30 percent of these facilities have add-on controls. Because they have either already re-engineered their coatings or use emission controls (including controls that are integral to their curing ovens) supports a conclusion they will continue to use low-HAP coatings and controls to comply with any VOC coating limits. In conclusion, we expect no emissions increase from these facilities if they were to reclassify, except in the alternative set of assumptions for coatings discussed above.

The MM2A database includes 48 facilities in alternative scenario 2. We expect surface coating sources would review their engineering calculations to ensure they are not over-estimating the annual HAP emissions they are reporting. They would also probably examine the solvents used in their cleaning operations and consider replacing any HAP-containing solvents with non-HAP solvents to reduce their emissions. Finally, they would speak to their coating supplier to see if lower-HAP coatings are already on the market that could meet their specifications without having to invest in "reformulation," so the only investment would be some testing of the new coatings. Based on our review, we would expect some emission decreases (79 tpy of single HAP and 53 tpy for combined HAP)[14] from these facilities if they were to reclassify as area sources.

Wet-Formed Fiberglass Mat Production

The technology basis of the major source NESHAP standard is the use of thermal oxidizers or similar controls (*e.g.*, RTO, regenerative catalytic oxidizer) and the demonstration of compliance with the percent-reduction requirement (96 percent destruction efficiency of formaldehyde). Formaldehyde-free resins are used in limited applications.

There are no individual state rules/NSPS/CTG that limit HAP from these sources, though some may be subject to state VOC limits.

The MM2A database indicates seven facilities are subject to the NESHAP. We estimate four facilities in the primary scenario. Based on permit reviews, two facilities have permit requirements associated with VOC control. Because formaldehyde is a VOC, we assumed that if these two facilities were to reclassify, the state requirements would prevent any potential for

[14] The total change in HAP for combined HAP is a smaller value that the total for a single HAP because more sources will have to reduce single HAP than total HAP to reclassify.

changes to the operating parameters of the add-on controls. Based on this review, we would expect no emissions increases if these two facilities were to reclassify.

In a review of a third facility's permit, we determined that it is not subject to any NESHAP and is, therefore, not impacted by MM2A. The fourth facility's permit indicates that it is not subject to other state rules limiting VOC or HAP emissions or that require operation and maintenance of an emission capture and control system. The latter source demonstrates compliance with the percent-reduction NESHAP standard, indicating >96 percent control, and most of that level of control would be needed to maintain area source status.

As a result of a review of operating permits for this source category, we determined that under one set of assumptions for our illustrative analysis, if these sources were to reclassify we could expect them to operate the add-on controls at the same control level as prior to reclassification, resulting in no potential increases in emissions due to the reclassification.

Under a second set of assumptions for our illustrative analysis, we reviewed whether these four facilities could potentially be allowed to adjust the operating parameters to achieve less than 96 percent reduction of formaldehyde. We found that only one facility has a potential to increase emissions under this set of assumptions. If it were to reclassify and the permit requires control of formaldehyde at a lower percentage reduction (less than 96 percent control), emissions could potentially increase (0.14 tpy for a single HAP or 9.5 tpy for combined HAP).

The MM2A database indicates one facility in alternative scenario 2, and we estimate that emissions of HAP would be reduced by 0.6 tpy for single HAP and 10 tpy for combined HAP if it opted to reclassify.

Wood Furniture Manufacturing

The technology basis of the major source NESHAP standard is low-HAP coatings and high-efficiency application methods. The major source NESHAP limits formaldehyde content in coatings and adhesives used in wood furniture manufacturing and prohibits the use of conventional spray guns. The RTR confirmed that most facilities are using low- and no-formaldehyde coatings and contact adhesives and found only one facility using an add-on control.

These facilities are not subject to an NSPS, but they could be subject to state rules based on a 1996 CTG,[15] which is used in the establishment of reasonably available control technology (RACT) for VOC for ozone nonattainment areas.

The MM2A database includes 333 facilities are subject to the NESHAP. We estimate 224 facilities in the primary scenario. If facilities were to reclassify, we expect they would continue to comply with the limits on formaldehyde content in coatings and adhesives, and the prohibition

[15] Control of Volatile Organic Compound Emissions from Wood Furniture Manufacturing Operations. EPA-453/R-96-007. April 1996.

on the use of conventional spray guns. These facilities have already reformulated their coatings and implemented spray application compliance requirements and would need to continue using these measures to maintain area source status. Therefore, we would expect no emissions increase from these facilities if they were to reclassify.

The MM2A database indicates 28 facilities in alternative scenario 2. Some of these facilities may already be using low-HAP coatings but have high production volumes. Others may rely on formulations that contain a higher percentage of HAP due to product specifications. Based on this review, we would expect some potential for emission decreases (76 tpy single HAP, and 17 tpy for combined HAP) if these facilities were to reclassify as area sources.

3. Inference of Response from Available Data and EPA Source Category Technical Leads

For the final rule, we expanded our analysis of source categories and the assessment of emission changes in response to public comments. We utilize the same approach as is described in section C of this memo to determine the potential response from the source category to the MM2A rule.

Asphalt Processing and Asphalt Roofing Manufacturing

The review includes two source categories related to asphalt production. The technology basis of the major source NESHAP standard is use of thermal oxidizers to meet PAH emission limits, or Electrostatic Precipitator (ESP) to meet alternative limits for PM. There is an area source NESHAP for these source categories and an NSPS is applicable to facilities built after 1982.

The MM2A database includes one facility in the primary scenario. According to a memo from the EPA source category technical lead who reviewed the facility's operating permit indicates that gaseous emissions are controlled by thermal oxidizers (afterburners) and PM emissions are controlled by baghouse fabric filters. The source has enforceable conditions in its permit requiring operation of afterburners and PM control equipment to achieve 95 percent control efficiency to limit major source status for 40 CFR section 52.2, Prevention of Significant Deterioration, which serves as a limit on their ability to increase emissions. As a result, this facility will not increase emissions as a result of reclassification under MM2A.

The MM2A database indicates one facility in alternative scenario 2. We determined that this facility is a petroleum refinery that also has asphalt processing activities. The Refineries Emission Model indicates that any refinery that is above the MST will not be able to reduce to below the 10/25 (See the source category characterization for Refineries for more information).

Engine Test Cells

The technology basis of the major source NESHAP is the use of catalytic or thermal incinerators (*i.e.*, RTO). The NESHAP established four subcategories of engine test cell/stands including those used for testing:

- internal combustion engines of 25 horsepower or more;
- internal combustion engines of less than 25 horsepower;
- combustion turbine engines; and
- rocket engines.

Although the rule covers these four subcategories, it limits HAP only from new or reconstructed engine test cells/stands used for testing internal combustion engines of 25 horsepower or more located at a facility considered a major source of air toxics emissions.

The MM2A database includes 26 facilities in the primary scenario. Of the 26 facilities, only two facilities in the U.S. have controls being operated for purposes of the major source NESHAP. Only one of those facilities is indicated in the MM2A database under the primary scenario with actual emissions of 1.4 tpy total HAP. According to the EPA technical lead, this facility could potentially opt to reclassify under MM2A, however any change in emissions would be limited by BACT requirements under state rules for Michigan. The requirements limit the emissions of all non-VOC toxic air contaminants using CO as a surrogate for air toxics. This facility currently operates an RTO. If the RTO were to be adjusted to lower temperatures under BACT, emissions would increase. We are unable to determine the exact change in emissions; therefore, we employ the approximation methods describe in section C (e.g. actual emissions x 10 to illustrate maximum potential risk change) and conclude that emissions could potentially increase by 14.1 tpy.

The MM2A database indicates two facilities in alternative scenario 2 that were not assessed in the analysis.

Iron and Steel Foundries

Facilities in the Iron and Steel Foundries source category are not likely to reclassify. These sources have already installed add-on controls that the source will need to continue to operate if they were to reclassify (i.e., sunk costs). These sources would not be exempt from the monitoring and recordkeeping requirements, and it is unlikely that they would want to incur the cost of reopening their air permits. The industry is also cautious due to uncertainties and the timing of the post-promulgation judicial review. As a result of this review, we conclude that this source category would not be impacted (as reflected in the MM2A database memo).

Leather Finishing Operations

Due to the substantial costs associated with reformulating a coating product and testing for quality assurance, the facilities in the MM2A database are not likely to alter the low HAP coatings currently in use. These facilities do not operate add-on pollution control technologies in order to comply with the Leather Finishing Operations NESHAP, therefore, such technologies are not a factor in determining if sources would alter their emissions as a result of the MM2A rule. The facilities reviewed would be limited in their ability to increase production (and hence emissions) under the current plant structures. In addition, there are regulatory mechanisms

applied to some facilities to limit VOCs emitted to the air that would also limit production and therefore HAP emissions. Finally, economic data indicates that the Leather industry is currently slowing in their production levels by a rate of -3.5 percent (IBISworld market research website, August 2019; www.ibisworld.com/united-states/market-research-reports/leather-tanning-finishing-industry). This indicates that the industry would be limited in its ability to increase production directly in response to the MM2A rule, and emissions as well. In conclusion, with the likely continued use of low HAP coatings and slow market growth in the industry, we conclude that emissions will not increase for this source category if facilities decide it is beneficial for their business and choose to reclassify. For alternative scenario 2, the EPA source category technical lead stated that there is a possibility of this facility adjusting production levels between this facility and another facility in the primary scenario and could reclassify. Because it would be a trade-off of emissions between facilities in the same source category, we do not include this in our estimate of emission reductions.

Marine Tank Vessel Loading Operations

For this analysis based on the applicability criteria of the Marine Vessels Loading NESHAP, sources in the primary scenario are subject to the submerged fill standards for Cargo Filling Lines. The cargo filling lines requirement will continue to apply to these sources in the event they were to reclassify to area source status and no longer be subject to the NESHAP because these requirements are also Coast Guard requirements. Based on this review, we would expect no emissions increases if these facilities were to reclassify to area source status.

In addition, we reviewed a sampling of state requirements in those states where the most marine vessel loading terminals are located. Many of these sources are located within areas regulated for VOC emissions and any VOC requirements applicable to these sources will also control HAP emissions. Below are some examples of VOC requirements applicable to MVL in three states:

- Texas: Texas requires 90 percent control of MVL at marine terminals only in the Houston/Galveston area counties (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties).
- Louisiana: Louisiana requires emission controls for MVL facilities with uncontrolled PTE of 25 tpy or more of VOC in the parishes of Ascension, East Baton Rouge, Iberville, Livingston, and West Baton Rouge, or 100 tpy or greater of VOC in any other parish. When loading liquids with vapor pressure ≥ 1.5 psia, a vapor collection and control system that reduces VOC 90 percent by weight must be used.
- Alaska: Alaska requires that VOC loading sources located only in the Port of Anchorage that have a design throughput of 15 million gallons (357,143 barrels) or more per year reduce VOC emissions by operating a vapor collection system and liquid product loading equipment that loads volatile liquid through submerged filling, and processes the collected vapors in a control device that emits no more than 10 milligrams of organic vapors per liter of volatile liquid loaded.

Based on this review, we would expect no emissions increases if these facilities were to reclassify to area source status.

The MM2A database indicates nine facilities in alternative scenario 2. While these facilities are typically collocated with other source categories making it more difficult to reduce total emissions to levels below the MST, if they were to reclassify, the total emissions reduced would be 23 tpy.

Miscellaneous Organic Chemical NESHAP (MON)

The technology basis of the major source NESHAP standard are combustion control devices operating at a 95 to 99.9 percent combustion efficiency depending on the emission point, storage tank controls, and work practices for batch processes.

The MM2A database includes 197 facilities that are subject to the major source NESHAP and indicates 33 facilities in the primary scenario (22 of which operate below 50 percent of the MST). We reviewed the operating permits for the 33 facilities in the primary scenario. Our permit review focused on the potential to emit (PTE) HAP for each facility. We used that information to calculate the maximum potential emission increase similar to the analysis conducted for the refineries source category.[16]

Based on this review, it was determined that:

- Nine facilities are not likely to seek reclassification based on information contained in their permit. We did not consider these facilities for our emission analysis.
- Seven could potentially reclassify and it is highly likely that four of the facilities will reclassify because their permit says they are minor sources that are subject to subpart FFFF only because of the OIAI policy. Therefore, we consider these facilities in our analysis of emission changes below.
- For the remaining 17 facilities, we were unable to find the PTE information in their permits. For these facilities it is more uncertain whether they would seek to reclassify and how emissions might change as a result. *(For this analysis, we assume they could reclassify and measure emission change from actual emissions to 75 percent of the MST or applied the alternative calculation of 10 times the actual emissions).*

In addition, if MON facilities were to reclassify as area sources, they could potentially be subject to the Chemical Manufacturing Area Sources NESHAP (CMAS), which was issued in 2009 and amended in 2012. CMAS is the area source equivalent to the Hazardous Organic NESHAP (HON). The HON covers similar emission points at organic chemical facilities as the MON. However, CMAS covers fewer emission points and fewer pollutants than the HON and MON. While the MON requires control of all 187 listed HAP, CMAS only requires control of a small subset of HAP, including: 1,3-butadiene; 1,3-dichloropropene; Acetaldehyde; Chloroform;

[16] Some MON facilities have reclassified since January 2018 and the EPA has reviewed their operating permits in the memo, *Review of reclassification actions for the rule "Reclassification of Major Sources as Area Sources under Section 112 of the Clean Air Act"* and concluded that emissions will not change for those that have already reclassified.

Ethylene dichloride; Hexachlorobenzene; Methylene chloride; Quinoline; Arsenic compounds; Cadmium compounds; Chromium compounds; Lead compounds; Manganese compounds; Nickel compounds; and Hydrazine. There are also exemptions under CMAS if the affected systems do not use any of the HAP listed in Table 1 to 40 CFR Subpart VVVVVV as feedstocks or if they do not manufacture any listed HAPS as byproducts or products.

Therefore, if the facilities detailed above were to reclassify (a total of 26 facilities), this source category could potentially increase total HAP emissions by about 280 tpy.

In addition, some facilities identified in the MM2A database in the primary scenario have an estimated PTE that is above the MST, yet their actual emissions are well below 75 percent of the MST. These facilities might opt to reclassify by taking a limit on their PTE down to a level below the MST. For these facilities, we calculate the reduction in PTE that the facility must take to modify their PTE to down to 18.75 tpy. This reduction in emissions can be viewed as foregone emissions under PTE. Actions taken to lower PTE are highly dependent on the actions of the permitting authority and the facilities' demonstration of emission limits needed to ensure they can sustain emissions below the MST. For four facilities in the MM2A database in this category, the foregone allowable emissions totals a reduction of about 22 tpy. Therefore, the net change in emissions for the MON source category is a net increase of 258 tpy.

Seventeen facilities operate in alternative scenario 2 (seven of which are between 75 and 100 percent of the MST) with an estimated potential emission reduction of 59 tpy.

4. Summary of Emission Impacts

Tables 4 and 5 present a summary of the findings from the emission impact analysis presented in this memo. Under the primary scenario, the total change in emissions across 128 facilities is an increase of about 919-1258 tpy. This represents 3.1 percent of the total number of facilities in the 72 source categories; and 7.9 percent of the total number of sources in the primary scenario. In addition, reductions due to foregone allowable emissions totals 193 tpy. Under alternative scenario 2, the total change is emissions from approximately 105 facilities is a decrease of about 183 tpy.

Table 4. Summary of Illustrative Emission Impacts Under the Primary Scenario for the MM2A Rule

Source Category	Number of Facilities in Source Category	Primary Scenario		
		Number of Facilities below 75% of the MST	Number of Facilities Contributing to Potential Emission Changes	Total Potential Change in Emissions (tpy)
17 Coating Source Categories (including Boat Manu. And RPC)	2215	1076	27	0-302
55 Other Source Categories Analyzed	1853	478	101	919 – 956
Totals for 72 source categories	4068	1614	128 (3.1% of the total number of sources in source categories; 7.9% of the total number of sources in the primary scenario)	919-1258 (this value does not include reductions due to total foregone allowable emissions of -193 tpy)
Detailed Summary by Source Category				
Source Category	**Number of Facilities in Source Category**	**Primary Scenario**		
		Number of Facilities below 75% of the MST	**Number of Facilities Contributing to Potential Emission Changes**	**Total Potential Change in Emissions (tpy)**
MON	197	28	19	280 tpy total HAP (this value does not include the

				potential foregone emission reduction of -22 tpy)
OLD	178	57	54	480 – 517 tpy total HAP
Refineries (2 source categories)	142	24	24	113 tpy total HAP (this value does not include the potential foregone emission reduction of -205 tpy)
Engine Test Cells/Stands	59	26	1	14.1 tpy total HAP
HCl	19	4	2	8.39 tpy single HAP; 22.31 tpy total HAP
Wet Formed Fiberglass	7	4	1	0.14 tpy single; 9.5 tpy total HAP
			101	919 – 956 (this value does not include the potential foregone emission reduction of -193 tpy)

Table 5. Summary of Illustrative Emission Impacts Under Alternative Scenario 2 for the MM2A Rule

Source Category	Number of Facilities in Source Category	Alternative Scenario 2	
		Number of Facilities Contributing to Potential Emission Change	Total Potential Change in Emissions (reductions in tpy)
HCl	19	1	(0.7 single HAP); (0.07 total HAP)
MON	197	17	(59 total HAP or single HAP depending on facility)
OLD	178	8	(18 total HAP)
Surface Coatings for Metal Cans	5	1	(4 total HAP); (4 single HAP)
Surface Coatings for Misc. Metal Parts	368	48	(52 total HAP); (79 single HAP)
Wet Formed Fiberglass	7	1	(0.6 single HAP); (10 total HAP)
Wood Furniture	333	28	(76 single HAP); (17 total HAP);
Marine Vessel Loading Operations	152	9	(23 total HAP)
Total		113	(183)

5. Description of Uncertainties

As has been discussed at length in the documentation of the MM2A database and cost analysis, the voluntary nature of this action, along with other factors specific to each facility, add uncertainty to the EPA's assessment of facility response to this rule. This assessment addresses these uncertainties and others associated with the assessment of emission impacts. In addition, data used for the analysis are based on recent RTR modeling files and the 2017 NEI. Any errors in those files or in the actual emission estimates would be carried forward into this analysis.

The most accurate way to estimate the emission impacts from sources that reclassify is to evaluate the methods of compliance set in the permits for these sources both before and after reclassification. This method allows us to most directly assess the potential for emission changes that would not have occurred without reclassification and is the method we used to evaluate the potential for emissions changes in our analysis of 69 actual reclassifications (see permit review TSM). However, because permit authorities in the states are responsible for processing the actions and deciding upon the conditions necessary for the permits (after public input), we lack definitive information on the specific conditions that will be set in post-reclassification permits for any sources that may reclassify in the future. Thus, estimating emissions impacts requires us to apply broad assumptions, all of which increase the uncertainty of our analysis.

In addition to these general uncertainties, other considerations could impact the emissions estimates:

- *Operation of Emission Control Technology and Strategies:*
    - The main factor determining the potential for emissions changes is whether a facility could adjust the types of control technology, formulations, and process controls used to comply with the major source NESHAP requirements upon reclassifying.
        - Compliant Materials: We considered pollution prevention measures (*e.g.,* process changes or switches to low-HAP surface coatings) as not adjustable and assume no emission change. If sources are able to adjust such controls, the emission estimates of this analysis would be understated.
        - Non-adjustable Control Technologies: We assumed particulate controls for inorganic HAP (*e.g.,* fabric filters, electrostatic precipitators) are not adjustable and assume no emission change. If sources are able to adjust such controls, the magnitude of emission increases of this analysis would be understated.
        - Adjustable Control Technologies: For adjustable controls (*e.g.,* caustic scrubbers, RTOs), our analysis considered two different sets of assumptions. The first derives from the findings of our permit review of sources that have reclassified since January 2018 that nearly all sources continued to use the same compliance strategy before and after reclassification, and that their add-on controls were not adjusted to decrease control efficiency after the source reclassified. To account for the

potential for future reclassification actions to differ from those that we have reviewed, we also estimate emissions increases if sources were to be allowed to change the operating parameters of adjustable add-on controls upon reclassifying. The range of results presented in our analysis accounts for some of the uncertainties, but emissions changes could vary depending on requirements of specific reclassification actions.

- *Proxy for PTE:* Where EPA does not have sufficient information to determine PTE prior to reclassification, we use actual emissions as a proxy for baseline emissions before reclassification. This results in an overstatement of emission increases, sometimes by a significant amount.

  For facilities operating at very low levels of actual emissions, we assume a conservatively high measure of emission increase of a factor of 10 (*e.g.,* a facility operating at 0.5 tpy with no information on PTE would increase to 5 tpy) rather than calculating emission increases to the 75-percent threshold level of 18.75 tpy, which could be 1000-times actual emissions in some cases. However, actions taken that would increase emissions by even 10-fold would likely require a modification to the source, and hence a modification to their permit, under the requirements of NSR or PSD. These requirements likely would limit the potential for emission increases outside of actions taken under MM2A. Thus, even our PTE proxy of a factor of 10 increase is likely to result in an overestimate of emission increases for those facilities.

- *Baseline Measure of Current and Future Emissions:* As noted above, when PTE is unavailable for the calculation of change in emissions, we measured the change from actual emissions. For these actual emissions, we use a single year of NEI emissions data or RTR modeling file data; this single year could represent typical emissions at the source, but it could also be higher or lower than typical emissions. This has an unknown impact on the direction of emission impacts. While averaging several years of data may reduce this uncertainty somewhat, given the high level of uncertainties in all other areas of the analysis, this improvement would not significantly reduce overall uncertainty, and thus is not warranted for this analysis. In addition, we assume that a single year of emissions data is representative of emissions into the future (up to 2025). Projections of HAP emissions for the source categories would contain additional uncertainties (e.g., economic growth projections), and thus use of emission projections is not warranted for this analysis.

- *Source Categories Missing from Analysis:* We are unable to assess emission impacts for the categories contained in the extrapolated cost approach, which may lead to an underestimate of emission impacts. This underestimate is diminished by the fact that several of the extrapolated source categories would not be the primary business activity of the source, and may be accounted for in our analysis of sources under their primary business activity (*i.e.*, emissions from utilities at an industrial source would be captured

in total HAP estimates contained in the database). In addition, we are unable to assess some of the categories in the RTR modeling files, which may also lead to an underestimate of emission impacts.

- *Choice of Compliance Margin:* The analysis assumes a compliance margin of 25 percent. Lesser compliance margins (*i.e.*, a 10-percent compliance margin or no compliance margin, as suggested by some commenters) would lead to a proportionally higher emission impact. Higher compliance margins would lead to a proportionally lower emission impact.

- *Facilities with Multiple NESHAP Activities:* For facilities that comply with multiple major source NESHAP, we characterize the facility's emissions response based on the primary industrial activity of the facility. This assumption ignores the potential for reducing or increasing HAP emissions from other emission points at the major source (*i.e.*, combustion engines, boilers, process vents, and other manufacturing operations in the facility). In reality, the change in pollutant emissions could be a mix of many different NESHAP pollutants. Sources will ultimately choose the lowest cost operating plan and evaluate pollutant impacts accordingly. The measurement of emissions change is from PTE of the primary NESHAP applied at the source. Such a PTE measure would not account for other NESHAP pollutants, so estimates would be understated. In many cases, the measure is from actual total HAP emissions, which would account for other NESHAP pollutants; in such cases, the measure is neither understated nor overstated. In source categories assumed to have no emissions changes, we assume no change for all NESHAP pollutants, which would understate emissions.

- *Regulatory Limitations:* The analysis assumes that many reclassifications will include requirements from other federal or state regulations that will limit changes in HAP emissions. Each permitting authority will consider the applicability of each requirement as they set conditions in post-reclassification permits. In some cases, the requirements can differ county-by-county within a state. Our analysis does not evaluate conditions at the county level, but rather presumes state-level regulations apply to the source. This would lead to understated emission changes if certain state requirements were not applicable to the source. In many cases, we lack information on regulatory limitations for specific sources. To the extent that there are regulatory limitations on some sources included in the analysis, the emissions estimates would be overstated.

- *Technological Limitations:* Commenters stated that there are factors that will prevent emissions increases, including environmental management systems with which sources are engaged that require them to identify environmental impacts, set performance objectives, implementation of standards for training and work practices, audit implementation of such standards, and take corrective action when deviations occur. We are unable to assess the impact of these factors in our emissions analysis, and this limitation, may result in an overstatement of emission impacts.

- *Economic Limitations:* To the extent that a source's emissions correlate with the level of production, markets could face challenges to expanding production that could limit potential emission increases from facilities. Industry-wide growth typically would be distributed across all facilities in the industry; however, this analysis considers maximum growth could be applied to the impacted facility. This assumption may lead to an overstatement of emission increases.

- *Foregone Allowable Emissions Under PTE:* We calculate foregone allowable emissions for some facilities that have an estimated PTE that is above the MST, yet their actual emissions are well below 75 percent of the MST. We present an estimate of emissions reductions by restricting their PTE down to 75 percent of the MST. If permitting authorities set PTE at higher levels than the primary scenario of this analysis, the foregone emissions presented would be overstated.