

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

AIR ALLIANCE HOUSTON,
CHESAPEAKE CLIMATE ACTION
NETWORK, CLEAN AIR COUNCIL,
DOWNWINDERS AT RISK,
ENVIRONMENTAL DEFENSE
FUND, ENVIRONMENTAL
INTEGRITY PROJECT, MONTANA
ENVIRONMENTAL INFORMATION
CENTER, SIERRA CLUB, and
TEXAS CAMPAIGN FOR THE
ENVIRONMENT,

Petitioners,

v.

U.S. ENVIRONMENTAL
PROTECTION AGENCY and
ANDREW WHEELER, Administrator,
U.S. Environmental Protection Agency,

Respondents.

No. 20-1268

PETITION FOR REVIEW

Pursuant to Clean Air Act § 307(b)(1), 42 U.S.C. § 7607(b)(1), Rule 15 of the Federal Rules of Appellate Procedure, and D.C. Circuit Rule 15, Air Alliance Houston, Chesapeake Climate Action Network, Clean Air Council, Downwinders At Risk, Environmental Defense Fund, Environmental Integrity Project, Montana Environmental Information Center, Sierra Club, and Texas Campaign for the Environment hereby petition this Court for review of a final action taken by

Respondents U.S. Environmental Protection Agency and Administrator Andrew Wheeler and published in the Federal Register at 85 Fed. Reg. 31,286 (May 22, 2020) and titled “National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units—Reconsideration of Supplemental Finding and Residual Risk and Technology Review” (Attachment).

In that Federal Register notice, EPA provided notice of two separate actions, the “reconsideration of the supplemental finding,” and the “residual risk and technology review.” In this petition, Petitioners challenge only the latter action, the residual risk and technology review. On June 19, 2020, some of the Petitioners here filed a petition for review of the former action, the reconsideration of the supplemental finding. *American Academy of Pediatrics et al. v. Wheeler*, Case No. 20-1221 (D.C. Cir.). The issues in the instant petition are distinct from—and do not overlap with—the issues in the petitions challenging the reconsideration of the supplemental finding, and Petitioners are not aware of any other party challenging the residual risk and technology review. Thus, Petitioners respectfully request that the instant petition not be consolidated with the other petitions for review of the actions published at 85 Fed. Reg. 31,286.

DATED: July 21, 2020

Respectfully submitted,

/s/ Patton Dycus (w/permission)

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RULE 26.1 DISCLOSURE STATEMENT

Pursuant to Federal Rules of Appellate Procedure 26.1 and D.C. Circuit Rule 26.1, Air Alliance Houston, Chesapeake Climate Action Network, Clean Air Council, Downwinders At Risk, Environmental Defense Fund, Environmental Integrity Project, Montana Environmental Information Center, Sierra Club, and Texas Campaign for the Environment make the following disclosures:

Air Alliance Houston

Non-Governmental Corporate Party to this Action: Air Alliance Houston.

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: Air Alliance Houston, a corporation organized and existing under the laws of the State of Texas, is a nonprofit organization working to reduce air pollution in the Houston region to protect public health and environmental integrity through research, education, and advocacy.

Chesapeake Climate Action Network

Non-Governmental Corporate Party to this Action: Chesapeake Climate Action Network ("CCAN").

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: CCAN is a grassroots, non-profit organization founded to transition the region towards clean-energy solutions to climate change, specifically in Maryland, Virginia, and Washington, D.C. CCAN's mission is to educate and mobilize citizens in a way that fosters a rapid societal switch to clean energy sources. This mission includes ensuring that facilities that contribute to

global warming, such as coal-fired power plants, do not impact the health of CCAN's members or the environment through emitting dangerous toxics.

Clean Air Council

Non-Governmental Corporate Party to this Action: Clean Air Council ("CAC").

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: CAC is a corporation organized and existing under the laws of the Commonwealth of Pennsylvania. CAC is a not-for-profit organization focused on protection of public health and the environment.

Downwinders At Risk

Non-Governmental Corporate Party to this Action: Downwinders At Risk.

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: Downwinders At Risk, a non-profit corporation organized and existing under the laws of the State of Texas, is a diverse grassroots citizens group dedicated to protecting public health and the environment from air pollution in North Texas.

Environmental Defense Fund

Non-Governmental Corporate Party to this Action: Environmental Defense Fund

(“EDF”)

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party’s Stock: None.

Party’s General Nature and Purpose: Environmental Defense Fund is a national non-profit organization, organized under the laws of the State of New York, which links science, economics, and law to create innovative, equitable, and cost-effective solutions to urgent environmental problems. Environmental Defense Fund does not have any parent corporations, and no publicly held corporation has a ten percent or greater ownership interest in the Environmental Defense Fund.

Environmental Integrity Project

Non-Governmental Corporate Party to this Action: Environmental Integrity Project

(“EIP”).

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party’s Stock: None.

Party’s General Nature and Purpose: EIP, a corporation organized and existing under the laws of the District of Columbia, is a national non-profit organization that advocates for more effective enforcement of environmental laws.

Montana Environmental Information Center

Non-Governmental Corporate Party to this Action: Montana Environmental Information Center (“MEIC”).

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party’s Stock: None.

Party’s General Nature and Purpose: MEIC is a state-based nonprofit organized under the laws of the State of Montana and is dedicated to the protection and restoration of Montana’s natural environment.

Sierra Club

Non-Governmental Corporate Party to this Action: Sierra Club.

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party’s Stock: None.

Party’s General Nature and Purpose: Sierra Club, a corporation organized and existing under the laws of the State of California, is a national nonprofit organization dedicated to the protection and enjoyment of the environment.

Texas Campaign for the Environment

Non-Governmental Corporate Party to this Action: Texas Campaign for the Environment (“TCE”).

Parent Corporations: None.

Publicly Held Company that Owns 10% or More of Party's Stock: None.

Party's General Nature and Purpose: TCE is a nonprofit organization with members across the state of Texas. TCE's mission is to empower Texans to fight pollution through sustained grassroots organizing campaigns that shift corporate and government policy. TCE maintains offices in Austin, Dallas, and Houston, Texas and is active in grassroots campaigns across the State.

DATED: July 21, 2020

Respectfully submitted,

/s/ Patton Dycus (w/permission)

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CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing **Petition for Review** and **Rule 26.1 Disclosure Statement** on Respondents by sending a copy via First Class Mail to each of the following addresses on this 21st day of July, 2020.

Andrew Wheeler
EPA Headquarters 1101A
United States Environmental Protection Agency
William Jefferson Clinton Federal Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

William Barr
Attorney General
U.S. Department of Justice
950 Pennsylvania Avenue, N.W.
Washington, D.C. 20530

Correspondence Control Unit
Office of General Counsel (2311)
United States Environmental Protection Agency
William Jefferson Clinton Federal Building
1200 Pennsylvania Avenue, N.W.
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/s/ James S. Pew
James S. Pew

ATTACHMENT

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA-HQ-OAR-2018-0794; FRL-10008-60-OAR]

RIN 2060-AT99

National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units—Reconsideration of Supplemental Finding and Residual Risk and Technology Review

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The U.S. Environmental Protection Agency (EPA) is revising its response to the U.S. Supreme Court decision in *Michigan v. EPA*, which held that the EPA erred by not considering cost in its determination that regulation under section 112 of the Clean Air Act (CAA) of hazardous air pollutant (HAP) emissions from coal- and oil-fired electric utility steam generating units (EGUs) is appropriate and necessary. After primarily comparing the cost of compliance relative to the benefits of HAP emission reduction from regulation, the EPA finds that it is not “appropriate and necessary” to regulate HAP emissions from coal- and oil-fired EGUs, thereby reversing the Agency’s previous conclusion under CAA section 112(n)(1)(A) and correcting flaws in the Agency’s prior response to *Michigan v. EPA*. We further find that finalizing this new response to *Michigan v. EPA* will not remove the Coal- and Oil-Fired EGU source category from the CAA section 112(c) list of sources that must be regulated under CAA section 112(d) and will not affect the existing CAA section 112(d) emissions standards that regulate HAP emissions from coal- and oil-fired EGUs. The EPA is also finalizing the residual risk and technology review (RTR) conducted for the Coal- and Oil-Fired EGU source category regulated under national emission standards for hazardous air pollutants (NESHAP), commonly referred to as the Mercury and Air Toxics Standards (MATS). Based on the results of the RTR analyses, the Agency is not promulgating any revisions to the MATS rule.

DATES: Effective May 22, 2020.

ADDRESSES: The EPA has established a docket for these actions under Docket ID No. EPA-HQ-OAR-2018-0794.¹ All

¹ As explained in a memorandum to the docket, the docket for these actions include the documents

documents in the docket are listed on the <https://www.regulations.gov/> website. Although listed, some information is not publicly available, e.g., confidential business information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through <https://www.regulations.gov/>, or in hard copy at the EPA Docket Center, WJC West Building, Room Number 3334, 1301 Constitution Ave. NW, Washington, DC. The Public Reading Room hours of operation are 8:30 a.m. to 4:30 p.m. Eastern Standard Time (EST), Monday through Friday. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Docket Center is (202) 566-1742.

FOR FURTHER INFORMATION CONTACT: For questions about these final actions, contact Mary Johnson, Sector Policies and Programs Division (D243-01), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541-5025; and email address: johnson.mary@epa.gov. For specific information regarding the risk modeling methodology, contact Mark Morris, Health and Environmental Impacts Division (C539-02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541-5416; and email address: morris.mark@epa.gov. For information about the applicability of the NESHAP to a particular entity, contact your EPA Regional representative as listed in 40 CFR 63.13 (General Provisions).

SUPPLEMENTARY INFORMATION:

Preamble acronyms and abbreviations. We use multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for

and information, in whatever form, in Docket ID Nos. EPA-HQ-OAR-2009-0234 (National Emission Standards for Hazardous Air Pollutants for Coal- and Oil-fired Electric Utility Steam Generating Units), EPA-HQ-OAR-2002-0056 (National Emission Standards for Hazardous Air Pollutants for Utility Air Toxics; Clean Air Mercury Rule (CAMR)), and Legacy Docket ID No. A-92-55 (Electric Utility Hazardous Air Pollutant Emission Study). See memorandum titled *Incorporation by reference of Docket Number EPA-HQ-OAR-2009-0234, Docket Number EPA-HQ-OAR-2002-0056, and Docket Number A-92-55 into Docket Number EPA-HQ-OAR-2018-0794* (Docket ID Item No. EPA-HQ-OAR-2018-0794-0005).

reference purposes, the EPA defines the following terms and acronyms here:

- CAA Clean Air Act
- CAMR Clean Air Mercury Rule
- CEMS continuous emissions monitoring systems
- CFR Code of Federal Regulations
- CRA Congressional Review Act
- EGU electric utility steam generating unit
- EPA Environmental Protection Agency
- EPRI Electric Power Research Institute
- HAP hazardous air pollutant(s)
- HCl hydrochloric acid
- HF hydrogen fluoride
- HQ hazard quotient
- ICR information collection request
- km kilometer
- MACT maximum achievable control technology
- MATS Mercury and Air Toxics Standards
- MIR maximum individual risk
- MW megawatt
- NAAQS National Ambient Air Quality Standards
- NAICS North American Industry Classification System
- NEI National Emissions Inventory
- NESHAP national emission standards for hazardous air pollutants
- NOAEL no-observed-adverse-effect-level
- NO_x nitrogen oxides
- NTTAA National Technology Transfer and Advancement Act
- OAQPS Office of Air Quality Planning and Standards
- OMB Office of Management and Budget
- PB-HAP hazardous air pollutants known to be persistent and bio-accumulative in the environment
- PDF Portable Document Format
- PM particulate matter
- PM_{2.5} fine particulate matter
- POM polycyclic organic matter
- PRA Paperwork Reduction Act
- RDL representative detection level
- REL reference exposure level
- RFA Regulatory Flexibility Act
- RIA regulatory impact analysis
- RTR residual risk and technology review
- SO₂ sulfur dioxide
- TOSHI target organ-specific hazard index
- tpy tons per year
- UMRA Unfunded Mandates Reform Act

Background information. With this action, the EPA is, after review and consideration of public comments, finalizing two aspects of the 2019 Proposal. On February 7, 2019, the EPA proposed to find that it is not “appropriate and necessary” to regulate HAP emissions from coal- and oil-fired EGUs, thereby reversing the Agency’s prior conclusion under CAA section 112(n)(1)(A) and correcting flaws in the Agency’s prior response to *Michigan v. EPA*, 135 S. Ct. 2699 (2015). 84 FR 2670 (2019 Proposal). We further proposed that finalizing this new response to *Michigan v. EPA* would not remove the Coal- and Oil-Fired EGU source category from the CAA section 112(c) list of sources that must be regulated under CAA section 112(d) and would not

affect the existing CAA section 112(d) emissions standards that regulate HAP emissions from coal- and oil-fired EGUs. In the same action, the EPA also proposed the results of the RTR of the NESHAP for Coal- and Oil-Fired EGUs. In this action, we are taking final action with regard to these aspects of the 2019 Proposal.² We summarize some of the more significant comments regarding the proposed rule and provide our responses in this preamble. A summary of all other significant comments on the 2019 Proposal and the EPA's responses to those comments is available in the document titled *Final Supplemental Finding and Risk and Technology Review for the NESHAP for Coal- and Oil-Fired EGUs Response to Public Comments on February 7, 2019 Proposal* (Response-to-Comment (RTC) document), in Docket ID No. EPA-HQ-OAR-2018-0794.

Organization of this document. The information in this preamble is organized as follows:

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 - C. Judicial Review and Administrative Reconsideration
- II. Appropriate and Necessary Finding
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 - C. EPA's Finding Under CAA Section 112(n)(1)(A)

- D. Effects of This Reversal of the Supplemental Finding
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 - A. What is the statutory authority for this action?
 - B. What is the Coal- and Oil-Fired EGU source category and how does the NESHAP regulate HAP emissions from the source category?
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 - G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments
 - H. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks
 - I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use
 - J. National Technology Transfer and Advancement Act (NTTAA)
 - K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations
 - L. Congressional Review Act (CRA)

I. General Information

A. Do these actions apply to me?

Regulated entities. Categories and entities potentially regulated by these final actions are shown in Table 1 of this preamble.

TABLE 1—NESHAP AND INDUSTRIAL SOURCE CATEGORIES AFFECTED BY THESE FINAL ACTIONS

NESHAP and source category	NAICS ¹ code
Coal- and Oil-Fired EGUs	221112, 221122, 921150.

North American Industry Classification System.

Table 1 of this preamble is not intended to be exhaustive, but rather to provide a guide for readers regarding entities likely to be affected by these final actions for the source category listed. To determine whether your facility is affected, you should examine the applicability criteria in the appropriate NESHAP. If you have any questions regarding the applicability of any aspect of this NESHAP, please contact the appropriate person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section of this preamble.

B. Where can I get a copy of this document and other related information?

In addition to being available in the docket, an electronic copy of this

document will also be available on the internet. Following signature by the EPA Administrator, the EPA will post a copy of this document at: <https://www.epa.gov/mats/regulatory-actions-final-mercury-and-air-toxics-standards-mats-power-plants>. Following publication in the **Federal Register**, the EPA will post the **Federal Register** version and key technical documents at this same website.

Additional information regarding the RTR action is available on the RTR website at <https://www3.epa.gov/ttn/atw/rrisk/rtrpg.html>. This information includes an overview of the RTR program, links to project websites for the RTR source categories, and detailed emissions and other data we used as inputs to the risk assessments.

C. Judicial Review and Administrative Reconsideration

Under CAA section 307(b)(1), judicial review of these final actions is available only by filing a petition for review in the United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit) by July 21, 2020. Under CAA section 307(b)(2), the requirements established by this final rule may not be challenged separately in any civil or criminal proceedings brought by the EPA to enforce the requirements.

Section 307(d)(7)(B) of the CAA further provides that only an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment (including any public hearing) may be raised

² The EPA took final action on the other aspect of the 2019 Proposal (*i.e.*, solicitation of comment

on establishing a subcategory of certain existing EGUs firing eastern bituminous coal refuse for

emissions of acid gas HAP) on April 15, 2020, in a separate action (85 FR 20838).

during judicial review. That section of the CAA also provides a mechanism for the EPA to reconsider the rule if the person raising an objection can demonstrate to the Administrator that it was impracticable to raise such objection within the period for public comment or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule. Any person seeking to make such a demonstration should submit a Petition for Reconsideration to the Office of the Administrator, U.S. EPA, Room 3000, WJC South Building, 1200 Pennsylvania Ave. NW, Washington, DC 20460, with a copy to both the person(s) listed in the preceding **FOR FURTHER INFORMATION CONTACT** section, and the Associate General Counsel for the Air and Radiation Law Office, Office of General Counsel (Mail Code 2344A), U.S. EPA, 1200 Pennsylvania Ave. NW, Washington, DC 20460.

II. Appropriate and Necessary Finding

A. Overview

On June 29, 2015, the U.S. Supreme Court ruled in *Michigan v. EPA* that the Agency had erred when it failed to take cost into account in its previous CAA section 112(n)(1)(A) determination that it is appropriate and necessary to regulate HAP emissions from coal- and oil-fired EGUs. In response to that decision, the EPA finalized a supplemental finding on April 25, 2016, that evaluated cost considerations and concluded that the appropriate and necessary finding was still valid. 81 FR 24420 (2016 Supplemental Finding). On February 7, 2019, the EPA proposed a revised response to the U.S. Supreme Court decision. 84 FR 2670 (2019 Proposal). In the 2019 Proposal, after primarily comparing the cost of compliance relative to the benefits of HAP emission reduction from regulation, the EPA proposed to find that it is not appropriate and necessary to regulate HAP emissions from coal- and oil-fired EGUs, thereby reversing the Agency’s conclusion under CAA section 112(n)(1)(A), first made in 2000 and later affirmed in 2012 and 2016. Specifically, the Agency proposed that the 2016 Supplemental Finding considering the cost of MATS was flawed as it did not satisfy the EPA’s obligation under CAA section 112(n)(1)(A), as interpreted by the U.S. Supreme Court in *Michigan*. Additionally, the EPA proposed that while finalizing the action would reverse the 2016 Supplemental Finding,

it would not remove the Coal- and Oil-Fired EGU source category from the CAA section 112(c)(1) list, nor would it affect the existing CAA section 112(d) emissions standards regulating HAP emissions from coal- and oil-fired EGUs that were promulgated on February 16, 2012. 77 FR 9304 (2012 MATS Final Rule).

In section II.B of this preamble, which finalizes the reversal of the 2016 Supplemental Finding, the EPA provides background information regarding the previous appropriate and necessary findings, including the affirmations in the preamble of the 2012 MATS Final Rule and in the 2016 Supplemental Finding. Section II.C of this preamble describes why the 2016 Supplemental Finding was flawed, why the EPA has authority to revisit that finding now, and what the EPA is finalizing as the appropriate approach to satisfy the EPA’s obligation under CAA section 112(n)(1)(A) as interpreted by the U.S. Supreme Court in *Michigan*. Finally, section II.D of this preamble explains that the EPA’s revised determination that regulation of HAP emissions from EGUs under CAA section 112 is not appropriate and necessary will not remove coal- and oil-fired EGUs from the CAA section 112(c) list of source categories, and that the previously established CAA section 112(d) standards for HAP emissions from coal- and oil-fired EGUs will remain in place. In this preamble, the EPA provides a summary of certain significant comments received on the 2019 Proposal and the Agency’s response to those comments. The RTC document for this action summarizes and responds to all other significant comments that the EPA received.

B. Background

The CAA establishes a multi-step process for the EPA to regulate HAP emissions from EGUs. First, section 112(n)(1)(A) of the CAA requires the EPA to perform a study of the hazards to public health reasonably anticipated to occur as a result of HAP emissions from EGUs “after imposition of the requirements of this chapter.”³ If, after considering the results of this study, the EPA determines that it is “appropriate and necessary” to regulate EGUs under

CAA section 112, the EPA shall then do so.

The required study, which the EPA completed in 1998, contained an analysis of HAP emissions from EGUs, an assessment of the hazards and risks due to inhalation exposures to these emitted pollutants, and a multipathway (inhalation plus non-inhalation exposures) risk assessment for mercury and a subset of other relevant HAP.⁴ The study indicated that mercury was the HAP of greatest concern to public health from coal- and oil-fired EGUs. Mercury is highly toxic, persistent, and bioaccumulates in food chains. The study also concluded that numerous control strategies, of varying cost and efficiency, were available to reduce HAP emissions from this source category. Based on this study and other available information, the EPA determined in December 2000, pursuant to CAA section 112(n)(1)(A), that it was appropriate and necessary to regulate coal- and oil-fired EGUs under CAA section 112 and added such units to the CAA section 112(c) list of sources that must be regulated under CAA section 112(d). 65 FR 79825 (December 20, 2000) (2000 Finding).⁵ The 2000 Finding did not consider the cost of regulating EGUs in its finding that it was appropriate and necessary to do so. *Id.* at 79830.

In 2005, the EPA revised the original 2000 Finding and concluded that it was neither appropriate nor necessary to regulate EGUs under CAA section 112. 70 FR 15994 (March 29, 2005) (2005 Revision). This action was taken because, at that time, the EPA concluded that the original 2000 Finding lacked foundation in that it failed to consider: (1) The HAP reductions that could be obtained through implementation of CAA sections 110 and 111; and (2) whether hazards to public health would still exist after imposition of emission reduction rules under those sections. The 2005 Revision also removed coal- and oil-fired EGUs from the CAA section 112(c) list of source categories to be regulated under CAA section 112. In a separate but related 2005 action, the EPA also promulgated the Clean Air Mercury Rule (CAMR) which established CAA section 111 standards of performance for mercury emissions from EGUs. 70 FR 28605 (May 18, 2005).

³ See CAA section 112(n)(1)(A); see also *Michigan v. EPA*, 135 S. Ct. at 2705 (“Quite apart from the hazardous-air-pollutants program, the Clean Air Act Amendments of 1990 subjected power plants to various regulatory requirements. The parties agree that these requirements were expected to have the collateral effect of reducing power plants’ emissions of hazardous air pollutants, although the extent of the reduction was unclear.”).

⁴ U.S. EPA. 1998. *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units—Final Report to Congress, Volume 1*. EPA-453/R-98-004a.

⁵ In the same 2000 action, the EPA Administrator found that regulation of HAP emissions from natural gas-fired EGUs is not appropriate or necessary. 65 FR 79826.

Both the 2005 Revision and the CAMR were vacated by the D.C. Circuit in 2008. The Court held that the EPA had failed to comply with the requirements of CAA section 112(c)(9) for delisting source categories, and consequently also vacated the CAA section 111 performance standards promulgated in CAMR, without addressing the merits of those standards. *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008).

In response to the *New Jersey* decision, the EPA conducted additional technical analyses, including peer-reviewed risk assessments on human health effects associated with mercury and non-mercury HAP emissions from EGUs, focusing on risks to the most exposed and sensitive individuals in the population. Those analyses found that mercury and non-mercury HAP emissions from EGUs remain a significant public health hazard and that EGUs were the largest U.S. anthropogenic source of mercury emissions to the atmosphere.⁶ Based on these findings, in 2012, the EPA affirmed the original 2000 Finding that it is appropriate and necessary to regulate EGUs under CAA section 112. 77 FR 9304 (February 16, 2012).

In the same 2012 action, the EPA established a NESHAP, commonly called MATS, that required coal- and oil-fired EGUs to meet HAP emission standards reflecting the application of the maximum achievable control technology (MACT) for mercury and other air toxics. After MATS was promulgated, both the rule itself and many aspects of the EPA's appropriate and necessary finding were challenged in the D.C. Circuit. In *White Stallion Energy Center v. EPA*, the Court denied all challenges. 748 F.3d 1322 (D.C. Cir. 2014). One judge dissented, expressing the view that the EPA erred by refusing to consider cost in its "appropriate and necessary" determination. *Id.* at 1258–59 (Kavanaugh, J., dissenting).

The U.S. Supreme Court subsequently granted *certiorari*, directing the parties to address a single question posed by the Court itself: "Whether the Environmental Protection Agency unreasonably refused to consider cost in determining whether it is appropriate to regulate hazardous air pollutants emitted by electric utilities." *Michigan v. EPA*, 135 S. Ct. 702 (Mem.) (2014). In

2015, the U.S. Supreme Court held that "EPA interpreted [CAA section 112(n)(1)(A)] unreasonably when it deemed cost irrelevant to the decision to regulate power plants." *Michigan v. EPA*, 135 S. Ct. 2699, 2712 (2015). In so holding, the U.S. Supreme Court found that the EPA "must consider cost—including, most importantly, cost of compliance—before deciding whether regulation is appropriate and necessary." *Id.* at 2711. It is "up the Agency," the Court added, "to decide (as always, within the limits of reasonable interpretation) how to account for cost." *Id.* The rule was ultimately remanded back to the EPA (without vacatur) to complete the required cost analysis. *White Stallion Energy Ctr. v. EPA*, No. 12–1100, ECF No. 1588459 (D.C. Cir. December 15, 2015).

In response to the U.S. Supreme Court's direction, the EPA in the 2016 Supplemental Finding promulgated two different approaches to incorporate cost into the appropriate and necessary finding. 81 FR 24420. The EPA's preferred approach (referred to as the "cost reasonableness" approach) compared the estimated cost of compliance in the regulatory impact analysis (RIA) for the 2012 MATS Final Rule (referred to here as 2011 RIA⁷) against several cost metrics relevant to the EGU sector (e.g., historical annual revenues, annual capital expenditures, and impacts on retail electricity prices). The "cost reasonableness" approach did not compare costs to benefits. Under this approach, the EPA concluded that the power sector would be able to comply with the MATS requirements while maintaining its ability to generate, transmit, and distribute reliable electricity at reasonable cost to consumers. Using a totality-of-the-circumstances approach, the EPA weighed this analysis that the costs of the rule were reasonable along with its prior findings about the amount of HAP pollution coming from the Coal- and Oil-Fired EGU source category, the scientific studies and modeling assessing the risks to public health and the environment from domestic EGU HAP pollution, and information about the toxicity and persistence of HAP in the environment.

In a second, alternative, and independent approach (referred to as the "cost benefit" approach), the EPA considered the benefit-cost analysis in the RIA for the 2012 MATS Final Rule.

In that analysis, the EPA estimated that the final MATS rule would yield total annual monetized benefits (in 2007 dollars) of between \$37 billion to \$90 billion using a 3-percent discount rate and \$33 billion to \$81 billion using a 7-percent discount rate, plus additional benefits that cannot be quantified, in comparison to the projected \$9.6 billion in annual compliance costs. That analysis reflects that 99.9 percent of the total annual monetized benefits were attributable not to benefits from HAP reduction, but rather from benefits from co-reduction of non-HAP pollutants. In the 2016 Supplemental Finding, the EPA determined that both the preferred "cost reasonableness" approach and the alternative "cost benefit" approach supported the conclusion that regulation of HAP emissions from EGUs is appropriate and necessary.

Several state and industry groups petitioned for review of the 2016 Supplemental Finding in the D.C. Circuit. *Murray Energy Corp. v. EPA*, No. 16–1127 (D.C. Cir. filed April 25, 2016). In April 2017, the EPA moved the D.C. Circuit to continue oral argument and hold the case in abeyance in order to give the new Administration an opportunity to review the 2016 action. (As further explained below, as of the date of signature, the case remains pending in the D.C. Circuit.) Accordingly, the EPA reviewed the 2016 action and proposed on February 7, 2019, to correct flaws in the prior response to *Michigan v. EPA* (84 FR 2670). Specifically, the 2019 Proposal proposed to reverse the 2016 action and to conclude that it is not "appropriate and necessary" to regulate HAP emissions from coal- and oil-fired EGUs. The public comment period for the 2019 Proposal ended on April 17, 2019. The remainder of this section of this preamble responds to significant comments received on the appropriate and necessary finding and describes the EPA's justification for finalizing this reversal of the 2016 Supplemental Finding.

C. EPA's Finding Under CAA Section 112(n)(1)(A)

1. EPA Has the Statutory Authority To Revisit the Appropriate and Necessary Finding

a. Summary of 2019 Proposal

Section 112(n)(1)(A) of the CAA directs the Administrator of the EPA to determine whether it is "appropriate and necessary" to regulate HAP emissions from fossil fuel-fired EGUs after conducting a study of the hazards to public health reasonably anticipated to occur as a result of emissions of HAP

⁶U.S. EPA. 2011. *Revised Technical Support Document: National-Scale Assessment of Mercury Risk to Populations with High Consumption of Self-caught Freshwater Fish in Support of the Appropriate and Necessary Finding for Coal- and Oil-Fired Electric Generating Units*. Office of Air Quality Planning and Standards. December. EPA–452/R–11–009. Docket ID Item No. EPA–HQ–OAR–2009–0234–19913.

⁷U.S. EPA. 2011. *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards*. EPA–452/R–11–011. Available at: https://www3.epa.gov/ttn/ecas/docs/ria/utilities_ria_final-mats_2011-12.pdf.

from EGUs after imposition of emission controls imposed under other provisions of the CAA. In *Michigan v. EPA*, the U.S. Supreme Court instructed the Agency that it was required to consider cost as part of its appropriate and necessary determination. The Agency completed a consideration of the cost to regulate HAP emissions from coal- and oil-fired EGUs in the 2016 Supplemental Finding. The EPA’s 2019 action proposed to revisit the 2016 Supplemental Finding’s consideration of cost, on the basis that the 2016 action is flawed. The 2019 Proposal stated that such reexamination was permissible as a basic principle of administrative law and under the CAA. 84 FR 2674 n.3.

b. Final Rule

The EPA is finalizing this action as proposed in February 2019 on the basis that the CAA and CAA section 112(n)(1)(A) do not prohibit the Administrator from revisiting a prior finding made under that section.

c. Comments and Responses

Comment: Some commenters asserted that it is unlawful for the EPA to revisit its 2016 Supplemental Finding at all, because the EPA has completed the analytic process Congress set in motion in 1990, and the statute unambiguously prohibits the EPA from revisiting or revising the CAA section 112(n)(1)(A) finding. Commenters asserted that the legislative history, statutory context, and statutory structure support their position that Congress intended the CAA section 112(n)(1)(A) appropriate and necessary finding to be a one-time decision, and that the provision gives the EPA “limited discretion to activate a one-way switch to ‘turn on’ regulation of power plants.” The commenters argued that “[o]nce EPA turns on that switch, as it did in its 2000 finding . . . it must regulate power plants under section 112.”

Moreover, those commenters argued that even if CAA section 112 were ambiguous as to the EPA’s authority to revisit the appropriate and necessary finding, the EPA was still bound to follow CAA section 112(c)(9)’s delisting procedure before it could reverse its finding under CAA section 112(n)(1)(A). The commenters claimed that *New Jersey* confirms that the EPA lacks inherent authority to reconsider the appropriate and necessary finding.

Finally, the commenters claimed that it would be “illogical” for the EPA to have authority to revise the appropriate and necessary finding independent of removing power plants from the list of regulated sources under CAA section 112. Commenters argued that a revised

finding that has no regulatory effect would be “inherently irrational,” and that the EPA has failed to articulate a reasoned basis for undertaking this action (citing *Air Alliance Houston v. EPA*, 906 F.3d 1049 (D.C. Cir. 2018), and asserting that in that decision the D.C. Circuit found an EPA rule irrational where the EPA tried to “have it both ways” by claiming that a rule was necessary to prevent harms to regulated industry but also “does nothing more than maintain the status quo,” *Id.* at 1068).

Other commenters said that the EPA has authority to reconsider prior Agency decisions and the 2016 Supplemental Finding in particular. These commenters noted that if the 2016 Supplemental Finding were left unamended, it would establish policy precedents at odds with well-established precepts about how benefits and costs should be considered in regulatory decisions.

Response: The EPA disagrees with commenters that CAA section 112(n)(1)(A) speaks to the EPA’s authority to revisit its appropriate and necessary finding, and we, therefore, disagree with commenters’ contention that the statute on its face prohibits the EPA from revisiting a determination made under that provision. The provision reads: “The Administrator shall regulate electric utility steam generating units under this section, if the Administrator finds such regulation is appropriate and necessary after considering the results of the study required by this subparagraph [the “Utility Study”⁸].” The only clear requirement with regard to timing or sequence found in the text of the provision is that the Administrator may not make the finding prior to considering the results of the Utility Study, which the EPA completed in 1998. The statute does not restrict the Administrator’s ability to revise or reconsider a prior finding made under CAA section 112(n)(1)(A).

We also disagree with commenters’ argument that because other statutory provisions in the CAA mandate that the EPA review and revise regulations on a set schedule or continuing basis, it must follow that every other statutory provision lacking such a review-and-revise clause prohibits an agency from

rethinking its interpretation of such provision. The EPA’s CAA rulemaking history contains many examples of the Agency’s changing position on a previous interpretation of a provision, even where there is no explicit directive within the provision to review or revise.

Absent a specific statutory prohibition, the EPA’s ability to revisit existing decisions is well established. The EPA has inherent authority to reconsider and/or revise past decisions to the extent permitted by law so long as the Agency provides a reasoned explanation. The authority to reconsider exists in part because the EPA’s interpretations of statutes it administers “[are not] instantly carved in stone,” but must be evaluated “on a continuing basis.” *Chevron U.S.A. v. Natural Resources Defense Council*, 467 U.S. 837, 863–64. This is true when, as is the case here, review is undertaken partly “in response to . . . a change in administrations.” *National Cable & Telecommunications Ass’n v. Brand X Internet Services*, 545 U.S. 967, 981 (2005). Indeed, “[a]gencies obviously have broad discretion to reconsider a regulation at any time.” *Clean Air Council v. Pruitt*, 862 F.3d 1, 8–9 (D.C. Cir. 2017).

Commenters’ assertions that the statutory context and structure of CAA section 112 and the legislative history of that provision support their view that the EPA lacks authority to revisit its CAA section 112(n)(1)(A) determination are marred by the commenters’ assumed premise that the EPA necessarily would find that it *is* appropriate and necessary to regulate EGUs. The commenters argue that their interpretation of the statute must be correct because it creates a tidy framework: The EPA makes an affirmative appropriate and necessary finding, regulations under CAA section 112 are promulgated, and the *only* statutory means by which the appropriate and necessary finding could be revisited is to satisfy the delisting criteria under CAA section 112(c)(9). According to commenters, such a framework fits with Congress’ concerns about dangers to public health and welfare due to air pollution and what they broadly characterize as congressional desire to regulate HAP from power plants “promptly.” The problem with the commenters’ statutory interpretation is that it makes sense only if an affirmative appropriate and necessary finding occurs in the first instance. If, as commenters assert, CAA section 112(c)(9) is the *only* statutory means by which a finding under CAA section 112(n)(1)(A) may be revisited, commenters’ framework provides no pathway by which the EPA could revisit

⁸CAA section 112(n)(1)(A) directs the EPA to conduct a study to evaluate the hazards to public health reasonably anticipated to occur as the result of HAP emissions from EGUs after the imposition of the requirements of the CAA, and to report the results of such study to Congress by November 15, 1993. See U.S. EPA, *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units—Final Report to Congress*. EPA–453/R–98–004a, February 1998.

a finding that it is *not* appropriate and necessary to regulate HAP from power plants. Commenters’ “unambiguous” reading of CAA section 112(n)(1)(A) and its assumption that Congress drafted the provision in order to ensure “prompt” reductions of HAP from EGUs treats an affirmative finding under that section as a foregone conclusion rather than a decision left up to the expertise of the Agency and its Administrator.

The commenters’ reading of the statute also cannot be squared with the *Michigan v. EPA* decision. They assert that CAA section 112(n)(1)(A) only allows the EPA “to activate a one-way switch to ‘turn on’ regulation,” and notes that the Agency did so “in its 2000 finding.” Commenters are essentially arguing that the U.S. Supreme Court’s instruction to the EPA that it was required to consider cost as part of a CAA section 112(n)(1)(A) finding could *never* have had any practical effect, because according to commenters, the “only . . . statutorily mandated avenue to turn the switch off and reverse course . . . [is] the section 112(c)(9) procedures.” Therefore, in petitioners’ view, regardless of what the EPA determined on remand from *Michigan*, only the satisfaction of the CAA section 112(c)(9) criteria, which contain no consideration of cost, could have altered the EPA’s finding under CAA section 112(n)(1)(A). We do not agree that this is a reasonable reading of the statute or the *Michigan* decision.

Additionally, the EPA notes that the D.C. Circuit in *New Jersey* held that the EPA’s reversal of a prior determination that it was appropriate and necessary to regulate EGUs under CAA section 112 did not by itself effect a delisting of EGUs from the CAA section 112(c) list of source categories. This holding recognizes that the CAA section 112 appropriate and necessary determination is structurally and functionally separate from the EPA’s ability, conditioned on certain predicate findings, to remove source categories from the CAA section 112(c) list. Commenters are, therefore, wrong to assert that the EPA can reverse an appropriate and necessary determination under CAA section 112(n)(1)(A) only if it has first undertaken CAA section 112(c)(9)’s delisting procedure, and wrong to assert that *New Jersey* supports their position that the EPA lacks inherent authority to reconsider the appropriate and necessary finding; in fact, that case supports the opposite position.

For similar reasons, we also reject the commenters’ contention that CAA section 112(c)(9)’s health protective criteria are substantively incorporated

into CAA section 112(n)(1)(A)’s appropriate and necessary determination, such that a failure to consider those criteria in the context of reversing a determination under CAA section 112(n)(1)(A) is arbitrary and renders CAA section 112(c)(9) a nullity. As explained in section II.D of this preamble, we agree that the EPA may not delist EGUs from the CAA section 112(c) list and revoke MACT standards for power plants without meeting the delisting criteria of CAA section 112(c)(9). We do not agree, however, that the delisting provision has any effect on the Agency’s ability to make an affirmative or negative determination under CAA section 112(n)(1)(A) where we are not purporting to alter the CAA section 112(c) list. In particular, we do not agree with the commenters’ reading of *New Jersey* that the D.C. Circuit’s holding means that the EPA could reverse an affirmative appropriate and necessary finding only if it found that the CAA section 112(c)(9) delisting criteria were met. The Court’s holding in *New Jersey* plainly states that CAA section 112(c)(9) “unambiguously limit[s] EPA’s discretion to remove sources, including EGUs, from the section 112(c)(1) list once they have been added to it.” 517 F.3d 574, 583 (D.C. Cir. 2008). Commenters’ presumed incorporation of the statutory delisting criteria into the CAA section 112(n)(1)(A) determination also finds no support in the *Michigan* decision, which said nothing about the EPA’s obligation to consider those criteria in determining whether regulation of power plants is appropriate and necessary.

Finally, we disagree with commenters who assert that this final action is “inherently irrational” because the MATS standards would not be reversed as a result of the negative appropriate and necessary finding, due to controlling legal precedent from the D.C. Circuit (*New Jersey*). In this action the EPA is setting out the Agency’s revised reasoning to respond to a U.S. Supreme Court decision and remand (*Michigan*), because the EPA concludes that the 2016 Supplemental Finding is not appropriate as a matter of interpretation of the statute or as a matter of policy. As noted by some of the commenters, leaving in place the incorrect interpretation of “appropriate” in CAA section 112(n)(1)(A) could establish policy precedent that could have “long-term and harmful consequences.”

Moreover, the EPA disagrees that *Air Alliance Houston v. EPA* has any bearing on this action. There, in admonishing the Agency that it could not “have it both ways,” the Court was

criticizing the EPA for attempting to characterize its rule as relieving “substantial compliance and implementation burden” while also “maintaining the status quo” (such that the rule would have little effect on compliance requirements). *See Air Alliance Houston*, 906 F.3d at 1068. Here, the Agency believes a different finding and better response to the U.S. Supreme Court’s decision in *Michigan v. EPA* is warranted given the proper application of that decision and the facts in the EPA’s record. We acknowledge that this change in policy will not affect the CAA section 112 MACT standards for EGUs because the D.C. Circuit’s decision in *New Jersey v. EPA* prohibits the Agency from removing listed sources from the CAA section 112(c) list without satisfying the CAA section 112(c)(9) delisting criteria (*see* section II.D of this preamble). But we do not agree that simply because D.C. Circuit precedent establishes that the Agency’s reversing its prior determination will have a particular regulatory consequence, the Agency is, therefore, prohibited from revisiting that prior determination in the first instance.

Comment: Some commenters stated that the EPA has no authority to “revise” its response to the U.S. Supreme Court’s decision in *Michigan*, and its attempt to do so would impermissibly subvert the judicial review process. These commenters argued that the EPA’s response to *Michigan* is the 2016 Supplemental Finding, and that at this stage, that response cannot be altered or reversed. The commenters contended that the 2016 Supplemental Finding constitutes final Agency action and noted that the Finding is currently subject to petitions for review in the D.C. Circuit. The commenters suggested that seeking to undo the 2016 Supplemental Finding by administrative action would unlawfully circumvent that review. Other commenters asserted that the EPA has an obligation to explain how final action on the 2019 Proposal could impact the government’s position in ongoing litigation of the 2016 Supplemental Finding. Commenters also said the EPA must address the implications of a reversal of that finding, considering the petitioner’s positions in the ongoing litigation where the petitioner has argued that reversal of the appropriate and necessary finding must be followed by vacatur of MATS.

Response: The EPA disagrees with the commenters that finalizing this action “subverts the judicial review process” with respect to the 2016 Supplemental Finding. To the extent that commenters are arguing that the EPA lacks statutory

authority to review the 2016 Supplemental Finding, the EPA has addressed that contention in the response to the comment above. We agree that the 2016 Supplemental Finding constituted final Agency action, and we acknowledge that petitions for review of that action were filed in the D.C. Circuit in *Murray Energy Corp. v. EPA*, No. 16–1127 (and consolidated cases) (D.C. Cir. filed April 25, 2016). However, we disagree that our final action unlawfully circumvents the judicial process. The EPA filed a motion in the *Murray Energy* litigation requesting the Court to continue oral argument, which had been scheduled for May 18, 2017, to allow the new Administration adequate time to review the 2016 Supplemental Finding to determine whether it needed to be reconsidered.⁹ On April 27, 2017, in consideration of the EPA’s motion, the D.C. Circuit ordered that the consolidated challenges to the 2016 Supplemental Finding be held in abeyance.¹⁰ That case continues to be held in abeyance, pending further order of the Court. In its order, the Court directed the parties to file motions to govern future proceedings within 30 days of the Agency’s concluding its review of the 2016 Supplemental Finding.¹¹

The EPA disagrees with the commenters that the Agency has an obligation to address in the context of this regulatory action the government’s position in that ongoing litigation. We address in section II.D of this preamble the implications of the reversal of the 2016 Supplemental Finding, including addressing those comments received that argue that a vacatur of MATS is required upon finalization of this action. To the extent that the commenter is suggesting that it would be appropriate or required for the EPA at this point to address potential *future* arguments petitioners might make in the *Murray Energy* litigation following this final action, the Agency disagrees. The appropriate venue for addressing such arguments is the judicial review process for that action. Commenters provide no authority to support their assertion that an agency is obliged to discuss in a rulemaking the implications of that rulemaking for pending litigation challenging a previous, related agency action; the EPA is aware of no such authority; and the EPA declines to take

such litigation positions in this final action.

2. The Preferred Cost Reasonableness Approach of the 2016 Supplemental Finding Was Deficient

a. Summary of 2019 Proposal

The EPA proposed to determine that the Agency’s 2016 Supplemental Finding erred in its consideration of cost. Specifically, we proposed to find that what was described in the 2016 Supplemental Finding as the preferred approach, or the “cost reasonableness test,” does not meet the statute’s requirements to fully consider costs and was an unreasonable interpretation of CAA section 112(n)(1)(A)’s mandate, as informed by the U.S. Supreme Court’s opinion in *Michigan*. A summary of that approach can be found in the 2019 Proposal. 84 FR 2674–75.

b. Final Rule

After considering comments submitted in response to the EPA’s 2019 Proposal, the EPA is finalizing the proposed approach. The EPA concludes that the “preferred approach” in the 2016 Supplemental Finding did not meaningfully consider cost, which the *Michigan* Court observed to be a “centrally relevant factor” in making the CAA section 112(n)(1)(A) appropriate and necessary finding. The 2016 Supplemental Finding’s de-emphasis of the importance of the cost consideration in the appropriate and necessary determination was based on an impermissible attempt to “harmonize” CAA section 112(n)(1)(A) with the remainder of CAA section 112,¹² and was not consistent with Congress’ intent and the U.S. Supreme Court’s decision in *Michigan v. EPA*, given that statutory provision’s directive to treat EGUs differently from other sources. See 135 S. Ct. at 2710 (“The Agency claims that it is reasonable to interpret [CAA section 112(n)(1)(A)] in a way that ‘harmonizes’ the program’s treatment of power plants with its treatment of other sources. This line of reasoning overlooks the whole point of having a separate provision about power plants:

¹² See *Legal Memorandum Accompanying the Proposed Supplemental Finding that it is Appropriate and Necessary to Regulate Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units (EGUs)* (2015 Legal Memorandum) (Docket ID Item No. EPA–HQ–OAR–2009–0234–20519), at 6–15 (describing statutory purpose of 1990 CAA Amendments and CAA section 112, and concluding that “while cost is certainly an important factor, it is one of several factors that must be considered and section 112(n)(1) does not support a conclusion that cost should be the predominant or overriding factor.”).

Treating power plants *differently* from other sources.”) (emphasis in original).

c. Comments and Responses

Comment: Some commenters asserted that the cost analysis in the 2016 Supplemental Finding was consistent with longstanding cost-effectiveness methodologies used in other CAA programs, such as the CAA section 111 New Source Performance Standards and CAA section 169 Prevention of Significant Deterioration (PSD). These commenters disagreed with what they characterized as the 2019 Proposal’s position that CAA section 111 case law was irrelevant to the CAA section 112(n)(1)(A) appropriate and necessary determination, noting that cost effectiveness is used in CAA section 111 to determine standards for existing sources, much as the EPA is determining whether to regulate existing sources in CAA section 112(n)(1)(A). These commenters further said that the proposed monetized cost-benefit approach is inferior to the longstanding cost-effectiveness test for addressing concerns about standards that impose costs too high for the industry to bear. However, other commenters agreed with the EPA that cases interpreting section 111 of the CAA were not an appropriate guide to considering costs under CAA section 112(n)(1)(A).

Response: The broad language of CAA section 112(n)(1)(A) and the holding of the *Michigan* Court suggest that there is more than one permissible way to interpret the Agency’s obligation to consider cost in the appropriate and necessary finding. The text of that section does not require the Agency to consider cost in a particular fashion. The U.S. Supreme Court, in identifying that the Agency’s obligation to consider cost in *some* fashion in light of the broad term “appropriate,” recognized the discretion afforded the Administrator, noting, “[i]t will be up to the Agency to decide (as always, within the limits of reasonable interpretation) how to account for cost.” 135 S. Ct. at 2711. Even in the final 2016 Supplemental Finding, the EPA acknowledged that the cost reasonableness test was but one way to interpret its CAA section 112(n)(1)(A) obligation to consider cost, and “that the agency need not demonstrate that [its] decision is the same decision that would be made by another Administrator or a reviewing court.” 81 FR 24431. The commenters provide many reasons for why they preferred the EPA’s “cost reasonableness” test, but even they do not attempt to argue that the EPA’s 2016 “preferred approach” is

⁹ Respondent EPA’s Motion to Continue Oral Argument at 6, *Murray Energy Corp. v. EPA*, No. 16–1127 (D.C. Cir. April 18, 2017), ECF No. 1671687.

¹⁰ Order, *Murray Energy Corp. v. EPA*, No. 16–1127 (D.C. Cir. April 27, 2017), ECF No. 1672987.

¹¹ *Id.*

the *only* permissible interpretation of the statute.

Comparisons of a regulation's costs and the relationship of those costs to the benefits the regulation is expected to accrue are a traditional and commonplace way to assess the costs of a regulation and are a permissible way to comply with Congress' broad directive to the Administrator to determine whether regulation is "appropriate" in CAA section 112(n)(1)(A). The EPA has never taken the position, nor do commenters argue now, that *any* comparison of costs to benefits would be an impermissible reading of the Agency's obligation to consider cost in CAA section 112(n)(1)(A); indeed, the Agency's alternative approach to considering cost in the 2016 Supplemental Finding was a formal cost-benefit analysis based on its 2011 RIA, and many of the commenters who now evince a preference for the 2016 "cost reasonableness test" at the time agreed that the 2011 RIA cost-benefit analysis could independently satisfy the Agency's obligation to consider cost under CAA section 112(n)(1)(A). U.S. Supreme Court precedent also supports the Agency's position that, absent an unambiguous prohibition to use cost-benefit analysis, the Agency generally may do so as a reasonable way to consider cost.¹³ In *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009), the U.S. Supreme Court struck down a Second Circuit decision prohibiting the EPA from employing benefit-cost analysis where the statute was silent as to how the Agency was to consider cost in adopting standards for cooling water intake standards for power plants. The Second Circuit found that because analogous provisions in the Clean Water Act explicitly instructed the EPA to consider "the total cost of application of technology in relation to the effluent reduction benefits to be achieved," (33 U.S.C. 1314(b)(4)(B)), Congress' failure to include such an instruction to the EPA in the provision at issue in the case meant that the EPA was not permitted to compare compliance costs to expected environmental benefits. The U.S. Supreme Court reversed, holding that the EPA's use of cost-benefit analysis "governs if it is a reasonable interpretation of the statute—not necessarily the only possible interpretation, nor even the interpretation deemed *most* reasonable

by the courts." *Id.* at 218 (emphasis in original).

The EPA's choice to employ cost-effectiveness analyses, rather than cost-benefit comparisons, in the context of other statutory provisions such as CAA section 111 or the PSD program in no way binds the Agency to using that method to consider cost in CAA section 112(n)(1)(A). The EPA's citation in the 2015 Legal Memorandum of our consideration of cost under CAA section 111 and the case law evaluating those instances was only to provide context to explain the genesis of the EPA's newly minted "cost reasonableness" test in the 2016 Supplemental Finding. Even then the EPA did not take the position that the D.C. Circuit cases reviewing the Agency's cost considerations under CAA section 111 were binding precedent upon which the Court should review our action under CAA section 112(n)(1)(A). In short, the commenters' preference that the EPA consider cost in a different way does not preclude the Agency from instead considering cost using an approach that compares costs and benefits, where the statute's broad directive suggests that it may. See *Entergy*, 556 U.S. at 226.

Comment: Some commenters asserted that the EPA's proposed approach to considering costs and benefits is inconsistent with what they broadly characterize as congressional intent to err on the side of protecting public health. These commenters argued that Congress recognized the insufficiency of available methods for quantifying costs and benefits when revising CAA section 112 in 1990 and that Congress concluded that the nature and latency of harms posed by HAP are not given sufficient weight in a regulatory process that must balance long-term benefits against present-day costs. Commenters said that the Agency should not construe the *Michigan* Court's instruction to "meaningfully consider cost" as a requirement to consider benefits in a way that is inconsistent with Congress' determination that reductions in HAP emissions have great value to the public. These commenters added that the EPA's proposed approach is based on an incorrect interpretation of *Michigan*, which stated only that consideration of cost should play some role in the appropriate and necessary finding, not that cost considerations should dominate that finding. According to these commenters, the studies required in CAA section 112(n) indicate that Congress put public health and environmental concerns at the forefront of CAA section 112, which was enacted explicitly in response to the EPA's lack of action in addressing

the harmful effects of HAP, and, therefore, shares the section's overall focus on harm prevention. These commenters asserted that the "preferred approach" in the 2016 Supplemental Finding met the requirements of *Michigan* and were consistent with congressional intent and the CAA's statutory goals.

Other commenters, however, agreed with the 2019 Proposal that the "cost reasonableness" test in the 2016 Supplemental Finding's "preferred approach" was invalid, harmful, and failed to meet the *Michigan* Court's expectation that the Agency should weigh benefits against costs. These commenters characterized the cost-reasonableness test, which compared costs of MATS compliance with various other costs incurred by the power sector, as an "affordability test," or an inquiry into whether the power sector could absorb the costs of compliance. These commenters noted that such a test ignores benefits by failing to provide important information on whether society's investment in additional costs is worth the expected benefits and fails to consider whether costs would be "prudently incurred" as a means to reduce hazards to public health. As one commenter put it, "Simply because the power sector *could* absorb costs without affecting current operational performance does not mean that it *should* absorb those costs." Some commenters objecting to the "preferred approach" in the 2016 Supplemental Finding emphasized that looking at cost in this manner would invite the promulgation of regulations that are poorly designed, with few potential benefits. They voiced concern that using affordability tests could result in agencies focusing public and private sector resources on extinguishing relatively small risks while leaving larger risks unattended. Other commenters noted that such tests also penalize successful industries due to their success, and risk failing to appropriately regulate industries that are less profitable.

Response: The EPA agrees with commenters who stated that Congress' intent with respect to CAA section 112, as a whole, evinces an acknowledgment of the seriousness of toxic air pollutants. We do not agree, however, that general congressional concern about the toxicity of HAP overrides the specific instruction given to the Administrator in CAA section 112(n)(1)(A) to make a determination about whether regulation of EGUs in particular is "appropriate and necessary." As the U.S. Supreme Court admonished the EPA in *Michigan*, the text and structure of CAA section

¹³ See S. Masur & Eric A. Posner, *Cost-Benefit Analysis and the Judicial Role*, 85 U. Chi. L. Rev. 935, 981 (2018).

112, and 112(n)(1)(A) in particular, evince Congressional design to approach the question whether to regulate EGUs differently than other source categories:

Congress crafted narrow standards for EPA to apply when deciding whether to regulate other sources; in general, these standards concern the volume of pollution emitted by the source, [CAA section 112(c)(1)], and the threat posed by the source “to human health or the environment,” [citing CAA section 112(c)(3)]. But Congress wrote the provision before us [CAA section 112(n)(1)(A)] more expansively . . . That congressional election settles this case. [The Agency’s] preference for symmetry cannot trump an asymmetrical statute.

135 S. Ct. at 2710 (internal citations omitted).

Moreover, we do not agree with commenters’ suggestion that in the Agency’s comparison of costs and benefits, the EPA is considering benefits in a way that is inconsistent with a congressional determination that reductions in HAP emissions have great value to the public and Congress’ public health and environmental concerns. We disagree that CAA section 112’s general concerns about public health and environmental risks from HAP emissions mandated a particular manner of valuing or weighing the benefits of reducing those risks.

As noted in the 2019 Proposal, we do not think the 2016 Supplemental Finding’s analysis of cost satisfied the Agency’s mandate under CAA section 112(n)(1)(A) and *Michigan*. The “preferred approach” in the 2016 Supplemental Finding considered cost insofar as the Agency at the time analyzed whether the utility industry as a whole could continue to operate, and found that it could (*i.e.*, that costs were “reasonable”). 81 FR 24420, 24422, 24424, 24427, 24428, 24429, 24430, 24431. But we do not think the “preferred approach” in the 2016 Finding gave sufficient weight to cost as a “centrally relevant factor,” *Michigan*, 135 S. Ct. at 2707—that is, we do not think that a cost standard that is satisfied by establishing that regulation will not fundamentally impair the functioning of a major sector of the economy places cost at the center of a regulatory decision—and we are in this action heading the *Michigan* Court’s reading of the Administrator’s role under CAA section 112(n)(1)(A), which directed the Agency to meaningfully consider cost within the context of a regulation’s benefits. We agree that *Michigan* did not hold that the Agency is required to base its decision whether it is appropriate and necessary to regulate EGUs under CAA section 112

on a formal benefit-cost analysis, but neither did it hold that a comparison of costs and benefits is an impermissible approach to considering cost.

The U.S. Supreme Court contemplated that a proper consideration of cost would be relative to benefits, and the Court’s decision contains many references comparing the two considerations. In establishing the facts of the case, the Court pointed out that “EPA refused to consider whether the costs of its decision outweighed the benefits.” 135 S. Ct. at 2706. The Court questioned whether a regulation could be considered “rational” where there was a gross imbalance between costs and benefits and stated that “[n]o regulation is ‘appropriate’ if it does more harm than good.” *Id.* at 2707. The Court also made numerous references to a direct comparison of the costs of MATS with benefits from reducing emissions of HAP. For instance, the Court pointed out that “[t]he costs [of MATS] to power plants were thus between 1,600 and 2,400 times as great as the quantifiable benefits from reduced emissions of hazardous air pollutants.” *Id.* at 2706. Although the Court’s holding established no bright-line rules, the opinion as a whole, thus, repeatedly suggests that CAA section 112(n)(1)(A)’s requisite consideration of cost would not be met if the cost analysis did not “prevent the imposition of costs far in excess of benefits.” *Id.* at 2710.

The 2016 Supplemental Finding’s “test” of whether an industry can bear the cost of regulation, and its subsequent conclusion that such costs are “reasonable,” does not satisfy the statute’s mandate to determine whether such regulation is appropriate and necessary. We agree with commenters who stated that the metrics “tested” by the Agency in the 2016 Supplemental Finding are not an appropriate basis for the determination whether it is “appropriate and necessary” to impose that regulation. Each cost metric the Agency examined compared the cost of MATS to other costs borne by the industry, but never in its “preferred approach” did the Agency make the assessment of whether the benefits garnered by the rule were worth it—*i.e.*, a comparison of costs and benefits. Even if the EPA determined that cost of regulation was, viewed on its own terms, *unreasonable* after comparing the cost of regulation to other costs borne by the industry, the “preferred approach” could have still resulted in a finding that regulation was “appropriate” because the EPA placed so much weight on hazards to public health and the environment that needed to be

prevented. *See* 81 FR at 24432. In other words, much as it did in 2012 when it read cost consideration entirely out of the CAA section 112(n)(1)(A) determination, the Agency in 2016 was fixated on the term “necessary,” without considering whether any countervailing factors, *i.e.*, cost, might call into question whether regulation was “appropriate.” As many commenters pointed out, the “cost reasonableness test” failed to consider cost relative to benefits, and really focused only on whether costs could be absorbed, rather than on whether they should be absorbed—the inquiry that is specifically required by the word “appropriate.” We, therefore, conclude that the “cost reasonableness” approach did not adequately address the U.S. Supreme Court’s instruction that a reasonable regulation requires an agency to fully consider “the advantages *and* the disadvantages” of a decision. *See Michigan*, 135 S. Ct. at 2707 (emphasis in original).

Moreover, we take seriously commenters’ concerns that leaving the “preferred approach” in place, with its “cost reasonableness” or affordability test, could have a harmful influence on other agencies interpreting similarly broad congressional directives to consider cost. Statutes that direct agencies to make determinations about whether regulation is “appropriate” are precisely the contexts in which those agencies should retain discretion to select and prioritize public policies which provide the most value for the public good in relation to the cost.

Comment: Commenters said that the EPA’s proposed new approach to considering cost in the CAA section 112(n)(1)(A) finding is an impermissible interpretation of that provision because it fails to meaningfully address factors that are “centrally relevant” to the inquiry of whether it is appropriate and necessary to regulate HAP from EGUs. Some commenters noted that the Agency’s alleged failure in the 2019 Proposal to adequately address these factors, upon which the 2016 Supplemental Finding was predicated, runs afoul of the Agency’s obligation to provide a reasoned explanation for abandoning these considerations, citing *Motor Vehicle Mfrs. Ass’n of United States, Inc. v. State Farm Mut. Automobile Ins. Co.*, 463 U.S. 29 (1983) and *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502 (2009). The commenters noted that these cases state the principle that agencies cannot simply ignore prior factual determinations but must provide a “reasoned explanation” for a proposed departure from “facts and circumstances that underlay or were engendered by the

prior policy.” These commenters specifically faulted the EPA for not giving appropriate weight to the following factors:

i. Unquantified Benefits

Commenters stated that the 2019 Proposal does not acknowledge that some “hazards to public health” are unquantified and asserted that the 2019 Proposal presents a significant change in position with insufficient justification for revising the EPA’s longstanding interpretation that the phrase “hazards to public health” encompasses risks that have not been monetized because of the limitations of current methods, data, and uncertainty. Commenters said the 2019 Proposal gave no discernable weight to these risks as required by the statutory phrase “hazards to public health reasonably anticipated to occur.”

Moreover, the commenters asserted that the monetized, HAP-specific benefits at issue, which quantify avoided IQ loss in children associated with prenatal methylmercury exposure from self-caught fish consumption among recreational anglers, are but a small fraction of the public health benefits attributable to reductions in mercury emissions alone. The commenters cited the statement from the EPA’s Science Advisory Board (SAB), which stated that IQ loss “is not the most potentially significant health effect associated with mercury exposure as other neurobehavioral effects, such as language, memory, attention, and other developmental indices, are more responsive to mercury exposure.” 80 FR 75040. The commenters noted that none of the environmental benefits from reductions in mercury emissions could be quantified, nor any of the health or environmental benefits attributable to reductions in other HAP.

ii. Qualitative Benefits Such as Impacts on Tribal Culture and Practices

Some commenters stated that the EPA’s proposed approach ignores non-monetizable benefits. These commenters asserted that methylmercury contamination threatens traditional American Indian lifeways, including longstanding traditions of fishing and fish consumption that are central to many tribes’ cultural identity and that make individual tribes as distinct as different individual people. These commenters stated that for many tribes, fishing and fish consumption are critical social practices, handed down from generation to generation. Where tribal members no longer fish due to health concerns, these fishing traditions are not passed down to new generations of

tribal members, leading to permanent cultural loss. Furthermore, these commenters stated that many tribes are connected to particular waters for cultural, spiritual, or other reasons (and others’ fishing rights are limited to certain grounds by treaty), so tribal members cannot simply move their fishing to another location to avoid mercury contamination. The commenters asserted that the preferred approach of the 2016 Supplemental Finding recognized that regulation of HAP from EGUs would benefit American Indians by allowing them to safely engage in, and thereby perpetuate, their culture. These commenters argued that the Agency’s preferred approach in the 2016 Supplemental Finding properly deemed these qualitative benefits to be cognizable and highly significant. In addition, the commenters stated that mercury emissions likewise cause significant harm to Indian subsistence and fishing economies, contaminating food sources that many tribal members depend on for survival. According to these commenters, the EPA’s 2016 preferred approach methodology allowed for a full range of qualitative benefits to be accounted for, whereas the 2019 proposed reversal does not.

iii. Latency, Persistence in the Environment, and Toxicity of Regulated Pollutants

Some commenters asserted that the EPA’s proposed approach disregarded the physiochemical nature and toxicity of the toxic air pollutants regulated by CAA section 112 and the concern Congress had expressed about these qualities in enacting that section. These commenters pointed out that, in enacting the list of regulated air toxics, Congress deliberately *withdrew* the EPA’s authority to judge the importance of the harms threatened by the listed pollutants. The commenters noted that Congress itself listed the pollutants, rather than waiting for the EPA to do so, because of a difficulty which commenters argue is particular to air toxics: “[t]he public health consequences of substances which express their toxic potential only after long periods of chronic exposure will not be given sufficient weight in the regulatory process when they must be balanced against the present-day costs of pollution control and its other economic consequences.” Leg. Hist. at 8522 (S. Rep. No. 101–228 at 182). The commenters argued that these identified harms from air toxics occur regardless of the source of the pollutants, and, therefore, there is no reason to believe that Congress might have, by inserting

CAA section 112(n)(1)(A), authorized the EPA to reassess the benefits of reducing those harms in the context of EGUs. The commenters stated that no study, including the EPA’s Utility Study, suggests that HAP from EGUs are of any different character or pose less harm by their nature than HAP emitted by any other industrial source category.

iv. Distributional Impacts of the Pollutants on the Population

Commenters pointed to Congress’ intent to address harms that are concentrated within particular communities or populations, citing CAA section 112(f)(2)(A)’s requirement that the EPA address lifetime excess cancer risks borne by the “individual most exposed to emissions,” CAA section 112(n)(1)(C)’s directive that the EPA consider power plant mercury harms to sensitive fish-consuming populations, and legislative history (“EPA is to consider individuals who are sensitive to a particular chemical” in assessing whether a pollutant’s harm warrants regulation) (Leg. Hist. at 8501). The commenters noted that the 2016 Supplemental Finding’s preferred approach identified several populations that were disproportionately at risk of mercury exposure from EGUs, including African-Americans living below the poverty line in the Southeast who rely on the fish they catch for food, and the children and fetuses in those communities in particular whose risk of exposure is amplified; and individuals and communities who live near coal- and oil-fired power plants, who are disproportionately members of racial and ethnic minorities. The commenters cited a study that found that of the 8.1 million people living within 3 miles of a coal-fired plant in the year 2000, 39 percent were people of color, a percentage significantly higher than the proportion of people of color in the U.S. population as a whole. The same study found that people living within 3 miles of such power plants had an average annual per capita income of \$18,596, significantly lower than the national average.

Some commenters pointed to various executive orders that independently direct the EPA to consider some of these factors, including Executive Order 12898 (February 11, 1994), which establishes that “disproportionately high and adverse human health or environmental effects” of EPA decisions “on minority populations and low-income populations in the U.S. and its territories and possessions” are of central concern to the EPA’s decision-making, with specific emphasis upon “subsistence consumption of fish and

wildlife.” The commenters also pointed to Executive Order 13045 (April 21, 1997),¹⁴ which is particularly concerned about “environmental health risks” that may “disproportionately affect children.”

Response: Agency decisions, once made, are not forever “carved in stone.” *Nat’l Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005) (internal quotation marks and citations omitted). We disagree with the commenters’ view that the EPA is not permitted to determine that the “cost reasonableness” approach is not the correct way to consider cost in the CAA section 112(n)(1)(A) appropriate and necessary finding, and their view that the EPA is not permitted to re-evaluate the significance of the factual findings underpinning its 2016 Supplemental Finding and come to a different conclusion. D.C. Circuit and U.S. Supreme Court precedent, including those cases cited by the commenters, support the Agency’s position that it is within its authority to do so, provided that the Agency’s new action is based on a permissible interpretation of the statute and is supported by a reasoned explanation.

In *FCC v. Fox*, the U.S. Supreme Court stated an agency’s obligation with respect to changing a prior policy quite plainly:

We find no basis . . . for a requirement that all agency change be subjected to more searching review. The [Administrative Procedure] Act mentions no such heightened standard. And our opinion in *State Farm* neither held nor implied that every agency action representing a policy change must be justified by reasons more substantial than those required to adopt a policy in the first instance.¹⁵

In cases where an agency is changing its position, the Court stated that a reasoned explanation for the new policy would ordinarily “display awareness that it is changing position” and “show that there are good reasons for the new policy.” *Id.* at 515. However, the Court held that the agency “need not demonstrate . . . that the reasons for the new policy are better than the reasons for the old one; it suffices that the new policy is permissible under the statute, that there are good reasons for it, and that the agency *believes* it to be better.” *Id.* In cases where a new policy “rests upon factual findings that contradict those which underlay its prior policy; or when its prior policy has engendered serious reliance interests that must be

taken into account,” the Court found that a more detailed justification might be warranted than what would suffice for a new policy.

Although commenters assert that the EPA has failed to provide a reasoned basis for its action here, their real complaint with the Agency’s abandonment of the 2016 Supplemental Finding’s “cost reasonableness test” and “preferred approach” is that they favored the way the Agency under that approach weighed certain factors, including unquantified benefits, impacts on tribes and tribal culture, the latency and persistence of air toxics in the environment, and distributional concerns and impacts. That the EPA now weighs these concerns differently—a weighing that is further explained below—does not mean the Agency is “disregarding” or “dismissing” these concerns.

In the 2019 Proposal, the EPA clearly stated that the unquantified HAP benefits associated with regulating power plants were “significant,” and enumerated the impacts on human health that have been linked to mercury (including neurologic, cardiovascular, genotoxic, and immunotoxic effects), the adverse health effects associated with non-mercury HAP (including cancer and chronic and acute health disorders that implicate organ systems such as the lungs and kidneys), and other effects on wildlife and ecosystems. 84 FR 2677. Contrary to commenters’ assertions, the EPA did not ignore these concerns but said, “The EPA acknowledges the importance of these benefits and the limitations on the Agency’s ability to monetize HAP-specific benefits. The EPA agrees that such benefits are relevant to any comparison of the benefits and costs of a regulation.” *Id.* at 2677–78. Moreover, as the Agency pointed out in its proposal, the 2011 RIA, which summarizes the factual findings and scientific studies which form the basis of this action as well as the EPA’s 2016 action, discussed all of the monetized and unquantified benefits of regulating HAP from power plants, including the qualitative impacts on American Indian tribes,¹⁶ distributional impacts,¹⁷ and latency and persistence of the pollutant.¹⁸ *Id.* at 2678.

In the context of this action, in which the lens we use to consider cost is based on a comparison of benefits to cost, we are choosing to weigh these concerns (and particulate matter (PM) co-benefits discussed in more detail in section

II.C.3 of this preamble) differently than the manner in which the EPA evaluated them in the 2016 Supplemental Finding. While it is true that many of the benefits associated with reducing emissions of HAP from power plants have not been quantified, the EPA provided in the 2019 Proposal its reasons for concluding that those unquantified benefits were not likely to overcome the imbalance between the monetized HAP benefits and compliance costs in the record. First, as the EPA pointed out and as discussed below, most of the unquantified benefits of MATS are morbidity effects associated with exposure to mercury and other HAP. Second, to the extent commenters have identified potential mortality outcomes such as potential cardiovascular impacts from mercury exposure and potential cancer risks from exposure to other HAP, the EPA disagrees, for the reasons provided below, with the proposition that significant monetized benefits would be expected from either outcome.

As the commenters acknowledged, the SAB noted that IQ loss “is not the most potentially significant health effect associated with mercury exposure, as other neurobehavioral effects, such as language, memory, attention, and other developmental indices, are more responsive to mercury exposure.” 80 FR 75040. The Agency explained in its 2019 Proposal that the neurobehavioral effects of mercury exposure identified by the SAB as more “potentially significant” are morbidity, not mortality, outcomes. In the EPA’s experience, the economic value of avoided morbidity effects (*e.g.*, impaired cognitive development, problems with language, abnormal social development, etc.) per incident is a small fraction of the monetizable value of avoided premature deaths. Further, when estimating the economic value of avoided cases of air pollution-related effects, the Agency has generally found that the aggregate value of the avoided illnesses (*e.g.*, hospital admissions, emergency department visits, cases of aggravated asthma, etc.) is small as compared to the total value of avoided deaths.¹⁹

And the EPA does not expect that to the extent the prevention of any premature deaths due to regulation of

¹⁹ See U.S. EPA 2010a: *Regulatory Impact Analysis for the Nitrogen Oxide National Ambient Air Quality Standards* Page 4–8 through 4–10; U.S. EPA. 2010b: *Regulatory Impact Analysis for the Sulfur Dioxide National Ambient Air Quality Standards* Page 5–26 through 5–28; U.S. EPA. 2012: *Regulatory Impact Analysis for the Particulate Matter National Ambient Air Quality Standards* pages 5–69; U.S. EPA. 2015: *Regulatory Impact Analysis for the Ozone National Ambient Air Quality Standards*. Pages 6–57 through 6–60.

¹⁴ Commenters cite Executive Order 13035 in their comments, but we believe this was a typographical error.

¹⁵ *FCC v. Fox*, 556 U.S. at 514.

¹⁶ 2011 RIA at 7–40 to –49.

¹⁷ 2011 RIA at 7–49 to –54.

¹⁸ 2011 RIA at Chapter 4.

HAP could be associated with the MATS rule, the value of that effect would be significant. With respect to potential premature deaths due to cardiovascular impacts from mercury exposure, as discussed further in section II.C.4 of this preamble, there is inconsistency among available studies as to the degree of association between methylmercury exposure and various cardiovascular system effects, including studies showing no association. As a result, based on the presently available information, the EPA believes available evidence does not support a clear characterization of the potential relationship between mercury exposure and cardiovascular mortality. For that reason, the EPA has not modeled risk (incidence) estimates for this health endpoint and has not included benefits associated with that endpoint in the analysis. With respect to potential premature deaths associated with inhalation exposure to non-mercury HAP, based on existing case-study analyses for EGUs which focus on the assessment of individual risk based on a number of conservative assumptions regarding exposure, the EPA anticipates that the mortality incidence associated with these non-mercury HAP exposures would be low (see section II.C.3 of this preamble for additional detail).²⁰ In sum, while the EPA recognizes the importance of unquantified benefits in a comparison against costs, the evaluation of evidence of unquantified benefits is based on qualitative information that helps understand the likelihood and potential scale of those benefits, relative to the monetized benefits and monetized costs. These qualitative assessments help confirm that unquantified benefits do not alter the underlying conclusion that costs greatly outweigh HAP benefits. This topic is discussed in more detail in section II.C.3 of this preamble.

The other factors identified by the commenters concern qualitative concerns such as impacts to tribal cultures and the concentration of public health risks occurring among certain population subgroups or for individuals living proximate to EGUs. The distribution of potential health effects may indicate more risk to some individuals than to others or more impacts to some groups like tribes than others; but in a cost-benefit comparison, the overall amount of the benefits stays the same no matter what the

distribution of those benefits is. The EPA, therefore, believes it is reasonable to conclude that those factors to which the EPA previously gave significant weight—including qualitative benefits, and distributional concerns and impacts on minorities—will not be given the same weight in a comparison of benefits and costs for this action under CAA section 112(n)(1)(A).²¹

None of the information underlying the EPA's action here constitutes new factual findings, but rather is a reevaluation of the existing record to arrive at what the Agency believes to be the better policy regarding whether regulation is "appropriate." In *Nat'l Ass'n of Home Builders v. EPA*, the D.C. Circuit reviewed challenges brought against the EPA that were similar to those concerns raised by commenters here and found that "this kind of reevaluation is well within an Agency's discretion." 682 F.3d 1032, 1038 (D.C. Cir. 2012) (*NAHB*). There, the EPA reversed course on a prior policy, and petitioners in that case contended that "EPA has provided no justification for its decision to reverse course . . . that is grounded in any information or experience that was not available to the Agency when it [adopted] the original rule . . . Rather, EPA merely revisited old arguments that had already been addressed as part of the original rulemaking." *NAHB*, 682 F.3d at 1036. Petitioners insisted in that case that the Agency was required to be held to a higher standard in reversing its prior decision based on the same factual record, but the D.C. Circuit disagreed. The Court held that *FCC v. Fox* "foreclosed" petitioners' argument, and that the Agency was permitted to rely on "a reevaluation of which policy would be better in light of the facts." *Id.* at 1036–38. It is well settled that such re-weighing or re-balancing is permissible. See *State Farm*, 463 U.S. at 57 ("An agency's view of what is in the public interest may change, either with or without a change in circumstances."); *Am. Trucking Ass'ns v. Atchison, Topeka & Santa Fe Ry. Co.*, 387 U.S.

397, 416 (1967) (declaring that an agency, "in light of reconsideration of the relevant facts and its mandate, may alter its past interpretation and overturn past administrative rulings"); *Organized Village of Kake v. Dept. of Agriculture*, 795 F.3d 956 (9th Cir. 2015) ("We do not question that the Department was entitled in 2003 to give more weight to socioeconomic concerns than it had in 2001, even on precisely the same record.").

As alluded to in these cases, the "reasoned basis" for an agency's change of interpretation need not be overly complex. Even Justice Breyer, who dissented from the *FCC v. Fox* majority, admitted, "I recognize that sometimes the ultimate explanation for a change may have to be, 'We now weight the relevant considerations differently.'" 556 U.S. at 550. Such change can, and often is, fueled by the basic functioning of American democracy—when new presidential administrations come into office—and the courts have recognized this to be a legitimate basis for a re-weighing of priorities. See *NAHB*, 682 F.3d at 1038 (noting the "inauguration of a new President and the confirmation of a new EPA Administrator" largely provided the reasoning for the EPA's change in policy). Unlike in *State Farm*, where the administering agency issued a rollback of a regulation requiring passive restraints in automobiles without even mentioning airbags at all, 463 U.S. at 48, 49, 51, here we acknowledge and address those factors to which we are giving less weight than was given in the 2016 Supplemental Finding. Cf. *Organized Village of Kake*, 795 F.3d at 968 (suggesting that a policy reversal could be premised upon "merely decid[ing] that [the agency] valued socioeconomic concerns more highly than environmental protection"). The commenters disagree with the way the Agency has now weighed the facts and circumstances underlying the original appropriate and necessary finding and the Agency's consideration of cost in 2016. But that does not mean that the Agency has not provided a "reasoned basis" for its action.

Comment: Some commenters asserted that a "more detailed justification" of the EPA's change in policy is required in this case given the "serious reliance interests" of states, the public, and industry in maintaining the appropriate and necessary determination and the MATS rule (citing *Fox*, 556 U.S. at 515; *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117 (2016)). With respect to state and public interests, the commenters pointed to the fact that the implementation of MATS has led to a dramatic decrease in HAP emissions

²⁰ U.S. EPA, *Supplement to the Non-Hg Case Study Chronic Inhalation Risk Assessment In Support of the Appropriate and Necessary Finding for Coal- and Oil-Fired Electric Generating Units*, November 2011, EPA-452/R-11-013.

²¹ Nor does the EPA agree with the commenters that Executive Orders 12898 and 13045 require a particular outcome in the EPA's appropriate and necessary finding. Executive orders recognize that agencies must weigh conflicting goals, priorities, and associated costs as a necessary part of reasoned decision making. Other more recent executive orders, which emphasize the environmentally responsible use and development of domestic natural resources, are also part of the policy calculus to consider. See, e.g., Executive Order No. 13783, 82 FR 16093 (March 28, 2017) (directing the EPA to review for possible reconsideration any rule that could "potentially burden the development or use of domestically produced energy resources, with particular attention to oil, natural gas, coal, and nuclear energy resources).

from power plants, and that the public has an interest in having those controls remain in place and in the continuation of improvements in air quality and the corresponding public health and environmental benefits. Other commenters pointed to the major capital investments that regulated utilities have already made to comply with MATS and asserted that a reversal of the 2016 Supplemental Finding creates uncertainty for the standards themselves. The commenters argued that these reliance interests, which they claim depend on the maintenance of the 2016 Supplemental Finding, therefore, require the EPA to provide the heightened justification required under *Fox* and *Encino Motorcars* for its reversal of that finding.

Response: The EPA disagrees with the commenters that the Agency is required to provide a “heightened justification” for this action. In *Fox*, the U.S. Supreme Court stated that as a general matter, no heightened scrutiny or review applies to decisions by agencies to reverse policies, and that policy changes need not be justified by reasons more substantial than those required to adopt a policy in the first instance. *See Fox*, 556 U.S. at 514–15. But the Court noted that “in such cases it is not that further justification is demanded by the mere fact of policy change; but that a reasoned explanation is needed for disregarding facts and circumstances that underlay or were engendered by the prior policy, *i.e.*, . . . when its prior policy has engendered serious reliance interests that must be taken into account.” *Id.* at 515. The Court elaborated on this principle in *Encino Motorcars v. Navarro*, 136 S. Ct. 2117 (2016). There, the Court found that the retail automobile and truck dealership industry had relied for decades on the Department of Labor’s (DOL) position that service advisors are exempt from the Fair Labor Standard Act’s overtime pay requirements. Given this reliance and the impact that the DOL’s change in policy would have on the industry (citing “systemic, significant changes to the dealerships’ compensation arrangements” and the risk that non-conforming dealerships could face “substantial FLSA liability”), the Court held that the DOL had not provided good reasons for its change in policy, noting that the agency “said almost nothing” and that it merely stated that exempting such employees from overtime pay was contrary to the statute and it believed its interpretation was reasonable. *Encino Motorcars*, 136 S. Ct. at 2126–27. The Court stated that “an agency may justify its policy choice by

explaining why that policy is more consistent with statutory language than alternative policies,” *Id.* (internal citations omitted), but chided the DOL for failing to include such a justification in its policy reversal.

First, we note that commenters raising serious reliance interests differ in at least one major way from the petitioners in *Encino Motorcars*. While those petitioners faced very real impacts based on the Agency’s changed position (“systemic, significant” changes to employee compensation and potential liabilities from failure to comply with the changed policy), the reliance interests cited by the commenters are not upended by this final action. As we stated in the proposal, the EPA finds that its re-evaluation of the costs and benefits of regulation of HAP emissions from power plants will not rescind or affect the regulatory program upon which the commenters rely, due to binding D.C. Circuit precedent (*see* section II.D of this preamble). To the contrary, the EPA is finalizing the results of the proposed RTR of MATS in this final action. The EPA determined that after compliance with MATS, the residual risks due to emissions of HAP from the Coal- and Oil-Fired EGU source category are acceptable in accordance with CAA section 112, and that there are no developments in HAP emissions controls to achieve further cost-effective reductions beyond the current standards. Therefore, based on the results of the RTR analyses, the Agency is promulgating this final action that maintains MATS in its current form.

Second, unlike the DOL in *Encino Motorcars*, the EPA has provided its reasons for changing its determination that the regulation of HAP emissions from power plants is not “appropriate.” As explained in the proposal and in this preamble, the EPA believes that a consideration of costs that compares the costs of compliance with the HAP-specific benefits of regulation “is more consistent with statutory language” than the 2016 Supplemental Finding’s “preferred approach.” Further, as discussed in section II.C.3 of this preamble, we do not think the determination that regulation is “appropriate” under CAA section 112(n)(1)(A), an air toxics provision, should primarily hinge on the monetary benefits associated with reductions in emissions of pollutants not regulated under CAA section 112. We believe the explanations provided in this action fully comply with the case law’s requirement to provide a reasoned explanation for our reversal of the 2016 Supplemental Finding.

3. The EPA’s Alternative Benefit-Cost Approach Used in the 2016 Supplemental Finding Improperly Considered Co-Benefits From Non-HAP Emissions Reductions

The 2016 Supplemental Finding presented an alternative approach under which the EPA made an independent finding under CAA section 112(n)(1)(A) based on a formal benefit-cost analysis²² that it was appropriate and necessary to regulate EGUs under CAA section 112. *See* 81 FR 24427. The formal benefit-cost analysis used in the 2016 Supplemental Finding relied on information reported in the RIA developed for the 2012 MATS Final Rule pursuant to Executive Orders 12866 and 13563 and applicable statutes other than the CAA (*e.g.*, the Regulatory Flexibility Act and the Unfunded Mandates Reform Act), as informed by Office of Management and Budget (OMB) guidance²³ and the EPA’s Economic Guidelines.²⁴

The quantified benefits accounted for in the formal benefit-cost analysis in the 2016 Supplemental Finding’s alternative approach included both HAP and non-HAP air quality benefits. Based on the 2011 RIA, the EPA projected the quantifiable benefits of HAP reductions under the rule to be \$4 to \$6 million in 2015.²⁵ The RIA also identified unquantified benefits associated with reducing HAP emissions from EGUs.

²² We use the term “formal benefit-cost analysis” to refer to an economic analysis that attempts to quantify all significant consequences of an action in monetary terms in order to determine whether an action increases economic efficiency. A benefit-cost analysis evaluates the favorable effects of policy actions and the associated opportunity costs of those actions. The favorable effects are defined as benefits. Opportunities forgone define economic costs. A formal benefit cost analysis seeks to determine whether the willingness to pay for an action by those advantaged by it exceeds the willingness to accept the action by those disadvantaged by it. The key to performing benefit-cost analysis is the ability to measure both benefits and costs in monetary terms so that they are comparable. Assuming all consequences can be monetized, actions with positive net benefits (*i.e.*, benefits exceed costs) improve economic efficiency. This usage is consistent with the definition of a benefit-cost analysis used in the economics literature and the EPA’s Guidelines for Preparing Economic Analyses.

²³ U.S. OMB. 2003. *Circular A-4 Guidance to Federal Agencies on Preparation of Regulatory Analysis*. Available at <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A4/a-4.pdf>.

²⁴ U.S. EPA. 2014. *Guidelines for Preparing Economic Analyses*. EPA-240-R-10-001. National Center for Environmental Economics, Office of Policy. Washington, DC. December. Available at <https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses>. Docket ID Item No. EPA-HQ-OAR-2009-0234-20503.

²⁵ Like the 2011 RIA, all benefits and costs in this and subsequent sections of this preamble are reported in 2007 dollars.

The EPA projected that the co-benefits associated with reducing these non-HAP pollutants would be substantial. Indeed, these projected co-benefits comprised the overwhelming majority (approximately 99.9 percent) of the monetized benefits of MATS (\$36 billion to \$89 billion in 2015). The compliance costs of the 2012 MATS Final Rule were projected to be \$9.6 billion in 2015.²⁶ These compliance costs are an estimate of the increased expenditures in capital, fuel, and other inputs by the entire power sector to comply with MATS emissions requirements, while continuing to meet a given level of electricity demand.

a. Summary of 2019 Proposal

The EPA proposed to find that it had erred in the 2016 Supplemental Finding's benefit-cost analysis in giving equal weight to the air quality co-benefits projected to occur as a result of the reductions in HAP. The focus of CAA section 112(n)(1)(A) is HAP emissions reductions.

The EPA outlined in detail in the 2019 Proposal that the Agency had erred in concluding in the 2016 Supplemental Finding that the statutory text of CAA section 112(n)(1)(A) and the legislative history of CAA section 112 more generally supported the position that it was reasonable to give equal weight to co-benefits in a CAA section 112(n)(1)(A) appropriate and necessary finding. 81 FR 24439. The EPA explained in the 2019 Proposal that, because the vast majority of the estimated monetized benefits in the 2011 RIA that were estimated to result from MATS are associated with reductions in fine particulate matter (PM_{2.5}) precursor emissions, the EPA had erred in the 2016 Supplemental Finding by giving equal weight to non-HAP co-benefits in making the appropriate and necessary determination. As the 2019 Proposal observed, Congress, in the National Ambient Air Quality Standards (NAAQS) program, established a rigorous system for setting standards of acceptable levels of criteria air pollutants requisite to protect public health with an adequate margin of safety, and by state, regional, and national rulemakings establishing control measures to meet those levels.

The EPA did acknowledge the importance of unquantified benefits in the 2019 Proposal, but also pointed out the limitations of the Agency's ability to monetize HAP-specific benefits. The

EPA explained that unquantified benefits are relevant to any comparison of the benefits and costs of regulation. Because unquantified benefits are, by definition, not considered in monetary terms, the EPA proposed that the Administrator would evaluate the evidence of unquantified benefits and determine the extent to which they alter any appropriate and necessary conclusion based on the comparison of monetized costs and benefits.

b. Final Rule

The EPA is finalizing the determination outlined in the 2019 Proposal. The EPA believes that the alternative approach to the 2016 Supplemental Finding was fundamentally flawed in applying a formal cost-benefit analysis to the specific decision making standard directed by CAA section 112(n)(1)(A) because, in the context of the appropriate and necessary finding, doing so implied that an equal weight was given to the non-HAP co-benefit emission reductions and the HAP-specific benefits of the regulation. The total cost of compliance with MATS (\$9.6 billion in 2015) vastly outweighs—by a factor of 1 thousand, or 3 orders of magnitude—the monetized HAP benefits of the rule (\$4 to \$6 million in 2015). In these circumstances, to give equal weight to the monetized PM_{2.5} co-benefits would permit those benefits to become the driver of the regulatory determination, which the EPA believes would not be appropriate for the reasons stated in the proposal and set forth below.

c. Comments and Responses

Comment: Many commenters argued that the EPA's proposed approach to considering co-benefits in the CAA section 112(n)(1)(A) appropriate and necessary determination is not consistent with the statute. The commenters believe that basic principles of statutory construction do not allow the EPA to read CAA section 112(n)(1)(A) only in isolation. The commenters asserted that the EPA has not explained why CAA section 112(n)(1)(A)'s reference to regulation of EGUs allows the Agency to disregard a portion of the consequences of its decision. One commenter noted that the language in the Senate Report on the 1990 amendments to CAA section 112, which directs the EPA to consider the co-benefits of HAP regulation, is the closest specific indication of congressional intent for interpreting CAA section 112(n). The commenter also pointed to the portion of CAA section 112(n) that requires the EPA to

conduct a study of hazards to health likely to occur from utility HAP emissions after implementation of other non-HAP provisions of the CAA, and suggested that this provision implies that the EPA should evaluate non-HAP benefits of HAP regulations to see if they are sufficient to establish the case for HAP regulation. One commenter noted that the EPA's approach arbitrarily excludes from consideration a critically important set of the consequences of the EPA's decision, namely the public health concerns at the heart of the CAA.

Response: The EPA agrees with the commenters that it is critical to examine the language in CAA section 112(n)(1)(A), as well as the overall context of CAA section 112, in determining the scope of the cost consideration for the appropriate and necessary determination. In CAA section 112, Congress has a particularized focus on reducing HAP emissions and addressing public health and environmental risks from those emissions. In CAA section 112(n)(1)(A), Congress directs the EPA to decide whether regulation of EGUs is appropriate and necessary under CAA section 112, *i.e.*, whether the deployment of specific CAA provisions targeted at reducing HAP emissions from the EGU sector is warranted. The EPA believes that it cannot answer this question by pointing to benefits that are overwhelmingly attributable to reductions in an entirely different set of pollutants not targeted by CAA section 112. The EPA believes that it is illogical for the Agency to make a determination, informed by a study of what hazards remain after implementation of other CAA programs, that regulation under CAA section 112, which is expressly designed to deal with HAP emissions, is "appropriate" principally on the basis of criteria pollutant impacts.

The EPA believes that relying almost exclusively on benefits accredited to reductions in pollutants not targeted by CAA section 112 is particularly inappropriate given that those other pollutants are already comprehensively regulated under other CAA provisions, such as those applying to the NAAQS. As the EPA outlined in the 2019 Proposal, the determination that it is not appropriate to give equal weight to non-HAP co-benefits in making the appropriate and necessary determination is further supported by the fact that Congress established a rigorous system for setting standards of acceptable levels of criteria air pollutants and provided a comprehensive framework directing the implementation of those standards in

²⁶ See Table 3–5 of the RIA: https://www3.epa.gov/ttn/ecas/docs/ria/utilities_ria_final-mats_2011-12.pdf.

order to address the health and environmental impacts associated with those pollutants. *See, e.g.*, 42 U.S.C. 7409; 7410; 7501; 7502; 7505a; 7506; 7506a; 7507; 7509; 7509a; 7511; 7511a; 7511b; 7511c; 7511d; 7511e; 7511f; 7512; 7512a; 7513; 7513a; 7513b; 7514; and 7515. The vast majority of the monetized benefits in the 2011 RIA that were estimated to result from MATS are associated with reductions in PM_{2.5} precursor emissions, principally nitrogen oxides (NO_x) and sulfur dioxide (SO₂). NO_x, SO₂, and PM_{2.5} are already addressed by a multitude of statutory provisions governing levels of these pollutants, including the NAAQS provisions that require the EPA to set standards for criteria pollutants requisite to protect public health with an adequate margin of safety, and by state, regional, and national rulemakings establishing control measures to meet those levels.

The 2016 Supplemental Finding pointed to CAA section 112(n)(1)(A)'s directive to "perform a study of the hazards to public health reasonably anticipated to occur as a result of emissions by electric utility steam generating units of [HAP] after imposition of the requirements of [the CAA]," and noted that the requirement to consider co-benefit reduction of HAP resulting from other CAA programs highlighted Congress' understanding that programs targeted at reducing non-HAP pollutants can and do result in the reduction of HAP emissions. *Id.* The finding also noted that the Senate Report on CAA section 112(d)(2) recognized that MACT standards would have the collateral benefit of controlling criteria pollutants. *Id.* However, these statements acknowledging that reductions in HAP can have the collateral benefit of reducing non-HAP emissions and vice versa, provides no support for the proposition that any such co-benefits should be considered on equal footing as the HAP-specific benefits when the Agency makes its finding under CAA section 112(n)(1)(A).

The study referenced in CAA section 112(n)(1)(A) specifically focuses on the hazards to public health that will reasonably occur as a result of HAP emissions, not harmful emissions in general. ("The Administrator shall perform a study of the hazards to public health reasonably anticipated to occur as a result of emissions by electric utility steam generating units of pollutants listed under subsection (b) of this section after imposition of the requirements of this chapter.") According to that section, "[t]he Administrator shall regulate electric utility steam generating units under this

section, if the Administrator finds such regulation is appropriate and necessary after considering the results of the study required by this subparagraph." The text on its face suggests that Congress wanted the Administrator's appropriate and necessary determination to be focused on the health hazards related to HAP emissions and the potential benefits of avoiding those hazards by reducing HAP emissions. While the provision in one sense does acknowledge the existence of co-benefits—*i.e.*, by referencing the potential for ancillary reductions of HAP emissions by way of CAA provisions targeting other pollutants—it does not follow from this that any ancillary reductions of criteria pollutants that may be projected to result from the regulation of EGU HAP emissions should, therefore, play a part in the Administrator's consideration under CAA section 112(n)(1)(A) whether the regulation of EGUs is "appropriate and necessary." To the contrary, the statutory direction to consider whether it is appropriate and necessary to regulate HAP after criteria pollutants have been addressed by the CAA's other requirements suggests that it is *not* proper for the co-benefits of further criteria pollutant reductions to provide the dominant justification for an affirmative CAA section 112(n)(1)(A) determination. Certainly, Congress' instruction to the EPA that it study HAP effects under CAA section 112 after implementation of other CAA provisions cuts against any suggestion that such benefits should be given equal consideration in a CAA section 112(n)(1)(A) determination.

Comment: Several commenters argued that the EPA's proposed approach, of not providing consideration to co-benefits equal to the consideration provided to the benefits specific to HAP reductions, takes a too-narrow approach that conflicts with *Michigan*. Commenters pointed out that the Court found that CAA section 112(n) tells the EPA to undertake a "broad and all-encompassing" review of "all the relevant factors." 135 S. Ct. at 2707. Commenters argued that if the Court read "appropriate" to be a "broad and all-encompassing term," then the EPA cannot excise relevant factors from consideration. Commenters also stated that the Court, in instructing the EPA to consider cost, appeared to adopt a broad reading of the word "cost," including "more than the expense of complying with regulations; any disadvantage could be termed a cost." 137 S. Ct. at 2707.

Response: Nothing in the *Michigan* decision decides this issue. To the

contrary, the Court said that the proper treatment of co-benefits is "a point we need not address." 135 S.Ct. at 2711. Additionally, commenters seem to mistake the EPA's position (*see, e.g.*, Environmental Protection Network (EPN) comment at 25 (April 17, 2019) (Docket ID Item No. EPA-HQ-OAR-2018-0794-2261) (referring to "EPA's crabbled claim that it can focus only on reduction of 'HAP emissions—without even considering reductions in non-HAP pollutants')." *See also* States and Local Governments comment at 35-36 (April 17, 2019) (Docket ID Item No. EPA-HQ-OAR-2018-0794-1175) ("In proposing to exclude consideration of [co-benefits], EPA misinterprets and misapplies the Supreme Court's directive in *Michigan*.")). The commenters essentially argue that the language in *Michigan* requires the EPA to review "all the relevant factors," including co-benefits. As described at length in the 2019 Proposal and other parts of this section of this preamble, the EPA *is* considering what significance co-benefits have for its determination under CAA section 112(n)(1)(A)—but we are concluding that the finding must be justified overwhelmingly by the HAP benefits due to the statutory structure.

Comment: Some commenters argued that existing case law, beyond the *Michigan* decision, supports inclusion of indirect benefits into an agency's benefit-cost analysis. A commenter quoted the D.C. Circuit's statement in *American Trucking Ass'ns v. EPA* that the EPA must consider both the direct and indirect effects of pollutants, rather than only "half of a substance's health effects." 175 F.3d 1027, 1051-53 (D.C. Cir. 1999), *rev'd on other grounds sub nom. Whitman v. Am. Trucking Ass'ns, Inc.*, 531 U.S. 457 (2001). The commenter also cited a Fifth Circuit case in which the Court held that the EPA had to consider the indirect safety harm that could result from the use of substitute, non-asbestos brakes when attempting to ban asbestos-based brakes under the Toxic Substances Control Act. *Corrosion Proof Fittings v. EPA*, 947 F.2d 1202, 1225 (5th Cir. 1991). A few commenters also noted the D.C. Circuit's favorable treatment of the EPA's consideration of co-benefits in regulating HAP from boilers, process heaters, and incinerators in *U.S. Sugar Corp. v. EPA*, 830 F.3d 579, 591, 625 (D.C. Cir. 2016).

Response: As explained elsewhere in this preamble, the EPA is interpreting and applying the statutory directive to make an appropriate and necessary determination under CAA section 112(n)(1)(A) and determining what role

consideration of co-benefits should play in making that determination. None of the case law the commenters cite pertains to CAA section 112(n)(1)(A), and, therefore, the case law is not directly relevant to this action.

As explained in the 2019 Proposal and in this preamble, the EPA believes that it would be inconsistent with the statute and with case law to base the appropriate and necessary finding on a monetized benefit estimate that is almost exclusively attributable to reductions of non-HAP pollutants. Further, the CAA sets out a specific regulatory scheme for the PM pollutants in question, the NAAQS, and as a first principle the EPA believes those regulations, not CAA section 112, should be the primary method by which the Agency targets those pollutants.

Comment: Several commenters argued that the EPA's approach of giving less weight to co-benefits in the appropriate and necessary determination is fundamentally arbitrary. The commenters pointed out that the PM_{2.5} emission reductions are a direct result of HAP emissions controls, and that there is no way to reduce the HAP emissions without reducing PM emissions. Some commenters asserted that excluding some benefits from the appropriate and necessary determination creates a biased analysis. One commenter argued that the EPA's approach is arbitrary and contrary to *Michigan* and other U.S. Supreme Court precedent because it "fail[s] to consider [such] an important aspect of the problem." *Michigan*, 135 S. Ct. at 2707 (quoting *State Farm*, 463 U.S. at 53).

Response: The EPA acknowledges the existence and importance of these co-benefits. However, when the EPA is comparing benefits to costs as a required prerequisite to regulation, it is critical to examine the particular statutory provision that is being implemented. That statutory provision may limit the relevance of certain costs and benefits—e.g., serve to establish that any benefits attributable to the ancillary reduction of pollutant emissions that are not the focus of the provision at issue are *not* "an important aspect of the problem" that Congress is seeking to address. As noted in the 2019 Proposal and in earlier responses to comments, in CAA section 112(n)(1)(A), Congress directs the EPA to decide whether regulation of EGUs is appropriate and necessary under CAA section 112; the EPA believes that it is not appropriate to answer this question in the affirmative by pointing to benefits that are overwhelmingly attributable to reductions in an entirely different set of pollutants that CAA section 112 is not

designed to address. In fact, the EPA believes that it would be arbitrary and capricious to do so. See *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) ("Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider.").

The EPA is not turning a blind eye to the reasonably predictable consequences of MATS. The 2011 RIA appropriately details the magnitude of the PM_{2.5}-related co-benefits in the form of avoided premature deaths, hospital admissions, emergency department visits and asthma attacks, among other endpoints. However, CAA section 112(n)(1)(A) requires a threshold determination of whether any regulation of EGUs under CAA section 112 is "appropriate and necessary." The EPA believes that this inquiry must be focused primarily on the risks posed by the pollutants targeted by CAA section 112, i.e., HAP emissions. The gross disparity between monetized costs and HAP benefits, which should be the primary focus of the Administrator's determination in CAA section 112(n)(1)(A), is so great as to make it inappropriate to form the basis of the necessary statutory finding. While the Agency acknowledges that PM co-benefits are substantial, the Agency cannot rely on PM co-benefits to supplant the primary factors Congress directed the Administrator to consider.

Comment: Several commenters asserted that the EPA's approach to considering co-benefits under the CAA section 112(n)(1)(A) analysis was inappropriate because it is unprecedented in the EPA's regulatory practice and contrary to OMB and EPA policy. Commenters asserted that co-benefits are universally accepted as an important tool in regulatory economics and economic planning. Commenters quoted OMB Circular A-4 as directing agencies in conducting RIAs to "look beyond the direct benefits and direct costs of your rulemaking and consider any important ancillary benefits and countervailing risks." The commenters also identified the EPA's "Guidelines for Preparing Economic Analyses" that states: "An economic analysis of regulatory or policy options should present all identifiable costs and benefits that are incremental to the regulation or policy under consideration. These should include directly intended effects and associated costs, as well as ancillary (or co-) benefits and costs." Commenters also cited to previous clean air rules where the EPA has afforded co-benefits equal weight in cost-benefit analyses.

Response: The EPA developed the 2011 RIA for the 2012 MATS Final Rule pursuant to Executive Orders 12866 and 13563, as well as certain other applicable statutes, as informed by OMB guidance and the EPA's Economic Guidelines. It is true that, in this action, the EPA is drawing on information generated in that RIA in order to make the determination required under CAA section 112(n)(1)(A) concerning whether regulation of EGUs under CAA section 112 is appropriate. How costs are to be considered in making the congressionally-directed CAA section 112(n)(1)(A) determination, however, is not governed independent from statutory requirements, by preexisting OMB or EPA guidelines, nor could it be. Furthermore, for the many reasons explained elsewhere in this preamble and in the 2019 Proposal, the CAA section 112(n)(1)(A) determination is governed by the particular statutory provision at issue, and, therefore, is distinct from any other CAA action.

In the context of conducting the CAA section 112(n)(1)(A) determination, the EPA finds it is not only appropriate but indeed, necessary for the EPA to interpret and apply the particular provision of CAA section 112(n)(1)(A), which as mentioned earlier specifically cites to HAP listed under section 112(b) of the CAA. To be valid, the EPA's analytical approach to that provision must recognize Congress' particular concern about risks associated with HAP and the benefits that would accrue from reducing those risks. OMB and EPA guidance outline regulatory principles that agencies are encouraged to follow to the extent permissible under law. These guidance documents, and the standard economic principles reflected in them, are not necessarily informative regarding how Congress intended the EPA to make the CAA section 112(n)(1)(A) determination, nor should they be read to override statutory text and structure that, as explained earlier in this preamble, requires a focus on a limited set of costs and benefits. Although an analysis of all reasonably anticipated benefits and costs in accordance with generally recognized benefit-cost analysis practices (including extending analytic efforts to ancillary impacts in a balanced manner across both benefits and costs) is appropriate for informing the public about the potential effects of any regulatory action, as well as for complying with the requirements of Executive Order 12866, it does not follow that equal consideration of all benefits and costs, including co-benefits, is warranted, or even

permissible, for the specific statutory provision requiring the EPA to make an appropriate and necessary finding called for under CAA section 112(n)(1)(A).

Comment: Some commenters asserted that the EPA's 2019 Proposal erroneously suggests that CAA sections 110 and 112 must be treated as mutually exclusive authorities for reducing the public health impacts of PM emissions. Commenters argued that there is no basis to ignore the benefits of reducing pollutants merely because they are also subject to regulation under state and federal implementation plans approved to implement the NAAQS. One commenter noted that the existence of other CAA provisions that deal with criteria pollutant emissions likely indicates Congress' deep concern about the health and environmental risks they pose. One commenter argued that there is no legal support for the idea that CAA section 110 or 112 requires exclusivity; the EPA is not required to pick one avenue through which it can impact PM emissions. The commenter noted that many CAA provisions can address PM, such as those for interstate transport and regional haze, and the EPA itself has encouraged states in their implementation planning to consider selecting controls that will minimize emissions of multiple pollutants. Another commenter acknowledged that the EPA does not argue that the other provisions should be the exclusive vehicle for addressing criteria pollutants, but this commenter asserted that the 2019 Proposal did not explain how criteria pollutant reductions could be realized more effectively by some other legal mechanism and did not claim that criteria pollutants have been fully controlled through those other programs. One commenter also argued that the EPA's proposal is particularly unfounded because many metal HAP are emitted as PM.

Response: The EPA disagrees with the commenters. The EPA's discussion of co-benefits, and the impropriety of giving them equal weight to HAP-specific benefits within the context of the appropriate and necessary determination, is based on an interpretation of CAA section 112(n)(1)(A), a provision enacted by Congress to address the unique situation facing EGUs. We have limited our analysis to the specifically tailored provision of CAA section 112(n)(1)(A), in which Congress recognized that EGUs would face regulation under numerous parts of the CAA and chose to ask the EPA to consider whether further regulation of EGUs under CAA section 112 would be appropriate and

necessary. As noted previously in this preamble and the 2019 Proposal, the vast majority of estimated monetized benefits resulting from MATS are associated with reductions in PM_{2.5} precursor emissions, principally NO_x and SO₂. Both NO_x and SO₂ are criteria pollutants in their own right and are already addressed by the numerous statutory provisions governing criteria pollutants. In interpreting and applying CAA section 112(n)(1)(A), we believe it is important to acknowledge that the CAA has established numerous robust avenues for minimizing PM-precursor emissions to a level that is requisite to protect public health with an adequate margin of safety. Because other CAA programs are already in place to ensure reductions in criteria pollutants to the level requisite to protect public health with an adequate margin of safety, the EPA believes that it is not reasonable to point to criteria pollutant co-benefits as the primary benefit to justify regulation of EGUs under a provision of the CAA that authorizes such regulation only where the Administrator determines that it is "appropriate and necessary" to do so.²⁷

With respect to one commenter's assertion that the EPA's approach was particularly unfounded given that many metal HAP are emitted as PM, the EPA agrees that most non-mercury metal HAP are emitted as PM. In fact, the EPA established an emission standard for filterable PM in the 2012 MATS Final Rule that serves as a surrogate for the non-mercury metal HAP (recognizing that controls for PM are also effective for the non-mercury metal HAP). However, the fact that the non-mercury metal HAP are emitted in a solid particulate form does not mean that the EPA should give equal weight to the benefits from removal of all PM. As described in the 2011 RIA for the 2012 MATS Final Rule, PM_{2.5} benefits result from emissions reductions of SO₂ (1,330,000 tons), NO_x (46,000 tons), carbonaceous PM_{2.5} (6,100 tons), and crustal PM_{2.5} (39,000 tons). Control of directly-emitted filterable PM for purposes of controlling non-mercury metal HAP constituted approximately 5 percent of the total PM_{2.5} health co-benefits of the rule. Based on analysis of available data, the EPA estimates that non-mercury metal HAP represent, at most, 0.8 percent of this directly emitted filterable PM.²⁸ The actual HAP-related

²⁷ A number of commenters raised this same issue and made this same point. See, e.g., Docket ID Item Nos. EPA-HQ-OAR-2018-0794-1135, -1178, -1189, -1190.

²⁸ As mentioned in the *Emission Factor Development for RTR Risk Modeling Dataset for Coal- and Oil-fired EGUs* memorandum (Docket ID Item No. EPA-HQ-OAR-2018-0794-0010), the

benefits of controlling non-mercury metal HAP were unquantified. Again, the vast majority of estimated monetized benefits resulting from MATS are associated with reductions in premature mortality resulting from emissions reductions of PM precursors and not from metal HAP or even direct PM.

Comment: Several commenters asserted that the EPA has not explained what weight is given to co-benefits, or how the EPA chose that standard, aside from saying that the weight is less than what is given to HAP-specific benefits. One commenter noted that the EPA essentially claims that co-benefits cannot affect the appropriate and necessary determination unless quantified HAP benefits are "moderately commensurate" with compliance costs, but the EPA does not provide any clarity on the point at which HAP benefits would be "moderately commensurate" to allow the EPA to rely on co-benefits.

Response: The Administrator has concluded that the following procedure provides the appropriate method under which the EPA should proceed to determine whether it is appropriate and necessary to regulate EGUs under CAA section 112(n)(1)(A). First, the EPA compares the monetized costs of regulation against the subset of HAP benefits that could be monetized. Here, those costs are disproportionate to the monetized benefits, by three orders of magnitude. That does not demonstrate "appropriate and necessary." Second, the EPA considers whether unquantified HAP benefits may alter that outcome. For the reasons proposed in February 2019 and further discussed in this final action, the EPA determines they do not. Third, the EPA considers whether it is appropriate, notwithstanding the above, to determine that it is "appropriate and necessary" to regulate EGUs under CAA section 112(n)(1)(A) out of consideration for the PM co-benefits that result from such regulation. For the reasons proposed in February 2019 and set forth in this final action, on the record before the Agency, it is not appropriate to do so.

Here, almost the entirety of monetized benefits (about 99.9 percent) of MATS

EPA developed ratios of non-mercury metal and filterable PM emissions for use in estimating emissions from coal- and oil-fired EGUs without current non-mercury metal emissions data. These ratios were determined by dividing the fuel-specific averages of the 2010 MATS Information Collection Request (ICR) non-mercury metals data, combined by control technique where possible, by the filterable PM emissions data. The ratios represent the amount of non-mercury metals present in filterable PM. For more detail, see memorandum titled *Non-mercury Metals Content of Filterable Particulate Matter* in the docket for this action.

reflected in the RIA were derived from non-HAP co-benefits. Had the HAP-specific benefits of MATS been closer to the costs of regulation, a different question might have arisen as to whether the Administrator could find that co-benefits legally form part of the justification for determination that regulation of EGUs under CAA section 112(d) is appropriate and necessary. The EPA does not need to, and does not, determine whether that additional step would be appropriate in this factual scenario given that the monetized and unquantified HAP-specific benefits do not come close to a level that would support the prior determination. Under the interpretation of CAA section 112(n)(1)(A) that the EPA adopts in this action, HAP benefits, as compared to costs, must be the primary question in making the ‘appropriate and necessary’ determination. While the Administrator could consider air quality benefits other than HAP-specific benefits in the CAA section 112(n)(1)(A) context, consideration of these co-benefits could permissibly play only, at most, a marginal role in that determination, given that the CAA has assigned regulation of criteria pollutants to other provisions in title I of the CAA, specifically the NAAQS regime pursuant to CAA sections 107–110, which requires the EPA to determine what standards for the ambient concentration of PM are necessary to protect human health. Here, to the extent that the alternative approach set forth within the 2016 Supplemental Finding was legally grounded in co-benefits, the massive disparity between co-benefits and HAP benefits on this record would mean that that alternative approach clearly elevated co-benefits beyond their permissible role.

If the Administrator were to consider the size of the PM_{2.5}-related co-benefits in deciding whether regulating EGUs under CAA section 112(d) is appropriate and necessary, he should also consider taking into account key assumptions affecting the size and distribution of these co-benefits and potential uncertainty surrounding them. In the past, the EPA has highlighted a number of these assumptions as having particularly significant effect on estimates of PM-related benefits, including assumptions about: The causal relationship between PM exposure and the risk of adverse health effects; the shape of the concentration-response relationship for long-term exposure-related PM_{2.5} and the risk of premature death; the toxicity of individual PM_{2.5} particle components; the levels of future PM_{2.5}; the validity of

the reduced-form technique used to relate PM_{2.5} emission precursors to the number and value of PM_{2.5} adverse health effects; and the approach used to assign a dollar value to adverse health effects. The Agency has separately noted that, in general, it is more confident in the size of the risks we estimate from simulated PM_{2.5} concentrations that coincide with the bulk of the observed PM concentrations in the epidemiological studies that are used to estimate the benefits. Likewise, the Agency is less confident in the risk estimated from simulated PM_{2.5} concentrations that fall below the bulk of the observed data in these studies.²⁹ Furthermore, when setting the 2012 PM NAAQS, the Administrator acknowledged greater uncertainty in specifying the “magnitude and significance” of PM-related health risks at PM concentrations below the NAAQS. As noted in the preamble to the 2012 PM NAAQS final rule, in the context of selecting an alternative NAAQS, the “EPA concludes that it is not appropriate to place as much confidence in the magnitude and significance of the associations over the lower percentiles of the distribution in each study as at and around the long-term mean concentration.” (78 FR 3154, January 15, 2013).

Comment: Some commenters argued that the EPA is inappropriately giving full weight to the consideration of indirect costs of regulating EGUs while simultaneously giving less than equal weight to co-benefits. One commenter argued that comparing direct and indirect costs to only the “direct” benefits associated with HAP reductions is not an apples-to-apples comparison. Some commenters stated that the EPA is including not only compliance costs incurred by the sources regulated under MATS, but also costs incurred by other power plants that are not regulated under MATS due to the effects on the power sector of regulated sources’ investing in pollution abatement technologies or taking other steps to reduce emissions. The commenter argued that the EPA does not explain why it is appropriate to discount or

²⁹ The Federal Register document for the 2012 PM NAAQS indicates that “[i]n considering this additional population level information, the Administrator recognizes that, in general, the confidence in the magnitude and significance of an association identified in a study is strongest at and around the long-term mean concentration for the air quality distribution, as this represents the part of the distribution in which the data in any given study are generally most concentrated. She also recognizes that the degree of confidence decreases as one moves towards the lower part of the distribution.”

ignore co-benefits while giving full weight to indirect compliance costs.

Response: The EPA disagrees with the commenters that co-benefits and the types of compliance costs that the commenters consider “indirect” must be given comparable treatment within this action. As discussed throughout this section, the EPA believes that it is inappropriate to rely, as did the alternative, benefit-cost approach in the 2016 Supplemental Finding, almost exclusively on benefits accredited to reductions in pollutants not targeted by CAA section 112 when those other pollutants are already extensively regulated under other CAA provisions.

Additionally, unlike benefits, which can be disaggregated into benefits attributable to reduction in HAP and co-benefits attributable to reduction in non-HAP pollutants, costs cannot similarly be disaggregated. There is no analogous distinction with respect to compliance costs and, thus, nothing in the statute that directs the EPA to partition compliance costs into direct and indirect (or ancillary) costs, or that supports the view that such a partitioning would be appropriate.

From an economic perspective, MATS was a consequential rulemaking that was expected to induce changes in both electricity and fuel markets beyond the impacts on affected coal- and oil-fired EGUs. The policy case examined in the 2011 RIA introduced the requirements of MATS as constraints on affected EGUs, which resulted in new projections of power sector outcomes under MATS. These compliance costs are an estimate of the increased expenditures in capital, fuel, labor, and other inputs by the entire power sector to comply with MATS emissions requirements, while continuing to meet a given level of electricity demand. These costs were summarized in Table 3–16 of the 2011 RIA.³⁰

The commenters do not attempt to present an alternative analysis under which the EPA would assess what they term “indirect costs.” To focus on the projected impact of MATS on only affected entities would produce an incomplete estimate of the entire cost of complying with the rule and, thus, lead to an inappropriate consideration of the costs of the 2012 MATS Final Rule. The costs termed “indirect costs” by commenters are neither ancillary or incidental costs; these costs are an integral part of the compliance costs that are attributable to expected changes

³⁰ The EPA estimated the impacts of MATS on oil-fired units and costs associated with monitoring, recordkeeping, and reporting in separate analyses, which are summarized in Chapter 3 and Appendix 3A of the 2011 RIA.

to production behavior in the sector in order to minimize the cost of complying with MATS. Furthermore, an evaluation of the costs borne solely by the owners of EGUs subject to MATS would need to account for the ability of owners of these EGUs to recoup their increased expenditures through higher electricity prices; otherwise, an estimate of the costs of MATS borne by the owners of those EGUs (*i.e.*, their economic incidence) would be an overestimate. However, if the EPA was to only account for the economic incidence for owners of EGUs, the costs borne by the consumers of electricity from these higher prices would be ignored, which the EPA finds inappropriate. Therefore, the EPA determined it was appropriate to account for all of the costs that may be incurred as a result of the rule that could be reasonably estimated, recognizing that these expenditures would ultimately be borne either by electricity consumers or electricity producers, rather than limiting our consideration of costs to just those borne by a subset of producers or consumers.

Comment: Some commenters asserted that the EPA has failed to explain how it has given any meaningful consideration in its benefit-cost comparison to the numerous health effects of reducing HAP emissions that the EPA has not quantified. A few commenters asserted that the non-monetized benefits of the rule encompass virtually all the HAP reductions that the rule yields. One commenter argued that the EPA has only given “lip service” to these benefits, but not any discernible weight in reaching the conclusion that regulating EGUs under CAA section 112 is not appropriate and necessary. Further, the commenter asserted that the EPA has offered no support or explanation for the assertion that the unquantified benefits are not sufficient to overcome the difference between the monetized benefits and the costs of MATS.

Response: The 2011 RIA attempted to account for all the monetized and unquantified benefits of the rule, and the EPA’s benefit-cost analysis in the RIA does not discount the existence or importance of the unquantified benefits of reducing HAP emissions. However, in this final action, the EPA has determined that it is reasonable to evaluate unquantified benefits separately in the comparison of benefits and costs for this action under CAA section 112(n)(1)(A).

The EPA explained in the 2011 RIA that there are significant obstacles to successfully quantifying and monetizing

the public health benefits from reducing HAP emissions (*see also* Gwinn, *et al.*, 2011,³¹ and Fann, Wesson, and Hubbell, 2016³² for a detailed discussion of the complexities associated with estimating the benefits of reducing emissions of air toxics). These obstacles include gaps in toxicological data, uncertainties in extrapolating results from high-dose animal experiments and worker studies to estimate human effects at lower doses, limited monitoring data, difficulties in tracking diseases such as cancer that have long latency periods, and insufficient economic research to support the valuation of the health impacts often associated with exposure to individual HAP.

The EPA fully acknowledges the existence and importance of the unquantified benefits. The EPA explained in the 2019 Proposal reasons why the EPA has determined that the unquantified benefits are unlikely to overcome the significant difference (which, the EPA notes again, is a difference of three orders of magnitude) between the monetized HAP-specific benefits and compliance costs of the MATS rule. This is also further discussed in section II.C.2 of this preamble. As noted there, many of the HAP-related effects that were unquantified in the 2011 RIA consist of morbidity effects in humans. The EPA’s methods estimating the economic value of avoided health effects values mortality effects significantly more than avoided illnesses (*e.g.*, hospital admissions, emergency department visits, cases of aggravated asthma, *etc.*).³³ Hence, valuing HAP-related morbidity outcomes would not likely result in estimated economic values similar to those attributed to avoiding premature deaths.

Commenters raised the possibility that there could be unquantified HAP-related benefits of mortality effects, based on the comments the EPA believes the most significant are

associated with avoiding premature death, and in particular, potential cancer risks.³⁴ As part of the 2012 MATS Final Rule, the EPA modeled the maximum individual risk (MIR) associated with non-mercury HAP including arsenic, hexavalent chromium, nickel, and hydrogen chloride for a subset of 16 EGUs. MIR is the “maximum individual risk” experienced by the most highly exposed individual living in proximity to the source, presuming continuous exposure for 70 years. The analysis found that the one oil-fired EGU studied had a lifetime cancer risk of 20-in-1 million, and that none of the remaining 15 coal-fired EGU facilities posed a lifetime risk of cancer for the maximally exposed individual exceeding 8-in-1 million, with most facilities posing a risk of equal to, or less than, 1-in-1 million. These risks are significantly below the levels defined by the EPA as being the presumptive upper limit of acceptable risk (*i.e.*, 1-in-10 thousand). While that analysis did not separately estimate the number of new cases of HAP-attributable cancer among each year, the size of the MIR implies that the number of new cases would likely be very small. The EPA’s evaluation of evidence of unquantified benefits is based on qualitative information that helps understand the likelihood and potential scale of those benefits, relative to the monetized benefits and monetized costs. These qualitative assessments help confirm that unquantified benefits do not alter the underlying conclusions that costs greatly outweigh HAP benefits.

Comment: Several commenters pointed out that the EPA’s 2019 Proposal relies on undefined terms such as “moderately commensurate,” “gross disparity,” and “significant difference,” which are not statutory terms and do not appear in prior regulatory actions associated with MATS. Without explanation of what these terms mean, the commenters asserted that the public did not receive adequate notice so that they could provide meaningful comments on the proposal. Commenters said the 2019 Proposal leaves the public in the dark as to what data and methodology the EPA relies on to determine that the costs of regulating power plants under CAA section 112 “grossly outweigh” the hazardous air pollution benefits. One commenter asserted that the failure to define these terms and outline the EPA’s analytical

³¹ Gwinn, M.R., *et al.*, 2011. *Meeting Report: Estimating the Benefits of Reducing Hazardous Air Pollutants—Summary of 2009 Workshop and Future Considerations*. *Environmental Health Perspectives*, 119(1): 125–130.

³² Fann N., Wesson K., and Hubbell B (2016), *Characterizing the confluence of air pollution risks in the United States*. *Air Qual Atmos Health* 9:293. Available at <https://doi.org/10.1007/s11869-015-0340-9>.

³³ See U.S. EPA. 2010a: *Regulatory Impact Analysis for the Nitrogen Oxide National Ambient Air Quality Standards* Page 4–8 through 4–10; U.S. EPA. 2010b: *Regulatory Impact Analysis for the Sulfur Dioxide National Ambient Air Quality Standards* Page 5–26 through 5–28; U.S. EPA. 2012: *Regulatory Impact Analysis for the Particulate Matter National Ambient Air Quality Standards* pages 5–69; U.S. EPA. 2015: *Regulatory Impact Analysis for the Ozone National Ambient Air Quality Standards*. Pages 6–57 through 6–60.

³⁴ See sections II.C.2 and II.C.4 of this preamble for the EPA’s response to commenters’ assertions regarding potential mortality effects due to methylmercury exposure and cardiovascular impacts.

methodology has rendered this action in violation of CAA section 307(d).

Response: The EPA believes that the language used in its 2019 Proposal and final actions is reasonable and understandable and is consistent with legal standards that have been previously upheld in litigation challenges. For example, in the *Entergy* decision the U.S. Supreme Court upheld the EPA's use of a "wholly disproportionate" standard. 556 U.S. at 224 ("[I]t is also not reasonable to interpret Section 1326(b) as requiring use of technology whose cost is wholly disproportionate to the environmental benefit to be gained") (internal quotation removed). Further, as recognized in the 2016 Supplemental Finding, CAA section 112(n)(1)(A) and the *Michigan* decision give broad discretion to the Administrator to apply his expert judgment in considering cost in order to determine whether it is appropriate and necessary to regulate HAP emissions from EGUs. See 81 FR 24428. CAA section 112(n)(1)(A) requires that "the Administrator shall regulate [EGUs] . . . if the Administrator finds such regulation is appropriate and necessary." The *Michigan* Court explicitly acknowledged the discretion held by the Administrator: "[i]t will be up to the Agency to decide (as always, within the limits of reasonable interpretation) how to account for cost." 135 S. Ct. at 2711. As explained in the prior response and in other places in this preamble, the EPA has concluded, as a result of our qualitative evaluation of evidence, that unquantified benefits cannot reasonably be expected to be comparable to the cost of regulation or to meaningfully redress the gross disparity between that cost and the monetized HAP benefits. The commenters take issue with some of the terminology used in the 2019 Proposal, but given the discretion afforded to the Administrator by CAA section 112(n)(1)(A), as acknowledged by the U.S. Supreme Court, we believe this preamble outlines a reasonable and fitting approach to Congress' open-ended instruction to the Administrator to determine whether a regulation of EGUs is "appropriate and necessary." The EPA further believes that, in a context where costs outweigh monetized HAP-specific benefits by three orders of magnitude, the meaning and relevance of terms such as "gross disparity" and "significant difference" are self-evident.

4. It Is Reasonable To Continue To Rely on the Original 2011 Regulatory Cost-Benefit Data Comparison as Part of a CAA Section 112(n)(1)(A) Assessment of Costs and Benefits

a. Summary of 2019 Proposal

As discussed above, in the 2016 Supplemental Finding, the EPA considered an alternative approach to considering cost as part of the appropriate and necessary finding that was based on a benefit-cost analysis originally performed as part of the 2011 RIA for the 2012 MATS Final Rule. This analysis summarized the EPA's projected estimates of annualized benefits, costs, and net benefits of the MATS rule in 2015. The 2011 RIA considered costs, quantified HAP benefits, unquantified HAP benefits, and non-HAP co-benefits and concluded that aggregated monetized benefits (\$37 to \$90 billion each year) exceeded the costs of compliance (\$9.6 billion) by 3 to 9 times. The EPA, therefore, concluded in the 2016 Supplemental Finding's alternative approach that the RIA's benefit-cost analysis supported its affirmation of the prior appropriate and necessary finding under CAA section 112(n)(1)(A).

The 2019 Proposal also used the estimates from the 2011 RIA to address costs in the context of a CAA section 112(n)(1)(A) appropriate and necessary finding but concluded that the alternative approach in the 2016 Supplemental Finding had improperly weighed the non-HAP co-benefits estimates reported in the 2011 RIA. Specifically, the EPA concluded that the Agency's previous equal weighting of the PM_{2.5} co-benefits projected to occur as a result of the reductions in HAP emissions was inappropriate given that the focus of CAA section 112(n)(1)(A) is on the HAP emissions reductions themselves. Upon reconsideration, the EPA proposed to determine that it would be illogical for the Agency to decide that regulation under CAA section 112, which is expressly designed to deal with HAP, could be justified primarily based on the non-HAP pollutant impacts of these regulations. In the 2019 Proposal, the EPA provided an updated comparison of costs and targeted pollutant benefits (i.e., HAP benefits) in a memorandum to the proposed rulemaking docket.³⁵ The

³⁵ See *Compliance Cost, HAP Benefits, and Ancillary Co-Pollutant Benefits for "National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units—Reconsideration of Supplemental Finding and Residual Risk and Technology Review"* (Docket ID Item No. EPA-HQ-OAR-2018-0794-0007).

EPA used the results from the 2011 RIA for the updated comparison, as this RIA contained the best available information on the projected costs, benefits, and impacts of the MATS rule at the time the Agency was making its regulatory decision to establish CAA section 112(d) emissions standards.

b. Final Rule

The EPA is finalizing the determination outlined in the 2019 Proposal. The EPA believes that the approach to the formal benefit-cost analysis presented in the 2011 RIA contains the best available information on the projected costs, benefits, and impacts of the MATS rule at the time the Agency was making its regulatory decision to establish CAA section 112(d) emissions standards. The EPA maintains that, based upon an evaluation of the information in the record, even if the Agency were to perform new analysis to estimate the benefit and cost impacts of MATS, the results are unlikely to materially alter the general conclusions of the analysis, with small benefits associated with the targeted quantified HAP benefits and compliance costs and would not alter the final determination herein.

c. Comments and Responses

Comment: Some commenters asserted that the EPA has failed to comply with basic principles of administrative law by failing to develop an adequate factual record in basing its cost-benefit comparison on the data contained in the 2011 RIA, as opposed to gathering the body of information relevant to these issues that has since become available. These commenters asserted that any consideration of the appropriate and necessary finding must consider new information on what the benefits and costs of regulating EGUs would be if the question were revisited in light of current knowledge, not as the facts were thought to be 8 years in the past.

Response: The EPA agrees with the commenters that courts have required administrative agencies to address "newly acquired data in a reasonable fashion," but depending on the circumstances, agencies are not always required to rely on updated data when engaged in decision-making. *American Iron & Steel Inst. v. EPA*, 115 F.3d 979, 1007 (D.C. Cir. 1997). The EPA maintains that its use of benefit and cost information from the 2011 RIA is reasonable in this context.

To determine whether an agency reasonably addressed updated data, courts may look to the statutory mandate to the Agency. *NRDC v. Herrington*, 786 F.2d 1355 (D.C. Cir.

1985). Under the statutory structure of CAA section 112, the CAA section 112(n)(1)(A) finding is a preliminary determination that is made significantly before the CAA section 112(d) standards would be promulgated. The suggestion by some commenters that the EPA is required to conduct a new analysis that attempts to estimate the actual costs incurred through compliance with the final CAA section 112(d) standards is, thus, not consistent with the statute. The 2016 Supplemental Finding similarly declined to conduct new analysis before reaffirming the appropriate and necessary determination, arguing that this was an appropriate approach to the problem because that determination is a threshold question under the statute. 81 FR 24432 (2016 Supplemental Finding). We also note that in 2012, the EPA interpreted CAA section 112(n)(1)(A) as not obligating the Agency to update its data, and we maintain that interpretation here. That interpretation is consistent with the text and structure of CAA section 112(n)(1)(A), which focuses on an expressly required study that evaluates hazards to public health. When the EPA reaffirmed the 2000 appropriate and necessary finding in 2012, it explained that although it was choosing to undertake an updated analysis of the public health risks associated with EGU HAP emissions, doing so was “not required.” 77 FR 9304, 9310 (February 16, 2012). The EPA argued at the time that the continued existence of the appropriate and necessary finding in 2012 was warranted by the analysis undertaken in 1998 and summarized in the 2000 appropriate and necessary finding. *Id.*

Both the statute and the *Michigan* decision support the EPA’s reliance on the cost estimates from the 2011 RIA. First, any cost analysis included in an “initial decision to regulate,” *Michigan*, 135 S. Ct. at 2709, must precede any regulations flowing out of that decision. Therefore, in considering the costs of compliance as part of its appropriate and necessary finding, it is reasonable for the EPA to look at what types of cost information, such as the 2011 RIA cost estimates, would be available at this threshold stage. In addition, nothing in the *Michigan* decision precludes the EPA’s use of the existing cost information in the record in addressing the Agency’s obligation on remand to consider cost as part of the appropriate and necessary finding. In *Michigan*, the Court rejected arguments that it could conclude that the Agency had properly considered cost based on the Agency’s consideration of costs in other stages of

the rulemaking (e.g., in setting the emission standards or in the RIA). The Court emphasized that the Agency itself had not relied upon these rationales at the finding stage. 135 S. Ct. 2710–11 (citing *SEC v. Chenery Corp.*, 318 U.S. 80, 87 (1943)). However, the Court left open the possibility that the economic analyses the Agency had already conducted could suffice to satisfy its obligation to consider costs as part of the appropriate finding. *Id.* at 2711.

There is nothing in the operative statutory language here that is akin to wording that courts have found to require an agency to incorporate updated information. See *Sierra Club v. EPA*, 671 F.3d 955 (9th Cir. 2012) (directing the EPA to rely on updated data when approving nonattainment state implementation plans (SIPs) because CAA section 172(c)(3) requires SIPs to include “comprehensive, accurate, current inventory of actual emissions”); see also *City of Las Vegas v. Lujan*, 891 F.2d 927 (D.C. Cir. 1989) (holding that the Secretary of the Interior could not disregard available scientific information because the Endangered Species Act required the “best scientific and commercial data available”).

In addition to looking at the statutory language, courts also often examine the impact any updated data would have had on the agency’s decision. *Catawba County v. EPA*, 571 F.3d 20, 45 (D.C. Cir. 2009) (upholding the EPA’s designations for the NAAQS because “EPA dealt with the newly acquired data in a reasonable fashion by explaining why it would not have changed the designations”); see also *Eastern Carolinas Broadcasting v. FCC*, 762 F.2d 95, 98 (D.C. Cir. 1985) (upholding FCC’s determination in light of the Commission’s failure to utilize updated data because it was a “harmless error in light of the ultimate rationale”).

According to the commenters, costs of MATS compliance have been lower than the EPA estimated in 2011 and the EPA has not accounted for more recent studies of quantified HAP benefits. However, even if the EPA updated its analysis, there is no reason to believe that the new data and analysis would change the overall conclusion of the 2011 analysis that costs outweighed the quantified benefit attributed to reduction in HAP emissions.

However, while it is challenging to produce rigorous retrospective estimates of the benefits and costs of MATS, it is possible to demonstrate, using publicly available information, that there is no reason to believe that the relative difference between compliance costs and quantified HAP benefits projected

in the 2011 RIA (\$9.6 billion versus \$4 to \$6 million annually in 2015) would be materially different under any re-analysis.³⁶ Several commenters pointed to independent analyses that provided three estimates of the actual costs of MATS. While none of these estimates can be precisely compared against the EPA *ex ante* estimates because they use different cost metrics and dollar years, the independent analyses indicate that, if actual costs were to be estimated in a manner consistent with the EPA’s 2011 RIA estimates, the compliance costs expenditures would still likely be in the billions of dollars.

First, a 2015 analysis by Andover Technology Partners referred to by commenters estimated that the actual cost of compliance in the initial years of implementation was approximately \$2 billion per year.^{37 38} The second study referred to by commenters was a study performed by M.J. Bradley & Associates (MJB&A) using information from the U.S. Energy Information Administration.³⁹ MJB&A estimated that MATS-regulated facilities incurred total capital expenditures on environmental retrofits of \$4.45 billion, an estimate that does not include ongoing operating and maintenance expenditures. Finally, as documented in a letter to the EPA and cited by several commenters, the Edison Electric Institute estimated that the power sector incurred total compliance costs of more than \$18 billion, including both capital and

³⁶ The EPA’s April 15, 2020, finalization of the subcategorization of Eastern Bituminous Coal Refuse-Fired EGUs could alter the benefits and costs of MATS. However, given that such subcategorization will affect only six units, we think it is reasonable to expect that any changes to the 2011 RIA’s projected cost and benefits as a result of the potential subcategorization would not materially affect the EPA’s conclusion that compliance costs of MATS disproportionately outweigh the HAP benefits associated with the standards.

³⁷ Declaration of James E. Staudt, Ph.D., CFA, at 3, *White Stallion Energy Center v. EPA*, No. 12–1100 (D.C. Cir., December 24, 2015). Also available at Docket ID Item No. EPA–HQ–OAR–2009–0234–20549.

³⁸ In addition to the 2015 study, Andover Technology Partners produced two other analyses in 2017 and 2019, respectively, that estimated the ongoing costs of MATS. The 2017 report estimated that the total annual operating cost for MATS-related environmental controls was about \$620 million, an estimate that does not include ongoing payments for installed environmental capital. The 2019 report estimates the total annual ongoing incremental costs of MATS to be about \$200 million; again, this estimate does not include ongoing MATS-related capital payment. The 2017 report is available in Docket ID Item No. EPA–HQ–OAR–2018–0794–0794. The 2019 report is available in Docket ID Item No. EPA–HQ–OAR–2018–0794–1175.

³⁹ Available in Docket ID Item No. EPA–HQ–OAR–2018–0794–1145.

operations and maintenance costs.⁴⁰ While these retrospective cost estimates are developed from bases that are dissimilar from one another and, in particular, from how the EPA developed the prospective cost estimates in the 2011 RIA, it is evident that the independent analyses each indicate that the industry costs of MATS are of a similar order of magnitude and in the billions of dollars.

At the same time, the quantified mercury-related benefits would still likely be in the millions of dollars and not substantially more than what was estimated when the rule was finalized. Table 3–4 of the 2011 RIA shows that the EPA estimated that MATS would reduce mercury emissions from MATS-regulated units about 20 tons in 2015 (from 27 to 7 tons). According to recent EPA estimates, mercury emissions from MATS-regulated units decreased by about 25 tons from 2010 (pre-MATS) to 2017 (from 29 to 4 tons).⁴¹ Even if the 25-ton decrease in mercury emissions from 2010 to 2017 is entirely attributed to MATS (which would be a very strong assumption given other economic and regulatory factors that influenced the trajectory of mercury emissions downward during this period), the quantified mercury-related benefits are likely to be not much greater than the estimates in the 2011 RIA, and certainly would continue to be at least an order of magnitude smaller than the actual costs of MATS.

Similarly, as discussed in more detail in sections II.C.2 and II.C.3 of this preamble, we would expect that the unquantified HAP-related benefits of MATS would not meaningfully redress the large disparity between monetized costs and monetized HAP benefits estimated in the 2011 RIA. Lastly, whether the co-benefits that MATS achieved are larger or smaller than estimated in the 2011 RIA is not a central consideration in the EPA's appropriate and necessary finding, as discussed previously in section II.C.3 of this preamble.⁴² The net result of this inquiry is that we believe that if the EPA were to perform retrospective analysis of the impacts of MATS for the purposes of the appropriate and necessary determination, the results of that analysis would not lead to any material

change in the relative magnitude of costs and HAP-related benefits. In satisfaction of the requirements of OMB's Circular A–4, Section 3 of the memorandum, *Compliance Cost, HAP Benefits, and Ancillary Co-Pollutant Benefits*, that accompanies this final action presents all reasonably anticipated costs and benefits arising out of the MATS rule, including those arising out of co-benefits.

Comment: Commenters said that the compliance cost estimates underlying the 2019 Proposal are several times higher than actual costs because the projections in the 2011 RIA assumed that MATS would require the installation of additional fabric filters, scrubber upgrades, and electrostatic precipitator upgrades that were subsequently not required. Additionally, the commenters suggested the EPA's analysis erred because the projected price of natural gas was too low in the 2011 RIA. Commenters said that what they characterized as substantial inaccuracies of the 2011 RIA projections render these projections an inappropriate basis for the proposed comparison of the costs and benefits.

Response: The EPA disagrees with the commenters that the entire economic analysis that the EPA performed in the 2011 RIA is invalid simply because of an asserted discrepancy between modeling projections and actual outcomes. *See, e.g., EME Homer City Generation, L.P. v. EPA*, 795 F.3d 118, 135–36 (D.C. Cir. 2015) (“We will not invalidate EPA's predictions solely because there might be discrepancies between those predictions and the real world. That possibility is inherent in the enterprise of prediction. The best model might predict that the Nationals will win the World Series in 2015. If that does not happen, you can't necessarily fault the model.”). The EPA used the best available data and modeling information, in accordance with Executive Order 12866 and the EPA's economic guidelines, and provided the public with the opportunity to comment on all aspects of its analysis in developing the 2011 RIA.

The independent analyses cited by several commenters find that a variety of control technology costs have shown to be lower than the EPA's projection from the 2011 RIA. However, the suggestion that important components of the actual compliance cost of MATS are lower than the Agency's projections does not alter the Agency's determination that the analysis in the 2011 RIA represents the best and most comprehensive estimate of the cost of compliance with MATS available to the EPA for use in this finding, because it

was developed at the time when the Agency reaffirmed the appropriate and necessary finding and established CAA section 112(d) standards for EGUs. Additionally, as discussed in another comment response in this section, even if actual compliance costs are lower than the EPA projected in the 2011 RIA, the costs are still likely to be at least an order of magnitude greater than the monetized HAP benefits.

Comment: Other commenters rejected the argument that actual utility sector compliance costs for MATS have been less than predicted in 2011. One commenter said that utilities have spent less on retrofitting power plants by simply closing plants to avoid installing costly controls. However, the commenter also claimed that the utility sector's avoided MATS compliance costs did not simply disappear; they were translated into costs borne by the former employees of retired coal-fired plants, by coal workers who have lost their jobs, and by the communities of those displaced workers. Commenters said that the 2019 Proposal continues to treat these MATS-driven “costs” as irrelevant when considering the regulatory impacts, but the commenters said that the EPA must add these regulatory costs to its analysis as required by *Michigan*. The commenter cited data indicating an individual's job loss has a direct correlation with adverse health outcomes.

Response: The 2011 RIA provided estimates of employment changes for the regulated power sector and for the air pollution control sector, including estimates of employment impacts from changes in fuel demand from EGUs. However, examining localized employment impacts that may arise from MATS compliance actions is outside of the scope of this action. The commenter asserts that the cost of the rule will result in lost income or employment that will, in turn, result in negative health impacts. The EPA disagrees that this point is relevant to the appropriate and necessary finding.

Comment: Commenters highlighted that the industry has already incurred costs to implement MATS and cannot recover these costs except through rate recovery and similar mechanisms. Commenters argued that finalization of a reconsideration of the appropriate and necessary finding under CAA section 112(n)(1)(A) should be based on an analysis of ongoing and future costs weighed against ongoing and future benefits, as opposed to considering past costs and benefits. If the EPA considers past costs that have already been incurred by the industry to comply with MATS in connection with the proposed

⁴⁰ Available in Docket ID Item No. EPA–HQ–OAR–2018–0794–2267.

⁴¹ <https://www3.epa.gov/airmarkets/progress/reports/index.html>.

⁴² As previously discussed, section 112(n) of the CAA requires the EPA to make a finding as to whether regulation of EGUs is “appropriate and necessary” following consideration of hazards to public health reasonably anticipated to result from EGU emissions of HAP listed in CAA section 112(b).

rule, the Agency must consider whether those past costs might weigh in favor of maintaining or affirming the 2016 Supplemental Finding.

Response: A previous response in this section explains why the EPA's use of the benefit and cost estimates from the 2011 RIA is reasonable. Additionally, with respect to the suggestion that the EPA estimate future costs and benefits flowing from this action, section II.D of this preamble explains that the EPA's revised determination that regulation of HAP emissions from EGUs under CAA section 112 is not appropriate and necessary will not remove EGUs from the CAA section 112(c) list of sources, and the previously established MATS rule will remain in place. As a result, there will be no changes in future compliance expenditures or emissions under MATS as a result of the revised determination under CAA section 112(n)(1)(A).

Comment: Commenters said that many utilities that expended resources to comply with MATS are subject to ongoing rate reviews by public utility commissions regarding recovery of MATS-associated costs. Some utilities expressed concerns that, if MATS or the appropriate and necessary finding is rescinded, whether through EPA action or as a result of judicial review of a reversal of the 2016 Supplemental Finding, stakeholders will intervene in rate cases before public utility commissions, arguing that utilities' investments in the MATS-required pollution controls were imprudent and should no longer be recoverable through their approved rates. Because of this reasoning, the commenters said the EPA should consider the impacts on recovery of sunk costs jeopardized by a reversal of the appropriate and necessary finding in its benefit-cost analysis.

Response: Section II.D of this preamble explains that the EPA's revised determination that regulation of EGUs under CAA section 112 is not appropriate and necessary will not remove EGUs from the CAA section 112(c) list of sources, and the previously established MATS rule will remain in place. As a result, the EPA does not anticipate that the ability of utilities to recover MATS-related expenditures will be jeopardized as a result of this action. Even if MATS were to be rescinded, a number of states have mercury rules that would continue to mandate the use of mercury controls. The EPA is committed to working with states that are interested in developing their own HAP-specific requirements. The EPA's proposal noted that, in 2011, the Utility Air Regulatory Group (UARG) submitted a petition pursuant to CAA section

112(c)(9) requesting that coal-fired EGUs be removed from the CAA section 112(c) List of Categories of Major and Area Sources, and that the EPA denied this petition on several grounds.⁴³ The EPA's position on denial of this petition has not changed.

Comment: Commenters stated that since the revised consideration of weighing costs and benefits as part of a CAA section 112(n)(1)(A) finding hinges on the estimation of HAP reduction benefits, the EPA must make a better effort to monetize all HAP reduction benefits. These commenters asserted that new research suggests that the EPA underestimated the benefits associated with HAP reductions across several effects. Specific criticisms of the EPA HAP benefit estimation focused primarily on methylmercury⁴⁴ and included: (1) Failure to quantify cardiovascular effects; (2) criticism of the approach used in modeling the IQ loss endpoint; (3) failure to consider other neurological endpoints besides IQ loss; (4) failure to consider additional health effects besides neurological and cardiovascular impacts; and (5) failure to model the full range of fish consumption pathways related to mercury emissions from EGUs.

Response: After reviewing the additional peer-reviewed studies on health effects attributable to mercury that were submitted in the comments, the EPA concludes that the approach to assessing quantified and unquantified methylmercury benefits in the 2011 RIA, while subject to uncertainty, remains valid. We address the major criticisms across the five major categories of comments below.

i. Failure To Quantify Cardiovascular Effects

Commenters cited several studies regarding the linkage between methylmercury concentrations in blood and tissue samples and cardiovascular health. Some of the studies cited in the comments were available to the EPA at the time of the 2011 RIA, while others were not. The former category includes Rice *et al.* (2010)⁴⁵ and Roman *et al.*

(2011)⁴⁶ which characterize methylmercury-related effects. These two articles concluded that methylmercury is both directly linked to acute myocardial infarction and intermediary impacts that contribute to myocardial infarction risk. They also discussed a host of uncertainties associated with methylmercury cardiovascular effects.

Rice *et al.* (2010) evaluated the benefits of a 10-percent reduction in methylmercury exposure for U.S. populations (reflecting IQ loss and presumed mortality impacts). The study used a probabilistic approach to address confidence in a causal association between methylmercury and heart attacks. Importantly, they state "we view the evidence for causal interpretation as relatively weak." They use a subjectively defined probability of one-third that the association between methylmercury and cardiovascular effects is causal, acknowledging that the strength of the association was "modest." The Rice *et al.* (2010) estimates are also sensitive to assumptions regarding the coefficient linking hair mercury to heart attack and the timing of the exposure-response relationship.

The Roman *et al.* (2011) paper was a workshop report from a panel convened to assess the potential for developing a concentration-response function for the cardiovascular effect from methylmercury exposure. The report recommended that the EPA develop a new dose-response relationship for cardiovascular-related methylmercury effects. However, the study also reports the results of a literature review that yield a very small number of in vitro or animal studies; the review characterized the strength of the epidemiological studies that assessed clinically significant endpoints as being "moderate." The Roman *et al.* (2011) review also mentions uncertainty as to which exposure metric (including the timing of exposure and appropriate biomarker) would provide the most robust statistical outcome in modeling cardiovascular effects.

In the 2012 MATS Final Rule, the EPA also addressed comments on the linkage between methylmercury exposure and cardiovascular effects. One of the references cited as part of the EPA response was Mozaffarian *et al.*

Environmental Science & Technology, 44(13): 5216–5224.

⁴⁶ Roman, H.A., *et al.* (2011). *Evaluation of the cardiovascular effects of methylmercury exposures: Current evidence supports development of a dose-response function for regulatory benefits analysis.* Environmental Health Perspectives, 119(5): 607–614.

⁴³ 84 FR 2679–2680.

⁴⁴ Additional comments also addressed the modeling of non-mercury HAP in the context of the appropriate and necessary risk assessment (as opposed to the benefits analysis), with these comments focusing on claims that EPA had failed to appropriately include adjustment factors addressing individual-variability and limitations in using the census block-centroid approach to capturing risk for the most exposed individual. These comments are addressed in the RTC document.

⁴⁵ Rice, G.E., *et al.* (2010). *A Probabilistic Characterization of the Health Benefits of Reducing Methyl Mercury Intake in the United States.*

(2011), which evaluated health outcomes from two large cohorts of men and women in the U.S. and showed no evidence of a relationship between mercury exposure and increased cardiovascular disease risk.⁴⁷ This study also evaluated multiple coronary heart disease subtypes and concluded that mercury exposure was not associated with the risk of nonfatal myocardial infarction or fatal coronary heart disease. Based on the available scientific literature at the time of the MATS rule, the Agency concluded that there was inconsistency among available studies as to the association between methylmercury exposure and various cardiovascular system effects.

In the second category of newer literature, commenters referenced the Genchi *et al.* (2017)⁴⁸ review article that summarizes the methylmercury-cardiovascular literature but does not report dose-response parameters. The paper cites studies from 2002–2007 looking at cardiovascular-related effects (e.g., heart rate variability, myocardial infarction, atherosclerosis, hypertension, *etc.*) for a range of populations, some U.S. and some non-U.S. The article recommends development of a dose-response function for methylmercury exposure and myocardial infarctions for regulatory benefits analysis, but does not provide specific recommendations regarding which studies, effect estimates or functional forms to use. The authors also acknowledge the need “to improve the characterization of the potential linkage between methylmercury exposure and the risk of cardiovascular disease.” Commenters also cited Giang and Selin (2016)⁴⁹ as support for their argument that the monetized benefits of reducing mercury is greater than the EPA estimates in the proposal. This study also acknowledges that the relevant literature (through 2016) is relatively small and inconsistent with respect to the association between methylmercury exposure and cardiovascular disease. The study notes that all of the literature discusses the challenges associated with teasing out any adverse effects of methylmercury

exposure through fish consumption in the midst of the positive cardiovascular impacts associated with fish consumption. However, based on the information available in the existing record and material submitted during the public comment period, the EPA believes available evidence does not support a clear characterization of the potential relationship between mercury exposure and cardiovascular effects at this time. This does not preclude the possibility that later scientific work may provide more clarity as to the existence or absence of an association.

Further, current research is also insufficient to support modeling of the cardiovascular mortality endpoint with a sufficient degree of confidence for inclusion in an EPA benefits analysis due to (1) questions regarding overall causality and uncertainty in specifying the dose-response relationship required (including the form and parameterization of the function) and (2) uncertainty in modeling the prospective bio-markers (e.g., hair mercury) required in part due to questions regarding the temporal aspects of the exposure-response relationship.

ii. Criticism of the Approach Used in Modeling the IQ Loss Endpoint

The second category of criticism related to the 2011 RIA estimation of benefits involves the approach used in modeling IQ loss, specifically the effect estimate used in modeling this endpoint. Commenters pointed out that in modeling IQ loss, two studies, Bellanger *et al.* (2013)⁵⁰ and Trasande *et al.* (2005),⁵¹ employ effect estimates significantly larger than the effect estimate utilized by the EPA in the 2011 RIA, which was obtained from Axelrad *et al.* (2007).⁵² In responding to these comments, the EPA notes that both of these alternate studies (Bellanger *et al.*, 2013 and Trasande *et al.*, 2005) utilized data from one of the three key datasets (Faroes study) in characterizing the relationship between methylmercury exposure and IQ loss. By contrast, Axelrad *et al.* (2007) uses data from all three key studies (Faroes, Seychelles, and New Zealand) in fitting their

function. In addition, Axelrad *et al.* (2007) also obtained a new modeled estimate for IQ loss for the Faroes data from the study authors based on structural equation modeling involving underlying neurological endpoints. And finally, Axelrad *et al.* (2007) also used a sophisticated hierarchical random-effects model that can consider study-to-study and endpoint-to-endpoint variability in modeling the endpoint. When considered in aggregate, these details regarding study design associated with Axelrad *et al.* (2007) lead the EPA to conclude that the effect estimate obtained from this particular study is well supported by the underlying evidence and continues to be appropriate for modeling IQ loss benefits related to methylmercury exposure.

iii. Failure To Consider Other Neurological Endpoints Besides IQ Loss

The third broad category of criticism related to the 2011 RIA estimation of benefits was that the EPA failed to consider other neurological endpoints besides IQ loss in modeling benefits. Specifically, commenters asserted that pre-existing literature⁵³ and more recent data have revealed a suite of more sensitive neurodevelopmental effects than IQ loss. For example, one recent study (Patel *et al.*, 2019)⁵⁴ referenced in the comments suggests an association between methylmercury exposure and behavioral problems (specifically anxiety), even at relatively low prenatal exposure levels. Another study, Masley *et al.* (2012)⁵⁵ cited by commenters concludes that cognitive effects of methylmercury on adults are substantial enough to negate beneficial effects of omega-3 fatty acids among adults who consume large amounts of some types of fish. Finally, commenters pointed to new research (Julvez *et al.*, 2013)⁵⁶ which suggests that some individuals might be genetically susceptible to the neurological effects of methylmercury and that null groups which do not include these individuals could mask significant impacts among

⁵³ National Research Council, *The Toxicological Effects of Methylmercury*, 2000. <https://www.nap.edu/catalog/9899/toxicological-effects-of-methylmercury>, p. 310.

⁵⁴ Patel, N.B.; Xu, Y.; McCandless, L.C.; Chen, A.; Yolton, K.; Braun, J.; . . . Lanphear, B.P. (2019). *Very low-level prenatal mercury exposure and behaviors in children: The HOME Study*. Environmental Health: A global access science source, 18(1), 4. doi:10.1186/s12940-018-0443-5.

⁵⁵ Masley, S.C.; Masley, L.V.; Gualtieri, T.: *Effect of mercury levels & seafood intake on cognitive function in middle-aged adults*. Integrative Medicine, 11:32–40, 2012.

⁵⁶ Julvez, J. and Grandjean, P. *Genetic susceptibility to methylmercury developmental neurotoxicity matters*. Front Genet, 4: 278, 2013.

⁴⁷ Mozaffarian, D.; Shi, P.; Morris, J.S.; Spiegelman, D.; Grandjean, P.; Siscovick, D.S.; Willett, W.C.; Rimm, E.B. *Mercury exposure and risk of cardiovascular disease in two U.S. cohorts*. N Engl J Med, 2011, 364, 1116–1125.

⁴⁸ Genchi, G.; Sinicropi, M.S.; Carocci, A.; Lauria, G.; Catalano, A. *Mercury Exposure and Heart Diseases*. Int. J. Environ. Res. Public Health, 2017, 14, 74. <https://doi.org/10.3390/ijerph14010074>.

⁴⁹ Giang, A.; Selin, N. *Benefits of mercury controls for the United States*. Proceedings of the National Academy of Sciences, Vol 113, No. 2, January 12, 2016. <https://doi.org/10.1073/pnas.1514395113>.

⁵⁰ Bellanger, D., *et al.* (23 authors), *Economic benefits of methylmercury exposure control in Europe: Monetary value of neurotoxicity prevention*. Environmental Health, 2013, 12:3.

⁵¹ Trasande, L.; Landrigan, P.; Schechter, C. *Public Health and Economic Consequences of Methyl Mercury Toxicity to the Developing Brain*. Environmental Health Perspectives, Vol 113, No 5, May 2005. <https://doi.org/10.1289/ehp.7743>.

⁵² Axelrad, D.; Bellinger, D.; Ryan, L.; Woodruff, T. *Dose-Response relationship of Prenatal Mercury Exposure and IQ: An Integrative Analysis of Epidemiologic Data*. Environmental Health Perspectives, Vol 115, No 4, April 2007.

genetically susceptible within the larger study group.

Taking these comments in order, regarding the potential for modeling additional neurological endpoints, including behavioral problems (e.g., anxiety), the EPA notes that the cited study (Patel *et al.*, 2019) is equivocal in its findings, with the authors stating that they “did not find a consistent association between very low-level prenatal mercury exposure and behavior problem scores in children, but [they] did find some evidence of an association between very low-level mercury exposure during early pregnancy and parent-reported anxiety scores in children.” The authors note that the association of low-level mercury exposure with behavioral problems, including anxiety, deserves further scrutiny. The EPA concludes that we are not yet at the point where we can reliably model the effects of low-level mercury exposure on children’s behavior, including anxiety.

Regarding the potential for the beneficial cognitive effects of omega-3 fatty acids in adults (resulting from fish consumption) to be partially negated by coexistent methylmercury exposure, the EPA recognizes conceptually that this could occur. However, it is important to note that the effects of methylmercury on omega-3 fatty acid intake and associated benefits were seen only for the subset of the population with relatively elevated consumption of larger fish (*i.e.*, more than 3–4 servings a month, Masley *et al.*, 2012). Modeling benefits-related changes in fish consumption typically focuses on the general consumer rather than attempting to model benefits for a specific subset of that population which can be challenging to enumerate (*i.e.*, the subgroup of those consuming relatively elevated levels of higher-trophic level fish)—that level of more refined subgroup modeling is often reserved for scenario-based risk assessments, where population enumeration is not the focus. For that reason, data on how methylmercury could obscure the benefits of omega-3 fatty acid intake (for a specific higher large-fish-consuming segment of the population) would have less utility in the context of a benefits analysis aimed at the more generalized fish-consuming population. In addition, the EPA would note potential challenges in modeling this kind of trade-off related to fish consumption, since not only would levels of methylmercury and omega-3 fatty acids need to be characterized for a broad range of fish species; in addition, the specific mix of those types of fish consumed by the high-consuming study

population would need to be specified in order to increase overall confidence in modeling cognitive-related benefits at the representative population-level for this subgroup.

Regarding the potential that certain individuals could be genetically susceptible to the neurological effects of methylmercury and that, consequently, these individuals may not be fully covered by existing studies characterizing neurodevelopmental effects of methylmercury, the EPA acknowledges this as a possibility. However, the study cited by commenters (Julvez *et al.*, 2013) does not provide effect estimates for these potentially at-risk subgroups, which prevents quantitative analysis of risk and associated dollar-benefits associated with mercury-exposure in these subgroups.

iv. Failure To Consider Additional Health Effects Besides Neurological and Cardiovascular Impacts

Commenters pointed to the potential for methylmercury exposure to be associated with a range of additional adverse health effects (besides neurological and cardiovascular), including cancer (leukemia and liver) and possible effects on the reproductive, hematological, endocrine (diabetes), and immune systems. The EPA notes the distinction between evidence-based support for specific health effects (potentially even including support for causal associations should it exist) and the ability to reliably model those health endpoints quantitatively. In referencing the above health endpoints, commenters referred to a range of study data which can be used as evidence for an association, including elucidation of potential toxicity pathways.

In response to these comments, the EPA notes that in order to model a health effect within a defined population as part of a benefits analysis, high-confidence concentration-response functions linked to clearly defined biometrics (which can themselves be simulated at the population-exposure level) are required. At this time, as noted earlier, with the exception of IQ loss in children, the EPA does not believe research is currently sufficient to support quantitative assessment of any of these additional endpoints in the context of a benefits analysis involving mercury (accessed through a fish-consumption pathway).

v. Failure To Model the Full Range of Fish Consumption Pathways Related to Mercury Emissions From EGUs

A number of commenters stated that the EPA underestimated IQ-related

benefits by focusing the benefits analysis on self-caught (recreational) freshwater fish. Specifically, commenters pointed to Trasande *et al.* (2005) as an example of an assessment that, while also modeling benefits associated with controlling mercury emissions from U.S. power plants, more fully considers exposure to methylmercury, including the general consumption of commercial fish by the U.S. population. The Trasande *et al.* (2005) study employs general linear apportionment (based on estimates of U.S. EGU emissions relative to global emissions) to estimate the fraction of methylmercury in U.S. freshwater and coastal fish associated with U.S. EGU emissions. A similar calculation is used to estimate the fraction of methylmercury in non-U.S. sourced commercial fish associated with U.S. EGU emissions. They then apportion their estimate of total IQ loss for children in the U.S. (assumed to come completely from fish consumption) to U.S. EGU-sourced mercury versus other sources. Similarly, commenters have also cited Giang and Selin (2016) as another example of a study that attempts to generate a more complete picture of methylmercury benefits associated with controlling U.S. EGU mercury emissions, including exposures associated with commercial fish consumption. Notably, the Giang *et al.* (2016) study uses a more sophisticated modeling approach (compared with Trasande *et al.*, 2005), to project potential benefits associated with MATS within the United States out to 2050, including application of global mercury deposition modeling covering specific regions associated with commercial fishing. The authors note that greater than 90 percent of U.S. commercial fish consumption, and the majority of U.S. mercury intake, comes from marine and estuarine sources, particularly from the Pacific and Atlantic Ocean basins. Regarding the assertion that the EPA should have used methodologies similar to those cited in these studies to incorporate consideration of commercial fish consumption (linked to U.S. EGU mercury emissions) in its benefits analysis, the EPA again reiterates the importance of including only those consumption pathways that can be modeled with a reasonable degree of confidence. Both of the studies cited employ broad-scale simplifying assumptions in order to link changes in U.S. EGU mercury emissions to potential changes in the concentration of methylmercury in commercial fish, which Giang *et al.* (2016) suggest is responsible for the vast majority of fish-

related methylmercury exposure in the U.S. Specifically, as noted earlier, the Trasande *et al.* (2005) study links U.S. EGU emissions (as a fraction of total global emissions) to methylmercury concentrations in commercially and recreational fish consumed by the U.S. population. With the Giang *et al.* (2016) study, the authors utilize U.S. EGU deposition (as a fraction of total) in specific broad fishing regions (*e.g.*, Atlantic) to estimate the fraction of methylmercury in commercially sourced fish caught in those broad regions attributable to U.S. EGUs. Both of these simplifying assumptions mask the potential complexity associated with linking U.S. EGU-sourced mercury to methylmercury concentrations in these commercial fish species. In particular, a larger region such as the Atlantic likely displays smaller-scale variation in critical factors such as fish species habitat/location, patterns of mercury deposition, and factors related to the methylation of mercury and associated bioaccumulation/biomagnification. In developing these kinds of more sophisticated models aimed at factoring commercial fish consumption into a benefits analysis involving U.S. EGU mercury, additional analyses could be needed to understand this critical element of spatial scale and the generalizing assumptions used by these authors in linking mercury emissions and deposition to commercial fish. Note that in the EPA's benefits analysis completed for MATS, one reason focus was placed on the freshwater angler scenario was increased confidence in modeling this exposure pathway given our ability to link patterns of U.S. EGU mercury deposition (relative to total deposition) over specific watersheds to sampled fish tissue concentrations in those same watersheds. This degree of refined spatial precision in linking U.S. EGU deposition to actual measured fish tissue data increased overall confidence in modeling benefits associated with this pathway, leading us to focus on the recreational angler exposure pathway.

D. Effects of This Reversal of the Supplemental Finding

1. Summary of 2019 Proposal

In the 2019 Proposal, the EPA proposed to conclude that finalizing a revision to the 2016 Supplemental Finding to determine that it is not appropriate and necessary to regulate HAP emissions from coal- and oil-fired EGUs would not lead to the removal of that source category from the CAA section 112(c)(1) list, nor would it affect the CAA section 112(d) standards established in the MATS rule.

As described in section II.B of this preamble, in 2005, the EPA reversed the 2000 determination that regulation of HAP emissions from EGUs under CAA section 112 was appropriate and necessary. At that time, the EPA justified its decision to delist EGUs because it “reasonably interprets section 112(n)(1)(A) as providing it authority to remove coal- and oil-fired units from the section 112(c) list at any time that it makes a negative appropriate and necessary finding under the section.” 70 FR 16032. In the 2005 Delisting Rule, the EPA “identified errors in the prior [2000] finding and determined that the finding lacked foundation.” 70 FR 16032. Because the EPA concluded the 2000 Finding had been in error at the time of listing, the Agency asserted that coal- and oil-fired EGUs “should never have been listed under section 112(c) and therefore the criteria of section 112(c)(9) do not apply” in removing the source category from the list. *Id.* at 16033. Therefore, the EPA stated that it had “inherent authority under the CAA to revise [the listing] at any time based on either identified errors in the December 2000 finding or on new information that bears upon that finding.” *Id.* at 16033.

The D.C. Circuit rejected the EPA's interpretations, holding that the Agency did not have authority to remove source categories from the CAA section 112(c) list based only on a revised CAA section 112(n)(1)(A) negative appropriate and necessary finding. The Court held that the CAA unambiguously requires the EPA to demonstrate that the delisting criteria in CAA section 112(c)(9) have been met before “any” source category can be removed from the CAA section 112(c)(1) list. *New Jersey*, 517 F.3d at 582. The D.C. Circuit specified that, under the plain text of the CAA, “the only way the EPA could remove EGUs from the section 112(c)(1) list” was to satisfy those criteria. *Id.* The Court expressly rejected the EPA's argument that, “[l]ogically, if EPA makes a determination under section 112(n)(1)(A) that power plants should not be regulated at all under section 112 . . . [then] this determination *ipso facto* must result in removal of power plants from the section 112(c) list.” *Id.* (quoting the EPA's brief). Instead, the Court maintained that CAA section 112(n)(1) governed only how the Administrator determines whether to list EGUs, and that the EPA's authority to remove a source category from the list, even for EGUs, must be exercised only in accordance with the requirements of CAA section 112(c)(9).

Accordingly, the Court vacated the 2005 Delisting Rule.

Based on the D.C. Circuit's holding in *New Jersey*, the EPA proposed that finalization of the reversal of the 2016 Supplemental Finding, much like the 2005 Delisting Rule's reversal of the 2000 appropriate and necessary determination, would not have the effect of removing the Coal- and Oil-Fired EGU source category from the CAA section 112(c)(1) list because the EPA had not met the statutorily required CAA section 112(c)(9) delisting criteria. Because coal- and oil-fired EGUs would remain on the CAA section 112(c)(1) source category list, the EPA proposed to conclude that the CAA section 112(d) standards for that category, as promulgated in the MATS rule, would be unaffected by the proposal if finalized.

In the proposal, the EPA requested comment on two alternative interpretations of the *New Jersey* holding. The first alternative interpretation probed whether the *New Jersey* decision does not apply because the facts of the current situation are distinguishable from the underlying facts of that case. Specifically, the EPA requested comment on the view that *New Jersey* would not apply because the proposed reversal of the 2016 Supplemental Finding is a continuation of the Agency's response to the U.S. Supreme Court's remand in *Michigan*. Under this view, the Agency could rescind MATS without demonstrating that the CAA section 112(c)(9) criteria had been met because *New Jersey* did not address the situation in which the Agency was revising its CAA section 112(n)(1)(A) determination in response to a U.S. Supreme Court decision. The second alternative interpretation solicited comment on whether the EPA would have the authority to rescind the standards regulating HAP emissions under CAA section 112(d) in light of the fact that CAA section 112(n)(1)(A) plainly requires that the Administrator must find that regulation under CAA section 112 is appropriate and necessary as a prerequisite to undertaking such regulation. Under this theory, EGUs would remain on the CAA section 112(c) list, but would not be subject to CAA section 112(d) standards, because *New Jersey* did not address the question of whether, in the absence of a valid and affirmative appropriate and necessary finding, the EPA must regulate EGUs for HAP. For both alternative interpretations, the EPA solicited comment on whether the Agency had the discretion to follow an alternative or was, in fact, obligated to pursue an alternative interpretation.

2. Final Rule

After considering comments submitted in response to the EPA’s 2019 Proposal, we are concluding that the current action to reverse the 2016 Supplemental Finding would not affect the CAA section 112(c) listing of EGUs or the CAA section 112(d) regulations. The situation here is essentially indistinguishable to that in the *New Jersey* case, and, therefore, in the absence of the CAA section 112(c)(9) delisting criteria being satisfied, coal- and oil-fired EGUs necessarily remain on the list of regulated sources, and the CAA section 112(d) standards promulgated in the MATS rule necessarily remain in place. The EPA did not propose a delisting analysis, and the EPA does not intend to examine the delisting criteria for the Coal- and Oil-Fired EGU source category. Moreover, as noted in the proposal, the results of the CAA section 112(f)(2) residual risk review conducted as part of this final action indicate that with the MATS rule in place, the estimated inhalation cancer risk to the individual most exposed to actual emissions from the source category is 9-in-1-million, which would not satisfy the requirements for delisting as specified in CAA section 112(c)(9).⁵⁷

3. Comments and Responses

Comment: Some commenters argued that the EPA must rescind MATS if the Agency finalizes a determination that regulation under CAA section 112(n)(1)(A) is not appropriate and necessary. The commenters cited the finding in *Michigan* which held that “EPA interpreted [section 112(n)(1)(A)] unreasonably when it deemed cost irrelevant to the decision to regulate power plants” and asserted that if the EPA now concludes that, based on a proper evaluation of costs, regulation of EGUs under CAA section 112 is not appropriate and necessary, then either the CAA section 112(c) listing, the MATS rule, or both must be invalidated. The commenters argued that, after the finalization of the proposal, there is no

valid appropriate and necessary determination, which was the basis for the EPA’s listing of the Coal- and Oil-Fired EGU source category. The commenters also argued that under the plain meaning of the statutory text, Congress’ intention is clear that if the EPA determines that regulation of EGU emissions under CAA section 112 is not “appropriate and necessary,” then the EPA lacks jurisdiction to regulate such emissions. One commenter asserted that the EPA’s proposal to continue to enforce MATS while simultaneously rejecting the factual and statutory basis for the rule, offends the rule of law.

The commenters argued that the EPA’s reliance on the *New Jersey* decision is misplaced because the regulatory landscape presented in this action is fundamentally different than what was assessed by the D.C. Circuit in *New Jersey*. According to the commenters, the *New Jersey* decision only addressed the EPA’s authority to delist based on the reversal of an appropriate and necessary finding presumed to be legally valid, which is a fact pattern not present in this action given the *Michigan* holding. One commenter argued that because the EPA had not yet issued any EGU HAP standards under CAA section 112(d) at the time of *New Jersey*, the EPA’s interpretation of its regulatory jurisdiction under CAA section 112(n) had not been subject to judicial review and the *New Jersey* decision, therefore, does not speak to whether the EPA has authority to rescind a CAA section 112(d) standard after reversing the appropriate and necessary finding. One commenter further argued that to the extent the EPA views its legal authority regarding continued enforcement of MATS to be ambiguous, it would be arbitrary and capricious for the EPA to voluntarily leave MATS in place.

Conversely, there were many commenters who agreed with the EPA’s proposed approach to leave the MATS rule in place. These commenters agreed that the situation here is identical to what was adjudicated in *New Jersey*; that is, in both cases (1) the EPA had reversed an earlier final and effective finding that regulating EGUs under CAA section 112(n)(1)(A) was appropriate and necessary, and (2) coal- and oil-fired EGUs had been listed pursuant to CAA section 112(c). These commenters concluded that following a final EPA determination that regulation of EGUs under CAA section 112 is not appropriate and necessary, both the CAA and the *New Jersey* holding are clear that the only way to delist or de-regulate EGUs would be through

meeting the delisting criteria of CAA section 112(c)(9).

Response: As explained in the 2019 Proposal, the EPA believes that the D.C. Circuit’s *New Jersey* decision governs the effects of the EPA’s final action. More specifically, this final action reversing the 2016 Supplemental Finding does not remove the Coal- and Oil-Fired EGU source category from the CAA section 112(c)(1) list. As the Court stated, “Congress . . . undoubtedly can limit an agency’s discretion to reverse itself, and in section 112(c)(9) Congress did just that, unambiguously limiting EPA’s discretion to remove sources, including EGUs, from the section 112(c)(1) list once they have been added to it.” 517 F.3d at 583. The Court expressly rejected the argument made by the EPA at the time that if the Agency reversed course and determined it was not appropriate and necessary to regulate EGUs under CAA section 112, then that determination “logically” resulted in the removal of EGUs from the CAA section 112(c)(1) list. 517 F.3d at 582. As the D.C. Circuit stated: “EPA’s disbelief that it would be prevented from correcting its own ‘errors’ except through section 112(c)(9)’s delisting process or court-sanctioned vacatur cannot overcome the plain text enacted by Congress.” 517 F.3d at 583. Because coal- and oil-fired EGUs remain on the CAA section 112(c)(1) source category list, the CAA section 112(d) standards for the Coal- and Oil-Fired EGU source category, as promulgated in the MATS rule, are unaffected by this action.

The EPA does not find persuasive commenters’ argument that *New Jersey* is distinguishable because this action is not a reversal of a valid prior appropriate and necessary finding. As the commenters acknowledge, the D.C. Circuit in *New Jersey* did not directly assess the validity of the EPA’s 2000 appropriate and necessary determination. Rather, the EPA in its 2005 action revised the 2000 appropriate and necessary finding because it was flawed. Similarly, here, the EPA has determined that the 2016 Supplemental Finding was erroneous (just as it did in 2005 with respect to the 2000 finding) and is finalizing reversal of the 2016 Supplemental Finding (just as the EPA revised the 2000 finding).

We also disagree with the commenters’ argument that *New Jersey* is distinguishable because it was decided before the EPA had promulgated a NESHAP for EGUs, and, therefore, the D.C. Circuit did not address the EPA’s authority to rescind MATS following a final determination that it is not appropriate and necessary

⁵⁷ As relevant here, CAA section 112(c)(9) provides that the “Administrator may delete any category from the list under this subsection . . . whenever the Administrator makes the following determination . . . (i) In the case of hazardous air pollutants emitted by sources in the category that may result in cancer in humans, a determination that no source in the category . . . emits such hazardous air pollutants in quantities which may cause a lifetime risk of cancer greater than *one in one million* to the individual in the population who is most exposed to emissions of such pollutants from the source” (emphases added). The findings of the EPA’s residual risk review indicate that it is extremely unlikely that any EPA Administrator could (much less would) lawfully exercise his or her discretion to “de-list” the Coal- and Oil-Fired EGU source category.

to regulate EGUs under CAA section 112. The statute does preclude a challenge to the EPA's appropriate and necessary finding until standards are in place, see CAA section 112(e)(4); *Util. Air Regulatory Grp. v. EPA*, D.C. Cir. No. 01-1074, 2001 WL 936363 at *1 (D.C. Cir., July 26, 2001), but nothing in the D.C. Circuit's reasoning in the *New Jersey* decision relied on the fact that the earlier appropriate and necessary finding was not yet reviewable. In *New Jersey*, the 2000 Finding was not yet subject to judicial review and the EPA argued that the inclusion of EGUs on the CAA section 112(c) list was not final Agency action; here, the 2016 Supplemental Finding was final and subject to judicial review. *New Jersey* is clear that, even following an EPA determination that it is not appropriate and necessary to regulate EGUs under CAA section 112, the EPA cannot delist EGUs without going through the statutory delisting criteria (which the EPA has not done here). As long as EGUs stay on the CAA section 112(c) list of source categories, the EPA is required to promulgate emission standards under CAA section 112(d) regulating such sources. 42 U.S.C. 7412(c)(2) ("For the categories and subcategories the Administrator lists, the Administrator shall establish emissions standards under subsection (d) of this section."). Thus, there is no question about it: Under the D.C. Circuit's holding in *New Jersey*, in order to rescind regulation under CAA section 112(d), *i.e.*, to rescind MATS, EGUs must first be delisted as a CAA section 112(c) source category.

As explained, the EPA believes that it is bound by the D.C. Circuit's *New Jersey* decision. The *New Jersey* decision itself was decided on *Chevron* step 1 grounds. 517 F.3d at 582 ("EPA's purported removal of EGUs from the section 112(c)(1) list therefore violated the CAA's plain text and must be rejected under step one of *Chevron*"). Because the facts of this rulemaking are substantially similar to those before the D.C. Circuit in *New Jersey*, and because the D.C. Circuit recognized that in such a scenario the Agency has no discretion, the EPA does not believe that it has any discretion under *Chevron*, as one commenter asserted, to voluntarily rescind MATS following this final action. For these reasons, the EPA rejects commenters' assertion that it is acting in an arbitrary and capricious manner in this determination of the effect of this final Agency action.

The EPA additionally notes that one commenter stated in its comment that if the EPA finalized the proposal "based on any justification that does not

include a full updating, subject to public comment, of the analytical data base on which it rests," EPN "formally petitions EPA to continue the EGU MACT rule in effect" by making a new appropriate and necessary finding "based on the facts as they stand today," which EPN believes would support a determination that regulation of EGUs under CAA section 112 is appropriate and necessary. EPN comment at 36 (April 17, 2019) (Docket ID Item No. EPA-HQ-OAR-2018-0794-2261). However, as explained above, the EPA determines that this final action has no effect on the MATS for EGUs; the MATS rule remains in effect without any further action by the EPA. To the extent any response is needed, the EPA denies the EPN petition.

Comment: Numerous stakeholders claimed a serious reliance interest in the MATS rule that should weigh against delisting or rescission of MATS as a result of the EPA's reversal of the 2016 Supplemental Finding. These stakeholders cited concerns about how delisting or rescission could lead to negative impacts on cost recovery of significant capital investments, potential disruptions to pre-existing air quality planning efforts at the state-level, or potentially foregone improvements in public health of the kind that have already resulted from improved air quality due to MATS emissions reductions. Some commenters pointed to these interests as a reason why the EPA should not adopt either of the two alternative interpretations presented by the Agency in the 2019 Proposal regarding the potential effects of this Agency action.

Response: The EPA's revised determination that regulation of EGUs under CAA section 112 is not appropriate and necessary will not remove EGUs from the CAA section 112(c) list of sources, and the previously established EGU MACT standard, as established in MATS, remains in place. As a result, the EPA does not anticipate that any of the reliance interests cited above will be jeopardized as a result of this action.

III. Background on the RTR Action

A. What is the statutory authority for this action?

Section 112 of the CAA establishes a two-stage regulatory process to address emissions of HAP from stationary sources. In the first stage, we must identify categories of sources emitting one or more of the HAP listed in CAA section 112(b) and then promulgate technology-based NESHAP for those sources. "Major sources" are those that

emit, or have the potential to emit, any single HAP at a rate of 10 tons per year (tpy) or more, or 25 tpy or more of any combination of HAP. For major sources, these standards are commonly referred to as MACT (maximum achievable control technology) standards and must reflect the maximum degree of emission reductions of HAP achievable after considering cost, energy requirements, and non-air quality health and environmental impacts. CAA section 112(d)(2) directs the EPA, in developing MACT standards, to consider the application of measures, processes, methods, systems, or techniques, including, but not limited to, those that reduce the volume of or eliminate HAP emissions through process changes, substitution of materials, or other modifications; enclose systems or processes to eliminate emissions; collect, capture, or treat HAP when released from a process, stack, storage, or fugitive emissions point; are design, equipment, work practice, or operational standards; or any combination of the above.

For these MACT standards, the statute specifies certain minimum stringency requirements, which are referred to as MACT floor requirements, and which may not be based on cost considerations. See CAA section 112(d)(3). For new sources, the MACT floor cannot be less stringent than the emission control achieved in practice by the best-controlled similar source. The MACT standards for existing sources can be less stringent than floors for new sources, but they cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources in the category or subcategory (or the best-performing five sources for categories or subcategories with fewer than 30 sources). In developing MACT standards, we must also consider control options that are more stringent than the floor under CAA section 112(d)(2). We may establish standards more stringent than the floor, based on the consideration of the cost of achieving the emissions reductions, any non-air quality health and environmental impacts, and energy requirements.

In the second stage of the regulatory process, the CAA requires the EPA to undertake two different analyses, which we refer to as the technology review and the residual risk review. Under the technology review, we must review the technology-based standards and revise them "as necessary (taking into account developments in practices, processes, and control technologies)" no less frequently than every 8 years, pursuant

to CAA section 112(d)(6). Under the residual risk review, we must evaluate the risk to public health remaining after application of the technology-based standards and must revise the standards, if necessary, to provide an ample margin of safety to protect public health or to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect. The residual risk review is required within 8 years after promulgation of the technology-based standards, pursuant to CAA section 112(f). In conducting the residual risk review, if the EPA determines that the current standards provide an ample margin of safety to protect public health, it is not necessary to revise the MACT standards pursuant to CAA section 112(f).⁵⁸ For more information on the statutory authority for this rule, see 84 FR 2670, February 7, 2019.

B. What is the Coal- and Oil-Fired EGU source category and how does the NESHAP regulate HAP emissions from the source category?

The EPA promulgated the NESHAP for Coal- and Oil-Fired EGUs (commonly referred to as MATS) on February 16, 2012 (77 FR 9304). The standards are codified at 40 CFR part 63, subpart UUUUU. The MATS rule applies to existing and new coal- and oil-fired EGUs located at both major and area sources of HAP emissions. An EGU is a fossil fuel-fired combustion unit of more than 25 megawatts (MW) that serves a generator that produces electricity for sale. A unit that cogenerates steam and electricity and supplies more than one-third of its potential electric output capacity and more than 25 MW electric output to any utility power distribution system for sale is also an EGU. The source category covered by this MACT standard currently includes an estimated 713 EGUs located at approximately 323 facilities.

For coal-fired EGUs, the rule established standards to limit emissions of mercury, acid gas HAP, non-mercury HAP metals (e.g., nickel, lead, chromium), and organic HAP (e.g., formaldehyde, dioxin/furan). Standards for hydrochloric acid (HCl) serve as a surrogate for the acid gas HAP, with an alternate standard for SO₂ that may be used as a surrogate for acid gas HAP for those coal-fired EGUs with flue gas

desulfurization systems and SO₂ continuous emissions monitoring systems installed and operational. Standards for filterable PM serve as a surrogate for the non-mercury HAP metals, with standards for total non-mercury HAP metals and individual non-mercury HAP metals provided as alternative equivalent standards. Work practice standards that require periodic combustion process tune-ups limit formation and emissions of the organic HAP.

For oil-fired EGUs, the rule establishes standards to limit emissions of HCl and hydrogen fluoride (HF), total HAP metals (e.g., mercury, nickel, lead), and organic HAP (e.g., formaldehyde, dioxin/furan). Standards for filterable PM serve as a surrogate for total HAP metals, with standards for total HAP metals and individual HAP metals provided as alternative equivalent standards. Periodic combustion process tune-up work practice standards limit formation and emissions of the organic HAP.

The MATS rule was amended on April 19, 2012 (77 FR 23399), to correct typographical errors and certain preamble text that was inconsistent with regulatory text; on April 24, 2013 (78 FR 24073), to update certain emission limits and monitoring and testing requirements applicable to new sources; on November 19, 2014 (79 FR 68777), to revise definitions for startup and shutdown and to finalize work practice standards and certain monitoring and testing requirements applicable during periods of startup and shutdown; and on April 6, 2016 (81 FR 20172), to correct conflicts between preamble and regulatory text and to clarify regulatory text. In addition, the electronic reporting requirements of the rule were amended on March 24, 2015 (80 FR 15510), to allow for the electronic submission of Portable Document Format (PDF) versions of certain reports until April 16, 2017, to allow for time for the EPA's Emissions Collection and Monitoring Plan System to be revised to accept all reporting that is required by the rule, and on April 6, 2017 (82 FR 16736), and on July 2, 2018 (83 FR 30879), to extend the interim submission of PDF versions of reports through June 30, 2018, and July 1, 2020, respectively.

Additional detail regarding the standards applicable to the seven subcategories of EGUs regulated under the MATS rule can be found in section IV.B of the 2019 Proposal. 84 FR 2670 (February 7, 2019).

C. What changes did we propose for the Coal- and Oil-Fired EGU source category in our February 7, 2019, proposed rule?

On February 7, 2019, the EPA published a proposed rule in the **Federal Register** for the NESHAP for Coal- and Oil-Fired EGUs, 40 CFR part 63, subpart UUUUU, that took into consideration the RTR analyses. 84 FR 2670. In the proposed rule, we found that residual risks due to emissions of air toxics from this source category are acceptable and that the current NESHAP provides an ample margin of safety to protect public health, and we identified no new developments in HAP emission controls to achieve further cost-effective emissions reductions under the technology review. Based on the results of these analyses, we proposed no revisions to the MATS rule.

IV. What is included in this final rule based on results of the RTR?

This action finalizes the EPA's determinations pursuant to the RTR provisions of CAA section 112 for the Coal- and Oil-Fired EGU source category.

A. What are the final rule amendments based on the residual risk review for the Coal- and Oil-Fired EGU source category?

We found risk due to emissions of air toxics to be acceptable from this source category and determined that the current NESHAP provides an ample margin of safety to protect public health and prevent an adverse environmental effect. Therefore, we did not propose and are not finalizing any revisions to the NESHAP for Coal- and Oil-Fired EGUs based on our analyses conducted under CAA section 112(f).

B. What are the final rule amendments based on the technology review for the Coal- and Oil-Fired EGU source category?

We determined that there are no developments in practices, processes, and control technologies that warrant revisions to the MACT standard for this source category. Therefore, we did not propose and are not finalizing revisions to the MACT standard under CAA section 112(d)(6).

C. What are the effective and compliance dates of the standards?

The final rule is effective on May 22, 2020. No amendments to the MATS rule are being promulgated in this action. Thus, there are no adjustments being made to the compliance dates of the standards.

⁵⁸The D.C. Circuit has affirmed this approach to implementing CAA section 112(f)(2)(A). See *NRDC v. EPA*, 529 F.3d 1077, 1083 (D.C. Cir. 2008) ("If EPA determines that the existing technology-based standards provide an 'ample margin of safety,' then the Agency is free to readopt those standards during the residual risk rulemaking.")

V. What is the rationale for our final decisions regarding the RTR action for the Coal- and Oil-Fired EGU source category?

This section of this preamble provides a description of what we proposed and what we are finalizing, the EPA’s rationale for the final decisions, and a summary of key comments and responses. For comments not discussed in this preamble, comment summaries and the EPA’s responses can be found in the document titled *Final Supplemental Finding and Risk and*

Technology Review for the NESHAP for Coal- and Oil-Fired EGUs Response to Public Comments on February 7, 2019 Proposal, available in the docket for this action.

A. Residual Risk Review for the Coal- and Oil-Fired EGU Source Category

1. What did we propose pursuant to CAA section 112(f) for the Coal- and Oil-Fired EGU source category?

Pursuant to CAA section 112(f), the EPA conducted a residual risk review and presented the results of this review,

along with our proposed decisions regarding risk acceptability, ample margin of safety, and adverse environmental effects, in the February 7, 2019, proposed rule. 84 FR 2697–2700. The results of the risk assessment are presented briefly in Table 2, and in more detail in the document titled *Residual Risk Assessment for the Coal- and Oil-Fired EGU Source Category in Support of the 2019 Risk and Technology Review Proposed Rule* (risk document for the proposed rule), available in the docket for this action.

TABLE 2—COAL- AND OIL-FIRED EGU INHALATION RISK ASSESSMENT RESULTS IN THE FEBRUARY 2019 PROPOSAL
 [84 FR 2670, February 7, 2019]

Number of facilities ¹	Maximum individual cancer risk (in 1 million) ²		Population at increased risk of cancer ≥1-in-1 million		Annual cancer incidence (cases per year)		Maximum chronic noncancer TOSHI ³		Maximum screening acute noncancer HQ ⁴
	Based on . . .		Based on . . .		Based on . . .		Based on . . .		Based on actual emission level
	Actual emissions level	Allowable emissions level	Actual emissions level	Allowable emissions level	Actual emissions level	Allowable emissions level	Actual emissions level	Allowable emissions level	
322	9	10	193,000	636,000	0.04	0.1	0.2	0.4	HQ _{REL} = 0.09 (arsenic).

¹ Number of facilities evaluated in the risk analysis. There are an estimated 323 facilities in the Coal- and Oil-Fired EGU source category; however, one facility is located in Guam, which is beyond the geographic range of the model used to estimate risks. Therefore, the Guam facility was not modeled and the emissions for that facility are not included in this assessment.

² Maximum individual excess lifetime cancer risk due to HAP emissions from the source category.

³ Maximum target organ-specific hazard index (TOSHI). The target organ systems with the highest TOSHI for the source category are neurological and reproductive.

⁴ The maximum estimated acute exposure concentration was divided by available short-term threshold values to develop an array of hazard quotient (HQ) values. HQ values shown use the lowest available acute threshold value, which in most cases is the reference exposure level (REL). When an HQ exceeds 1, we also show the HQ using the next lowest available acute dose-response value.

a. Chronic Inhalation Risk Assessment Results

The results of the chronic inhalation cancer risk assessment based on actual emissions, as shown in Table 2 of this preamble, indicate that the estimated maximum individual lifetime cancer risk (cancer MIR) is 9-in-1 million, with nickel emissions from oil-fired EGUs as the major contributor to the risk. The total estimated cancer incidence from this source category is 0.04 excess cancer cases per year, or one excess case in every 25 years. Approximately 193,000 people are estimated to have cancer risks at or above 1-in-1 million from HAP emitted from the facilities in this source category. The estimated maximum chronic noncancer TOSHI for the source category is 0.2 (respiratory), which is driven by emissions of nickel and cobalt from oil-fired EGUs. No one is exposed to TOSHI levels above 1 based on actual emissions from sources regulated under this source category.

The EPA also evaluated the cancer risk at the maximum emissions allowed by the MACT standard (*i.e.*, “allowable emissions”). As shown in Table 2 of this preamble, based on allowable emissions, the estimated cancer MIR is 10-in-1 million, and, as before, nickel

emissions from oil-fired EGUs are the major contributor to the risk. The total estimated cancer incidence from this source category, considering allowable emissions, is 0.1 excess cancer cases per year, or one excess case in every 10 years. Based on allowable emissions, approximately 636,000 people are estimated to have cancer risks at or above 1-in-1 million from HAP emitted from the facilities in this source category. The estimated maximum chronic noncancer TOSHI for the source category is 0.4 (respiratory) based on allowable emissions, driven by emissions of nickel and cobalt from oil-fired EGUs. No one is exposed to TOSHI levels above 1 based on allowable emissions.

b. Screening Level Acute Risk Assessment Results

Table 2 of this preamble provides the worst-case acute HQ (based on the REL) of 0.09, driven by emissions of arsenic. There are no facilities that have acute HQs (based on the REL or any other reference values) greater than 1. For more detailed acute risk results, refer to the risk document for the proposed rule, available in the docket for this action.

c. Multipathway Risk Screening and Site-Specific Assessment Results

Potential multipathway health risks under a fisher and gardener scenario were identified using a three-tier screening assessment of the HAP known to be persistent and bio-accumulative in the environment (PB–HAP) emitted by facilities in the Coal- and Oil-Fired EGU source category, and a site-specific assessment of mercury using the EPA’s Total Risk Integrated Methodology. Fate, Transport, and Ecological Exposure (TRIM.FaTE) for one location (*i.e.*, three facilities located in North Dakota) as further described below. Of the 322 MATS facilities modeled, 307 facilities have reported emissions of carcinogenic PB–HAP (arsenic, dioxins, and polycyclic organic matter (POM)) that exceed a Tier 1 cancer screening value of 1, and 235 facilities have reported emissions of non-carcinogenic PB–HAP (lead, mercury, and cadmium) that exceed a Tier 1 noncancer screening value of 1. For facilities that exceeded a Tier 1 multipathway screening value of 1, we used additional facility site-specific information to perform an assessment through Tiers 2 and 3, as necessary, to determine the maximum chronic cancer and noncancer impacts

for the source category. For cancer, the highest Tier 2 screening value was 200. This screening value was reduced to 50 after the plume rise stage of Tier 3. Because this screening value was much lower than 100-in-1 million, and because we expect the actual risk to be lower than the screening value (site-specific assessments typically lower estimates by an order of magnitude), we did not perform further assessment for cancer. For noncancer, the highest Tier 2 screening value was 30 (for mercury), with four facilities having screening values greater than 20. These screening values were reduced to 9 or lower after the plume rise stage of Tier 3.

Because the final stage of Tier 3 (time-series) was unlikely to reduce the highest mercury screening values to 1, we conducted a site-specific multipathway assessment of mercury emissions for this source category. Analysis of the facilities with the highest Tier 2 and Tier 3 screening values helped identify the location for the site-specific assessment and the facilities to model with TRIM.FaTE. The assessment took into account the effect that multiple facilities within the source category may have on common lakes. The three facilities selected are located near Underwood, North Dakota. All three facilities had Tier 2 screening values greater than or equal to 20. Two of the facilities are near each other (16 kilometers (km) apart). The third facility is more distant, about 20 to 30 km from the other facilities, but it was included in the analysis because it is within the 50-km modeling domain of the other facilities and because it had an elevated Tier 2 screening value. We expect that the exposure scenarios we assessed for these facilities are among the highest, if not the highest, that might be encountered for other facilities in this source category. The refined multipathway assessment estimated an HQ of 0.06 for mercury for the three facilities assessed. We believe the assessment represents the highest potential for mercury hazards through fish consumption for the source category.

In evaluating the potential multipathway risk from emissions of lead compounds, rather than developing a screening threshold emission rate, we compare maximum estimated chronic inhalation exposure concentrations to the level of the current NAAQS for lead (0.15 micrograms per cubic meter). Values below the level of the primary (health-based) lead NAAQS are considered to have a low potential for multipathway risk. We did not estimate any exceedances of the lead NAAQS in this source category.

d. Environmental Risk Screening Results

An environmental risk screening assessment for the Coal- and Oil-Fired EGU source category was conducted for the following pollutants: Arsenic, cadmium, dioxins/furans, HCl, HF, lead, mercury (methylmercury and mercuric chloride), and POMs. In the Tier 1 screening analysis for PB-HAP (other than lead, which was evaluated differently), POM emissions had no exceedances of any of the ecological benchmarks evaluated. Arsenic and dioxin/furan emissions had Tier 1 exceedances for surface soil benchmarks. Cadmium and methylmercury emissions had Tier 1 exceedances for surface soil and fish benchmarks. Divalent mercury emissions had Tier 1 exceedances for sediment and surface soil benchmarks.

A Tier 2 screening analysis was performed for arsenic, cadmium, dioxins/furans, divalent mercury, and methylmercury emissions. In the Tier 2 screening analysis, arsenic, cadmium, and dioxin/furan emissions had no exceedances of any of the ecological benchmarks evaluated. Divalent mercury emissions from two facilities exceeded the Tier 2 screen for a sediment threshold level benchmark by a maximum screening value of 2. Methylmercury emissions from the same two facilities exceeded the Tier 2 screen for a fish (avian/piscivores) no-observed-adverse-effect-level (NOAEL) (merganser) benchmark by a maximum screening value of 2. A Tier 3 screening assessment was performed to verify the existence of the lake associated with these screening values, and it was found to be located on-site and is a man-made industrial pond, and, therefore, was removed from the assessment.

Methylmercury emissions from two facilities exceeded the Tier 2 screen for a surface soil NOAEL for avian ground insectivores (woodcock) benchmark by a maximum screening value of 2. Other surface soil benchmarks for methylmercury, such as the NOAEL for mammalian insectivores and the threshold level for the invertebrate community, were not exceeded. Given the low Tier 2 maximum screening value of 2 for methylmercury, and the fact that only the most protective benchmark was exceeded, a Tier 3 environmental risk screen was not conducted for methylmercury.

For lead, we did not estimate any exceedances of the secondary lead NAAQS. For HCl and HF, the average modeled concentration around each facility (*i.e.*, the average concentration of all off-site data points in the

modeling domain) did not exceed any ecological benchmark. In addition, each individual modeled concentration of HCl and HF (*i.e.*, each off-site data point in the modeling domain) was below the ecological benchmarks for all facilities. Based on the results of the environmental risk screening analysis, we do not expect an adverse environmental effect as a result of HAP emissions from the Coal- and Oil-Fired EGU source category.

e. Facility-Wide Risk Results

An assessment of risk from facility-wide emissions was performed to provide context for the source category risks. Based on facility-wide emissions estimates developed using the same estimates of actual emissions for emissions sources in the source category, and emissions data from the 2014 National Emissions Inventory (NEI) (version 2) for the sources outside the source category, the estimated cancer MIR is 9-in-1 million, and nickel emissions from oil-fired EGUs are the major contributor to the risk. The total estimated cancer incidence based on facility-wide emissions is 0.04 excess cancer cases per year, or one excess case in every 25 years. Approximately 203,000 people are estimated to have cancer risks at or above 1-in-1 million from HAP emitted from all sources at the facilities in this source category. The estimated maximum chronic noncancer TOSHI posed by facility-wide emissions is 0.2 (respiratory), driven by emissions of nickel and cobalt from oil-fired EGUs. No one is exposed to TOSHI levels above 1 based on facility-wide emissions. These results are very similar to those based on actual emissions from the source category because there is not significant collocation of other sources with EGUs.

f. Proposed Decisions Regarding Risk Acceptability, Ample Margin of Safety, and Adverse Environmental Effect

In determining whether risks are acceptable for this source category in accordance with CAA section 112, the EPA considered all available health information and risk estimation uncertainty. The risk results indicate that both the actual and allowable inhalation cancer risks to the individual most exposed are well below 100-in-1 million, which is the presumptive limit of acceptability. Also, the highest chronic noncancer TOSHI, and the highest acute noncancer HQ, are well below 1, indicating low likelihood of adverse noncancer effects from inhalation exposures. There are also low risks associated with ingestion, with the highest cancer risk being less than 50-

in-1 million based on a conservative screening assessment, and the highest noncancer hazard being less than 1 based on a site-specific multipathway assessment. Considering this information, the EPA proposed that the residual risks of HAP emissions from the Coal- and Oil-Fired EGU source category are acceptable.

We then considered whether the current standards provide an ample margin of safety to protect public health and whether more stringent standards were necessary to prevent an adverse environmental effect by taking into consideration costs, energy, safety, and other relevant factors. In determining whether the standards provide an ample margin of safety to protect public health, we examined the same risk factors that we investigated for our acceptability determination and also considered the costs, technological feasibility, and other relevant factors related to emissions control options that might reduce risk associated with emissions from the source category. In our analysis, we considered the results of the technology review, risk assessment, and other aspects of our MACT rule review to determine whether there are any cost-effective controls or other measures that would reduce emissions further to provide an ample margin of safety. The risk analysis indicated that the risks from the source category are low for both cancer and noncancer health effects, and, therefore, any risk reductions from further available control options would result in minimal health benefits. Moreover, no additional measures were identified for reducing HAP emissions from affected sources in the Coal- and Oil-Fired EGU source category. Thus, we proposed that the current MATS requirements provide an ample margin of safety to protect public health in accordance with CAA section 112.

Based on the results of our environmental risk screening assessment, we also proposed that more stringent standards are not necessary to prevent an adverse environmental effect.

2. How did the residual risk review change for the Coal- and Oil-Fired EGU source category?

Since proposal (84 FR 2670, February 7, 2019), neither the risk assessment nor our determinations regarding risk acceptability, ample margin of safety, or adverse environmental effects have changed.

3. What key comments did we receive on the residual risk review, and what are our responses?

The EPA received comments in opposition to and in support of the proposed residual risk review and our determination that no revisions were warranted under CAA section 112(f)(2) for the Coal- and Oil-Fired EGU source category.

Generally, the comments that were not supportive of the proposed determination from the risk review claimed that the risks are understated with the methods used by the EPA to assess inhalation, multipathway, and environmental risks and suggested changes to the underlying risk assessment methodology. For example, some commenters stated that the EPA should lower the acceptability benchmark so that risks below 100-in-1 million are unacceptable, include emissions outside of the source category in question in the risk assessment, and assume that pollutants with noncancer health risks have no safe level of exposure. With regard to the Coal- and Oil-Fired EGU source category risk review, several commenters claimed that the type and quantity of organic HAP emissions modeled were underestimated, disagreeing with the EPA's determination to model only 16 organic HAP and to base the estimated emissions on EPA-developed representative detection levels (RDLs). Commenters pointed to the difference between the modeled 3.4 tons of total source category organic HAP emissions versus other estimates of total source category organic HAP, such as the EPA's 2014 NEI estimate of over 3,000 tons of total source category organic HAP emissions from 130 organic HAP.

The EPA disputes the comments objecting to the type and quantity of organic HAP modeled under the risk review. As discussed in section IV.B of the proposed rule (84 FR 2670, February 7, 2019), during the 2010 ICR effort for the original MATS rulemaking process, most of the organic HAP emissions data for EGUs were at or below the detection levels of the prescribed test methods, even when long duration test runs (*i.e.*, approximately 8 hours) were required. Under the MATS rule, organic HAP are regulated by a work practice standard that requires periodic combustion process tune-ups. As such, EGUs are not required to meet numeric emission limits for organic HAP or to test and report organic HAP emissions. Because the MATS rule does not require measurements of organic HAP, the EPA reviewed the available organic HAP test results from the 2010 ICR when

developing the RTR emissions dataset. For each organic HAP tested, if 40 percent or more of the available test data were above test method detection limits, emissions estimates for that HAP were included in the modeling file. We assert that this approach which modeled each organic HAP where up to 60 percent of its 2010 ICR emissions data were below test method detection limits is a reasonable and conservative means of estimating which organic HAP are emitted from currently operating coal- and oil-fired EGUs. We also assert that the use of RDLs, which are based on averages of better-performing unit method detection levels, as well as laboratories using the most sensitive analyses across many source categories, is a reasonable means of estimating organic HAP emissions from currently operating EGUs which, under the MATS rule, are not required to measure organic HAP emissions. With regard to the 2014 NEI organic HAP emissions estimates referred to by commenters, the EPA points out that those estimates are based on pre-MATS compliance information and, thus, do not reflect reductions in organic HAP resulting from periodic tune-ups that have been conducted as required by the MATS rule. In addition, the pre-MATS compliance estimates in instances are likely to be based on, at most, 19 site-specific tests which have an average "D" rating and which were conducted over 25 years ago, as opposed to the MATS ICR data from up to 170 site-specific tests which would have an average A rating and which were conducted just 9 years ago.⁵⁹ Moreover, the pre-MATS compliance estimates most certainly includes emissions from EGUs that have since shut down.

Although some comments were supportive of the EPA's proposed determination based on results of the risk review, the comments claimed that

⁵⁹ As discussed in the Introduction to AP-42 (*see* <https://www3.epa.gov/ttn/chieff/qp42/c00s00.pdf>), the AP-42 emission factor rating is an overall assessment of how good a factor is, based on both the quality of the test(s) or information that is the source of the factor and on how well the factor represents the emission source. A 'D' rated emission factor is below average and is developed from test data from a small number of facilities, and there may be reason to suspect that these facilities do not represent a random sample of the industry. In addition, test data from 'D' rated emission factors may show evidence of variability within the source population. Emission factors from the MATS ICR have not been developed for AP-42 and the current rating process has been revised from letter grades to descriptors. However, under the previous rating process, emission factors from the MATS ICR data would have received 'A' ratings, where an 'A' rated emission factor is excellent and is developed from test data taken from many randomly chosen facilities in the industry population. Moreover, for an 'A' rated emissions factor, the source category population is sufficiently specific to minimize variability.

the risks are overstated due to the overly conservative risk assessment methodology used by the EPA.

Commenters stated, for example, that the risk assessment makes numerous conservative assumptions regarding emissions and exposures, the exposure assumptions are scientifically outdated, and the assessment used unrealistically high fish consumption rates. With regard to the Coal- and Oil-Fired EGU source category risk review, several commenters suggested data corrections to emissions estimates for particular EGUs that, according to commenters, resulted in overstated emissions being modeled. One commenter also suggested several revisions to the emissions estimation methodology for HAP emissions from EGUs. Several commenters pointed out that the EPA's risk review for the Coal- and Oil-Fired EGU source category and the June 2018 Electric Power Research Institute (EPRI) risk studies for coal-fired power plants⁶⁰—each of which followed somewhat different methodologies—similarly concluded that human health risks associated with HAP emissions are within EPA acceptability thresholds.

The EPA acknowledges that the risk assessment results for the Coal- and Oil-Fired EGU source category are dependent on the emission values used in the assessment. If we were to lower emission rates based on more accurate data, we expect lower risk estimates. Because the EPA has determined that the risk is acceptable, and that the existing standards provide an ample margin of safety to protect public health in accordance with CAA section 112, making the data corrections suggested by commenters would potentially reduce risk further but would not change the determinations under the risk review. Accordingly, we conclude that it is reasonable not to update the risk assessment following the proposal, and we have finalized the risk document and re-submitted it to the docket for this action as the *Residual Risk Assessment for the Coal- and Oil-Fired EGU Source Category in Support of the 2019 Risk and Technology Review Final Rule*.

⁶⁰EPRI. June 8, 2018. *Hazardous Air Pollutants (HAPs) Emission Estimates and Inhalation Human Health Risk Assessment for U.S. Coal-Fired Electric Generating Units: 2017 Base Year Post-MATS Evaluation*. Available at <https://www.epri.com/#/pages/product/3002013577/?lang=en>. EPRI. June 22, 2018. *Multi-Pathway Human Health Risk Assessment for Coal-Fired Power Plants*. Available at <https://www.epri.com/#/pages/product/3002013523/?lang=en>.

4. What is the rationale for our final approach and final decisions for the residual risk review?

We evaluated all of the comments on the EPA's proposed residual risk review and determined that no changes to the review are needed. For the reasons explained in the proposed rule, we determined that the risks from the Coal- and Oil-Fired EGU source category are acceptable, and that the current standards provide an ample margin of safety to protect public health and prevent an adverse environmental effect. Therefore, pursuant to CAA section 112(f)(2), we are finalizing our residual risk review as proposed.

B. Technology Review for the Coal- and Oil-Fired EGU Source Category

1. What did we propose pursuant to CAA section 112(d)(6) for the Coal- and Oil-Fired EGU source category?

Pursuant to CAA section 112(d)(6), the EPA conducted a technology review, which focused on identifying and evaluating developments in practices, processes, and control technologies for the emission sources in the source category. After conducting the CAA section 112(d)(6) technology review of the NESHAP for Coal- and Oil-Fired EGUs, we proposed that revisions to the standards are not necessary because we identified no cost-effective developments in practices, processes, or control technologies. More information concerning our technology review is in the memorandum titled *Technology Review for the Coal- and Oil-Fired EGU Source Category*, available in the docket for this action, and in the February 7, 2019, proposed rule. 84 FR 2700.

2. How did the technology review change for the Coal- and Oil-Fired EGU source category?

Since proposal (84 FR 2670, February 7, 2019), the technology review has not changed.

3. What key comments did we receive on the technology review, and what are our responses?

The EPA received comments in support of and against the proposed technology review and our determination that no revisions were warranted under CAA section 112(d)(6) for the Coal- and Oil-Fired EGU source category.

The comments that agreed with the EPA's proposed determination that no revisions to the MATS rule are warranted based on results of the technology review also asserted that the reductions required by MATS were not cost-effective at the time they were

adopted and forced widespread and unprecedented coal-fired EGU retirements, that the general costs of emission control technologies have not significantly been reduced and have increased in some instances, and that the beyond-the-floor analyses conducted by the EPA in support of the 2012 MATS Final Rule are still valid. Commenters also asserted that the EPA cannot adopt more stringent standards under CAA section 112(d)(6) where there is no appreciable HAP-related benefit from doing so and pointed to the results of the risk assessment for the Coal- and Oil-Fired EGU source category.

The comments that were not supportive of the proposed determination from the technology review generally claimed that the review failed to assess whether control technologies deployed for compliance with the 2012 MATS Final Rule were less expensive and more effective than projected and whether technologies deemed economically infeasible in 2012 have since become cheaper.

The EPA disagrees with the comments opposing the proposed determination that no revisions were warranted under CAA section 112(d)(6). As explained in section VI.C of the proposed rule (84 FR 2670, February 7, 2019), control technologies typically used to minimize emissions of pollutants that have numeric emission limits under the MATS rule include electrostatic precipitators and fabric filters for control of PM and non-mercury HAP metals; wet scrubbers and dry scrubbers for control of acid gases (SO₂, HCl, and HF); and activated carbon injection for control of mercury. These existing air pollution control technologies that are currently in use are well-established and provide the capture efficiencies necessary for compliance with the MATS emission limits. Organic HAP, including emissions of dioxins and furans, are regulated by a work practice standard that requires periodic burner tune-ups to ensure good combustion. This work practice continues to be a practical approach to ensuring that combustion equipment is maintained and optimized to run to reduce formation and emissions of organic HAP and continues to be expected to be more effective than establishing a numeric standard for emissions that, due to current detection levels, cannot reliably be measured or continuously monitored. We received no comments that included specific information on costs or performance for control technologies deployed to comply with the 2012 MATS Final Rule or for other control technology, work practices, operational

procedures, process changes, or pollution prevention approaches that reduce HAP emissions. Since proposal, no information has been presented to cause us to change the proposed determination that no developments in practices, processes, or control technologies, nor any new technologies or practices were identified for the control of non-mercury HAP metals, acid gas HAP, or mercury, and that no developments in work practices nor any new work practices or operational procedures have been identified for the control of organic HAP.

4. What is the rationale for our final approach for the technology review?

We evaluated all of the comments on the EPA's technology review and determined that no changes to the review are needed. For the reasons explained in the proposed rule, we determined that no cost-effective developments in practices, processes, or control technologies were identified in our technology review to warrant revisions to the standards. Therefore, pursuant to CAA section 112(d)(6), we are finalizing our technology review as proposed.

VI. Summary of Cost, Environmental, and Economic Impacts and Additional Analyses Conducted

A. What are the affected facilities?

The EPA estimates that there are 713 existing coal- and oil-fired EGUs located at 323 facilities that are subject to the MATS rule and will be affected by this final action.

B. What are the air quality impacts?

Because the EPA is not promulgating any amendments to the MATS rule, there will be no air quality impacts as a result of this final action.

C. What are the cost impacts?

Because the EPA is not promulgating any amendments to the MATS rule, there will be no cost impacts as a result of this final action.

D. What are the economic impacts?

Because the EPA is not promulgating any amendments to the MATS rule, there will be no economic impacts as a result of this final action.

E. What are the benefits?

Because the EPA is not promulgating any amendments to the MATS rule, there will be no benefits as a result of this final action.

F. What analysis of environmental justice did we conduct?

Executive Order 12898 (59 FR 7629, February 16, 1994) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the U.S.

As discussed in section VI.A of the proposed rule (84 FR 2670, February 7, 2019), to examine the potential for any environmental justice issues that might be associated with the source category, we performed a demographic analysis, which is an assessment of risk to individual demographic groups of the populations living within 5 km and within 50 km of the facilities.⁶¹ In the analysis, we evaluated the distribution of HAP-related cancer and noncancer risks from the Coal- and Oil-Fired EGU source category across different demographic groups within the populations living near facilities. The results of the Coal- and Oil-Fired EGU source category demographic analysis indicate that emissions from the source category expose approximately 193,000 people to a cancer risk at or above 1-in-1 million and no people to a chronic noncancer TOSHI greater than 1. There are only four facilities in the source category with cancer risk at or above 1-in-1 million, and all of them are located in Puerto Rico. Consequently, all of the percentages of the at-risk population in each demographic group associated with the Puerto Rican population are much higher than their respective nationwide percentages, and those not associated with Puerto Rico are much lower than their respective nationwide percentages. The methodology and the results of the demographic analysis are presented in the technical report titled *Risk and Technology Review—Analysis of Demographic Factors for Populations Living Near Coal- and Oil-Fired EGUs Regulated Under the Mercury and Air Toxics Standards (MATS)*, available in Docket ID No. EPA-HQ-OAR-2018-0794.

⁶¹ See technical report titled *Risk and Technology Review—Analysis of Demographic Factors for Populations Living Near Coal- and Oil-Fired EGUs Regulated Under the Mercury and Air Toxics Standards (MATS)*, May 23, 2018; Docket ID Item No. EPA-HQ-OAR-2018-0794-0012.

G. What analysis of children's environmental health did we conduct?

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. This action's health and risk assessments are summarized in section V.A of this preamble and are further documented in sections V and VI of the proposed rule (84 FR 2670, February 7, 2019), and the risk document for the final rule,⁶² available in the docket for this action.

VII. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at <https://www.epa.gov/laws-regulations/laws-and-executive-orders>.

A. Executive Orders 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a significant regulatory action that was submitted to OMB for review because it is likely to raise novel legal or policy issues. Any changes made in response to OMB recommendations have been documented in the docket. The EPA does not project any potential costs or benefits associated with this action.

B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This action is not considered an Executive Order 13771 regulatory action. There are no quantified cost estimates for this final rule because it will not result in any changes in costs.

C. Paperwork Reduction Act (PRA)

This action does not impose any new information collection burden under the PRA. OMB has previously approved the information collection activities contained in the existing regulations and has assigned OMB control number 2060-0567. This action does not impose an information collection burden because the EPA is not making any changes to the information collection requirements.

D. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a

⁶² See document titled *Residual Risk Assessment for the Coal- and Oil-Fired EGU Source Category in Support of the 2019 Risk and Technology Review Final Rule*, available in Docket ID No. EPA-HQ-OAR-2018-0794.

substantial number of small entities under the RFA. This action will not impose any requirements on small entities. The EPA does not project any potential costs or benefits associated with this action.

E. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local, or tribal governments or the private sector.

F. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. It would neither impose substantial direct compliance costs on tribal governments, nor preempt Tribal law. Thus, Executive Order 13175 does not apply to this action.

Consistent with the EPA Policy on Consultation and Coordination with Indian Tribes, the EPA consulted with tribal officials during the development of this action. A summary of the consultations follows.

On April 2, 2019, the EPA held a consultation with the Blue Lake Rancheria. The tribe indicated that they did not support the 2019 Proposal for several reasons. The tribe expressed concern that the EPA’s proposed finding that it is not appropriate and necessary to regulate HAP emissions from coal- and oil-fired EGUs under section 112 of the CAA would remove the legal foundation for the MATS rule. The tribe added that the EPA has neither the authority nor the obligation to remove coal- and oil-fired EGUs from the CAA section 112(c) source category list or to rescind MATS. The tribe noted that the costs of compliance for EGUs subject to MATS have already been incurred, and that those investments could be in vain if MATS is rescinded. In addition, the proposed finding will likely lead to litigation which would be a waste of taxpayer dollars, according to the tribe.

The Blue Lake Rancheria stated that the EPA’s cost-benefit analysis should not exclude co-benefits, and that the analysis should include healthcare costs and environmental remediation costs. The tribe discussed the health effects of exposure to mercury and noted that the RTR shows that the risks are acceptable with MATS in place; that margin of safety would be eliminated if the rule is rescinded. The tribe also expressed concern that eliminating the MATS rule will prolong the use of coal-fired power plants, which would lead to increased greenhouse gas emissions.

The EPA held a consultation with the Fond du Lac Band of Lake Superior Chippewa on April 3, 2019. The tribe also did not support the proposed finding that regulation of HAP emissions from coal- and oil-fired EGUs is not appropriate and necessary. The tribe stated that studies have shown that mercury is harmful and should be controlled, and that the EPA does not have the authority to delist EGUs from regulation under CAA section 112. According to the tribe, co-benefits from reductions of non-HAP pollutants should be considered equally with benefits from reductions of HAP. The tribe asked whether the EPA had considered factors specific to their tribe in the EPA’s analysis, such as their higher consumption of fish due to cultural and subsistence reasons and the prevalence of wetlands and ditches on the reservation, which are mercury sinks. The tribe also questioned whether impacts to wildlife such as otters, loons, and eagles were considered.

Responses to these comments and others received are available in the RTC document,⁶³ available in the docket for this action.

H. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. This action’s health and risk assessments are contained in sections V and VI of the proposed rule (84 FR 2670, February 7, 2019), and the risk

document for the final rule, available in the docket for this action (see document titled *Residual Risk Assessment for the Coal- and Oil-Fired EGU Source Category in Support of the 2019 Risk and Technology Review Final Rule*, available in Docket ID No. EPA–HQ–OAR–2018–0794).

I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not a “significant energy action” because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. This action is not anticipated to have impacts on energy supply decisions for the affected electric utility industry.

J. National Technology Transfer and Advancement Act (NTTAA)

This action does not involve technical standards.

K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, and/or indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). The documentation for this decision is contained in section VI.F of this preamble, section VI.A of the proposed rule (84 FR 2670, February 7, 2019), and the technical report, *Risk and Technology Review—Analysis of Demographic Factors for Populations Living Near Coal- and Oil-Fired EGUs Regulated Under the Mercury and Air Toxics Standards (MATS)*, available in the docket for this action (see Docket ID Item No. EPA–HQ–OAR–2018–0794–0012).

L. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

Dated: April 16, 2020.

Andrew Wheeler,
 Administrator.

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⁶³ See document titled *Final Supplemental Finding and Risk and Technology Review for the NESHAP for Coal- and Oil-Fired EGUs Response to Public Comments on February 7, 2019 Proposal*, available in Docket ID No. EPA–HQ–OAR–2018–0794.