MEMORANDUM

TO: Docket for rulemaking, "National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks" (EPA-HQ-OAR-2002-0085) and "National Emission Standards for Hazardous Air Pollutants for Coke Ovens Batteries" (EPA–HQ-OAR– 2003–0051)

DATE: June 2025

SUBJECT: Economic Impact Analysis for the National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks, and Coke Oven Batteries; Residual Risk and Technology Review, and Periodic Technology Review: Interim Final Rule

1. Introduction

This document describes the estimated cost savings of the U.S. Environmental Protection Agency's (EPA) interim final National Emission Standards for Hazardous Air Pollutants (NESHAP) rule for the coke ovens industry. Two NESHAP regulate emissions from coke oven source categories: Coke Oven Batteries (COB) (40 CFR part 63, subpart L) and Pushing, Quenching, and Battery Stacks (PQBS) (40 CFR part 63, subpart CCCCC, or "5C"). A coke oven battery consists of a group of ovens connected by common walls and is used to convert coal to coke. Blast furnaces use coke to reduce iron ore to molten iron, which can be further refined to produce steel. Coke oven emissions are a mixture of coal tar, coal tar pitch, volatiles (benzene, toluene, xylenes, naphthalene), creosote, polycyclic aromatic hydrocarbons (PAH), and particulate matter (PM).[1] Coke ovens also emit acid gases (hydrogen fluoride (HF) and hydrogen chloride (HCl)), hydrogen cyanide (HCN), formaldehyde, mercury (Hg), and other PM non-Hg HAP metals (such as lead and arsenic).

The COB NESHAP addresses leaks from coke oven doors, lids, offtake systems, and charging for two groups of facilities based on whether chemicals are recovered from the coke process exhaust.[2] The PQBS NESHAP regulates emissions from coke oven processes known as pushing and quenching in addition to emissions from battery stacks. Pushing is the process of removing the coke from the oven after the coal has been coked. During quenching, the coke is cooled with water. Coke plants primarily emit coke oven emissions, which is a separately listed HAP under CAA section 112(b)(1).

The EPA finalized amendments to both NESHAP regulating coke oven source categories on July 5, 2024. For COB sources, the amendments updated certain emissions standards and added a fenceline monitoring requirement for benzene. For PQBS sources, the amendment set

[1] U.S. EPA. 2016. *Coke Oven Emissions*. Available at: https://www.epa.gov/sites/default/files/2016-09/documents/coke-oven-emissions.pdf.

[2] Offtake systems include the standpipe and standpipe caps, goosenecks, stationary jumper pipes, mini-standpipes, and standpipe and gooseneck connections.

maximum achievable control technology (MACT) standards for previously unregulated HAP. The EPA also finalized revisions to startup, shutdown, and malfunction provisions and electronic reporting requirements affecting both source categories. These amendments completed the residual risk and technology review (RTR) for the PQBS source category and the technology review for the COB source category. The emissions limits and fenceline monitoring requirements included in the amendments required compliance by July 7, 2025, or January 5, 2026, depending on the provision.

This interim final rule revises all compliance deadlines associated with the July 5, 2024, NESHAP amendments to July 5, 2027, while the EPA issues corrections and clarifications to the language in the regulatory text associated with the new requirements and reconsiders various aspects of the rule. This Economic Impact Analysis (EIA) estimates the cost impacts from revising these compliance deadlines. This interim final rule is not an economically significant action under E.O. 12866, as it is not expected to have an annual impact on the economy of $100 million or more in any year.

1.1. Industry Background

Coke is metallurgical coal that has been baked into a charcoal-like substance that burns more evenly and has more structural strength than coal. Coke is primarily used as an input for producing steel in blast furnaces at integrated iron and steel mills. The U.S. produced 12.5 million short tons of coke in 2021.[3]

There are two types of coke facilities: byproduct recovery, which recover chemicals from coke oven gas in an on-site chemical plant, and nonrecovery, which do not recover chemicals but may recover heat. One of the primary differences between byproduct recovery and heat and nonrecovery (HNR) facilities is that the ovens at byproduct recovery facilities operate under positive pressure, whereas at HNR facilities the ovens operate under negative pressure. The heat recovery facilities use the heat from coke oven gas to produce electricity in on-site heat recovery steam generators (HRSG). These facilities use bypass stacks when HRSG are bypassed for maintenance, repair, or malfunction, whereas nonrecovery facilities without heat recovery use waste heat stacks whenever the facility is operational. Both the bypass and waste heat stacks release coke oven gas from the coke ovens and are collectively referred to as HNR B/W stacks. Coke facilities are either integrated into a larger iron and steel manufacturing facility or as stand-alone “merchant coke” facilities. Merchant facilities sell their product to steel manufacturers nationally.

[3] U.S. Energy Information Administration (2022). *Quarterly Coal Report.* Available at: https://www.eia.gov/coal/production/quarterly/.

Coke making involves heating coal in the absence of air, resulting in the separation of the non-carbon elements of the coal. The process bakes the coal into a charcoal-like substance for use as fuel in blast furnaces at integrated iron and steel manufacturing facilities and cupolas at iron foundries. The coke making process includes the following steps: (1) coal preparation and charging, (2) coking and pushing, (3) quenching, and (4) byproduct or heat recovery (depending on the type of facility).

1.1.1. Byproduct Coke Making

In byproduct coke making, coal is converted to coke in long, narrow coke ovens that are constructed in groups with common side walls, called batteries (typically consisting of 10 to 100 ovens). Metallurgical coal is pulverized and fed into the oven through ports at the top of the oven, which are then covered. The coal undergoes destructive distillation in the oven at 1,650 to 2,000 degrees Fahrenheit for 15 to 30 hours. A slight positive backpressure maintained on the oven prevents air from entering the oven during the coking process. After coking, the hot coke is then pushed from the coke oven into a railroad car and transported to a quench tower at the end of the battery where it is cooled with water ("quenched") and screened to a uniform size. The raw coke oven gas is removed through an offtake system to a separate byproduct (chemical) recovery plant where byproducts, such as benzene, toluene, and xylene, are recovered. The cleaned gas is then used to underfire the coke ovens and for fuel elsewhere in the plant.

1.1.2. Heat and Nonrecovery Coke Making[4]

In an HNR facility, the oven is horizontal and operates under negative pressure. All the volatiles in the coal are burned and provide heat to fuel the coking process. Primary air is introduced through ports in the oven doors and partially combusts the volatiles in the oven. Other air is introduced through sole flues, which run under the coal bed. Hot gasses are sent through common tunnels to an HRSG, in the case of a heat recovery plant (where high-pressure steam is produced for heating purposes or electricity generation), or to a B/W stack. The common tunnels are equipped with afterburners to destroy any remaining organic chemicals.

[4] This section is adapted from:

Towsey et al. (2013). *Comparison of Byproduct and Heat-recovery Cokemaking Technologies*. Association for Iron and Steel Technology. Available at: https://accci.org/wp-content/uploads/2021/07/comparison-of-byproduct-and-heatrecovery-cokemaking-technologies-07-22-2021.pdf

1.1.3. Use of Coke in Steel Production

Coke is charged into the top of an iron-smelting blast furnace along with iron ore, limestone, and other flux products.[5] Hot air is blasted into the bottom of the furnace, which ignites the coke. The burning coke melts the iron and provides fuel for the chemical reaction in the furnace. Coke releases carbon as it burns, which combines with the iron. Carbon bonds with oxygen in the iron ore to reduce the iron oxide to pure iron.[6] The molten iron is fed (along with steel scrap and other raw materials) to a basic oxygen furnace to produce steel. Producing steel in an integrated iron and steel (II&S) manufacturing facility typically requires between 500 and 650 kg of coke per ton of metric steel produced.[7] II&S facilities manufactured 29 percent of steel produced in the U.S. in 2023.[8] Electric arc furnaces (EAFs, sometimes referred to as mini mills) produced the rest.

1.1.4. Coke Facilities in the United States

Table 1 lists the coke facilities in the U.S. There are fourteen total facilities owned by six parent companies. Of these fourteen facilities, three are idle or closed: Cleveland-Cliffs Inc.'s Follansbee, WV plant and Middletown, OH plant (located within a steel manufacturing facility) are closed,[9,10] and Bluestone Coke (owned by the holding company James C. Justice Company, Inc.) is idle.[11] Bluestone Coke recently entered into a consent decree that could allow it to resume operations conditional on paying fines and upgrading the facility to control air emissions (industry experts estimate Bluestone may need capital improvements in excess of $150 million in

[5] "Flux" is a name for any substance introduced in the blast furnace to remove impurities in the molten iron in the form of slag. Typical flux materials in the blast furnace include limestone, silica, and dolomite. (https://www.britannica.com/technology/flux-metallurgy, accessed 3/20/2025.)

[6] U.S. EPA. (2002). *Economic Impact Analysis of Final Integrated Iron and Steel NESHAP*. Available at: https://www.epa.gov/sites/default/files/2020-07/documents/iron-steel_eia_neshap_final_09-2002.pdf.

[7] U.S. EPA. (Oct. 1986). *AP-42 Chapter 12.5: Iron and Steel Production.* Available at: https://www.epa.gov/sites/default/files/2020-11/documents/c12s05.pdf. Accessed 4/1/2025.

[8] USGS (2024). *USGS Mineral Commodity Summary 2024*. Available at: https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-iron-steel.pdf.

[9] Jenkins, Jeff. MetroNews. (February 11, 2022). *Cleveland-Cliffs closing Follansbee coke plant*. Available at: https://wvmetronews.com/2022/02/11/cleveland-cliffs-closing-follansbee-coke-plant/. Accessed 4/1/2025.

[10] McCrabb, Rick. Dayton Daily News. (October 12, 2021). *Coke oven at Middletown Works idle and may be torn down; company buys scrap business for $775M*. Available at: https://www.daytondailynews.com/news/coke-oven-at-middletown-works-idle-may-be-torn-down-no-layoffs-planned-according-to-union/KAWMIEUK2VHSHCIQHKDGACBBXM/. Accessed 4/1/2025.

[11] Blau, Max. ProPublica. (Dec. 12, 2022). Wealthy Governor's Company to Pay Nearly $1 Million for Chronic Air Pollution Violations. Available at: https://www.propublica.org/article/bluestone-jim-justice-north-birmingham-consent-decree. Accessed 4/4/2025.

order to reopen).[12] Of the 11 active coke facilities, six are byproduct recovery facilities and five are HNR. All five HNR facilities are owned by SunCoke Energy, Inc., and all but one (Vansant, VA) use HRSGs. The total active U.S. coke making capacity is about 12.4 million short tons per year, with about 66 percent coming from byproduct recovery facilities.

Table 1: U.S. Coke Facilities

Ultimate Parent Company	Facility	Facility Type	Capacity (million short tons)	Status
Cleveland-Cliffs Inc.	Burns Harbor, IN	Byproduct Recovery	1.4	Active
	Follansbee, WV		N/A	Closed
	Monessen, PA		0.35	Active
	Middletown, OH		0.35	Closed
	Warren, OH		0.55	Active
DTE Energy Company	River Rouge, MI	Byproduct Recovery	0.8	Active
Drummond Company	ABC-Tarrant, AL	Byproduct Recovery	0.73	Active
James C. Justice Companies Inc.	Bluestone-Birmingham, AL	Byproduct Recovery	0.35	Idle
SunCoke Energy, Inc.	East Chicago, IN	Heat and Nonrecovery; Heat Recovery Steam Generator	1.22	Active
	Franklin Furnace, OH		1.1	Active
	Granite City, IL		0.65	Active
	Middletown, OH		0.55	Active
	Vansant, VA	Nonrecovery	0.72	Active
U.S. Steel	Clairton, PA	Byproduct Recovery	4.3	Active

Source: Company websites.

1.2. Regulatory Background

Section 112 of the Clean Air Act (CAA) establishes a two-stage process to develop standards for emissions of HAP from new and existing stationary sources in various industries or sectors of the economy (i.e., source categories). Generally, the first stage involves establishing technology-based standards under CAA section 112(d) for source categories identified as emitting one or more HAP listed in CAA section 112(b). Sources of HAP emissions are either major sources or area sources depending on the amount of HAP the source has the potential to

[12] Ibid.

emit. CAA section 112(d)(2) states that the technology-based NESHAP must reflect the maximum degree of HAP emissions reduction achievable after considering cost, energy requirements, and non-air quality health and environmental impacts. These standards are commonly referred to as MACT standards. CAA section 112(d)(3) establishes a minimum stringency level for MACT standards, known as the MACT "floor." For area sources, CAA section 112(d)(5) gives the EPA discretion to set standards based on generally available control technologies or management practices (GACT) in lieu of MACT standards. In certain instances, CAA section 112(h) states that the EPA may set work practice standards in lieu of numerical emission standards.

For major sources and any area source categories subject to MACT standards, the second stage in the standard-setting process focuses on identifying and addressing any remaining (i.e., "residual") risk pursuant to CAA section 112(f) and concurrently conducting a technology review pursuant to CAA section 112(d)(6). CAA section 112(f)(2) requires the EPA to evaluate residual risk within eight years after promulgating a NESHAP to determine whether risks are acceptable and whether additional standards beyond the MACT standards are needed to provide an ample margin of safety to protect public health or prevent adverse environmental effects.

No requirement exists to address residual risk for area sources subject to GACT standards, but technology reviews are still required. Technology reviews assess developments in practices, processes, or control technologies and revise the standards as necessary without regard to risk, considering factors like cost and cost-effectiveness. The EPA must conduct a technology review every eight years after a NESHAP is promulgated. Thus, the first review after a NESHAP is promulgated is a residual risk and technology review (RTR), while the subsequent reviews are only technology reviews.

The EPA also addresses regulatory gaps (i.e., "gap-filling") when conducting NESHAP reviews, meaning it must establish standards for listed HAP that are known to be emitted from the source category pursuant to our interpretation of Louisiana Environmental Action Network v. EPA, 955 F.3d 1088 (D.C. Cir. 2020) (LEAN). The EPA has generally set new MACT standards related to gap-filling under CAA sections 112(d)(2) and (d)(3) or, in specific circumstances, under CAA sections 112(d)(4) or (h).

The COB source category NESHAP was promulgated in 1993. The rule addresses emissions from oven doors, lids, offtake systems, and charging for two groups of facilities based on whether chemicals are recovered from the coke process exhaust. The two types of facility are byproduct recovery facilities and HNR facilities. These types of facilities are described in Section 1.1. The COB source category NESHAP includes two compliance "tracks" that facilities can choose from: (1) the MACT track and (2) the lowest achievable emissions rate (LAER) track. The LAER track provides an extended compliance timeline but requires steeper emissions

reductions. The EPA finalized the RTR for the MACT track in 2005 but has not completed the RTR for the LAER track. The 2005 RTR for the MACT track identified unacceptable levels of remaining risk and increased the stringency of the standards for battery doors, lids, and offtake systems.

The PQBS source category NESHAP was promulgated in 2003 and applies to coke plants that are major sources of HAP emissions. For pushing processes (when coke is removed from the oven), the rule sets opacity limits and control device PM emissions limits. During quenching processes (when coke is cooled with water), the rule requires facilities to use water meeting certain criteria, meet limits for total dissolved solids in the quench water, equip quench towers with control devices known as baffles, and inspect and repair baffles on an ongoing basis. For battery stacks, the rule established opacity limits and requires the installation and operation of continuous opacity monitors. In addition, all batteries and battery controls are required to follow an operation and maintenance plan.

The EPA finalized amendments to both NESHAP on July 5, 2024. The amendments to the COB NESHAP included updates to leak rate limits for coke oven doors, lids and offtake systems and set a requirement for fenceline monitoring of benzene levels. The amendments to the PQBS NESHAP set MACT standards for previously unregulated emissions of acid gases (HF and HCl), formaldehyde, PAH, Hg, PM non-Hg metals, HCN, dioxins/furans (D/F), and volatile organic HAP (VOHAP), set an opacity limit for HNR B/W heat stacks, and set a zero percent leak limit for coke oven doors at HNR facilities. These amendments are summarized in Table 2 below.

Table 2: Summary of the 2024 Amendments to the 40 CFR part 63, Subparts 5C and L NESHAP

Emissions Source	Previous Standard	New Standard
40 CFR Part 63, Subpart L (COB)		
Fenceline Monitoring for Byproduct Coke Ovens	no requirement	work practice action level for benzene
Leaking from Coke Oven Doors		
Clairton Facility	3.3–4% limit	1.7–2.5% limit
Other Byproduct Facilities	0% limit or pressure monitoring	3.2–3.8% limit
HNR Facilities		0% limit and pressure monitoring
Leaking Lids	0.4% limit	0.32% limit
Leaking Offtake Systems	2.5% limit	2.1% limit
40 CFR Part 63, Subpart 5C (PQBS)		
HNR HRSG B/W Heat Stacks		MACT standard
Acid Gases, Formaldehyde (also a surrogate for VOHAP), Hg, PAH, and PM (as surrogate for non-Hg HAP metals)	no requirement	20% Opacity
HNR HRSG Main Stack		
Acid Gases, Hg, PAH (also a surrogate for Formaldehyde), PM (as surrogate for non-Hg HAP metals)	no requirement	MACT standard
Coke Pushing		
Acid Gases, HCN, Hg, PAH (also a surrogate for D/F, Formaldehyde and VOHAP)	no requirement	MACT standard
Byproduct Recovery Battery Stack		
Acid Gases, HCN, Hg, PM (as surrogate for non-Hg HAP metals), PAH, D/F, VOHAP	no requirement	MACT standard

Note: Higher opacity limit for coke oven doors applies to "tall" (equal to or greater than 6 meters) doors; lower leak limit applies to other doors. In addition, the COB NESHAP does not explicitly create separate requirements for the Clairton facility. However, it does impose different leak limits for doors at facilities with coke production capacity of greater than or equal to 3 million tons per year, which currently only affects the Clairton facility.

On September 3, 2024, the American Coke and Coal Chemicals Institute, SunCoke Energy, and the U.S. Steel submitted administrative petitions for reconsideration of the 2024 NESHAP amendments. These industry parties simultaneously submitted requests for administrative stay of the amendments pursuant to CAA section 307(d)(7)(B). On March 20, 2025, the EPA responded to the petitions for reconsideration by granting reconsideration on certain issues. The specific issues on which the EPA is granting reconsideration (and the attendant rationale) are discussed in the preamble of this interim final rule. The EPA is issuing

this interim final rule to revise any compliance deadlines associated with the 2024 amendments while working on the reconsideration.

1.3. Interim Final Rule Requirements

CAA section 112 requires that the EPA set deadlines for NESHAP requirements of no longer than three years following promulgation of a rule. However, the 2024 final rule set compliance deadlines of less than three years following promulgation. Specifically, the 2024 final rule set a compliance deadline of January 6, 2026, for the new PQBS MACT standards and a compliance deadline of July 7, 2025, for the PQBS opacity limit for HNR B/W stacks and the COB leak limits and fenceline monitoring requirement for benzene.

This interim final rule revises all compliance deadlines contained in the 2024 final coke ovens rule, with the exception of the opacity limit for HNR B/W stacks, to July 5, 2027, three years following promulgation of the 2024 final rule. The impact of the interim final rule on compliance deadlines for the coke ovens source category is contained in Table 3. The EPA estimated that facilities in the PQBS and COB source categories could comply with the new standards without installing additional pollution controls or otherwise needing to lower facility emissions. However, facilities will incur costs for periodic testing to demonstrate compliance with new MACT limits, to test opacity at HNR facilities with B/W stacks, to monitor for benzene at the fenceline, and to demonstrate compliance with the zero-percent leak limit for HNR coke oven doors. The EIA for the 2024 final rule presents estimates of these cost impacts.[13] This interim final rule is expected to generate cost savings for facilities in the coke ovens source categories by allowing facilities to avoid costs of compliance testing and fenceline monitoring over the period during which compliance with most provisions is no longer required. The next section of this EIA presents estimates of the compliance cost changes and potential economic impacts of this interim final rule.

[13] U.S. EPA. (2024). *Economic Impact Analysis for the Final National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks, Residual Risk and Technology Review; National Emission Standards for Hazardous Air Pollutants for Coke Oven Batteries Technology Review*. EPA-452/R-24-013. Doc. ID EPA-HQ-OAR-2002-0085-1597. Available at: https://www.regulations.gov/document/EPA-HQ-OAR-2002-0085-1597.

Table 3: Finalized and Revised Compliance for the Coke Ovens Source Categories

Requirement	Finalized Compliance Deadline	Revised Compliance Deadline
40 CFR Part 63, Subpart L (COB)		
Leak Limits for Doors/Lids/Offtake Ducts	July 7, 2025	July 5, 2027
Fenceline Monitoring for Benzene	July 7, 2025	July 5, 2027
40 CFR Part 63, Subpart 5C (PQBS)		
MACT Limits (PQBS)	January 6, 2026	July 5, 2027
Opacity Limits for HNR B/W Stacks (PQBS)	July 7, 2025	July 7, 2025

2. Emission, Cost, and Economic Impacts

This EIA analyzes only the estimated changes to costs expected from revising the compliance deadlines required by the 2024 final NESHAP amendments for coke oven source categories. The baseline for this analysis is the counterfactual world in which these NESHAP amendments go into effect on July 7, 2025. Cost impacts are measured incremental to this baseline. The EPA assumes full compliance with the final NESHAP amendments is required and achieved by coke oven facilities on July 5, 2027. The EPA expects that the impacts of revising the deadlines will be contained to the timeframe directly impacted by the revision: July 7, 2025, to July 5, 2027. Given this, the timeframe of the analysis covers the period July 5, 2025, through July 4, 2027, to provide two full years of cost savings estimates.

The EIA for the 2024 final rule contained estimates of the annual costs associated with fenceline monitoring for benzene, periodic compliance testing to demonstrate compliance with the new MACT limits affecting PQBS sources and the zero percent leak limit for coke oven doors at HNR facilities, and opacity testing for HNR B/W stacks under the PQBS NESHAP. These estimates of annual costs were combined with the original compliance deadlines to estimate the present value (PV) and equivalent annual value (EAV) of the costs of the rule from 2025 to 2036.[14] These annual cost estimates form the basis of the estimates of compliance cost changes for this interim final rule. For additional detail on how these cost estimates were obtained, consult the EIA for the 2024 final rule and the specific memoranda discussing cost estimates for the source category produced for the rule.[15,16]

2.1. Emissions Impacts

The EPA did not estimate quantified emissions changes associated with the 2024 final NESHAP amendments for coke ovens source categories. Based on the data available to the EPA at the time of the 2024 final rule, it was estimated that all facilities already achieved HAP emissions levels and door, leak, and offtake duct leak rates consistent with the requirements of the 2024 final rule. The EPA anticipates that the final rule's new requirements may increase the likelihood of facilities detecting any HAP emissions above the specified thresholds, allowing for

[14] The EAV of the PV of a stream of costs or benefits represents a single value which, if received at the end of each period over which costs or benefits occur, is equal in PV to the original stream. July 5, 2025, is treated as t=0 for the purposes of discounting and calculating PV and EAV in this EIA.

[15] U.S. EPA. (2024). *Economic Impact Analysis for the Final National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks, Residual Risk and Technology Review; National Emission Standards for Hazardous Air Pollutants for Coke Oven Batteries Technology Review*. EPA-452/R-24-013. Doc. ID EPA-HQ-OAR-2002-0085-1597. Available at: https://www.regulations.gov/document/EPA-HQ-OAR-2002-0085-1597.

[16] U.S. EPA. (2023). *Coke Ovens Risk and Technology Review: Compliance Costs*. Doc. ID EPA-HQ-OAR-2002-0085-0884. Available at: https://www.regulations.gov/document/EPA-HQ-OAR-2002-0085-0884.

earlier corrective action and thus preventing pollution increases that could otherwise occur. Further, it could be expected that the required fenceline monitoring for benzene may help facilities reduce emissions through improved compliance and emission detection. These potential emission impacts were not quantified for the 2024 final rule. Given this, the EPA does not expect that this interim final rule is likely to increase HAP emissions.

2.2. Cost Impacts

The final coke ovens rule requires fenceline monitoring pursuant to CAA section 112(d)(6) for byproduct coke oven facilities in the COB source category. The final rule also requires facilities to meet MACT standards applying to previously unregulated HAP, set a 20 percent opacity limit for B/W stacks at HNR facilities, and requires HNR facilities to demonstrate compliance with a zero percent leak limit. The facilities are expected to meet the new MACT standards and opacity limit without installing additional pollution controls or updating existing work practices. This interim final rule allows facilities to avoid compliance costs over the period July 5, 2025, through July 4, 2027, during which time compliance with these provisions, apart from the opacity limit for HNR B/W stacks, is no longer required. All estimates of compliance cost changes in this section are in 2024 dollars.

The estimated cost of fenceline monitoring at byproduct coke oven facilities is approximately $109,000 per facility per year. This includes testing costs, operation and maintenance of fenceline monitors, and recordkeeping and reporting (R&R) costs. Assuming six active facilities, revising the compliance deadline for fenceline monitoring allows $660,000 of compliance cost savings industrywide. Compliance cost savings would be higher if Bluestone Coke resumes operation during the analysis timeframe, but the facility remains closed and is unlikely to reopen soon.

Facilities are also required to demonstrate compliance with the new MACT standards and the zero percent leak limit for coke oven doors at HNR facilities through periodic compliance testing. The estimated annual cost of compliance testing related to the MACT standards is $3,300,000 industrywide, and the estimated annual cost of demonstrating compliance with the zero percent leak limit for coke oven doors at HNR facilities is $110,000 per year. Revising the compliance deadlines for the MACT standards and the zero percent leak limit for coke oven doors at HNR facilities results in industrywide compliance cost savings of approximately $3,500,000 per year.[17]

Table 4 shows the undiscounted compliance cost changes relative to the baseline for each set of provisions over the analytical timeframe of this EIA. Industrywide compliance cost

[17] Numbers in this paragraph are expressed using two significant digits and may not add as expected due to rounding.

savings totals $8.2 million dollars across the period, with about 81 percent from MACT testing and R&R costs that are no longer incurred. The discounted cost changes, PV, and EAV for this interim final rule, calculated using both a 3 percent and 7 percent social discount rate, are in Table 5. The choice of social discount rates reflects the guidance of OMB Circular A-4, which suggests a 3 percent rate to represent the social rate of time preference (i.e., the rate at which society discounts future consumption) and a 7 percent rate to represent the opportunity cost of capital.[18] EAVs are annualized over two years to reflect the length of the analytical timeframe used in this EIA. This interim final rule is estimated to result in a PV of $8.1 million of cost savings ($4.2 million EAV) using a 3 percent social discount rate and a PV of $7.9 million of cost savings ($4.4 million EAV) using a 7 percent social discount rate.

Table 4: Changes to Undiscounted Compliance Costs for the Interim Final NESHAP Amendments (millions of 2024 dollars)

Year	Fenceline Monitoring	MACT Testing/R&R	HNR Testing/R&R	Total
July 5, 2025-July 4, 2026	-$0.66	-$3.3	-$0.11	-$4.1
July 5, 2026-July 4, 2027	-$0.66	-$3.3	-$0.11	-$4.1
Total	-$1.3	-$6.7	-$0.22	-$8.2

Note: Negative values indicate cost savings. Figures are rounded to two significant digits and may not sum due to rounding.

Table 1: Present Value, Equivalent Annualized Value, and Discounted Compliance Cost Changes for the Interim Final NESHAP Amendments (millions of 2024 dollars)

Year	Discount Rate (Discounted to July 2025)	
	3%	7%
July 5, 2025-July 4, 2026	-$4.1	-4.1
July 5, 2026-July 4, 2027	-$4.0	-3.8
PV	**-$8.1**	**-$7.9**
EAV	**-$4.2**	**-$4.4**

Note: Negative values indicate cost savings. Figures are rounded to two significant digits and may not sum due to rounding.

2.3. Economic Impacts

This section is directed towards extending the compliance cost analysis and includes an analysis of potential firm-level impacts of regulatory costs and potential small entity impacts. Although facility-specific economic impacts (production changes or closures, for example) cannot be estimated by the compliance cost analysis contained in the previous section, the EPA conducted a screening analysis of compliance costs compared to the revenue of firms owning

[18] OMB. Circular No. A-4. September 17, 2003. https://www.federalregister.gov/documents/2003/10/09/03-25606/circular-a-4-regulatory-analysis. Accessed 3/19/2025.

coke oven facilities. The EPA often performs a partial equilibrium analysis to estimate impacts on producers and consumers of the products or services provided by the regulated firms. This type of economic analysis estimates impacts on a single affected industry or several affected industries, and all impacts of this rule on industries outside of those affected are assumed to be zero or inconsequential.[19]

If the compliance costs changes, which are key inputs to an economic impact analysis, are small relative to the receipts of the affected industries, then the impact analysis may consist of a calculation of annual (or annualized) costs as a percentage of sales for affected parent companies. This type of analysis is often applied when a partial equilibrium or more complex economic impact analysis approach is deemed unnecessary given the expected size of the impacts. The annualized cost-to-sales ratio for a company represents the maximum price increase in the affected product or service needed for the company to completely recover the annualized costs imposed by a regulation. For this interim final rule, the change in estimated compliance costs is negative, as the EPA estimates that firms owning coke oven facilities will realize cost savings due to this interim final rule, so the annualized cost-to-sales ratio represents the maximum price decrease that a firm could experience before exhausting the savings associated with this interim final rule. The EPA conducted a cost-to-sales analysis to estimate economic impacts for this interim final rule because the EAV of the compliance cost savings range from $4.2 million using a 3 percent social discount rate to $4.4 million using a 7 percent discount rate in 2024 dollars, which is small relative to the size of the affected firms and the revenues of the steel industry.

As shown in Table 1, five firms own active coke oven facilities in the U.S.: Cleveland-Cliffs, Inc., U.S. Steel, SunCoke Energy Inc., DTE Energy Company, and Drummond Company. A sixth company, James C. Justice Companies, Inc., owns the currently idled Bluestone Coke facility in Birmingham, Alabama. Table 6 shows 2024 revenue and employment estimates for each ultimate parent company. In the case of James C. Justice Companies, 2021 estimates were used, with the revenue estimate escalated to 2024, as more recent estimates were not available. Table 7 shows 2024 revenue, total annualized cost savings, and the ratio of annualized cost savings to sales for each ultimate parent company. The total annualized cost savings for each company was constructed by summing the cost savings associated with fenceline monitoring, MACT compliance testing, and opacity testing over the facilities owned by each ultimate parent company. Bluestone Coke, owned by James, C. Justice Companies, is currently idle and not likely to reopen soon. The estimate of compliance cost savings is presented as estimate of

[19] U.S. EPA. (2024). *Guidelines for Preparing Economic Analyses (3rd edition)*. Report number EPA-240-R-24-001. Washington, DC. Available at: https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses-3rd-edition.

hypothetical cost savings incremental to the baseline in the scenario where Bluestone Coke resumes operations prior to the original compliance deadlines under the 2024 final rule. As shown in the table, the estimated compliance cost savings for each ultimate parent company is small relative to its size, so the potential economic impacts of the interim final rule are likely to be small.

Table 6: Coke Facilities Owner Sales and Employment, 2024

Ultimate Parent Company	HQ Location	Legal Form	Revenue	Employment
Cleveland-Cliffs Inc.	Cleveland, OH	Public	$19,000	30,000
DTE Energy Company	Detroit, MI	Public	$13,000	9,400
Drummond Company	Birmingham, AL	Private	$3,300	6,000
James C. Justice Companies, Inc.	Roanoke, VA	Private	$340	520
SunCoke Energy, Inc.	Lisle, IL	Public	$2,000	1,200
U.S. Steel	Pittsburgh, PA	Public	$16,000	22,000
Total			$59,000	69,000

Note: Figures are rounded to two significant digits. Dollar figures measured in millions of 2024 dollars. Revenue estimates were collected from D&B Hoovers, ZoomInfo, and company financial statements. James C. Justice Companies revenue figure is a 2021 estimate escalated to 2024 dollars.

Table 7: Total Annualized Cost Savings-to-Sales Ratios of Coke Oven Facility Owners for the Interim Final NESHAP Amendments

Ultimate Parent Company	2024 Revenue	Total Annualized Cost Savings	TACS-Sales Ratio
Cleveland-Cliffs Inc.	$19,000	$0.60	0.00%
DTE Energy Company	$13,000	$0.18	0.00%
Drummond Company	$3,300	$0.25	0.01%
James C. Justice Companies	$360	$0.19	0.05%
SunCoke Energy, Inc	$2,000	$2.6	0.13%
U.S. Steel	$16,000	$0.47	0.00%

Note: Figures are rounded to two significant digits. Dollar figures measured in millions of 2024 dollars. Revenue estimates were collected from D&B Hoovers, ZoomInfo, and company financial statements. James C. Justice Companies revenue figure is a 2021 estimate escalated to 2024 dollars.

2.4. Small Entity Impacts

The Regulatory Flexibility Act (RFA; 5 U.S.C. §601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act (Public Law No. 104121), provides that whenever an agency publishes a proposed rule, it must prepare and make available an initial regulatory flexibility analysis (IRFA), unless it certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities (5 U.S.C. §605[b]).

Small entities include small businesses, small organizations, and small governmental jurisdictions. An IRFA describes the economic impact of the rule on small entities and any significant alternatives to the rule that would accomplish the objectives of the rule while minimizing significant economic impacts on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden or otherwise has a positive economic effect on the small entities subject to the rule.

To determine the possible impacts of this interim final rule on small businesses, the firms that own affected coke facilities are categorized as small or large using the Small Business Administration's (SBA's) general size standards definitions. Coke facilities fall under two six-digit North American Industry Classification System (NAICS) codes. Facilities located within an integrated iron and steel manufacturing facility fall under NAICS 331110 (Iron and Steel Mills and Ferroalloy Manufacturing); all other facilities fall under NAICS 324199 (All Other Petroleum and Coal Products Manufacturing). The SBA size standards for these NAICS codes indicate that a business is small if it employs 1,500 or fewer workers if classified under NAICS 331110 and 950 or fewer workers if classified under NAICS 324199.

The primary operations of a facility determine which NAICS a facility is classified under. Cleveland-Cliffs, Inc. and U.S. Steel own coke facilities that are located within integrated iron and steel manufacturing facilities, so we classified these firms using the larger (1,500 employee) small business size threshold. All other firms are classified using the 950-employee size threshold. Based on these SBA standards and the company employment figures shown in Table 6, the only firm that owns a potentially affected coke facility that can be considered a small entity is the James C. Justice Companies, which owns the idled Bluestone Coke facility.

Classifying the James C. Justice Companies as a small entity is subject to uncertainty since the classification is based upon modeled employment information from Dun & Bradstreet/Hoover's online database. There is additional uncertainty in the estimates of revenue and employment for this firm since it is a privately held company, and recent estimates are difficult to obtain. However, Bluestone Coke is currently idled and not projected to incur any compliance cost under the 2024 final rule or compliance cost savings under this interim final rule. Further, any compliance cost changes for Bluestone Coke incremental to the baseline would be compliance cost savings. The EPA has therefore concluded that this interim final rule will not have a significant economic impact on a substantial number of small entities.

2.5. Uncertainties and Limitations

There is uncertainty associated with the compliance cost estimates included in this EIA. The EPA summarizes the key elements here.

- **Baseline Compliance Rates**: The EPA assumes that the affected facilities would be able to comply with requirements of the 2024 final rule as written if implemented under the original compliance deadlines. To the extent that any facilities would not have been able to conduct all compliance testing and a establish a fenceline monitoring regime (if necessary) by the deadlines in the original rule, the cost savings of this interim final rule relative to baseline estimated in this EIA may be overstated.
- **Compliance Costs**: There is uncertainty associated with the costs necessary to conduct periodic compliance and opacity testing and administer fenceline monitoring. These costs provide the baseline level of cost against which the cost savings associated with this interim final rule are measured. To the extent these costs were over or underestimated in the analysis for the original rulemaking, the cost savings estimated for this interim final rule may be over or underestimated as well. Further, the EPA assumed in the analysis for the 2024 final rule that facilities could comply with the new MACT standards for PQBS sources and the opacity limit for HNR B/W stacks without installing additional pollution controls or changing existing work practices. If compliance would have required additional pollution controls or changes to work practices, compliance cost savings estimated for this interim final rule have been underestimated.
- **Emission Changes**: The EPA assumed in the analysis for the 2024 final rule that facilities could comply with the new MACT standards for PQBS sources and the opacity limit for HNR B/W stacks without reducing emissions. Given this, the EPA estimates that revise the compliance deadlines associated with the 2024 final rule will not result in emissions increases relative to baseline. To the extent that facilities would have needed to reduce emissions to achieve compliance with the 2024 final rule under the original compliance deadlines, these reductions were not estimated in the original analysis and are not captured in the baseline of the analysis in this EIA.
- **Projection Methods and Assumptions**: The number of facilities in operation is assumed to be constant over the analysis period. This is a particular source of uncertainty with respect to the idled facility, Bluestone Coke. If this facility were to resume operation, the projected cost savings of this interim final rule would increase due to an increase in baseline compliance costs. Alternatively, one or more of the currently active facilities could close due to unforeseen economic circumstances, which would reduce baseline compliance costs and reduce the compliance cost savings for this interim final rule.