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40 CFR Part 63
Supplemental Finding That It Is Appropriate and Necessary To Regulate Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA–HQ–OAR–2009–0234; FRL–9945–33–OAR]

RIN 2060–AS76

Supplemental Finding That It Is Appropriate and Necessary To Regulate Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final supplemental finding.

SUMMARY: This action responds to the U.S. Supreme Court decision in *Michigan* v. *EPA,* 135 S. Ct. 2699 (2015), and explains how the Environmental Protection Agency (EPA) has taken cost into account in evaluating whether it is appropriate and necessary to regulate coal- and oil-fired electric utility steam generating units (EGUs) under section 112 of the Clean Air Act (CAA). The EPA requested comment on all aspects of its approach to considering cost through a proposed supplemental finding and on a companion Legal Memorandum available in the rulemaking docket. After consideration of public comments, the EPA, in this final supplemental finding, concludes that a consideration of cost does not cause us to change our determination that regulation of hazardous air pollutant (HAP) emissions from coal- and oil-fired EGUs is appropriate and necessary and that EGUs are, therefore, properly included on the CAA section 112(c) list of sources that must be regulated under CAA section 112(d).

DATES: This final supplemental finding is effective on April 25, 2016.

ADDRESSES: The EPA has an established docket for this action under Docket ID No. EPA–HQ–OAR–2009–0234 (National Emission Standards for Hazardous Air Pollutants for Coal- and Oil-fired Electric Utility Steam Generating Units). All documents in the docket are listed on the *www.regulations.gov* Web site. Although listed in the index, 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, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *www.regulations.gov* or in hard copy at the EPA Docket Center (EPA/DC), Room 3334, EPA WJC West Building, 1301 Constitution Ave. NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the Air Docket is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: Dr. Nick Hutson, Energy Strategies Group, Sector Policies and Programs Division (D243–01), U.S. EPA, Research Triangle Park, NC 27711; telephone number (919) 541–2968, facsimile number (919) 541–5450; email address: *hutson.nick@epa.gov*.

SUPPLEMENTARY INFORMATION:

Organization of This Document. The information presented in this notice is organized as follows:

I. General Information

A. Executive Summary

The EPA is taking this final action in response to (1) the U.S. Supreme Court (Supreme Court) decision in *Michigan* v. *EPA,* 135 S. Ct. 2699 (2015), which held that the EPA must consider cost in evaluating whether it is appropriate and necessary to regulate coal- and oil-fired EGUs under CAA section 112, and (2) the comments received on the agency's proposal.

After evaluating cost reasonableness using several different metrics, the Administrator has, in accordance with her statutory duty under CAA section 112(n)(1)(A), weighed cost against the previously identified advantages of regulating HAP emissions from EGUs—including the agency's prior conclusions about the significant hazards to public health and the environment associated with such emissions and the volume of HAP that would be reduced by regulation of EGUs under CAA section 112.

In evaluating the costs of the Mercury and Air Toxics Standards (MATS), the EPA uses several cost metrics specific to the power sector to determine whether the costs of MATS are reasonable. The evaluations across each of the different metrics reveal that the cost of complying with MATS—compared to historical annual revenues, annual capital expenditures, and impacts on retail electricity prices—is well within the range of historical variability. The EPA further finds that the power sector is able to comply with the rule's requirements while maintaining its ability to perform its primary and unique function—the generation, transmission, and distribution of reliable electricity at reasonable cost to consumers. The EPA thus concludes that under every metric examined, the cost of MATS is reasonable and that no new information provided during the public comment period demonstrates otherwise.

In exercising the discretion granted to her under CAA section 112(n)(1)(A), the Administrator has taken numerous factors into account, in addition to the consideration of the cost of regulation, including Congress's concern about the hazardous nature of these pollutants, the wealth of public health and environmental effects research examined under the agency's prior findings showing substantial risks from

the emission of HAP from EGUs, and the fact that the power sector is the largest remaining anthropogenic source of many HAP in the U.S. The Administrator finds in this final action that, in her judgment, after determining under each metric examined that the cost of MATS is reasonable, and weighing this consideration against the many identified advantages to regulation, it clearly remains appropriate and necessary to regulate HAP emissions from EGUs.

The Administrator's approach to making her determination is fully consistent with the dictates of the statute and with the *Michigan* decision because it reflects her consideration of the full range of factors relevant to making a decision under CAA section 112(n)(1)(A) regarding whether it is appropriate to regulate HAP emissions from EGUs under CAA section 112. She prefers—and the CAA supports—this approach because, in addition to cost, it places value on the statutory goals of achieving prompt, permanent, and ongoing reductions in significant volumes of HAP emissions and on the important, and, in many cases, unquantifiable advantages of reducing the significant hazards to public health posed by such emissions, including addressing the risk to the most exposed and most sensitive members of society.

The EPA also presents in this action a second independent approach that supports the appropriate and necessary determination as informed by consideration of the cost of MATS: consideration of a formal benefit-cost analysis. Although the EPA does not view formal benefit-cost analysis as required to support the appropriate finding, the agency had performed such an analysis for the regulatory impacts analysis (RIA)[1] for the final MATS rule. In this final action—as in the proposal—the EPA finds that the analysis demonstrates that the benefits (monetized and non-monetized) of the rule are substantial and far outweigh the costs. The benefit-cost analysis, thus, fully and independently supports the finding that it is appropriate to regulate HAP emissions from EGUs.

The EPA provided an opportunity for public comment on both approaches through a proposed supplemental finding[2] published on December 1, 2015 and on a supporting Legal Memorandum.[3] The EPA received numerous comments both supporting and opposing the proposed approaches and the agency has considered all of these comments.

Based on all of these considerations, the Administrator finds that both approaches—the preferred approach and the alternative benefit-cost analysis in the MATS RIA—support her determination that consideration of cost does not cause her to alter the previous conclusion that regulation of HAP emissions from EGUs is appropriate and necessary. Therefore, in this final notice, the Administrator affirms that it is appropriate and necessary to regulate coal- and oil-fired EGUs under CAA section 112 and that these sources are properly listed as an affected source category under CAA section 112(c).

B. Does this Action Apply to Me?

The regulated categories and entities potentially affected by this final supplemental finding are shown below in Table 1.

TABLE 1—POTENTIALLY AFFECTED REGULATED CATEGORIES AND ENTITIES

Category	NAICS Code[1]	Examples of potentially affected entities
Industry	221112	Fossil fuel-fired electric utility steam generating units.
Federal government	[2] 221122	Fossil fuel-fired electric utility steam generating units owned by the federal government.
State/local/tribal government	[2] 221122	Fossil fuel-fired electric utility steam generating units owned by municipalities.
	921150	Fossil fuel-fired electric utility steam generating units in Indian country.

[1] North American Industry Classification System (NAICS).
[2] Federal, state, or local government-owned and operated establishments are classified according to the activity in which they are engaged.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities that may be affected by this action. If you have any questions regarding the applicability of this action to a particular entity, consult either the air permitting authority for the entity or your EPA Regional representative as listed in 40 CFR 60.4 or 40 CFR 63.13 (General Provisions).

C. Where can I get a copy of this document?

In addition to being available in the docket, an electronic copy of this final action will also be available on the World Wide Web (WWW). Following signature, a copy of this final action will be posted at the following address: *http://www3.epa.gov/mats/.*

D. Judicial Review

Under section 307(b)(1) of the CAA, judicial review of this final supplemental finding is available only by filing a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit Court) by June 24, 2016. Moreover, under section 307(b)(2) of the CAA, the requirements established by this final supplemental finding may not be challenged separately in any civil or criminal proceedings brought by the EPA to enforce these requirements.

In the proposal, the EPA provided notice that CAA section 307(d) was applicable to this action and has followed the requirements of that subsection. 80 FR 75042. CAA section 307(d) establishes procedural requirements specific to certain enumerated rulemakings under the CAA, and CAA section 307(d)(1)(V) provides for the extension of these procedural requirements to ''such other actions as the Administrator may determine.'' Section 307(d)(7)(B) of the CAA further provides that ''[o]nly 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 during judicial review.'' This section also provides a mechanism mandating the EPA to convene a proceeding for reconsideration ''[i]f the person raising an objection can demonstrate to the EPA 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

[1] U.S. EPA. 2011. *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards.* EPA–452/R–11–011. Docket ID No. EPA–HQ–OAR–2009–0234–20131.

[2] 80 FR 75025.

[3] ''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)'' (Legal Memorandum). Docket ID No. EPA–HQ–OAR–2009–0234–20519.

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, EPA WJC North 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. Overview and Background on the Proposed Supplemental Finding

A. Overview

On June 29, 2015, the Supreme Court ruled in *Michigan* v. *EPA* that the agency had erred when it failed to take cost into account in evaluating whether it is appropriate to regulate HAP emissions from coal- and oil-fired EGUs. On December 1, 2015, in response to the *Michigan* ruling, the EPA published the proposed supplemental finding and companion Legal Memorandum. In the proposed supplemental finding, the EPA proposed to determine that including a consideration of cost does not cause the agency to alter its previous conclusion that regulation of HAP emissions from EGUs is appropriate and necessary.

In Section II.B of this final supplemental finding, the EPA provides background information regarding the 2000 appropriate and necessary finding and the 2012 affirmation. Section II.C provides a summary of the proposed consideration of cost, explaining that, in the preferred approach, the EPA evaluated the cost of MATS and compared those costs to other metrics relevant to the power sector. In evaluating those cost metrics, the EPA proposed to determine that the MATS compliance costs are reasonable and that the power sector is able to comply with the rule's requirements while retaining its ability to perform its primary and unique function—the generation, transmission, and distribution of reliable electricity at a reasonable cost to consumers. The Administrator then weighed this evaluation of cost against previously identified advantages of regulation—such as addressing the significant hazards to public health and the environment posed by HAP emissions from EGUs. The EPA also considered the formal benefit-cost analysis from the final MATS RIA that showed the benefits (monetized and non-monetized) of the rule are substantial and far outweigh the costs. The EPA then proposed to find that consideration of such costs does not cause the agency to alter its previous finding that regulation of HAP emissions from EGUs is appropriate and necessary.

The EPA received numerous public comments on the proposed supplemental finding. In Section III.A below, the EPA explains how consideration of the public comments resulted in the addition of a limited analysis that reinforces the final supplemental finding. In Section III.B, we explain the basis for the final action, and, in Section III.C we affirm the proposed finding that a consideration of cost does not cause the EPA to change its conclusion that regulation of HAP emissions from coal- and oil-fired EGUs is appropriate and necessary and that EGUs are, therefore, properly included on the CAA section 112(c) list of sources that must be regulated under CAA section 112(d).

In Section IV below, the EPA provides a summary of selected significant comments and the agency's response to those comments. The Response to Comments (RTC) document [4] for this action summarizes all comments the EPA received. The RTC document also presents responses to significant comments or citations to Section IV below in the instances where relevant comment responses are presented in the preamble.

B. 2000 Finding and 2012 Affirmation

On December 20, 2000, the EPA determined, 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). December 2000 Finding; 65 FR 79825. The appropriate and necessary finding was based primarily on consideration of the *Utility Study Report to Congress* (Utility Study),[5] the *Mercury Study Report to Congress* (Mercury Study),[6] the National Academy of Sciences' *Toxicological Effects of Methylmercury* (NAS Study),[7] and mercury data collected from coal-fired EGUs after completion of the studies. 65 FR 79826. The EPA found that mercury is a significant hazard to public health, and EGUs are the largest domestic source of mercury emissions. The EPA also identified control strategies that would effectively reduce HAP emissions from U.S. EGUs. The EPA found that implementation of other requirements under the CAA would not adequately address the significant public health and environmental hazards arising from HAP emissions from U.S. EGUs. After consideration of this information, the EPA found that it was appropriate to regulate HAP emissions from EGUs because such emissions pose significant hazards to public health and the environment and also because there were available controls to effectively reduce mercury and other HAP emissions from EGUs. 64 FR 79825, 79830. The EPA found that it was necessary to regulate HAP emissions from EGUs because implementation of the other requirements of the CAA would not adequately address the serious hazards to public health and the environment posed by HAP emissions from EGUs and because CAA section 112 is the authority intended to regulate HAP emissions from stationary sources. *Id.* See also 76 FR 24984–20985 (for further discussion of conclusions supporting the 2000 finding).

In 2005, the EPA issued the Section 112(n) Revision Rule (70 FR 15994) that revised the agency's December 2000 appropriate and necessary finding and removed coal- and oil-fired EGUs from the CAA section 112(c) source category list. The agency also promulgated the Clean Air Mercury Rule (CAMR) which established CAA section 111 standards of performance for mercury emissions from EGUs. Several groups challenged these actions and on February 8, 2008, the D.C. Circuit Court vacated both the Section 112(n) Revision Rule and CAMR holding that the EPA had failed to comply with the requirements of CAA section 112(c)(9) for delisting source categories. *New Jersey* v. *EPA,* 517 F.3d 574 (D.C. Cir. 2008).

In May 2011, in conjunction with the proposed MATS, the EPA conducted additional technical analyses to reaffirm the appropriate and necessary finding, including peer-reviewed risk assessments on human health effects

[4] Response to Comments (RTC) for Supplemental Finding that it is Appropriate and Necessary to Regulate Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units. Available in the rulemaking docket. Docket ID EPA–HQ–OAR–2009–0234.

[5] U.S. EPA. 1998. *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units—Final Report to Congress.* EPA–453/R–98–004a. February. Docket ID No. EPA–HQ–OAR–2009–0234–3052.

[6] U.S. EPA. 1997. *Mercury Study Report to Congress.* EPA–452/R–97–003. December. Docket ID No. EPA–HQ–OAR–2009–0234–3054.

[7] National Research Council. 2000. *Toxicological Effects of Methylmercury.* Committee on the Toxicological Effects of Methylmercury, National Academy Press, Washington, DC. Docket ID No. EPA–HQ–OAR–2009–0234–3055.

associated with mercury and non-mercury HAP emissions from EGUs, focusing on risks to the most exposed and sensitive individuals in the population. These analyses found that mercury and non-mercury HAP emissions from EGUs remain a significant public health hazard and that EGUs are by far the largest U.S. anthropogenic source of mercury, selenium, hydrogen chloride, and hydrogen fluoride emissions, and a significant source of other metallic HAP emissions including arsenic, chromium, and nickel.[8]

Between the proposed and final MATS rule, the EPA conducted peer reviews of the Mercury Risk Assessment [9] and the approach for estimating inhalation cancer risk from two non-mercury metal HAP, and the agency also changed the input data for the non-mercury HAP risk assessment based on new data and information obtained during the public comment period. The revised Mercury Risk Assessment [10] estimated that up to 29 percent of modeled watersheds potentially have sensitive populations at risk from exposure to mercury from U.S. EGUs, including up to 10 percent of modeled watersheds where deposition from U.S. EGUs alone leads to potential exposures that exceed the level above which there is increased risk of adverse health effects (*i.e.,* the reference dose). *See, e.g.,* 77 FR 9310–6. In addition, the revised inhalation risk assessment for non-mercury HAP [11] of 16 facilities estimated a lifetime cancer risk [12] for an oil-fired EGU facility of 20-in-1 million, five coal-fired EGU facilities with cancer risks greater than 1-in-1 million, and one coal-fired facility with cancer risks of 5-in-1 million. *See, e.g.,* 77 FR 9317–9. Further, qualitative analyses on ecosystem effects found that mercury emissions from U.S. EGUs contribute to adverse impacts on fish-eating birds and mammals and that acid gases contribute to environmental acidification and chronic non-cancer (respiratory) toxicity. *See, e.g.,* 77 FR 9362–3.

Moreover, the EPA concluded that in 2016, after implementation of other provisions of the CAA, HAP emissions from U.S. EGUs would still reasonably be anticipated to pose hazards to public health. *See, e.g.,* 77 FR 9362–3. Finally, the EPA stated that the only way to ensure permanent reductions in HAP emissions from U.S. EGUs and the associated risks to public health and the environment is through standards set under CAA section 112. 77 FR 9363.

Based on the agency's updated analyses, a consideration of the peer reviews of the analyses, and public comments, the EPA affirmed the findings in the February 2012 final rule (77 FR 9304) that mercury and non-mercury HAP emissions from U.S. EGUs pose hazards to public health and found that it remains appropriate to regulate U.S. EGUs under CAA section 112. The EPA also concluded, at that time, that it remains appropriate to regulate U.S. EGUs under CAA section 112 because of the magnitude of mercury and non-mercury HAP emissions, environmental effects of mercury and certain non-mercury HAP emissions, and the availability of controls to reduce HAP emissions from EGUs. In addition, the EPA concluded that the hazards to public health from mercury and non-mercury HAP emissions from U.S. EGUs are reasonably anticipated to remain after imposition of the requirements of the CAA. The same is true for hazards to the environment. Thus, the agency confirmed that it is necessary to regulate U.S. EGUs under CAA section 112. 77 FR 9311.

After MATS was promulgated, industry, states, environmental organizations, and public health organizations challenged many aspects of the EPA's appropriate and necessary finding and the final MATS rule in the D.C. Circuit Court, and the Court denied all challenges. *White Stallion Energy Center* v. *EPA,* 748 F.3d 1222 (D.C. Cir. 2014). Some industry and state petitioners sought further review of the final MATS rule, and the Supreme Court granted *certiorari* to determine whether the EPA erred when it concluded that the appropriate and necessary finding under CAA section 112(n)(1)(A) could be made without consideration of cost. On June 29, 2015, the Supreme Court ruled that the EPA acted unreasonably when it determined cost was irrelevant to the appropriate and necessary finding. *Michigan* v. *EPA,* 135 S. Ct. 2699 (2015). Specifically, the Supreme Court held that the agency must consider cost before deciding whether regulation under CAA section 112 is appropriate and necessary, noting also that it will be up to the agency ''to decide, within the limits of reasonable interpretation, how to account for cost.'' *Michigan,* 135 S. Ct. at 2711.

C. Proposed Supplemental Finding

In response to the Supreme Court's direction, the EPA proposed two different approaches to incorporate cost into the appropriate and necessary finding. 80 FR 75025. The first—which the EPA identified as its preferred approach—evaluated the cost estimates in the RIA for the final MATS rule using several different metrics and weighed these costs against the previously identified advantages of regulating HAP emissions from EGUs—including the agency's prior conclusions about the significant hazards to public health and the environment associated with such emissions and the volume of HAP that would be reduced by regulation of EGUs under CAA section 112. In a second independent approach, the EPA proposed consideration of the formal benefit-cost analysis [13] in the RIA for the

[8] Specifically, the EPA estimated that in 2005 (the most recent inventory year available during the MATS rulemaking), U.S. EGUs emitted approximately 50 percent of total domestic anthropogenic mercury emissions, 62 percent of total arsenic emissions, 39 percent of total cadmium emissions, 22 percent of total chromium emissions, 82 percent of total hydrogen chloride emissions, 62 percent of total hydrogen fluoride emissions, 28 percent of total nickel emissions, and 83 percent of total selenium emissions. Docket ID No. EPA–HQ–OAR–2009–0234–19914.

[9] U.S. EPA. 2011. *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. November. EPA–452/R–11–009. Docket ID. EPA–HQ–OAR–2009–0234–3057.

[10] U.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. November. EPA–452/R–11–009. Docket ID No. EPA–HQ–OAR–2009–0234–19913.

[11] U.S. EPA. 2011. *Supplement to Non-mercury Case Study Chronic Inhalation Risk Assessment for the Utility MACT Appropriate and Necessary Analysis.* Office of Air Quality Planning and Standards. November. Docket ID No. EPA–HQ–OAR–2009–0234–19912.

[12] As described in the preamble to the proposed MATS (76 FR 25011), the non-mercury risk assessments calculated the maximum individual risk (MIR) for each facility as the cancer risk associated with a continuous lifetime (24 hours per day, 7 days per week, and 52 weeks per year for a 70-year period) exposure to the maximum concentration at the centroid of an inhabited census block.

[13] In this supplemental finding, 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. In other words, it is a determination of whether the willingness to pay for an action by those advantaged by it exceeds the willingness to pay to avoid the action by those disadvantaged by it. Measuring willingness to pay in a common metric of economic value, like dollars, is called monetization, and it allows for such comparisons across individuals. Assuming that all consequences can be monetized, actions with positive net benefits (*i.e.,* benefits exceed costs) improve economic efficiency. When there are technical limitations that prevent certain benefits or costs that may be of significant magnitude from being quantified or monetized, then information is provided describing those potentially important non-monetized benefits or costs. This usage is consistent with the definition of a benefit-cost

Continued

final MATS rule, which demonstrates that the benefits (monetized and non-monetized) of the rule are substantial and far outweigh the costs. Each of these approaches is discussed further below.

In the preferred approach, the EPA considered whether the cost of compliance with MATS is reasonable, and whether a consideration of such costs, when weighed against, among other things, the substantial hazards to public health and the environment posed by HAP emissions from power plants, causes the agency to alter its conclusion that regulation is appropriate and necessary. The EPA explained that it preferred this approach to a formal benefit-cost analysis given the statutory objectives of CAA section 112, in particular Congress' determination that HAP emissions are inherently harmful, and the instruction from Congress to protect the most sensitive populations from those harms. See Legal Memorandum at 6–20. The EPA found that CAA section 112(n)(1)(A)'s emphasis on the required studies supported its interpretation that while cost is an important factor that it must consider in making the appropriate and necessary finding, it is one of several factors that must be considered and the statutory text does not support a conclusion that cost should be the predominant or overriding factor. *See id.* at 11–15. The EPA's preferred approach to considering cost allows the Administrator to weigh the full range of factors relevant to making a determination under CAA section 112(n)(1)(A) of whether it is appropriate and necessary to regulate HAP emissions from EGUs. Moreover, because the Supreme Court's holding did not disturb the scientific assessments and conclusions made in the original appropriate and necessary finding, many of which were challenged and upheld by the D.C. Circuit in *White Stallion,* the Administrator concluded that the task on remand was to determine whether a consideration of cost caused her to alter her prior conclusion that it was appropriate to regulate HAP emissions from EGUs under CAA section 112. See 80 FR 75038; Legal Memorandum at 20.

The agency further explained that, as a check on the conclusion that the cost of MATS is reasonable, the EPA considered the power industry's ability to comply with MATS and still perform its primary and unique function—to provide a reliable source of electricity at a reasonable cost to consumers.

Specifically, the EPA considered several metrics to evaluate whether the estimated cost of compliance with MATS is reasonable for the power sector.[14] First, the EPA evaluated the annual compliance costs as a percent of the revenue from the power sector's annual retail electricity sales.[15] The EPA found that the $9.6 billion annual cost of MATS is a small fraction of the revenue from the sector's annual retail sales, which ranged from $277.2 billion in 2000 to a peak of $356.6 billion in 2008.[16] *See* 80 FR 75033, Table 2. Thus, the projected annual cost for MATS represents between 2.7 and 3.5 percent of annual revenues from electricity sales from 2000 to 2011—a small fraction of the value of overall sales.

A second way the EPA evaluated cost was to compare the annual capital expenditures due to MATS compliance to the range of variation in the power sector's annual capital expenditures between 2000 and 2011. As noted in the proposed supplemental finding, this comparison is a relevant metric because capital costs represent largely irreversible investments that must be paid off regardless of future economic conditions. Moreover, additional capital expenditures needed to comply with MATS represented about 26 percent of the total annual compliance cost projected for 2015, further emphasizing the importance of considering capital expenditures. Based on two different sources of data, capital expenditures for the electric power sector generally increased from 2000 to 2011. *See* 80 FR 75034, Table 3. Despite the generally increasing trend, the data show substantial year-to-year variability in industry capital expenditures. The EPA found that the incremental capital expenditures of $2.4 billion estimated to be required for MATS compliance in 2015 represent a small fraction—about 3.0 percent—of the power sector's overall capital expenditures in recent years and are well within the range of annual variability between 2000 and 2011. Even if power sector-level capital expenditures were to decline to 2004 levels, the lowest level observed during the 2000 to 2011 period, the incremental capital expenditures estimated for MATS would represent about 5.9 percent, a level we also find to be reasonable for this sector.

The third metric the EPA evaluated was the impact of MATS compliance cost on the retail price of electricity. Potential changes in retail electricity prices can be indicative of the ''cost'' of MATS, in this instance to consumers specifically, as opposed to the compliance cost to the power sector, which is borne collectively by EGU owners and electricity consumers. The MATS RIA estimated that relatively small changes in the average price of electricity would result from MATS compliance. The projected impact of MATS on electricity rates was 0.3 cents/kWh or 3.1 percent. Meanwhile, between 2000 and 2011, changes in national average retail prices ranged from −0.13 cents/kWh to as high as 0.52 cents/kWh. *See* 80 FR 75035, Table 4. Based on this analysis, the EPA found that the estimated MATS retail price impact is well within the range of price fluctuations in recent years.

The agency then proposed that each of these three metrics independently demonstrates that the MATS compliance costs are reasonable, and that each metric supports the EPA's proposed determination that weighing this consideration of cost against the prior conclusions reached by the agency does not alter the previous finding that it is appropriate to regulate HAP emissions from EGUs.

In addition to the analysis summarized above, the EPA recognized it was important to consider the ability of the power sector to comply with MATS and maintain a reliable supply of electricity. The agency's compliance modeling indicated that additional coal-fired capacity projected to retire as a result of MATS represented EGUs that are, on average, older and smaller units that are less frequently used. *See* 80 FR 75036, Table 6. The analysis indicated that the vast majority of the generation capacity directly affected by MATS requirements would be able to absorb

analysis used in the economics literature and the EPA's *Guidelines for Preparing Economic Analyses* (''*Guidelines*'').''

U.S. EPA. 2010. *Guidelines for Preparing Economic Analyses.* EPA–240–R–10–001. National Center for Environmental Economics, Office of Policy. Washington, DC. December. Available at *http://yosemite.epa.gov/ee/epa/eerm.nsf/vwAN/EE-0568-50.pdf/$file/EE-0568-50.pdf.* Docket ID No. EPA–HQ–OAR–2009–0234–20503.

[14] As explained in the proposed Supplemental Finding and described in the final MATS RIA and supporting materials for the RIA, the $9.6 billion compliance cost is an estimate of the change in electricity power generation costs between a base case without MATS and a policy case with MATS. These compliance costs represent a projection of the increase in expenditures by EGUs required to serve a particular level of electricity demand as a result of MATS. The compliance cost includes capital, fuel, and other variable and operating costs and was projected in the final MATS RIA to be $9.6 billion (2007 dollars) in 2015. The costs may be borne by electricity producers, or passed along to electricity consumers in the form of higher electricity prices.

[15] In the proposed supplemental finding, the analysis of annual compliance costs as a percent of the revenue from the power sector's annual retail electricity sales was referred to as a ''sales test.''

[16] Unless otherwise noted, all dollar amounts reported in this section and elsewhere in this notice are expressed in 2007-dollar equivalents to be directly comparable to the estimates in the 2011 final MATS RIA, which were expressed in 2007 dollars.

the anticipated compliance costs and remain operational. In addition, an analysis of the impacts of expected retirements on electric reliability found that reserve margins could be maintained over a 3-year MATS compliance period, indicating that the power sector would be able to comply with MATS while maintaining the capacity necessary to meet projected electricity demands. This determination that reliability and resource adequacy would not be adversely affected provided further support for the EPA's proposed determination that the cost of MATS is reasonable.

The EPA then weighed the reasonable cost of the rule against a number of other factors, including the agency's prior conclusions about the significant hazards to public health and the environment, as discussed above in Section II.B, and the volume of HAP that would be reduced by regulation of EGUs under CAA section 112. Keeping in mind Congress' statutory goals in enacting CAA section 112, the EPA proposed to find that a consideration of the cost of compliance with MATS did not outweigh the rule's many advantages and, therefore, does not cause the EPA to alter the prior determination that it is appropriate and necessary to regulate EGUs under CAA section 112.

In the proposed supplemental finding, the EPA also presented a second independent basis for concluding that consideration of cost supports affirmation of the finding that it is appropriate and necessary to regulate HAP emissions from coal- and oil-fired EGUs. The EPA explained that the formal benefit-cost analysis in the RIA for the final MATS rule, although not required to support the appropriate finding, also demonstrates that the benefits (monetized and non-monetized) of MATS are substantial and far outweigh the costs. Specifically, the EPA estimated that the final MATS 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 in addition to many categories of unquantified benefits in comparison to the projected $9.6 billion in annual costs. The benefit-cost analysis thus supports the finding that it is appropriate to regulate HAP emissions from EGUs.

Using both of these independent approaches, the EPA proposed to find that it remains appropriate to regulate HAP emissions from EGUs after considering costs. As such, the EPA proposed to find that including a consideration of cost does not alter the agency's previous determination that it is appropriate to regulate HAP emissions from EGUs under CAA section 112 and that coal- and oil-fired EGUs are properly listed pursuant to CAA section 112(c).

III. Final Supplemental Finding and Affirmation

A. Supplemental Analyses Conducted in Response to Comments

A number of groups representing states, tribes, industries, environmental organizations, health organizations, and others submitted comments on the proposed supplemental finding. The EPA has considered the comments and provided detailed responses to the significant comments either below in Section IV of this final notice or in the RTC document for this action.

The EPA has taken all the submitted comments into consideration in the preparation of this final supplemental finding. The EPA received comments that were both supportive and critical of both proposed approaches to considering cost. The EPA has carefully evaluated these comments and responded to them, as outlined in detail in Section IV below.

The EPA did not receive any public comments that caused the agency to conclude that the interpretation of the statute or the approaches for consideration of cost that were detailed in the proposed action were in error. Therefore, in this final action, the EPA continues to rely on the analyses contained in the proposed supplemental finding and in the companion Legal Memorandum. Specifically, in this final consideration of cost, the EPA continues to rely on the ''Consideration of Cost to the Power Sector'' metrics discussed in Section IV.A of the proposed supplemental finding. 80 FR 75032. These metrics are summarized above in Section II.C. The metrics include an evaluation of the cost of MATS compliance in comparison to the power sector's revenues from retail sales of electricity. In addition, the EPA continues to rely on the metric comparing the impact of MATS on the retail price of electricity to historical fluctuations of the average retail price of electricity. The EPA also stands by the evaluation of resource adequacy that was presented in the final MATS rulemaking and in the proposed supplemental finding. We explain here in this final notice—and in the RTC document—the decision not to alter these analyses for this final action.

While the agency has not changed its approaches to consideration of cost, the EPA has, in response to comments, supplemented the proposed metrics by incorporating additional information considering annual operating expenses to this industry. Specifically, the EPA added information on historical total production expenditures to the historical total capital expenditures in order to estimate total capital and production expenditures for the power sector from 2000 to 2011. The agency conducted this analysis to provide additional perspective to the projected cost information by looking at a broader range of power industry costs beyond the capital cost comparison conducted at proposal. The additional analysis reinforces the EPA's conclusion that the cost of compliance with MATS is reasonable.

Consistent with the proposal's focus on sector-level analysis, the EPA obtained historical information on power sector production costs. These production costs, which include operation and maintenance costs, fuel costs, and fixed costs were obtained from ABB Velocity Suite, a private sector firm that provides data and analytical services for the energy sector. The production costs were added to the two separate estimates of annual capital expenditures that were provided in the proposed supplemental finding (*See* Table 3, 80 FR 75034) in order to provide an estimate of historical trends in total capital and production costs faced by the power sector.[17] The EPA then, as it had done in the proposal, compared year-to-year changes in the total cost estimates to the projected total compliance cost estimate for the final MATS rule in 2015. The total production costs along with the electric power sector's capital expenditures are provided below in Table 2.

[17] For power sector-level capital expenditures, the EPA relies on two sets of information: The U.S. Census Bureau's Annual Capital Expenditures Survey and SNL, a private sector firm that provides data and analytical services. As noted in the proposed supplemental finding, while each dataset has limitations, the estimates from each correspond to one another reasonably well. However, we present both sets of information to better depict capital expenditures in the power sector.

TABLE 2—TOTAL CAPITAL AND PRODUCTION EXPENDITURES FOR THE ELECTRIC POWER SECTOR, 2000 TO 2011

[Billions 2007 dollars]

Year	Capital expenditures (SNL-based) [1]	Capital expenditures (U.S. census-based) [2]	Total production expenditures (velocity suite-based) [3]	Total expenditures (with SNL-based capital expenditures)	Change from previous year	Total expenditures (with U.S. census-based capital expenditures)	Change from previous year
2000	51.8	62.5	102.3	154.2		164.9	
2001	70.1	85.9	106.9	177.0	22.8	192.9	28.0
2002	56.4	66.4	93.7	150.1	−26.9	160.0	−32.9
2003	43.8	52.7	105.2	149.0	−1.1	157.9	−2.2
2004	40.4	45.0	111.6	152.0	3.0	156.6	−1.3
2005	46.7	50.0	133.6	180.2	28.2	183.5	27.0
2006	57.6	61.6	127.5	185.0	4.8	189.1	5.6
2007	66.9	73.9	133.5	200.4	15.3	207.4	18.3
2008	78.1	83.5	147.6	225.7	25.4	231.1	23.7
2009	76.6	87.9	117.3	193.9	−31.8	205.2	−25.9
2010	75.1	79.8	126.1	201.2	7.3	205.9	0.7
2011	79.6	79.2	121.3	200.9	−0.3	200.5	−5.4

[1] Source: SNL, accessed 10/14/15.

[2] Source: U.S. Census Bureau, Annual Capital Expenditures Survey, *http://www.census.gov/econ/aces/index.html*, accessed 10/14/15.

[3] Source: Velocity Suite ''Total Production Costs'' dataset. This dataset compiles operations and maintenance costs, fuel costs, and fixed costs reported in the FERC Form 1, RUS 12, and EIA 412. For plants that do not report cost information, production costs are estimated by Velocity Suite.

Note: Dollar figures adjusted to 2007 dollars using the Gross Domestic Product—Implicit Price Deflator, *https://research.stlouisfed.org/fred2/series/GDPDEF*, accessed 10/14/15. Changes may not sum due to independent rounding.

The estimated $9.6 billion total annual cost of the rule represents the total incremental annual capital and production costs to the sector for 2015. This incremental cost due to MATS requirements represents a small fraction of the power sector's annual capital and production expenditures in recent years, as illustrated in Table 2. For example, when compared to historical total expenditures that rely upon SNL-based estimates of capital expenditures, the total 2015 MATS cost represents about 4.3 percent of total expenditures in 2008 to 6.4 percent of total expenditures in both 2002 and 2003. With respect to historical total expenditures that rely upon Census Bureau-based estimates of capital expenditures, the total 2015 MATS cost represents about 4.2 percent of total expenditures in 2008 to 6.1 percent of total expenditures in 2004.

Additionally, the EPA notes that, similar to the capital expenditures analysis set forth in the proposed supplemental finding, the projected $9.6 billion in incremental capital plus production costs is well within the range of annual variability in costs in general over the 2000 to 2011 period. For example, during this period, the largest year-to-year decrease in power sector-level capital and production expenditures ranged from $31.8 billion (from 2008 to 2009, according to the sum of SNL-based capital expenditure and Velocity Suite-based production expenditure estimates) to $32.9 billion (from 2001 to 2002, according to the sum of U.S. Census-based capital expenditure and Velocity Suite-based production expenditure estimates). The largest year-to-year increase in power sector-level capital and production expenditures in this period ranged from $28.0 billion (from 2000 to 2001, according to the sum of U.S. Census-based capital expenditure and Velocity Suite-based production expenditure estimates) to $28.2 billion (from 2004 to 2005, according to the sum of SNL-based capital expenditure and Velocity Suite-based production expenditure estimates).

This wide range indicates substantial year-to-year variability in industry expenditures, and the projected $9.6 billion increase in total expenditures in 2015 attributable to MATS falls well within this variability. Therefore, the supplemental analysis that is responsive to commenters' suggestion provides additional support for the conclusion that the cost of MATS is reasonable when weighed against historical metrics.

B. Basis for the Final Supplemental Finding

As directed by the Supreme Court, the EPA has now considered cost in its evaluation of whether or not it is appropriate to regulate coal- and oil-fired EGUs under CAA section 112. The EPA's approach to considering cost under CAA section 112(n)(1)(A) is based on the interpretation of the relevant CAA provisions as described in the Legal Memorandum accompanying the proposed supplemental finding. As explained below in Section IV.C, the EPA stands by the interpretations presented in that document in this final action.

As previously mentioned in Section III.A, the EPA, in this final action, is continuing to rely on the same cost metrics that were presented in the proposed supplemental finding—supplemented by an additional evaluation of MATS compliance cost estimates in the context of total capital and production costs from the 2000 to 2011 period that simply confirms the proposed findings. No commenter provided any evidence or information that convinced the EPA that the preferred approach to consideration of cost is inadequate or unreasonable. Thus, the EPA concludes in this final action that the preferred approach to considering cost in the appropriate and necessary finding is to weigh the cost of compliance with section 112(d) standards against, among other things, the volume of HAP emitted by EGUs and the associated hazards to public health and the environment. *See e.g.,* 77 FR 9310–9364 (Section III. Appropriate and Necessary Finding). Specifically, the EPA has evaluated several metrics that are relevant to the power sector to determine whether the estimated cost of compliance with MATS is reasonable. The EPA has also considered the impact of the cost of MATS compliance on the power sector's ability to continue to reliably generate, transmit and distribute electricity, at a reasonable cost to consumers. These analyses and the conclusions the EPA draws from the analyses were summarized above in Sections II.C and III.A and were

described in detail in the proposed supplemental finding. *See* 80 FR 75031–39 (Section IV. Consideration of Cost). The EPA concludes, after considering all significant comments, that these technical analyses are reasonable evaluations of cost and that each supports a conclusion that the cost of MATS is reasonable. *Id.* The agency also finds that the power industry is able to comply with MATS while continuing to perform its primary and unique function—to provide consumers with a reliable source of electricity at a reasonable price—which further confirms that the cost of MATS is reasonable. *Id.* The supplemental analysis conducted in response to comments further confirms that the cost of MATS is reasonable based on historical fluctuations. *See* Section III.A above.

The EPA also continues to rely on the results of the formal benefit-cost analysis contained in the RIA for MATS as we received no public comments that convinced us that this analysis is an insufficient approach to considering costs. Although the EPA does not view formal benefit-cost analysis as required to support the appropriate finding, the final RIA demonstrates that the benefits (monetized and non-monetized) of MATS are substantial and far outweigh the costs. In fact, the monetized benefits exceed the cost by 3 to 9 times. Thus, for this final action, the EPA finds that the formal benefit-cost analysis in the final MATS RIA provides an independent basis to support the finding that a consideration of cost does not cause the agency to alter its determination that it is appropriate and necessary to regulate HAP emissions from EGUs. This conclusion is explained in greater detail in the proposed supplemental finding. *See* 80 FR 75039–41 (Section V. Consideration of Benefit-Cost Analysis in the MATS RIA).

The EPA further notes that the Supreme Court's decision in *Michigan* neither called into question nor reversed the portions of the D.C. Circuit Court's opinion in *White Stallion* that unanimously rejected all other challenges to the appropriate and necessary interpretation and finding (the lone dissenting opinion addressed only the issue of cost on which the Supreme Court granted *certiorari*). Per the Supreme Court's instruction, the EPA has reversed its prior determination that cost need not be considered in deciding whether regulation is appropriate and has taken steps to add cost considerations to its analysis under CAA section 112(n)(1)(A). Aside from the considerations of cost described above, the EPA is not revisiting, in this final action, any other aspects of the final MATS rule or legal interpretations established therein. Many other challenges to the final MATS rule were unanimously rejected in *White Stallion* and left undisturbed by the Supreme Court's decision in *Michigan.* This action does not provide an opportunity for stakeholders to re-litigate issues previously decided in *White Stallion* or to raise new objections to the MATS rule that could have been, but were not, raised in that case.

C. Affirmation of the Appropriate and Necessary Finding

The Administrator has weighed the cost of MATS against other relevant considerations in determining that it remains appropriate and necessary to regulate HAP emissions from EGUs. These other considerations include prior conclusions reached regarding the significant hazards to public health and the environment from HAP emissions from EGUs, and the agency's prior determination that these hazards will not be addressed through imposition of the requirements of the CAA. The Administrator's conclusion that, on balance, these factors support the appropriate finding is presented in the proposed supplemental finding, *see* 80 FR 75038–39 (Section IV.D. Incorporating Cost Into the Appropriate Finding). The supplemental analysis presented in this final notice and conducted in response to comments further supports the conclusion that the cost of compliance with MATS is reasonable and, thus, the Administrator determines that the supplemental analysis supports and does not alter the results of the proposed finding. Based on these conclusions, the EPA confirms that the preferred cost approach provides an independent basis to support the determination that a consideration of cost does not cause the agency to alter its previous conclusion that regulation of HAP emissions from EGUs is appropriate and necessary.

The EPA also concludes that the formal benefit-cost analysis contained in the RIA for MATS provides an independent basis to support the finding that a consideration of cost does not cause us to alter our determination that it is appropriate and necessary to regulate HAP emissions from EGUs. This conclusion is explained in detail in the proposed supplemental finding. *See* 80 FR 75039–41 (Section V. Consideration of Benefit-Cost Analysis in the MATS RIA). Although the EPA does not view formal benefit-cost analysis as required to support the appropriate finding, the final RIA demonstrates that the benefits (monetized and non-monetized) of MATS are substantial and far outweigh the costs. *Id.* In fact, the monetized benefits exceed the cost by 3 to 9 times.

Based on all of these considerations, the Administrator finds that the preferred approach and the benefit-cost analysis in the RIA for MATS each provide alternative independent bases to support the conclusion that a consideration of cost does not cause the agency to alter its previous determination that it is appropriate to regulate HAP emissions from EGUs. For all these reasons, the Administrator affirms that it is appropriate and necessary to regulate coal- and oil-fired EGUs under CAA section 112 and that these sources are properly listed as an affected source category under CAA section 112(c).

IV. Public Comments on the Proposed Supplemental Finding

This final action is in response to the Supreme Court's ruling that the agency erred by not considering cost in the initial determination that regulation of HAP emissions from EGUs is appropriate under CAA section 112. In the proposed supplemental finding, the EPA provided detailed information on how the agency has added such a consideration of cost and further explained why including such consideration does not alter the agency's previous determination. The EPA specifically requested comment on the proposed supplemental finding and on the companion Legal Memorandum.

The EPA received a number of comment submissions from groups representing states, tribes, industries, environmental organizations, health organizations, and others. The EPA has taken all the submitted comments into consideration in preparing this final supplemental finding. All of the comments have been summarized and the EPA has provided detailed responses to the significant comments either here in this final notice or in the RTC document for the supplemental finding available in the rulemaking docket.

A. Comments on Considerations of Cost

This Section of the notice addresses comments and responses to the EPA's preferred approach to consideration and incorporation of costs, analytical issues such as the use of compliance costs for the entire power sector, the use of the compliance cost and impact estimates from the final MATS RIA, and responses to comments on the cost metrics used to

evaluate the reasonableness of the MATS compliance costs.

1. The EPA's Preferred Approach to Considering and Incorporating Costs in Its Appropriate and Necessary Finding

Comment: Numerous commenters supported the EPA's preferred approach to considering cost and asserted that the approach is ''well-suited'' to fulfilling the agency's obligation under the statute and the *Michigan* decision. These commenters also approved of the four cost metrics selected by the agency to evaluate the cost reasonableness of the compliance costs—revenues, capital expenditures, retail electricity rates, and impact on reliability. Many commenters stated that these are relevant measures for evaluating costs to the utility sector, and another pointed out that these are the types of metrics that are taken into consideration by electric companies.

Moreover, many commenters strongly supported the EPA's preferred approach of weighing a consideration of cost against the many advantages of regulating HAP emissions from EGUs already identified by the agency. Several federally-recognized Indian tribes and inter-tribal organizations commented in support of the agency's methodology of weighing the hazards of HAP emissions from EGUs to public health and the environment against the costs of compliance. These commenters emphasized that this method of analysis would allow for consideration of important tribal interests and threats to longstanding Indian cultural traditions and critical social practices of fishing and fish consumption. Moreover, the tribal commenters also added that a benefit-cost analysis would not fully account for the MATS rule's impact on the tribes and pointed to the United States' treaty obligations to protect tribal rights and the resources of American Indians and tribes as an important consideration supporting the finding. Commenters supporting the EPA's preferred cost approach pointed out that the statute and the *Michigan* decision do not require the Administrator to perform a benefit-cost analysis in order to adequately consider cost and make a determination that it is appropriate and necessary to regulate EGUs for HAP emissions. These commenters cited the lack of statutory text requiring such an analysis or monetization of benefits before those benefits may be considered by the Administrator, as well as the fact that limiting the agency's appropriate determination to this framework would thwart goals clearly identified by Congress—such as limiting grave harms associated with pollutants that Congress had already deemed hazardous.

Other commenters, however, claimed that the EPA's preferred approach to considering cost for purposes of CAA section 112(n)(1)(A) does not rationally balance the costs of the rule against the public health and environmental harms previously identified. Those commenters acknowledged that the Supreme Court's decision in *Michigan* did not require the EPA to perform a ''formal cost-benefit analysis,'' in order to satisfy the agency's obligation to consider cost as part of its CAA section 112(n)(1)(A) appropriate and necessary finding, but they argue that any rational balancing necessarily requires the EPA to compare the costs of compliance with the rule to the quantified and monetized benefits of the rule. One commenter claimed that because it was the EPA's position in the proposed supplemental finding that ''the significant hazards to public health and the environment from HAP emitted by EGUs (and the substantial reductions in HAP emissions achieved by MATS. . .) should be weighed against the costs of compliance,'' 80 FR 75028, that EPA had ''acknowledge[d]'' that its task was to assess whether the rule's benefits outweigh the costs. Another commenter argued that *Michigan* required such a comparison, based on the portion of the decision which stated that ''[o]ne would not say that it is even rational, never mind 'appropriate,' to impose billions of dollars in economic costs in return for a few dollars in health or environmental benefits.'' 135 S. Ct. 2699, 2707 (U.S. 2015). The commenter alleged that the Supreme Court therefore required the EPA to weigh the rule's annual compliance costs of $9.6 billion against the monetized benefits from reducing HAP alone (not other pollutants) and determine whether the rule has positive net benefits (*i.e.,* benefits exceed costs), in order to satisfy its obligation to consider cost under CAA section 112(n)(1)(A). Similarly, another commenter noted that the EPA's *Guidelines* (U.S. EPA, 2010) provide that the ''foundation'' for a benefit-cost analysis is ''that a policy's net benefits to society be positive.''

Response: The EPA maintains that its preferred approach, where costs are considered in light of the significant hazards to public health and the environment posed by HAP emissions from EGUs, is consistent with the statute and the *Michigan* decision. CAA section 112(n)(1)(A) states that ''the Administrator shall regulate [EGUs] . . . if the Administrator finds such regulation is appropriate and necessary.'' The Supreme Court's directive to the agency was to consider cost when making this initial decision, but the Court explicitly stated that ''[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. Given the broad discretion afforded the Administrator by both the statute and the Supreme Court's decision in *Michigan,* the agency reasonably interpreted CAA section 112(n)(1)(A) to require the Administrator to apply her expert judgment in weighing several considerations in order to determine whether it is appropriate and necessary to regulate HAP emissions from EGUs.

As discussed above in Section II.C and III.A, the agency evaluated the reasonableness of the regulation's cost of compliance by comparing that cost to metrics relevant to the utility sector: revenues, expenditures (including capital and production costs), and retail electricity rates, and also the impact that compliance with the CAA section 112(d) standards would have on the power sector's ability to provide a reliable source of electricity. After concluding the costs of MATS are reasonable based on these metrics, the agency confirmed that the industry could comply with MATS without unreasonably increasing electricity prices or undermining the reliability of the electric grid.

The Administrator has taken this consideration of cost and weighed it against the other findings that were part of the EPA's prior evaluation of whether regulation of HAP emissions from EGUs is appropriate and necessary. See Section II.B above. The prior record supporting the original appropriate and necessary finding includes the agency's prior conclusions, based on the scientific evidence, that HAP emissions from EGUs pose significant hazards to public health and the environment and the conclusion that those emissions will not be addressed through imposition of other requirements of the CAA. The EPA also previously concluded that EGUs are by far the largest remaining source of mercury, selenium, hydrogen chloride, and hydrogen fluoride emissions, accounting for half or more of all U.S. anthropogenic emissions of such HAP, and that EGUs contribute a considerable percentage of all U.S. anthropogenic emissions of arsenic, chromium, nickel, and other metallic HAP emissions. The agency also confirmed the availability of controls to reduce these HAP emissions from EGUs. In addition, the agency found that MATS would achieve significant reductions of EGU emissions of HAP and a failure to regulate would result in continued emissions of significant

volumes of HAP emissions without any requirement to reduce or monitor those emissions. The finding also documented the persistent nature of HAP such as mercury, which, once emitted, can be re-emitted in the future, thereby resulting in continued contribution to mercury deposition and associated health and environmental hazards. In making the finding, the EPA noted the statutory goal of reducing the inherent hazards associated with HAP emissions and reducing the risks posed by such emissions, including risks to the most exposed and sensitive members of the population. 80 FR 75038. Based on all of these factors, the Administrator finds that, after considering cost, it remains appropriate and necessary to regulate HAP emissions from EGUs.

Not only does the agency's preferred approach comport with the statute and the *Michigan* decision, it also has the advantage of allowing the Administrator to consider the full range of factors relevant to the appropriate and necessary determination. Nothing in the statute or in *Michigan* requires the EPA to ignore advantages of regulation that cannot be represented by monetary values. The agency's preferred approach permits the Administrator to weigh impacts to society that are not easy, or in some cases are impossible, to quantify or monetize, but are no less real than any other advantage of regulation.[18] For example, the Administrator has taken into account distributional concerns (established as part of the agency's risk assessments performed for the prior affirmation of the appropriate and necessary finding) that found more severe risks from EGU HAP emissions to the most sensitive individuals, particularly subsistence fishers. Indeed, the EPA's *Guidelines* (U.S. EPA, 2010), cited by commenters who insist a benefit-cost analysis or some showing of economic ''net positive benefit'' of regulation is required under CAA section 112(n)(1)(A), explicitly acknowledges the limitations of purely economic analyses. ''It is important to note that economic analysis is but one component in the decision-making process . . . Other factors that may influence decision makers include enforceability, technical feasibility, affordability, political concerns, and ethics, to name but a few.'' [19]

Moreover, the EPA notes that most commenters opposed to the EPA's preferred approach appear to dismiss outright the advantages of regulating HAP emissions, including the EPA's assessment, as articulated in the Legal Memorandum, that such regulation furthers the goal of CAA section 112 to obtain prompt, permanent, and ongoing reductions in significant volumes of HAP emissions that pose hazards to public health and/or the environment. No commenter has demonstrated that any of the HAP that are emitted from EGUs are chemically different than HAP emitted from other stationary sources or provided any other support for a conclusion that the inherent risks associated with HAP emissions that were acknowledged by Congress are somehow inapplicable to HAP emissions from EGUs.

Instead, these commenters dismiss the agency's preferred approach without much analysis and conclude that the only rational consideration of cost is a bare comparison of the rule's costs of compliance with its monetized HAP-specific benefits, and the only way the EPA may find regulation to be appropriate and necessary under CAA section 112(n)(1)(A) is if that comparison results in a ''positive net benefit.'' The EPA disagrees that a benefit-cost analysis, particularly one that only accounts for monetized HAP specific benefits, or a finding of an economic positive net benefit, is required by CAA section 112(n)(1)(A) to determine whether regulation of HAP emissions from EGUs is appropriate and necessary, nor does the agency agree that such an analysis is the better approach.

The Supreme Court explicitly declined to mandate that the Administrator perform a benefit-cost analysis to satisfy her obligation to consider cost under CAA section 112(n)(1)(A). Specifically, the Court stated, ''We . . . do not hold that the law unambiguously required the Agency, when making this preliminary estimate, to conduct a formal cost-benefit analysis *in which each advantage and disadvantage is assigned a monetary value.''* 135 S. Ct. at 2711 (emphasis added). Some commenters nonetheless insist that the Supreme Court intended the EPA's consideration of cost to be circumscribed to a comparison with monetized benefits, and specifically HAP-specific monetized benefits, because the Court proffered one scenario of when regulation would not be appropriate, where a rule would impose ''billions of dollars in economic cost in return for a few dollars in health or environmental benefits.'' 135 S. Ct. at 2707. The Court's identification in dicta of one hypothetical, portrayed in the extreme for emphasis, does not establish a statutorily required formula by which the EPA must consider cost, particularly when the Court explicitly held, ''[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. There is, thus, no basis for commenters' assertion that a formal benefit-cost test is the only permissible way for the agency to consider cost.

We note that, in insisting that the Administrator is required to perform a benefit-cost analysis to satisfy her obligation to consider cost, the commenters also assert that the EPA may not rely on co-benefits associated with reductions in non-HAP emissions in weighing the advantages and disadvantages of regulation under CAA section 112(n)(1)(A).[20] Under the agency's preferred approach, however, the EPA did not consider co-benefit impacts at all. As summarized above in Section II.B, the public health and environmental risks from mercury and non-mercury HAP emissions from EGUs are significant, and it is *these* risks, not co-benefits associated with reductions in ancillary emissions, that inform the Administrator's finding that it is appropriate to regulate under the preferred approach.

Finally, while the EPA disagrees that section 112(n)(1)(A) in any way requires the Administrator to determine that regulation will have monetized positive ''net benefits'' to society, the record amply demonstrates that the advantages of MATS for society do in fact outweigh the disadvantages. The Administrator found that regulation of HAP emissions from EGUs has many advantages, chief among them is furthering Congress' goal of protecting the public, including sensitive populations, from risks posed by HAP emissions by reducing the volume of, and thus, the exposure to, those harmful pollutants. In light of the risk findings and the determination that the regulations are cost reasonable and will not impair the power sector's primary function of providing reliable electricity at a reasonable cost to consumers, the Administrator concludes that ''the significant advantages of

[18] Though not explicitly addressed at proposal, the interests raised by the federally-recognized Indian tribes and inter-tribal organizations—such as the cultural impacts to tribes and the furtherance of the United States' treaty obligations to tribes—are an example of the type of societal value that cannot be monetized. The Administrator recognizes the importance of such interests and, though they are not necessary in affirming the finding here, only weigh in favor of the Administrator's conclusion that it remains appropriate and necessary to regulate EGUs for HAP emissions.

[19] *See Guidelines* at p. 1–2.

[20] We disagree with commenters' position regarding the proper way to conduct a formal benefit-cost analysis and address the comments on this issue below in Section IV.B.

regulating these emissions outweigh the costs of regulation.'' See 80 FR 75039. We agree that the appropriate and necessary finding requires the Administrator to determine that regulating HAP emissions from EGUs will, on the whole, be beneficial as opposed to detrimental to society. But the agency does not agree that whether a regulation is beneficial must be determined by weighing only those considerations that can be monetized. There are many societal values—such as protecting the most vulnerable among us—that could never be reduced to a monetary value. In sum, there is no basis to conclude that the finding requires the EPA to show that regulation of EGUs under CAA section 112 provides greater monetized benefits, much less HAP-specific monetized benefits, than costs.

Comment: Several commenters stated that the EPA's finding that regulation of EGUs is ''appropriate and necessary'' after consideration of a number of factors is arbitrary and capricious because the EPA's alleged balancing of several factors is ''indecipherable,'' and because commenters assert that the agency lists the factors it considered without explaining the relative weight of each factor, and how that weighing supports the agency's finding.

The commenters alleged that, in the proposed supplemental finding, the EPA sets out the factors that it has considered and then declares ''by fiat'' that the regulation is appropriate, without comparing the significance of the factors on either side or explaining how the different factors relate to one another. One commenter stated that, even if the EPA had discretion to use an approach like the multi-factor balancing one, the agency ''must cogently explain why it has exercised its discretion in a given manner,'' citing *Motor Vehicle Mfrs. Ass'n* v. *State Farm Mut. Auto. Ins. Co.,* 463 U.S. 29, 48–49 (U.S. 1983). Similarly, another commenter alleged that, by failing to articulate and explain its decision, the agency makes meaningful comment on its conclusion impossible, citing *Appalachian Power Co.* v. *EPA,* 249 F.3d 1032, 1055 (D.C. Cir. 2001).

Response: It is well within the bounds of the EPA's authority to interpret CAA section 112(n)(1)(A) as directing the Administrator to exercise her discretion in making a determination based on the consideration of a number of factors, including cost, as to whether it is appropriate and necessary to regulate HAP emissions from EGUs. Commenters took issue with the use of the EPA's method of analysis, but the approach the agency has taken here, which sets out the many relevant factors, including cost, the Administrator weighed and considered, is a reasonable and fitting response to Congress' open-ended instruction to the Administrator to determine whether a regulation of EGUs is ''appropriate and necessary.''

As noted by the D.C. Circuit Court, ''[a]gencies routinely employ multi-factor standards when discharging their statutory duties, and we have never hesitated to uphold their decisions when adequately explained.'' *PDK Labs.* v. *DEA,* 438 F.3d 1184, 1194 (D.C. Cir. 2006). Moreover, a totality-of-the-circumstances approach can be particularly appropriate when a statute confers broad discretionary authority. *See, e.g., Catawba Cty.* v. *EPA,* 571 F.3d 20, 39 (D.C. Cir. 2009); *Chippewa & Flambeau Improvement Co.* v. *FERC,* 325 F.3d 353, 358 (D.C. Cir. 2003) (noting, ''[b]y enacting the ''necessary or appropriate'' standard [in section 309 of the Federal Power Act, 16 U.S.C. 825h], the Congress invested the Commission with significant discretion,'' and affirming FERC's use of a balancing of relevant factors as reasoned decision making). Here, CAA section 112(n)(1)(A) provides the broad directive that the Administrator shall regulate HAP emissions from EGUs under section 112 if she finds that such regulation is appropriate and necessary after considering the results of the CAA section 112(n)(1)(A) study. *Michigan* establishes that the Administrator must also consider the costs of regulation as part of her determination, but the Court's directive to ''pay[] attention to the advantages and disadvantages'' of regulation supports the EPA's choice to employ an approach that weighs a number of factors before reaching a conclusion.

We also disagree with the commenters who suggest the proposed notice failed to explain and articulate the basis for the finding. The Supreme Court has said that a rule will be found to be arbitrary and capricious ''if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.'' *State Farm,* 463 U.S. at 43 (U.S. 1983). Further, an agency is required to give ''some definitional content'' to vague statutory terms by ''defining the criteria it is applying,'' because a refusal to do so is equivalent to ''simply saying no without explanation.'' *Pearson* v. *Shalala,* 164 F.3d 650, 660 (D.C. Cir. 1999). And finally, as cited by commenters, the courts have also held that the judicial branch cannot ''be compelled to guess at the theory underlying the agency's action.'' *Appalachian Power Co.* v. *EPA,* 249 F.3d 1032, 1055 (D.C. Cir. 2001).

But here, the EPA has not relied on factors that Congress has prohibited it to consider, nor have commenters demonstrated that there is an aspect to the problem that the EPA has ignored. There is no question as to the theory underlying the agency's action; the agency has given meaning to its understanding of the appropriate and necessary determination by laying out all of the many factors and criteria that it considered based on a thorough examination of the statute in light of the *Michigan* decision. *See* 80 FR 75038–39 and Legal Memorandum. In choosing how to consider cost, the EPA took note of section 112(n)(1)(A)'s silence on the question, and the Supreme Court's direction that on remand the agency was to reasonably interpret the statute to decide how to account for cost. 135 S.Ct. at 2711. Furthermore, the agency heeded the D.C. Circuit's previous decisions holding that in other statutory provisions where the EPA is required to consider cost, the agency is prohibited from adopting a standard where the cost of doing so would be ''exorbitant,'' ''excessive,'' or ''unreasonable.'' *See* Legal Memorandum at 19 (citations omitted). The EPA also considered Congress' statement issued with the 1990 CAA Amendments that its goal ''has been to promote the public health and welfare and the productive capacity of our nation.'' 80 FR 75031 (citing ''A Legislative History of the Clean Air Act Amendments of 1990,'' Vol. II., p. 3187). Based on these considerations and consistent with the Supreme Court's direction in *Michigan,* the EPA developed an approach to considering cost that acknowledges the unique function of EGUs and their importance to the power grid. Specifically, the EPA looked to whether the cost of potential section 112(d) standards is reasonable and whether the standards can be implemented without impairing the industry's ability to provide reliable electricity at a reasonable cost to consumers.

The EPA used four metrics to evaluate the cost reasonableness of MATS and concluded that the costs associated with MATS are consistent with historical costs incurred in the power sector. 80 FR 75033–36. The EPA also confirmed that the power sector can reasonably absorb the compliance costs associated with MATS without impairing its ability to perform its primary and unique function —the generation, transmission,

and distribution of reliable electricity at a reasonable cost, *i.e.,* its ''productive capacity.'' 80 FR 75038. In addition, given Congress' directive in section 112(n)(1)(B) to examine the cost of mercury controls as part of the Mercury Study, and the *Michigan* court's implication of the relevance of section 112(n)(1)(B)'s reference to cost, the EPA also considered the declining cost of technologies available to control mercury, as well as the cost of controls for other HAP emissions from EGUs. 80 FR 75036–38. All of these cost metrics support a conclusion that the costs of MATS are reasonable.

The commenters are also incorrect that the Administrator failed to provide any sense of the relative weight or importance of the different factors considered under the agency's preferred approach. Commenters complain that the Administrator's balancing of the factors against each other is ''indecipherable,'' but it seems instead that they simply disagree that the costs are reasonable, that HAP emissions from EGUs pose hazards to public health and the environment, that the finding can consider harms to the environment, and that there is any benefit to regulating HAP emissions. As explained above, we disagree with the commenters' interpretations and further note that the bright line tests and thresholds they appear to prefer are not required under the statute or the case law. The D.C. Circuit Court has found that ''[a]n agency is free to adopt a totality-of-the-circumstances test to implement a statute that confers broad authority, even if that test lacks a definite ''threshold'' or ''clear line of demarcation to define an open-ended term.'' '' *Catawba Cty.* v. *EPA,* 571 F.3d at 37 (citation omitted) (noting that ''EPA's use of a multi-factor analysis is not in and of itself unreasonable just because it lacks quantitative standards''). Rather than requiring a quantification of the weight of each factor, courts have affirmed balancing tests where the agency provides an explanation of the relative significance of its considerations. *See PDK Labs.* v. *U.S. DEA,* 438 F.3d at 1194 (finding that the Deputy Administrator's explanation that one piece of evidence was by itself sufficient to induce action was enough of an explanation of the relative importance of that evidence to her decision); *Chippewa* v. *FERC,* 325 F.3d at 357–359 (deferring to FERC's ''expert judgment'' in determining on a case-by-case basis whether a reservoir is ''necessary or appropriate,'' where the Commission has made clear the emphasis it places on the positive impact on downstream generation).

In its proposed supplemental finding and the Legal Memorandum, the EPA pointed out section 112(n)(1)(A)'s silence regarding the weight to be given to the relevant factors in determining whether it is ''appropriate'' to regulate HAP emissions from EGUs. 80 FR 75030; Legal Memorandum at 19. Given this statutory silence, the EPA concluded that it was reasonable to consider the objectives of section 112 in deciding how to assign relative weight to the factors under consideration. *See* Legal Memorandum at 20. Taking note of Congress' determination in section 112 that HAP emissions are inherently harmful and the statutory goal of protecting the most sensitive populations from that harm, the agency interpreted ''section 112(n)(1) . . . not [to] support a conclusion that cost should be the predominant or overriding factor.'' 80 FR 75030. Cost, as the agency explained, is one of the factors to be considered. The EPA further emphasized the relative importance of its consideration of the public health and environmental risks in its analysis by noting that ''[i]f EPA were to conclude, prior to considering costs, that [HAP emissions from EGUs] posed no risk or that such risks had already been addressed by other provisions of the CAA (most notably the Acid Rain Program), a decision that regulation is not appropriate could be made without considering cost. Yet, the statutory focus on protecting public health and the environment suggests that the EPA could not make a finding under CAA section 112(n)(1)(A) solely on the basis of cost.'' Legal Memorandum at 25–26. The relative weight given to the EPA's consideration of cost is also tied, in this case, to its finding that maximum achievable control technology (MACT) standards in MATS can be implemented at a cost that will not impair the utility sector's ability to provide reliable electricity at a reasonable cost. As a 7th Circuit Court case cited by commenters acknowledges, ''one factor of great weight may offset several which lean slightly in the other direction.'' *Volkman* v. *Ryker,* 736 F.3d 1084, 1092 (7th Cir. 2013). Not all considerations are required to be given equal weight, and here, given the statutory goals of CAA section 112 and the EPA's finding that the cost of MATS is reasonable, it was correct for the EPA to place importance on reducing the significant hazards to public health and environment posed by HAP emissions from EGUs.

Finally, the Administrator must exercise her judgment in deciding whether the costs of regulation justify its advantages and the agency need not demonstrate that her decision is the same decision that would be made by another Administrator or a reviewing court. An agency action need not be the only approach or even the approach that a reviewing court might find most reasonable. Instead, the test is ''whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment.'' *Citizens to Preserve Overton Park, Inc.* v. *Volpe,* 401 U.S. 402, 416 (U.S. 1971); *see also ExxonMobil Gas Mktg. Co.* v. *FERC,* 297 F.3d 1071, 1083–1084 (D.C. Cir. 2002) (''Accordingly, we will uphold the Commission's application of the test as long as it gives ''reasoned consideration to each of the pertinent factors'' and articulates factual conclusions that are supported by substantial evidence in the record.'' (citation omitted)). Reasonable people, and different decision-makers, can arrive at different conclusions under the same statutory provision, but those conclusions must be reasonable under the statutory structure. The agency does not agree with the commenters' positions that HAP emissions from EGUs do not pose significant hazards to public health and the environment and that the cost of compliance with MATS is unreasonable. This factual disagreement with the commenters does not render the agency's statutory interpretation of how to consider cost and the Administrator's weighing of the relevant factors arbitrary. Absent clear direction from the statute and a demonstration that the Administrator has made a ''clear error of judgment,'' the EPA's interpretation and analysis should govern.

Comment: Several commenters stated that the EPA's cost analysis is unlawful and does not meet the Supreme Court's directive because it focuses mainly on whether the power sector can absorb the cost of compliance. The commenters argued that the EPA's focus on the ''affordability'' of controls compared to revenues, capital expenditures, and impacts on electricity rates does not satisfy the statutory prerequisite to engage in some meaningful balancing analysis of costs and benefits. Rather, the commenters alleged that the EPA's consideration of cost in this manner is a ''cost-only'' approach, and does not meet the Supreme Court's instruction to consider both advantages and disadvantages of regulation. One commenter posited that by arbitrarily placing emphasis on the economic well-

being of the power industry rather than on whether the costs of compliance are appropriate when comparing them to the benefits achieved from reducing HAP, ''an industry that was financially strained would not be subject to regulation, regardless of the human health and environmental risks posed from HAP emissions from those sources, merely because the costs of compliance would constitute too high a percentage of the industry's revenue.'' Such an outcome, the commenter argued, would be inconsistent with CAA section 112's objective to protect the public from the risks posed by HAP.

Response: The EPA disagrees that its consideration of cost in the proposed supplemental finding was confined to an analysis of whether the power sector could absorb the cost of compliance. The agency did not *only* consider whether the cost of regulation under CAA section 112 was reasonable, but also weighed the costs of compliance with MATS against previously established conclusions about the significant risk and harm to public health and the environment attributable to HAP emissions from EGUs. *See* 80 FR 75038–39; Legal Memorandum at 20, 25–26. It was this latter step that met the Supreme Court's directive to consider both the advantages and disadvantages of regulation.

Commenters' preference for a different approach that would have compared cost of compliance to monetized benefits of reducing HAP does not undermine the validity of the EPA's interpretation of CAA section 112(n)(1)(A) and *Michigan's* requirement to consider cost. As the EPA explained in the Legal Memorandum, and as explained below in response to comments, the agency concluded that commenters' preferred cost approach of comparing costs to monetized HAP-specific benefits is not required by CAA section 112 or CAA section 112(n)(1), nor does the statute provide the tools to quantify and monetize benefits attributable to reductions in HAP emissions from EGUs or any other source category. Legal Memorandum at 24. In addition, given the known scientific limitations on the ability to quantify and/or monetize HAP-specific benefits, there is no statutory basis for the assertion that the agency must decline to regulate HAP emissions from EGUs based on a comparison of costs to any HAP-specific benefits that could be monetized, and indeed it might not even be reasonable to do so. *Id.*

The hypothetical scenario posed by commenters regarding how the EPA's approach would apply to a financially strained industry is neither realistic nor relevant. The hypothetical they pose could never occur as cost considerations are not relevant to listing decisions for any source category besides EGUs. Moreover, nothing in the EPA's preferred approach would require the EPA to ignore the potential benefits (*e.g.,* reduced risk of cancer) of regulating a financially strapped industry based *solely* on a determination regarding the reasonableness of compliance costs for that industry.

2. Use of 2011 final MATS RIA costs and impacts

Comment: Some commenters supported the EPA's reliance upon the final MATS RIA for compliance cost estimates used in the proposed notice. One commenter noted that RIA cost estimates incorporated the actual MATS regulations as the compliance target, so they are much more reliable than the type of pre-regulatory estimate anticipated by the statute. In particular, one commenter expressed confidence in the estimates because the EPA derived those estimates using the Integrated Planning Model (IPM), which the agency has relied on for over 20 years to forecast the cost and emissions impacts of environmental policy. Some commenters noted that the EPA's use of the first compliance year, 2015, to estimate costs ensures that its cost consideration in this action is based on the highest cost year, and therefore is a ''representation of the maximum impact.''

Several commenters stated that some estimates of industry compliance costs have been much lower than those projected by the EPA in the final MATS RIA. One study cited by commenters found that the costs of control technologies have been less expensive and more effective than assumed in the RIA, and therefore the actual cost of complying with MATS has been significantly less than estimated by the EPA. This analysis was based on existing contracts for the installation of air pollution control systems, experience with the performance of emissions control technologies, and assessments of the amount of pollution control capacity installed by the power sector to comply with MATS. This analysis estimated that industry's actual annual compliance costs are currently approximately $2 billion, which is less than one-quarter of the $9.6 billion annual cost that the EPA estimated for MATS.[21] The commenters stated that the apparent dramatic cost reductions are the result of three key factors: (1) Improvements in the materials (sorbents) used to control acid gases and mercury have resulted in reduced operating costs and increased efficiency; (2) far fewer power plants than the EPA estimated have required installation of high-cost pollution controls, such as fabric filters and flue gas desulfurization systems (''FGD'' or ''scrubbers'') or system upgrades; and (3) natural gas prices have been significantly lower than the EPA projected, reducing the cost of gas conversion and related compliance strategies.

Other commenters contended that the EPA's use of the MATS RIA cost estimates does not accurately reflect costs of compliance. One commenter said the EPA significantly overestimated the capability of dry sorbent injection (DSI) by assuming that it could be used to meet the acid gas emission standards regardless of the size of the unit. The commenter also alleged that the EPA incorrectly projected that wet scrubbers would not be widely required to meet the proposed emission limits, and that the MATS RIA estimates therefore underestimated compliance costs and the number of retirements. Other commenters asserted that the EPA's alleged underestimate of retirements generally demonstrates that the costs of the rule are not reasonable and that the agency's assessment was based on flawed assumptions. Commenters disagreed with the EPA's focus on projected compliance costs and generation capacity estimated at the time of MATS promulgation and suggested that the EPA should consider actual costs and retirements that have occurred since the promulgation of MATS to update the assumptions made in the RIA instead of using assumptions that the commenters argue are unrepresentative. The commenters alleged that the EPA's continued use of those assumptions when actual, new data are available is arbitrary and capricious.

Response: The EPA maintains that its use of compliance cost and impact estimates from the MATS RIA for the year of 2015 is a reasonable way to assess expected costs of MATS for purposes of analyzing the cost reasonableness of the rule as part of its consideration of cost for the appropriate and necessary finding. As noted in the proposed supplemental finding and the Legal Memorandum, under the statutory

[21] *White Stallion Energy Center, LLC* v. *EPA,* D.C. Circuit Case No. 12–1100, Motion of Industry Respondent Intervenors to Govern Future Proceedings, filed September 24, 2015 (see Declaration of James E. Staudt and accompanying exhibits).

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. Moreover, the independent analysis cited by several commenters suggests that the actual costs of compliance have been much lower than the cost estimates contained in the MATS RIA.

Both the statute and the *Michigan* decision support the EPA's reliance on the cost estimates from the 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 MATS RIA cost estimates, would be available at this threshold stage. 80 FR 75030; Legal Memorandum at 19–21. 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.

We also disagree with the suggestion by commenters that the entire economic analysis that the EPA performed in the MATS RIA is invalid simply because of a 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 Office of Management and Budget (OMB) [22] and EPA guidance (U.S. EPA, 2010), and provided the public with the opportunity to comment on all aspects of its analysis in developing the final MATS RIA.

The EPA disagrees with commenters who assert that the EPA underestimated the costs of particular control technologies. In response to comments received on the proposed MATS rule, the EPA reviewed control technology cost and performance assumptions and updated some of these assumptions in the final RIA. Additionally, in the response to comment section of the final MATS preamble, the EPA responds to a series of comments on the cost and performance assumptions of the control technologies in the RIA. For example, in Section VII.G.1 of the final MATS preamble, the EPA responds to comments regarding the technical applicability, cost, and performance of DSI, explaining that the ''representation of DSI in MATS compliance modeling is reasonable, is properly limited to applications that are technically feasible, and reflects a conservative approach to modeling future use of this technology.'' [23] Furthermore, the EPA does not agree and the record does not support the assertion that the total costs projected in the RIA are underestimated as a result of the EPA's assumptions regarding the cost and performance of DSI and wet scrubber retrofits.

The EPA also disagrees with commenters that the number of retirements of coal- and oil-fired power plants that have occurred since the rule's promulgation indicates that the EPA's assumptions in the MATS RIA were flawed. Commenters argue that because there have been more retirements in recent years than the EPA predicted in the RIA would be attributable to MATS, that the EPA's assumptions are necessarily flawed. However, commenters fail to show that the additional retirements they cite are attributable to MATS. Coal-fired power plants shut down for reasons other than MATS. Numerous publications have pointed out that recent trends in the electric power industry, such as low natural gas prices and slow demand growth, have placed significant economic pressure on coal-fired power plants, even those that are compliant with MATS.[24] Lower natural gas prices have made natural gas generation increasingly more competitive as compared to coal. Moreover, lower natural gas prices result in a reduction in wholesale electricity prices, leading to a reduction in the revenues received by some coal-fired generators. These and other factors lead to EGUs retiring, and they are unrelated to MATS.

The EPA's cost analysis, summarized in the MATS RIA, was based on reasonable assumptions at the time of promulgation for important factors such as fuel supply, fuel prices, and electricity demand. More importantly, retirements that are not attributable to MATS cannot reasonably be considered a cost of compliance for MATS. Commenters have not demonstrated that any recent retirements not accounted for in the MATS RIA are solely or disproportionately a result of MATS and would not have occurred in the absence of MATS. For these reasons, in making the initial appropriate finding, it is reasonable for the EPA to use the final MATS RIA cost estimates, which were developed at the time the rule was finalized and are based on high quality economic, technical, and regulatory assumptions.

Moreover, in its consideration of cost here, the agency elected to focus on the 2015 impacts presented in the RIA because, as some commenters note, the modeling the agency conducted

[22] Office of Management and Budget. 2003. *Circular A–4: Regulatory Analysis.* Washington, DC. Available at: *http://www.whitehouse.gov/omb/circulars/a004/a-4.html.* Docket ID No. EPA–HQ–OAR–2009–0234–20507.

[23] 77 FR 9330, 9411.

[24] *See, e.g.,* ''FirstEnergy's Largest Coal Plant Idled Due to Low Power Prices.'' March 11, 2016. *Power Engineering News.* Available at: *http://www.power-eng.com/articles/2016/03/firstenergy-s-largest-coal-plant-idled-due-to-low-power-prices.8.leftinheritedbottom_standard_8.html.*

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U.S. EIA. 2016. ''Natural gas expected to surpass coal in mix of fuel used for U.S. power generation in 2016.'' *Today in Energy.* March 16. Available at: *http://www.eia.gov/todayinenergy/detail.cfm?id=25392#.*

indicated that compliance costs would be highest in that first compliance year under the rule. By using the estimate from the year when compliance costs are highest to compare against the various cost metrics, the EPA ensured that its assessment of cost reasonableness was, if anything, conservative, and that these comparisons would, therefore, be applicable for other future years.

The independent analysis cited by several commenters, which was the only retrospective analysis of MATS costs submitted to the EPA in comments, finds that a variety of control technology costs have shown to be lower than the EPA's projection from the final MATS RIA. These results further contradict the assertions of some commenters that the assumptions in the RIA led to an underestimate of costs. The EPA recognizes it is possible, and has historically been the case for other regulations, that the regulated industry develops ways to comply with regulations at lower cost than what the agency projects at the time of rule promulgation. However, the suggestion by the retrospective analysis 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 final MATS 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 the agency reaffirmed the appropriate and necessary finding and established CAA section 112(d) standards for EGUs.

3. Consideration of Costs at the Sector Level

Comment: Some commenters questioned whether the EPA's consideration of cost at the sector level was reasonable. These commenters argued that because MATS regulated only coal- and oil-fired power plants, that it was incorrect for the EPA to use sector-level data when comparing the costs of the rule to the array of metrics that the EPA used to assess the reasonableness of the rule.

Another commenter stated that the EPA's framing of the cost inquiry—whether the power sector can reasonably absorb the cost of the MATS Rule, 80 FR 75030—is reasonable, and well within its discretion, citing *Michigan* 135 S. Ct. at 2711 (''It will be up to the Agency to decide (as always, within the limits of reasonable interpretation) how to account for cost.''

Response: As explained here and below, the EPA's estimate of the MATS compliance costs reflects the cost to the entire power sector. MATS is an economically consequential rulemaking that is expected to induce changes in both electricity and fuel markets. To focus on the projected impact of MATS on only affected coal- and oil-fired EGUs 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 final MATS rule. The costs associated with installation and operation of pollution controls (or fuel switching) at some affected EGUs can influence the generation decisions of both EGUs that are regulated by MATS and those that are not regulated by MATS. As the EPA noted in the proposal, the U.S. electric power system is complex and interconnected and the generation decisions of a single affected EGU can influence the dispatch of other EGUs, wholesale power prices, and fuel prices. Therefore, for a rule with the scope and projected impacts of MATS it is necessary for the EPA to consider the full cost of the rule by capturing costs expended at all electric generators, not just those subject to emissions requirements under MATS. For example, the EPA's analysis estimated a small increase in generation from natural gas-fired sources as a result of the rule. This increase in generation results in increased demand for natural gas and, thus, a small increase in the price of natural gas. This results in additional costs for EGUs that utilize natural gas, which the EPA appropriately captured in the analysis for the RIA. Furthermore, an evaluation of the costs borne solely by EGUs subject to MATS would need to account for the potential ability of owners of these EGUs to recoup their increased expenditures through higher electricity prices, or else an estimate of the costs of MATS borne by the owners of those EGUs (*i.e.,* their economic incidence) would be an overestimate. However, in doing so, the costs borne by the consumers of electricity from these higher prices would be ignored, which the EPA finds inappropriate. This is especially true given that the demand for electricity is not particularly price-responsive and many firms in the industry are assured cost-recovery, and, therefore, there is considerable potential for producers to pass through their expenditures to consumers. Therefore, the EPA determined it was appropriate to account for all of the costs that may be expended 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, and not limiting our consideration of costs to just those borne by a subset of producers or consumers. Again, even non-regulated EGUs can be affected by the rule through changes in prices as a result of MATS, such as the example of a gas generator just provided. Another example is that of a generator that benefits from higher electricity prices induced by MATS without incurring costs, such as a renewable generator owned by a highly diversified firm. Ultimately, consumers and producers bear the costs of a regulation, not specific pieces of machinery. Therefore, a consideration of cost incurred by only directly regulated EGUs would not fully capture the impacts on the owners of those directly regulated EGUs.

Finally, many commenters in MATS and in this supplemental finding agree that cost reasonableness can be determined in part by increases in electricity prices, which reflect increased expenditures by EGUs resulting from MATS. By advocating for the consideration of electricity price impacts, these commenters further support EPA's determination that it is appropriate to consider other cost metrics at the sector level as well. The EPA's estimate of the cost of MATS is an appropriately complete accounting of the costs incurred by the sector, and the agency's comparison of these costs to the sector-wide metrics is reasonable.

4. Power Sector Sales

Comment: Commenters supporting the consideration of compliance costs as a percentage of power sector sales noted that the EPA has routinely used this type of analysis as a means of evaluating whether compliance costs for HAP regulations are reasonable. These commenters believe the comparison of compliance costs to power sector sales produces a useful metric to help the EPA determine whether the power sector can reasonably absorb the cost of compliance with MATS. These commenters also agree that this analysis supports the agency's conclusion and demonstrates that the costs of the standards are low, as compared to annual revenues of the electric utility sector.

Commenters disagreeing with the agency's analysis of compliance costs as a percentage of power sector sales argue it is misleading because it ignores the relationship between revenues and expenses and, therefore, in their view, provides no indication of cost reasonableness. The commenters suggested that given the high operating costs for EGUs, a comparison of

compliance costs to affected facilities' net operating income (*i.e.,* revenues from retail sales minus operating expenses) would more appropriately highlight the cost impacts on the marginal operations of affected sources.

One commenter stated that the EPA does not explain why the analysis of compliance costs as a percentage of power sector sales is appropriate for the utility sector. The commenter noted that this type of analysis is generally used for measuring economic impacts to small entities under the Regulatory Flexibility Act (RFA) and, in that context, sales are generally measured per company or on another more granular level.

Response: The EPA maintains that it is reasonable to employ an analysis of compliance costs as a percentage of power sector sales, a frequently used indicator of economic impact, to evaluate the cost of MATS. A comparison of revenues to costs is informative and relevant to an evaluation of whether the costs associated with a rule are reasonable.

While the EPA recognizes that alternative metrics could also be useful, the application of such alternative metrics would not invalidate the use of compliance costs as a percentage of power sector sales as demonstrating cost-reasonableness. The level of sales in the industry is, over time, representative of the costs incurred by the industry to generate, transmit, and distribute electricity, as the firms that operate in the electricity sector usually do so with the expectation that they will recover their costs (*i.e.,* expenditures) in addition to a profit. Therefore, total sales provides a sense of scope of economic activity in the industry, and annual changes in those sales provide a sense of the scope of fluctuations in that industry.

The EPA disagrees that a comparison of the costs of complying with MATS and the power sector's sales is an unreasonable way to evaluate costs simply because this type of comparison is often made in the context of evaluating economic impacts on small businesses. While commenters point out that the analysis is often used for smaller entities, they do not demonstrate why the metric holds no value for examining economic impacts on the power sector.

Further, with regard to the specific metric suggested by commenters opposed to using compliance costs as a percentage of power sector sales to consider costs, we note that while net operating income is an important indicator for utilities and other operating entities, as discussed in this section above, a significant share of operating expenditures may ultimately be borne by consumers. Therefore, comparing the costs borne by electricity producers to their net operating income (*i.e.,* a measure of profits that does not account for payments on costs that have been committed to previously, like financing of existing capital) would be an incomplete assessment of the cost of MATS. Thus, it would be unreasonable to compare the total expenditures incurred as a result of MATS to historical net operating income in the sector without accounting for the ability of firms to pass through these costs through higher electricity prices.

Additionally, there are difficulties associated with estimating changes in firm-level net-operating income or other measures of firm profits with the data and tools available to the agency. For example, many firms in the industry are not publicly traded, so historical profit data for many of these firms are not readily available; therefore, a comparison of an estimate of the change in profits to historical data on profits in the industry would be limited by data availability. Furthermore, there are accounting and tax practices that affect the timing of when profits are reported, and therefore measures of profits may fluctuate on an annual basis for reasons not directly related to coincident annual changes in revenues and expenditures. In addition, the fact that a large proportion of affected EGUs in the power sector operate within regulated markets and are able to pass regulatory costs to electricity consumers, yet often face different specific requirements for how and when they may recover those costs, presents challenges to the use of a change in net operating income as a metric for evaluating costs.

Commenters advocating changes in net operating income as a more appropriate metric than a metric based on compliance costs as a percentage of power sector sales for measuring cost reasonableness do not supply any analysis in their comment, nor do they provide a source of historical data to use for this analysis, nor a way to address these technical challenges with estimating historical profits, nor do they assert that a different metric would result in a conclusion that contradicts the EPA's findings. However, in response to comments highlighting the importance of considering annual operating expenses to this industry, the EPA considered additional information on operating expenses in order to ensure that our analysis of retrospective and projected cost information is robust and complete. This supplemental analysis was discussed earlier in Section III.A. In sum, the EPA continues to find that it is reasonable, when evaluating the reasonableness of the costs of MATS, to compare those costs to utility sector sales.

5. Capital Expenditures

Comment: Several commenters supported the EPA's use of the metric comparing MATS compliance costs to capital expenditures as one way to evaluate whether MATS compliance costs are reasonable. One commenter stated that projected compliance expenditures are small in relation to both the typical capital expenditures undertaken each year by the utility industry, as well as typical year-to-year changes in such expenditures. One commenter particularly approved of the focus of this metric on comparing the precise impact of a particular category of the rule's compliance costs to industry spending on that category of costs. The commenter stated that this metric provides a clear understanding of whether the rule's capital expenditure costs could readily be absorbed by industry.

Other commenters took issue with the EPA's comparison of annual capital expenditures required by MATS to overall power-sector capital expenditures as a way to assess whether the rule's compliance costs are reasonable. These commenters stated that the power sector's historical annual capital expenditures are broad, all-encompassing statistics that do not provide an adequate basis to judge whether compliance expenditures are reasonable. Specifically, this commenter suggested that the EPA's analysis should instead focus on the historical annual capital expenditures of only the entities that own affected sources. One commenter argued that the EPA did not explain the benefits of this approach over any other approach, or why it is a good measure of the reasonableness of the costs of a regulation.

Response: As an initial matter, the EPA notes that while a number of commenters disagreed with the agency's use of historical annual capital expenditure data for the power sector in its analysis, no commenter objected more generally to the agency's examination of the rule's capital expenditures as one way to consider whether the rule's costs are reasonable. In demonstrating that an analysis is reasonable, particularly in the absence of any statutory guidance, the EPA is not required to show that its chosen approach is better than ''any other approach.'' Instead, the agency is required to show that there is a ''rational connection between the facts found and

the choice made.'' *State Farm,* 463 U.S. at 52. As discussed in the proposed supplemental finding, capital costs are one aspect of total compliance costs that can be evaluated against historical levels. As the EPA explained in the proposed supplemental finding, capital costs represent largely irreversible investments for firms that must be paid off regardless of future economic conditions, as opposed to other important variable costs, such as fuel costs, that may vary according to economic conditions and generation needs. For an action that was projected to result in a large number of pollution control retrofits nationwide for multiple HAP, the EPA determined it was reasonable to consider projected capital costs as one component of a comprehensive evaluation of overall compliance costs. This is further supported by the EPA's projection that the annual projected capital costs represented about 26 percent of the total annual compliance cost projected for 2015. For this rulemaking, the EPA was able to access reliable historical data from multiple sources over a sufficient time horizon, which enabled comparisons of the EPA's projections of incremental capital expenditures under MATS to sector-level historical trends in capital expenditures.

We disagree with the comment alleging that the EPA's analysis of this metric is ''too broad''. Specifically, we do not agree with the commenter's suggestion that we should restrict our analysis of capital expenditures to focus on only the entities directly regulated by MATS (*i.e.,* ''the entities that own the affected sources''). As discussed in Section IV.A.3, the EPA views a sector-level assessment of costs, including capital expenditure requirements, to be the correct scale of analysis for this notice, in part because analyzing cost at the sector-level better captures impacts on entities, many of which own complex holdings that include units that are not regulated by MATS. Further, adopting the commenter's methodology for analyzing capital expenditures more narrowly would force the agency to ignore costs associated with installing additional new generating technologies that would be attributable to MATS (because those new units that are installed are not directly regulated by MATS and are not necessarily owned by entities that own units regulated by MATS), and those costs are not insignificant and increase over time. We also note that although the commenter urges the EPA to analyze historical annual capital expenditures by a subset of units, the commenter provides no information regarding that metric, nor is the agency aware of data to reliably analyze that metric. Therefore, for all of the reasons above, we decline to confine our analysis of capital expenditures to only those units that are directly regulated by MATS.

Moreover, we disagree with the commenter's implied premise that an estimate of the capital expenditure costs associated with installing controls to comply with MATS actually reflects capital expenditure impacts on entities owning ''affected sources''. As noted in Section IV.A.3, many of these sources are able to pass-through compliance costs to ratepayers, and, thus the cost of compliance, including capital expenditure costs, are in many cases ultimately borne by consumers. The EPA's sector-level approach to analyzing cost for this metric, as for others, takes into account all costs whether they are borne by producers or consumers, and is therefore the most comprehensive and well-suited to evaluating whether such costs are reasonable.

Additionally, in response to comments, the EPA supplemented its analysis of annual capital costs with annual production costs, the sum of which provides a more comprehensive metric to use to compare against total projected compliance costs (see Section IV.A.4 above). This addition confirmed the EPA's earlier finding that the compliance costs of this rule are projected to be well within historical variability, and continues to demonstrate that the agency's projected costs are reasonable when weighed against historical metrics.

6. Retail Electricity Prices

Comment: A commenter supporting the EPA's retail price of electricity metric stated that in evaluating the economic impacts of CAA regulation, the EPA has often considered the projected costs of regulation to electricity consumers. Additionally one commenter noted that recent data show that the EPA's estimate for 2015 was conservative and that actual electricity prices have been lower than the EPA projected. Commenters supporting the metric concluded that the agency's analysis demonstrates that on a regional and national basis, the increases in the retail price are reasonable in light of the benefits afforded, and well within the range of variability.

A commenter stated that the EPA's retail price of electricity metric masks the true effects of the rule because the commenter believes that the EPA failed to acknowledge that, of the 11 years examined, only 3 years saw greater average price increases than would be caused by the rule. The commenter added that the EPA did not acknowledge that the MATS rule causes average retail price of electricity increases that are almost double that of an average of the 11 examined years and that the EPA did not recognize that the price increases caused by the rule are additive.

Response: The EPA reviewed changes in average retail price of electricity over the 2000–2011 period and compared the projected impact of MATS on the average retail price of electricity to annual variability over this period. The EPA believes that the estimated increase in electricity price is reasonable because it falls well within the range of historical variation. The EPA does not believe that comparing the projected impact to an average or percentile of historical fluctuation is the appropriate approach for examining this particular impact. This is because the context of whether MATS incurs a disproportionate change is relevant in the context of positive changes in price, not simply the average trend in price changes, which includes both net-positive and net-negative changes. MATS will impact electricity prices; what is relevant is whether that change is disproportionate to the differences in electricity prices that happen for various different reasons, and that reveal themselves in year-to-year fluctuations. To compare the effect of MATS to an average of those variations over time, essentially dampening those variations to an average growth rate in electricity prices, would prove misleading when trying to compare the effect of MATS on retail electricity price with other influences.

Additionally, the EPA notes that the commenters' point regarding additive impacts is incorrect. The 0.3 cents per kilowatt-hour is incremental to the EPA's estimated average retail electricity price in the absence of the rule, not historical levels (which are actually higher in 2006–2011, on average, than the EPA's base case estimates for 2015). As the EPA explains in the preamble to the final MATS rule, ''Even with this rule in effect, electricity prices are projected to be lower in 2015 and 2020 than they were in 2010.'' In the EPA's consideration of the potential impacts of MATS on retail electricity prices, the agency appropriately considered the estimated increase in prices projected to occur as a result of MATS in the context of historical variability.

7. Reliability of Electricity Supply

Comment: Several commenters took issue with the EPA's analysis of the impacts of MATS on power sector generation capacity and stated that impacts on reliability alone are not a measure of the reasonableness of costs. Commenters stated that the EPA vastly underestimated the number of retirements that have occurred as a result of MATS and presented several estimates of retirements and facility closures. Several commenters alleged that the EPA arbitrarily compares its projection of MATS-related coal-fired capacity retirements to the nation's total generation capacity and the nation's coal-fired generation capacity.

Other commenters stated that the analysis of the impact on the sector's generating capacity supports the agency's finding. Commenters noted that retirement decisions are based on consideration of numerous factors (*e.g.,* age of the unit, capacity factors, fuel prices, etc.) making it difficult to determine whether a given coal- or oil-fired unit retired due to MATS compliance obligations or due to other unrelated factors that make operation uneconomic.

One commenter noted that the EPA's modeling and analysis in the MATS RIA provides the best estimate of the impact of MATS on retirements and stated that the fact that retirements have been higher than projected does not suggest that they were a result of MATS, much less that the EPA erred in concluding that the retirement of 4.7 gigawatts (GW) of generation capacity would be a reasonable burden for the electric power industry to bear. Commenters stated that the EPA's resource adequacy analyses showed that reserve margins can be maintained while the power sector complies with MATS and supports the agency's determination that MATS compliance costs are reasonable.

Response: In Section III.A.2 above, the EPA explains why commenters' assertions that the EPA underestimated the retirements due to MATS are unsupported and do not demonstrate that the EPA's assumptions and modeling for the MATS RIA are flawed. In fact, numerous factors unrelated to MATS have affected the rate of retirements in this sector (see Section III.A.2). Moreover, the EPA notes that, even while commenters argued that the EPA underestimated the total number of retirements that would occur, they do not provide any examples, nor could they, that the retirements that have occurred since promulgation of MATS have actually caused reliability problems.[25]

As some commenters highlighted, the EPA's proposed supplemental finding indicates that the vast majority of the generation capacity in the power sector directly affected by the requirements of MATS would be able to absorb the anticipated compliance costs and remain operational. The EPA's analysis conducted in conjunction with promulgation of the final rule demonstrated the feasibility of installing the retrofit controls projected by the EPA.[26] Given the fact that HAP control technologies are technically feasible and available, it is important to understand that the economics that drive retirements are based on multiple factors including: Expected demand for electricity, the cost of alternative generation, and the cost of continuing to generate using an existing unit. The EPA's analysis shows that factors other than MATS, such as the supply of natural gas, would have a greater impact on the number of projected retirements than the MATS rule itself.

Additionally, in order to ensure that any retirements resulting from MATS would not adversely impact the ability of the power sector to meet the demand for electricity, the EPA conducted a regional analysis of the impacts of projected retirements on electric reliability. This resource adequacy analysis looked at capacity projections in each of the 32 modeled subregions in the contiguous U.S. and demonstrated that, with the addition of very little new capacity, average reserve margins are significantly higher than required.[27] Additionally, several external analyses have reached conclusions that are consistent with the EPA's analysis.[28]

With regard to commenters' assertion that the impacts on reliability alone are not a measure of whether a rule's compliance costs are reasonable, given Congress' overall goal of maintaining the nation's productive capacity, it is reasonable for the EPA to consider such impacts as part of its consideration of costs under CAA section 112(n)(1)(A). The potential impact of MATS on reliability was one of a series of independent analyses, each supporting conclusions that the costs of MATS are reasonable.

B. Comments on Consideration of Benefit-Cost Analysis in the MATS RIA

1. Co-Benefits

Comment: Several commenters supported the EPA's conclusions regarding the benefit-cost analysis for MATS and also supported the inclusion of monetized co-benefits in that analysis. These commenters asserted that it would not be reasonable or legally defensible for the EPA to ignore the real and significant advantages of reductions in $PM_{2.5}$ and SO_2 emissions that result from reducing emissions of HAP from power plants. These commenters agreed that CAA section 112(n)(1)(A) reflects congressional intent that co-benefits are important considerations, and they highlighted legislative history, court instructions to agencies to consider indirect effects, and the EPA's consideration of co-benefits in justifying other CAA regulations. Commenters supporting the inclusion of co-benefits also noted that the EPA's consideration of co-benefits is consistent with well-settled principles of regulatory analysis supported by multiple presidential administrations of both parties as well as practices by states evaluating the benefits and costs of implementing state regulations on mercury.

Other commenters, however, argued that the EPA must conduct a monetized benefit-cost analysis to support the appropriate and necessary finding and that the agency may not include monetized co-benefits in such an analysis. These commenters argued that the plain language of CAA section 112(n)(1)(A) establishes that a finding of

[25] We note that, when promulgating MATS, the EPA recognized the statutory concern for meeting environmental goals without jeopardizing electric reliability, and consequently took steps to ensure that sources would be able to comply with the rule while maintaining a reliable supply of electricity. The rule set a 3-year compliance deadline for existing sources, which is the longest time period allowed by the statute. *See* 77 FR 9407. The rule also provided EGU specific guidance addressing how sources could obtain an extension for a fourth year from the relevant permitting authorities under CAA section 112(i)(3)(B) if such time is needed for the installation of controls. *See id.* at 9409–10. Finally, the EPA separately issued an enforcement response policy concurrently with MATS to provide additional flexibility for certain reliability-critical power plants. Memorandum from Cynthia Giles, Assistant Administrator of the Office of Enforcement and Compliance Assurance, *The Environmental Protection Agency's Enforcement Response Policy for Use of Clean Air Act Section 113(a) Administrative Orders in Relation to Electric Reliability and The Mercury and Air Toxics Standard* (Dec. 16, 2011); *see also* 77 FR 9411. To date, only a few sources have approached the agency regarding the policy.

[26] See *An Assessment of the Feasibility of Retrofits for the Mercury and Air Toxics Standards Rule.* Docket ID No. EPA–HQ–OAR–2009–0234–20001.

[27] U.S. EPA. 2011. *Resource Adequacy and Reliability in the Integrated Planning Model Projections for the MATS Rule, http://www3.epa.gov/ttn/atw/utility/revised_resource_adequacy_tsd.pdf.* Docket ID No. EPA–HQ–OAR–2009–0234–19997.

[28] 77 FR 9408.

whether regulation of HAP emitted by EGUs is ''appropriate'' must be based on the costs and benefits of regulating HAP, not other pollutants like $PM_{2.5}$. These commenters further asserted that it makes no difference whether such reductions in fine particulate matter ($PM_{2.5}$) are a ''direct consequence'' of the use of filterable PM as a surrogate for non-mercury metal HAP. These commenters argued that reductions in PM emissions are not relevant for, and cannot form the basis of, an ''appropriate'' finding.

One commenter also maintains that the EPA claims that Congress intended for the agency to take into account criteria pollutant co-benefits in shaping HAP regulation of EGUs under CAA section 112 and argues such a position is a logical fallacy.

Several commenters asserted that considering co-benefits circumvents the established regulatory framework of the CAA. These comments state that criteria pollutant emissions, like PM, are to be addressed through the national ambient air quality standards (''NAAQS'') program under CAA section 109. These commenters argued that PM co-benefits are irrelevant to the ''appropriate'' determination and that reliance on criteria pollutant emission reductions in this determination is an impermissible ''end run'' around the NAAQS program. Several commenters asserted that the EPA double-counts the co-benefits of MATS because the criteria pollutant emissions reductions should be attributable to other regulations, such as the PM NAAQS or the Cross-State Air Pollution Rule.

One commenter noted that although consideration of co-benefits in a benefit-cost analysis is fully consistent with economic principles and guidance documents, it is irrelevant to the decision about whether or not to regulate EGUs that co-benefit reductions are a direct consequence (or even an indirect consequence or mere chance relation) to HAP reductions. The commenter also asserted that the EPA's reliance on OMB guidance (OMB, 2003) is misplaced because the RIA benefit-cost analysis seeks to achieve a different purpose than is required for determining whether regulating HAP from EGUs is appropriate.

The commenters disagreeing with the inclusion of co-benefits assert that when co-benefits associated with $PM_{2.5}$ are excluded from the benefit-cost analysis for MATS, the quantified and monetized net benefits are overwhelmingly negative, which does not support a conclusion that it is appropriate to regulate HAP emissions from power plants.

Response: The EPA disagrees with the commenters stating that the EPA may not consider monetized co-benefits in determining that it is appropriate to regulate HAP emissions from EGUs if the EPA uses a formal benefit-cost analysis to support the finding. As explained in the proposed supplemental finding and the Legal Memorandum accompanying the proposal, CAA section 112(n)(1)(A) does not mandate any particular type of cost analysis. The EPA further explained in the proposed supplemental finding (80 FR 75039–41), the Legal Memorandum, and in Section IV.A above, why a formal benefit-cost analysis is not the preferred way of analyzing cost under CAA section 112(n)(1). Nevertheless, the EPA had conducted a formal benefit-cost analysis for MATS in the RIA, as required under Executive Orders 12866 and 13563. Thus, in responding to the Supreme Court's directive to consider cost, while the agency maintains that a formal benefit-cost analysis is not statutorily required or, in the Administrator's judgment, the best way to consider cost under CAA section 112(n)(1), we find that the formal benefit-cost analysis performed for the MATS rulemaking demonstrates that the benefits of the rule do substantially outweigh the costs. That analysis therefore fully and independently supports the EPA's finding that the consideration of cost does not cause us to alter our conclusion that it is appropriate and necessary to regulate HAP emissions from coal- and oil-fired EGUs.

As discussed in this response, the EPA included the air quality co-benefits associated with reductions in $PM_{2.5}$ and SO_2 (a $PM_{2.5}$ precursor) emissions when the agency evaluated the direct and indirect consequences of MATS in the RIA.[29] Regulation of a particular pollutant often necessarily and unavoidably results in reductions of other non-target pollutants. Reductions of the non-target pollutants are often referred to as ancillary reductions and the associated benefits referred to as co-benefits. All of the estimated PM co-benefits in the MATS RIA are attributable to the emissions reductions that would occur as a direct result of achieving the HAP emission limits under MATS, and these co-benefits are important, real, quantifiable, and monetizeable. Specifically, as outlined in the proposed supplemental finding (80 FR 75041), installing control technologies and implementing the compliance strategies necessary to reduce the HAP emissions directly regulated by the MATS rule also results in concomitant (co-benefit) reductions in the emissions of other pollutants such as directly emitted $PM_{2.5}$ and SO_2. While reductions of $PM_{2.5}$ and SO_2 are not the objective of the MATS rule, these emission reductions are a direct consequence of regulating the HAP emissions from EGUs.[30]

As an initial matter, the Supreme Court left it to the agency to determine a reasonable approach to considering costs in the finding, and the Court explicitly declined to address whether it would be reasonable to consider monetized co-benefits in evaluating the cost of the rule. *Michigan* v. *EPA,* 135 S. Ct. at 2711 (''[e]ven if the Agency *could* have considered ancillary benefits when deciding whether it is appropriate and necessary—a point we need not address—it plainly did not do so here'') (emphasis in original). The EPA thus first looks to whether the statutory text of the CAA addresses this issue. The statutory text of CAA section 112(n)(1)(A) supports the EPA's conclusion that it is reasonable to consider monetized co-benefit pollutant reductions as part of such an analysis. That provision directs the EPA to perform a study of the hazards to public health from EGU HAP emissions that are likely to remain after imposition of other provisions of the CAA, including the Acid Rain Program. This requirement to consider ancillary (*i.e.,* co-benefit) reductions in HAP emissions that are the result of other CAA programs highlights Congress' understanding that programs targeted at reducing pollutants other than HAP can and do result in the reduction of HAP emissions. The statutory text thus

[29] As noted in the proposed supplemental finding (80 FR 75041), ''$PM_{2.5}$ emissions are comprised in part by the mercury and non-mercury HAP metals that the MATS rule is designed to reduce. The only way to effectively control the particulate-bound mercury and non-mercury metal HAP is with PM control devices that indiscriminately collect all PM along with the metal HAP, which are predominately present as particles. Similarly, emissions of the acid gas HAP (hydrogen chloride, hydrogen fluoride, hydrogen cyanide, and selenium oxide) are reduced by acid gas controls that are also effective at reducing emissions of SO_2 (also an acid gas, but not a HAP).'' SO_2 emissions form sulfate particles in the atmosphere and contribute to ambient concentrations of $PM_{2.5}$. In the MATS RIA, the $PM_{2.5}$ co-benefits estimates included reducing exposure to both directly emitted particles as well as secondarily-formed sulfate particles. The MATS RIA did not quantify the benefits from reducing direct exposure to SO_2.

[30] Consider a hypothetical individual that quits smoking to decrease the likelihood he will develop lung cancer later in life. Although the objective of his quitting is to decrease the incidence of lung cancer, that individual will also unavoidably benefit from a decreased risk of cardiovascular disease, gum disease, and other health risks. The EPA believes that it would be unreasonable not to consider these co-benefits of quitting smoking, even though they are not the goal motivating the individual's health decision.

recognizes the relevance of benefits associated with concomitant reductions in pollutants other than the targeted pollutants. *See* CAA section 112(n)(1)(A) (requiring consideration of remaining HAP from EGUs ''after imposition of the other requirements of this chapter [*i.e.,* the CAA]''). The benefits associated with these concomitant reductions are just as real as benefits from reductions in the targeted pollutants.

In light of the requirement to consider the co-benefits of other CAA programs, the EPA believes that it is reasonable to conclude that the CAA would also allow the EPA to consider other pollutant reductions directly resulting from regulation of HAP emissions if a monetized benefit-cost analysis were required (or used as a means of considering cost at the agency's discretion) to support the appropriate and necessary finding. In addition, in the legislative history to CAA section 112(d)(2), the Senate Report recognized that MACT standards would have a collateral benefit of controlling criteria pollutants as well and viewed this as an important benefit of the air toxics program. See S. Rep. No. 101–228, 101st Cong. 1st sess. at 172; Legal Memorandum, page 25.

Even if one were to disagree that CAA section 112(n)(1)(A) and the legislative history expressly support our consideration of monetized co-benefits, nothing in the CAA, or the supporting legislative history, suggests that benefits associated with pollutants other than the targeted pollutants are irrelevant to a benefit-cost analysis or must be ignored by the EPA in this context. There is no statutory provision prohibiting consideration of direct co-benefits. The EPA believes that, consistent with economic principles and best practices regarding benefit-cost analysis and the fundamental linkages between reducing HAP emissions and reducing SO_2 and $PM_{2.5}$ emissions as a direct consequence of actions taken to meet the standards, it is reasonable to consider co-benefits in making the appropriate and necessary finding. *Chevron U.S.A. Inc.* v. *Nat'l Res. Defense Council,* 467 U.S. 837 (1984) (holding that a court will defer to an agency's position on how to interpret an ambiguous statutory provision if ''the agency's answer is based on a permissible construction of the statute''); *Catawba Cty. V. EPA,* 571 F.3d 20 (D.C. Cir. 2009) (acknowledging that the EPA is warranted deference especially when administering complicated provisions of the CAA). Further, as explained in previous Sections of this notice, the Legal Memorandum (pages 22–24) and the proposed supplemental finding (80 FR 75040), neither the statute nor the *Michigan* decision support, much less mandate, that the EPA's consideration of benefits must be limited to monetized HAP-specific benefits.

The EPA further notes that consideration of co-benefits is also consistent with economic principles and best practices, executive guidance on regulatory review, and longstanding agency practice under administrations of both parties. Commenters argued, on the one hand, that the EPA is required to undertake a formal benefit-cost analysis to support the finding. At the same time, commenters contend that the agency cannot follow standard economic principles when undertaking such an analysis in this context. The EPA agrees that a formal benefit-cost analysis is not the preferred way of analyzing cost under CAA section 112(n)(1). However, if a benefit-cost analysis is to be undertaken, and relied on, to support the finding, it should be conducted following standard economic principles. Commenters' argument that these principles should not be followed in this context undermines their argument that such a formal benefit-cost analysis is required. The EPA followed well-established principles for conducting such an analysis in the MATS RIA. Consistent with standard practice, the benefit-cost analysis for MATS accounted for all of the significant consequences of a policy decision (*i.e.,* direct and indirect, intended and unintended, beneficial and harmful). In commenters' view, however, formal benefit-cost analysis is not the best tool for evaluating costs and benefits under CAA section 112(n)(1). Their conclusion may weigh in favor of using an alternate approach such as EPA's preferred approach, but it does not provide a sufficient basis to conduct a distorted form of a benefit-cost analysis that ignores standard economic principles and well-established practices for conducting such analyses.

As noted in the proposed supplemental finding (80 FR 75039), the agency is directed to include ancillary benefits in benefit-cost analysis by economic guidance documents from OMB (2003) [31] and the EPA (2010).[32] The EPA's *Guidelines* (U.S. EPA, 2010) are based on a well-developed body of economics literature identifying rigorous methods for conducting benefit-cost analysis, were extensively peer-reviewed by the independent Environmental Economics Advisory Committee,[33] and represent the current consensus of the economics discipline as to the purpose and appropriate practice of benefit-cost analysis. As discussed in the proposed supplemental finding (80 FR 75039), the core purpose of a benefit-cost analysis is to determine whether a policy's overall net benefits to society are positive. Actions with positive net benefits (*i.e.,* benefits exceed costs) increase economic efficiency. A key requirement for conducting a proper benefit-cost analysis is that all known consequences of an action should be considered.[34]

In conducting benefit-cost analyses, the EPA routinely considers consequences (both positive and negative) that are ancillary to the intended purpose of a regulation. For example, the $9.6 billion cost estimated in the MATS RIA included costs that would be passed on to electricity customers and higher fuel costs, which are beyond the costs borne by owners of coal- and oil-fired units regulated by

[31] *See* p. 26 of OMB's *Circular A–4:* ''Your analysis should look beyond the direct benefits and direct costs of your rulemaking and consider any important ancillary benefits and countervailing risks. An ancillary benefit is a favorable impact of the rule that is typically unrelated or secondary to the statutory purpose of the rulemaking.''

[32] See p. 11–2 of EPA's *Guidelines:* ''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.''

[33] U.S. EPA—Science Advisory Board (U.S. EPA–SAB). 2009. *Science Advisory Board (SAB) Advisory on EPA's draft Guidelines for Preparing Economic Analyses (2008).* EPA–SAB–09–018. September. Available at *https://yosemite.epa.gov/sab/sabproduct.nsf/559B838F18C36F078525763C0058B32F/$File/EPA-SAB-09-018-unsigned.pdf.*

[34] Under a strict economic efficiency test, an action should only be undertaken if the benefits exceed the costs, assuming all significant consequences can be quantified and monetized. However, as both the EPA's and OMB's guidance acknowledge, there are often other important considerations, such as distributional concerns, that limit the reasonableness of employing strict economic efficiency tests in decision-making. As noted in the proposed supplemental finding (80 FR 75040), distributional concerns, such as impacts to the most exposed and sensitive individuals in a population, are important for MATS.

See p. 1–2 of the EPA's *Guidelines:* ''It is important to note that economic analysis is but one component in the decision-making process and under some statutes it cannot be used in setting standards. Other factors that may influence decision makers include enforceability, technical feasibility, affordability, political concerns, and ethics, to name but a few.''

See p. 2 of OMB's *Circular A–4:* ''Where all benefits and costs can be quantified and expressed in monetary units, benefit-cost analysis provides decision makers with a clear indication of the most efficient alternative, that is, the alternative that generates the largest net benefits to society (ignoring distributional effects). This is useful information for decision makers and the public to receive, even when economic efficiency is not the only or the overriding public policy objective.''

MATS. If it were unreasonable to consider co-benefits, then it would be unreasonable to consider these ancillary costs. The EPA notes that it similarly accounts for negative consequences such as increases in pollution emissions or concentrations (also called ''disbenefits'') in benefit-cost analyses when they occur.[35]

Because controlling HAP emissions necessarily results in fewer emissions of other non-HAP pollutants, the economic value of these consequences (*i.e.,* co-benefits) are clearly within the scope of a proper benefit-cost analysis. Based on previous peer-reviewed studies (*e.g.,* U.S. EPA, 2011),[36] the large economic value of reducing air pollution, particularly ambient $PM_{2.5}$, is well-known. Excluding such a large positive consequence has no basis in economic principles. Further, such deliberate disregard for the important consequences of an action would result in a benefit-cost analysis that would not be recognizable to most economists [37] and would provide an incorrect conclusion regarding the net impact of MATS on economic efficiency. In addition, because the monetized value of the $PM_{2.5}$ co-benefits were estimated to be $33 to $90 billion per year, it would likely be unreasonable to fail to consider such important economic consequences of MATS.

The EPA also disagrees with commenters' contentions that it is inappropriate for the EPA to consider co-benefits from reducing criteria pollutants below the level established in the NAAQS program. The EPA believes that the commenters mischaracterized the NAAQS program. As the EPA has consistently stated, the NAAQS are not zero-risk standards.[38] Unlike the CAA section 112 program, the agency is not required to take into account the health effects experienced by the most susceptible individual within at-risk populations when setting the NAAQS.[39] Further, there is no scientific basis for ignoring health benefits (including avoiding premature death) that occur as a result of reducing $PM_{2.5}$. In fact, there is a substantial body of scientific evidence supporting the existence of health impacts from exposure to $PM_{2.5}$, even at low concentrations below the NAAQS (U.S. EPA, 2009).[40] As a result, consistent with the robust scientific evidence and recommendations from multiple panels of the independent Science Advisory Board, the EPA routinely includes benefits of reductions in air pollution at levels below the NAAQS in benefits assessments. The most recent *Integrated Science Assessment for Particulate Matter* (PM ISA) concludes that the current science supports use of log-linear, no-threshold concentration-response functions, recognizing uncertainty in those relationship at concentrations where little data exists (U.S. EPA, 2009). In other words, there is no evidence of a $PM_{2.5}$ concentration below which health effects would not occur.[41] Based on these peer-reviewed scientific conclusions in the PM ISA, the EPA maintains that the most scientifically-defensible approach for estimating the benefits from reducing exposure to $PM_{2.5}$ includes benefits both above and below the levels of the NAAQS. The EPA responds to additional technical comments regarding the calculation of $PM_{2.5}$ co-benefits in the RTC document for this action.

The EPA further disagrees that the monetized $PM_{2.5}$ health benefits from MATS are double-counted with the health benefits achieved by other regulations, such as the Cross-State Air Pollution Rule or the NAAQS. The EPA's standard practice for its rules is to estimate, to the extent data and time allow, all benefits of the emissions reductions achieved by a rule beyond control requirements for other rules. If this rule was duplicative with other rules, then there would be no additional costs or benefits attributable to this rule. As stated in the EPA's previous response on this issue in the 2011 MATS rulemaking (MATS RTC, Vol 2, pp. 482–484),[42] the agency includes other rules such as the Cross-State Air Pollution Rule in the ''baseline'' in estimating the benefits and costs for rules like MATS. Any emission changes expected as a result of MATS are additional emission reductions beyond previous regulations. Therefore, the benefits from reducing $PM_{2.5}$ are not double counted—they are real additional health benefits from emissions reductions achieved by MATS alone. Further, the $PM_{2.5}$ health benefits expected from MATS are not double-counted with benefits estimated in the NAAQS RIAs. The NAAQS RIAs hypothesize, but do not predict, the control strategies that states may choose to enact. In implementing MATS, emission controls may lead to reductions in ambient $PM_{2.5}$ concentrations below the NAAQS in some areas and assist other areas with attaining these NAAQS. As noted above, because the NAAQS are not set at a level of zero risk and the science fully supports quantifying benefits below the NAAQS, the EPA considers them to be legitimate components of the total benefits estimate. Subsequent to the final MATS rule, the EPA proposed and finalized a revision to the PM NAAQS (78 FR 3086 (Jan. 15, 2013)). The RIA accompanying that rule (U.S. EPA, 2012) [43] explicitly included MATS in the baseline (p. 3–6) to avoid double-

[35] *See e.g.,* p. 5–14 of the MATS RIA.

[36] U.S. EPA. 2011. *The Benefits and Costs of the Clean Air Act 1990 to 2020: EPA Report to Congress.* Office of Air and Radiation, Office of Policy, Washington, DC. March. Available at *https://www.epa.gov/sites/production/files/2015-07/documents/fullreport_rev_a.pdf.*

[37] *See e.g.,* Chapter 1 (''Introduction'') of Just, Richard E., Darrell L. Hueth, and Andrew Schmitz. 2005. *The Welfare Economics of Public Policy: A Practical Approach to Project and Policy Evaluation.* Edward Elgar Publishing, Cheltenham, UK.

[38] In the preamble to the final revisions of the PM NAAQS in 2012 (78 FR 3090), the EPA noted that ''[t]he CAA does not require the Administrator to establish a primary NAAQS at a zero-risk level or at background concentration levels, see *Lead Industries* v. *EPA,* 647 F.2d at 1156 n.51, but rather at a level that reduces risk sufficiently so as to protect public health with an adequate margin of safety.''

[39] In the preamble to the final revisions of the PM NAAQS in 2012 (78 FR 3090), the EPA noted that ''[t]he legislative history of section 109 indicates that a primary standard is to be set at ''the maximum permissible ambient air level . . . which will protect the health of any [sensitive] group of the population,'' and that for this purpose ''reference should be made to a representative sample of persons comprising the sensitive group rather than to a single person in such a group.'' S. Rep. No. 91–1196, 91st Cong., 2d Sess. 10 (1970).''

[40] U.S. EPA. 2009. *Integrated Science Assessment for Particulate Matter (Final Report).* EPA–600–R–08–139F. National Center for Environmental Assessment—RTP Division. December. Available at *http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=216546.* Docket ID No. EPA–HQ–OAR–2009–0234–20501.

[41] The recognition that there is ''no population threshold, below which it can be concluded with confidence that $PM_{2.5}$-related effects do not occur'' (78 FR 3098) and ''there is no evidence of a threshold'' (78 FR 3119, 3138) is consistent throughout the 2012 PM NAAQS rulemaking process, including in the assumptions for quantifying the mortality and morbidity health risks in the peer-reviewed risk assessment supporting the rulemaking.

U.S. EPA. 2010. *Quantitative Health Risk Assessment for Particulate Matter—Final Report.* EPA–452/R–10–005. Office of Air Quality Planning and Standards, Research Triangle Park, NC. September. Available at *http://www.epa.gov/ttnnaaqs/standards/pm/data/PM_RA_FINAL_June_2010.pdf.*

[42] U.S. EPA. 2011. *EPA's Responses to Public Comments on EPA's National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units.* December. Volume 2 of 2. Docket ID No. EPA–HQ–OAR–2009–0234–20126.

[43] U.S. EPA. 2012. *Regulatory Impact Analysis for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter.* EPA–452/R–12–003. Office of Air Quality Planning and Standards, Health and Environmental Impacts Division, Research Triangle Park, NC. December. Available at *http://www.epa.gov/ttnecas1/regdata/RIAs/finalria.pdf.*

counting the benefits and costs of MATS in that rulemaking.

In conclusion, for all of the reasons stated above, it is appropriate for the benefit-cost analysis to consider co-benefits, which are a direct consequence of actions to reduce HAP emissions. It is consistent with economic guidance documents and best practices to include such benefits in a formal benefit-cost analysis. The inclusion of such benefits is consistent with the underlying science. In addition, including such benefits is consistent with statutory requirements in CAA section 112(n)(1)(A) and the legislative history for the CAA section 112(d) maximum achievable control technology or MACT program. The final MATS RIA demonstrates that the quantified and monetized benefits and the unquantified benefits of the rule significantly outweighed the costs of the rule; thus, that analysis fully and independently supports the EPA's determination that it is appropriate to regulate HAP emissions from EGUs.

2. Monetized HAP Benefits

Comment: Several commenters stated that the quantified and monetized mercury benefits in the MATS RIA vastly understated the full benefits from reducing mercury emissions and that there are many categories of unquantified HAP benefits. These commenters supported this conclusion by submitting recent research to the docket for this rulemaking, including studies that quantify additional categories of benefits not included the MATS RIA. Each of these cited studies [44] indicate that the monetized mercury benefits from MATS could be in the hundreds of millions to billions of dollars per year. For example, the cited Giang and Selin (2016) study found that the monetized mercury benefits from implementation of MATS would exceed $3.7 billion (in 2005 dollars) per year in lifetime benefits for affected individuals and $1.1 billion per year in economy-wide benefits. Additional commenters stated that new studies (*e.g.,* Zhang *et al.* (2016), Castro and Sherwell, 2015; Drevnick *et al.,* 2012; Evers *et al.,* 2007; Hutcheson *et al.,* 2014; Cross *et al.,* 2015) [45] demonstrate that reductions in mercury deposition to U.S. ecosystems and resulting human and ecological exposures were underestimated in the MATS RIA.

Several commenters agreed that consideration of unquantified benefits is appropriate and consistent with economic principles and best practices, executive guidance on regulatory review, and longstanding EPA practice under administrations of both parties. These commenters noted that it is important to account for the full range of benefits associated with the action, including benefits that cannot be monetized due to lack of data. For example, several commenters noted that the monetized mercury benefits in the MATS RIA did not capture the breadth and severity of the hazards that mercury poses to wildlife and the ecosystem services that wildlife provides, including benefits to fish, sensitive bird species, marine mammals, and amphibian populations. Several commenters asserted that because the monetized benefits in the MATS RIA do not cover all of the benefits from reducing HAP emitted from power plants, a formal benefit-cost comparison is incomplete and potentially misleading. However, these commenters concluded that recent scientific findings on the quantified and unquantified benefits of reducing HAP exposure supports the EPA's determination that it is appropriate to regulate HAP from power plants after considering the costs.

However, numerous other commenters asserted that the $4 to $6 million in monetized mercury benefits in the RIA were the only real benefits attributable to MATS, and thus the rule is not justified because these small benefits do not exceed the projected $9.6 billion in costs.

Response: For all of the reasons discussed above in Sections IV.A.1 and IV.B.1, the EPA disagrees with commenters that the only benefits that should be included in a benefit-cost analysis are the HAP-specific monetized benefits. When all of the benefits are properly considered, the monetized benefits of MATS far outweigh the costs.

Further, the EPA agrees with the commenters stating that the monetized mercury health benefits in the MATS RIA significantly underestimate the HAP health benefits associated with MATS. In the MATS RIA, the EPA could only quantify and monetize a small subset of the health and environmental benefits attributable to reducing mercury and none of the health and environmental benefits attributable to reductions in other HAP. As noted in the proposed supplemental finding (80 FR 75040), the monetized mercury benefits did not account for ''(1) benefits from reducing adverse health effects on brain and nervous system development beyond IQ loss; (2) benefits for consumers of commercial (store-bought) fish (*i.e.,* the largest pathway to mercury exposure in the U.S.); (3) benefits for consumers of self-caught fish from oceans, estuaries or large lakes such as the Great Lakes; (4) benefits for the populations most affected by mercury emissions (*e.g.,* children of women who consume subsistence-level amounts of fish during pregnancy); (5) benefits to children exposed to mercury after birth; and (6) environmental benefits from reducing adverse effects on birds and mammals that consume fish.'' This is because data and methods for monetizing these benefits are largely unavailable in scientific literature, including gaps in toxicological data, uncertainties in extrapolating results from high-dose animal experiments 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. However, the EPA acknowledges the submission of new research from several commenters that further corroborates the EPA's conclusion that the HAP benefits are underestimated in the MATS RIA and demonstrates the potential extent of that underestimation. See Section 3–3 of the RTC for the supplemental finding for additional details regarding new studies cited by commenters.

[44] Giang, Amanda, and Noelle E. Selin. 2016. ''Benefits of Mercury Controls for the United States.'' *Proceedings of the National Academy of Sciences* 113 (2): 286–291. Docket ID No. EPA–HQ–OAR–2009–0234–20544.

Rice, Glenn E, James K Hammitt, and John S Evans. 2010. ''A Probabilistic Characterization of the Health Benefits of Reducing Methyl Mercury Intake in the United States.'' *Environmental Science & Technology* 44 (13) (July 1): 5216–24. Docket ID No. EPA–HQ–OAR–2009–0234–19897.

NESCAUM. 2005. *Economic Valuation of Human Health Benefits of Controlling Mercury Emissions from U.S. Coal-Fired Power Plants.* Available at: *http://www.nescaum.org/documents/rpt050315mercuryhealth.pdf.*

[45] Zhang *et al.* 2016. ''Observed decrease in atmospheric mercury explained by global decline in anthropogenic emissions.'' *PNAS* 113 (3): 526–531. Docket ID No. EPA–HQ–OAR–2009–0234–20558, Exhibit 4.

Castro, M.S. and J. Sherwell. 2015. ''Effectiveness of emission controls to reduce the atmospheric concentrations of mercury.'' *Envtl. Sci. Tech.* 49(24): 14000–14007.

Drevnick, P.E., *et al.* 2007. ''Spatial and temporal patterns of mercury accumulation in lacustrine sediments across the Great Lakes region.'' *Environmental Pollution* 161: 252–260. Evers, D.C., *et al.* 2007. ''Biological mercury hotspots in the northeastern United States and southeastern Canada.'' *Bioscience* 57(1): 29–43. Docket ID No. EPA–HQ–OAR–2009–0234–20559, Exhibit I–22.

Hutcheson, M.S., *et al.* 2014. ''Temporal and spatial trends in freshwater fish tissue mercury concentrations associated with mercury emissions reductions.'' *Envtl. Sci. Tech.* 48: 2193–2202.

Cross, F.A., *et al.* 2015. ''Decadal declines of mercury in adult bluefish (1972–2011) from the mid-Atlantic coast of the U.S.A.'' *Envtl. Sci. Tech.* 49: 9064–9072.

The EPA also agrees that consideration of unquantified benefits is appropriate and consistent with economic principles and best practices, executive guidance on regulatory review, and longstanding EPA practice. The EPA agrees that it is important to recognize the full range of impacts associated with an action in a benefit-cost analysis, including those impacts that cannot be quantified or monetized due to a lack of data, for which the MATS RIA accounted qualitatively.

Although the MATS RIA did not quantify and monetize all of the benefits that would result from reducing HAP emissions, the EPA maintains that the benefits of this rule (both quantified and unquantified) are substantial and far outweigh the costs, which independently supports the determination that regulating HAP emissions from EGUs is appropriate.

3. Impacts to Tribes

Comment: One commenter representing several federally-recognized Indian tribes and inter-tribal organizations strongly agreed that a formal benefit-cost analysis is not a preferred approach to considering whether the costs of compliance are reasonable. The commenter stated that the EPA's inclusion of non-quantifiable benefits in the proposed supplemental finding is essential to the commenter's support of the agency's methodology because the benefits of MATS are difficult to monetize—and in the case of the impacts to American Indian culture—are impossible to monetize. The commenter stated that benefits of MATS to American Indians are fundamentally different in kind than the economic costs the rule imposes on coal- and oil-fired EGU operators and ratepayers and provided examples of substantial non-quantitative benefits of MATS that are unique to tribal communities. The commenter stated that American Indians are disproportionately impacted by mercury emissions because many are subsistence fishers that rely on locally-caught fish for daily sustenance and consume fish at far higher rates than the general population. The commenter stated that American Indians are therefore at unusually high risk for neurodevelopmental disorders, cardiovascular disease, autoimmune disorders, infertility, and other adverse health effects from methylmercury exposure, the impacts of which the EPA could not monetize. In addition to health concerns, the commenter describes how methylmercury contamination threatens longstanding Indian cultural traditions and critical social practices of fishing and fish consumption that are central to many tribes' cultural identity. The commenter explained that tribes are often connected to particular waters for cultural, spiritual, or other reasons (and others' fishing rights are limited to certain grounds by treaty), so they cannot simply move their fishing to another location to avoid mercury contamination. In addition, mercury fish advisories harm Indian subsistence and fishing economies, including commercial harvests and tourist revenues. The commenter states that MATS provides critical protections for Indian health, fishing rights, and traditional cultures that help the United States fulfill its legal duties to protect tribal rights and resources of American Indians and tribes.

Response: The EPA acknowledges the supportive comments of the Indian tribes and inter-tribal organizations. The EPA shares the tribes' concerns about the potential impact of mercury emissions on tribes and agrees that tribes are likely to be affected differently by mercury contamination compared to the general population. The EPA acknowledges the importance of subsistence fishing and fishing cultures to numerous tribes and agrees that those who traditionally consume fish at higher rates than the general population are disproportionately exposed to higher levels of mercury. The EPA is committed to honoring and respecting tribal treaty rights by ensuring that its actions do not conflict with those rights, and by implementing its programs to enhance protection of treaty rights where there is discretion to do so. The EPA believes that MATS will substantially reduce emissions of mercury in the U.S. and that this reduction will benefit communities with subsistence fishing lifeways, including American Indians and Alaska Natives. The EPA also acknowledges that it was unable to monetize many of the benefits of MATS and recognizes the difficulty in attempting to quantify or monetize impacts to American Indian culture.

C. Comments on the Legal Interpretation of CAA Section 112(n)(1)

Comment: Some states, tribes, industries, environmental organizations, and health organizations, and others generally supported the EPA's interpretation of the statute as set forth in the proposed supplemental finding and Legal Memorandum. Some commenters expressly agree that the purpose of CAA section 112 is to achieve prompt, permanent and ongoing reductions in HAP emissions from stationary sources to reduce the inherent risks associated with exposure to such emissions. Some commenters further agreed that these goals apply to HAP emissions from EGUs and that the EPA determined a reasonable approach to incorporating cost into the appropriate and necessary finding in light of the statute and the *Michigan* decision. Several of these commenters specifically agreed that cost should not be the predominant or overriding factor in the appropriate and necessary finding.

Response: The EPA agrees that the interpretation of the statute and the *Michigan* decision set forth in the companion Legal Memorandum is reasonable. As stated above and in detail below, the EPA stands by the interpretation in the Legal Memorandum in this final action.

Comment: Some state and industry commenters disagreed with several aspects of the EPA's interpretation of CAA section 112 and its reading of the Supreme Court's decision in *Michigan.* Several commenters argued that the Supreme Court's decision in *Michigan,* in essence, requires the EPA to discard all aspects of the EPA's prior appropriate and necessary finding. These commenters implicitly suggest that the *Michigan* decision by itself invalidates aspects of the finding unrelated to EPA's erroneous conclusion that it was not required to consider cost under section 112(n)(1)(A). These commenters argued that the agency must disregard or reevaluate all of its prior findings concerning the hazards to public health and the environment posed by HAP emissions from EGUs. They also argued that the EPA must reconsider all of its prior interpretations of CAA section 112(n)(1), including its conclusion that CAA section 112(n)(1) is a listing provision and not a regulatory provision.

For example, these commenters asserted the Supreme Court's decision in *Michigan* requires the EPA to consider the potential cost of regulating HAP emissions from EGUs under statutory provisions other than CAA section 112(d). Among the approaches that the commenters asserted the EPA *must* consider are regulation of HAP emissions under CAA sections 112(n), 112(f), and 111(d). At least one commenter also asserted that the EPA must determine whether the cost of regulation of HAP emissions by the individual states would be more cost effective than regulation of HAP emissions from EGUs under the CAA at all. No commenter suggested a specific mechanism for regulating under those other authorities or for determining the

cost of such regulation. They appear to suggest, however, that the EPA must compare the cost of these undefined approaches to regulating HAP against the potential cost of standards under CAA section 112(d), and that the EPA must regulate under the least cost option or only to the level necessary to address the identified risks.

As support for their positions, commenters point to the Supreme Court's *Michigan* decision; to the CAA section 112(n) Revision Rule and the Clean Air Mercury Rule (CAMR); to the requirement in CAA section 112(n)(1)(A) to consider ''alternative control strategies'' for emissions of HAP that warrant regulation and to regulate EGUs ''under this section [112]''; and to statements in the legislative history. Specifically as concerning the citation to the requirement to consider ''alternative control strategies'', commenters asserted that the EPA improperly interpreted the requirement when conducting the CAA section 112(n)(1)(A) Utility Study that was issued in 1998, and that if the EPA had properly conducted the Utility Study, it would have had the information necessary to conduct these additional analyses.

Some commenters also challenged the EPA's prior findings that HAP emissions from EGUs pose hazards to public health and the environment, specifically the findings for mercury, non-mercury metal HAP, and acid gas HAP. Some of these commenters also acknowledged that the Supreme Court only addressed the requirement to consider the cost of regulation in the threshold finding and did not disturb any other findings or legal conclusions in the MATS rule or the *White Stallion* decision. The commenters also resubmitted many comments previously submitted on the proposed MATS rule and addressed in the D.C. Circuit Court challenge to the MATS standards in *White Stallion.* In addition, the comments raised issues that were submitted in petitions for reconsideration on the MATS final rule and that were denied by the agency.[46] The comments included arguments that the risk threshold of 1-in-1 million is not reasonable, that the EPA cannot base the appropriate and necessary finding on environmental risks, and that the volume of HAP emissions is not a legitimate basis for listing, even when the sources are emitting at major source levels.

[46] 80 FR 24218; ''Denial of Petitions for Reconsideration of Certain Issues: MATS and Utility NSPS'' (March 2015). Docket ID No. EPA–HQ–OAR–2009–0234–20493.

The same commenters also argued that the EPA must evaluate the cost of regulating each HAP individually and may only regulate those HAP for which a specific finding is made and then only to the level of regulation that is required to address the identified risk. The commenters maintained that the EPA must separately consider the cost of regulation of each HAP emitted by EGUs under various approaches (as identified above) before regulating any of the HAP at all, and certainly before regulating all the EGU HAP under CAA section 112(d).

Commenters also argued that CAA section 112(n)(1)(A) is not a listing provision as the EPA states in the proposal. Legal Memorandum Accompanying at 2, 11–12. The commenters argued that CAA section 112(n)(1)(A) does not mention listing because listing is only a precondition to regulation under CAA section 112(d), and that the EPA was not required or even authorized to regulate EGUs under that subsection. The commenters asserted that whether to list EGUs is not the question raised by CAA section 112(n)(1)(A). Instead, the commenters asserted, the question is whether additional regulation of EGU HAP emissions under CAA section 112 is ''appropriate and necessary.'' The commenters argued that the statutory question calls for a decision to authorize or to preclude specific regulation of EGU HAP emissions under CAA section 112. One commenter further asserted that the Supreme Court's opinion in *Michigan* confirms that *New Jersey* v. *EPA,* 517 F.3d 574 (D.C. Cir. 2008), was wrongly decided on this point. The commenter asserted that the *New Jersey* holding cannot stand because the D.C. Circuit Court found that even if the ''appropriate and necessary'' CAA section 112(n) finding and CAA section 112(c) listing of EGUs were erroneous, the EPA could only remove EGUs from the list of source categories regulated under CAA section 112(d) if it followed the delisting requirements of CAA section 112(c)(9). *Id.* at 583. The commenter maintained that holding cannot stand because, according to the commenter, the Supreme Court's opinion makes clear that the ''appropriate and necessary'' finding is the gateway to deciding to regulate EGU HAP emissions under CAA section 112, and if that finding is not made, then regulation cannot be imposed. *See Michigan,* 135 S. Ct. at 2707.

Commenters further maintained that CAA section 112(n)(1)(A) requires the EPA to decide whether regulation of HAP emissions from EGUs ''under this section'' is ''appropriate and necessary'' after considering a study that addresses ''hazards to public health'' that remain ''after imposition of the requirements of this chapter,'' and ''alternative control strategies for emissions which may warrant regulation.'' Commenters characterized the EPA's first task as a requirement to find whether a residual public health hazard is posed by specific EGU HAP emissions remaining after those emissions have been reduced under other provisions of the Act. Commenters also asserted that, if the EPA finds that any remaining EGU HAP emissions pose a hazard, then the EPA must determine how and ultimately whether to regulate those emissions ''under this section [112].'' Commenters argued that the EPA must therefore calculate a ''preliminary estimate'' of the costs of the specific form of CAA section 112 regulation that it is considering. Commenters also maintained that the EPA's interpretation of the statute—which the commenters characterized as mandating regulation under CAA section 112(d) if the EPA finds that one HAP emitted by one EGU is found to pose either a residual health or environmental risk—is no longer valid because of the *Michigan* decision.

Commenters also asserted that CAA section 112(n)(1)(A) is, on its face, a residual risk regulatory provision and, as such, it requires the EPA to make a risk management decision regarding whether health risks exist, and if so, the degree to which they need to be reduced further. The commenters maintained that regulation must necessarily depend on what remaining risks, if any, are identified, that certain HAP should only be regulated to the extent necessary to address the risks and only if the monetized HAP-specific benefits exceed the costs of standards, and that the EPA must undertake this analysis before regulating each HAP individually. Commenters asserted that the statute allows the EPA to regulate only those HAP from EGUs that do pose some risk, and then only to the extent ''appropriate'' (from a cost point of view) and ''necessary'' (from a risk reduction point of view). The commenters argued that the EPA's approach impermissibly uses the risk allegedly associated with one HAP to regulate another HAP. The commenters maintain that the EPA must instead evaluate different regulatory approaches available to it in order to determine costs and benefits on an individual HAP basis. The commenters concluded that the EPA cannot interpret the statute to permit regulation of all HAP under CAA section 112(d)(2)–(3) because that approach results in high HAP control

costs for *no* HAP benefit, at least for some pollutants (*e.g.,* acid gases), according to the comments.

For acid gas HAP, the commenters appear to maintain that the EPA could potentially use CAA section 112(d) to regulate, but that the nature of such regulation must change to satisfy the *Michigan* decision. For example, some commenters asserted that the agency could impose less costly health-based emissions limits for acid gas HAP. The commenters point to other CAA section 112 standards that include CAA section 112(d)(4) health-based emissions limits for the acid gases, including the recently promulgated CAA section 112(d)(4) standards for hydrogen chloride, hydrogen fluoride, and chlorine for the Brick and Structural Clay Products Manufacturing and Clay Ceramics Manufacturing source categories as support for their position. 80 FR 65470–71 (Oct. 26, 2015).

Response: The EPA does not agree with these comments. For the reasons set forth below, the EPA stands by the interpretation of the statute and the *Michigan* decision set forth in the companion Legal Memorandum.

These comments focus on several primary arguments: (1) The *Michigan* decision rendered invalid all aspects of the EPA's interpretation of CAA section 112(n)(1)(A) as set forth in the MATS record and the portions of the *White Stallion* decision upholding the EPA's interpretation; (2) the EPA cannot satisfy its obligation to consider cost without evaluating alternatives to regulating HAP emissions from EGUs under CAA section 112(d); and 3) that the requirement to consider cost renders invalid and/or insufficient the EPA's prior analyses of the significant hazards posed by HAP emissions from EGUs as well as the EPA's specific findings regarding the risks to public health and the environment. The EPA explains below why we disagree with these arguments.

1. The Michigan decision does not disturb aspects of the EPA's interpretation of CAA section 112(n)(1)(A) that are unrelated to its prior conclusion that cost need not be considered.

Many of the comments in opposition to the EPA's interpretation of the statute are largely, if not wholly, premised on the position that the Supreme Court's decision in *Michigan* that the EPA must consider cost in the appropriate and necessary finding rendered invalid, in all respects, the EPA's prior interpretation of CAA section 112(n)(1)(A) and also the specific findings that supported the appropriate and necessary finding in the original 2000 listing and in the reaffirmation of that finding in the MATS rulemaking.[47] In essence, many of the comments opposed to the proposed supplemental finding are premised on a belief that the Supreme Court decision in *Michigan* invalidated interpretations and analyses presented in the MATS rule that were unrelated to the EPA's erroneous decision not to consider cost when evaluating whether regulation is appropriate and necessary. That premise and the assertions on which it is based lack merit.

We note that many of the commenters opposed to the proposed supplemental finding were parties to the *Michigan* case. The Court granted certiorari to consider one issue: Whether it was reasonable for the EPA to refuse to consider cost when making the section 112(n)(1)(A) ''appropriate and necessary'' finding. *Michigan,* 135 S. Ct. at 2704. The Court held that the EPA was obligated to consider cost, but emphasized that ''it 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.[48] It thus remanded the rule to the D.C. Circuit Court ''for further proceedings consistent with this opinion.'' *Id.* at 2712.[49]

In sum, the *Michigan* decision obligates the EPA to take cost into account when deciding whether regulation is appropriate and necessary but does not disturb other legal interpretations and technical findings made by the agency in support of the appropriate and necessary finding. The interpretation set forth in the Legal Memorandum reasonably incorporates a consideration of cost into the appropriate and necessary finding. The EPA's legal interpretation of CAA section 112(n)(1)(A) was, with the exception of the cost issue, unanimously upheld by the D.C. Circuit Court, and undisturbed by the Supreme Court decision. The agency thus used that legal structure as the starting point for the incorporation of cost into the appropriate and necessary finding. See *White Stallion Energy Center, LLC* v. *EPA,* 748 F.3d 1222 (D.C. Cir. 2014) (Judge Kavanaugh dissented only on the issue of cost). The commenters opposed to the EPA's interpretation make conclusory statements that the prior interpretations are rendered invalid because the EPA must consider cost in the appropriate and necessary finding. However, none of the commenters opposed to the agency's interpretation demonstrate in any substantive way that the agency's interpretation in the Legal Memorandum is unreasonable, and in developing the interpretation the agency considered not only the *Michigan* decision, but also the purpose of the 1990 amendments to CAA section 112 to obtain prompt, permanent and ongoing reductions in HAP emissions; the structure and context of the statute; and the long rulemaking and litigation history at issue in this case. The commenters did not clearly articulate an alternative to the EPA's reasoned interpretation of the role of cost in the appropriate and necessary finding; thus,

[47] The record in support of the appropriate and necessary finding is extensive and includes: (1) The three studies requires by CAA section 112(n)(1) and the additional NAS study of methylmercury directed in the appropriations report for the EPA's fiscal year 1999 appropriations; (2) the 2000 Finding, 65 FR 79825 (December 20, 2000) (Finding it appropriate and necessary to regulate HAP emissions from coal- and oil-fired EGUs and adding such units to the CAA section 112(c) list of sources that must be regulated under CAA section 112(d)); (3) the Proposed MATS rule, 76 FR 24976, 24980–25020 (May 3, 2011) (The EPA affirmed the 2000 Finding was valid at the time it was made based on the available information, and reaffirmed that it remains appropriate and necessary to regulate HAP emissions from EGUs based on new information and analyses in the proposed MATS rule); and (4) the Final MATS rule, 77 FR 9304, 9310–9366 (February 16, 2012) (reaffirming the appropriate and necessary finding and denying a petition to delist coal- and oil-fired EGUs from the CAA section 112(c) list).

[48] In addition, the Supreme Court specifically stated in the *Michigan* decision that ''EPA has interpreted the Act to mean that power plants become subject to regulation on the same terms as ordinary major and area sources, see 77 *Fed. Reg.* 9330 (2012), and we assume without deciding that it was correct to do so.'' *Id.* at 2705. This statement indicates that the Court did not intend for the *Michigan* decision to call into question legal interpretations, such as those relating to the terms on which power plants are to be regulated if an appropriate and necessary finding is made, that are beyond the scope of the grant of certiorari. All aspects of the agency's interpretation of section 112(n)(1)(A) were commented on during the MATS rulemaking and many were challenged and unanimously affirmed in the D.C. Circuit's *White Stallion* decision. The parties could have petitioned, and in one case did petition, the Supreme Court to review those other decisions. The Supreme Court explicitly limited its grant of certiorari and addressed only one question, leaving all other aspects of the *White Stallion* decision in place. It would not be reasonable to interpret the Supreme Court's decision in *Michigan* as reaching beyond the scope of the grant of certiorari to address issues that were decided by the EPA in the MATS rulemaking, and either not litigated in the lower court or unanimously upheld by that court in the *White Stallion* decision.

[49] On remand, the D.C. Circuit considered competing motions to govern the proceedings. Some states and industry asked for vacatur while the EPA, other states, industry groups and environmental NGOs asked the court to remand without vacatur. On December 15, 2015, the same D.C. Circuit panel that had originally heard the challenges to the MATS rule in the *White Stallion* case unanimously decided to remanded the proceeding to the EPA without vacatur of the rule. *White Stallion Energy Center, LLC* v. *EPA,* No. 12–1100 (Dec. 15, 2015) (order granting remand without vacatur). Docket ID No. EPA–HQ–OAR–2009–0234–20567.

the EPA finds no reason to revise the interpretations set forth in the proposed supplemental finding and the companion Legal Memorandum.

Furthermore, while not expressly stated, the commenters appear to assume that the EPA could never justify the cost of the MATS rule and that no analysis of whether the costs of the rule are reasonable would even be relevant. The Administrator disagrees and believes the EPA should evaluate and consider the cost of the MATS rule. Furthermore, having concluded that the cost of MATS is reasonable under several metrics and that the rule will not impair the ability of the industry to provide reliable electricity, the Administrator believes she must consider those conclusions. In light of those conclusions and the findings that HAP emissions pose significant hazards to public health and the environment that will not be addressed through imposition of the other requirements of the CAA, the Administrator concludes in this final notice that regulation is appropriate and necessary.[50] The EPA went through an extensive process that spanned approximately 20 years before finally establishing standards for HAP emissions from EGUs in 2012. The agency took comment on its legal interpretations and on its findings that HAP emissions from EGUs pose hazards to public health and the environment. Many of those interpretations and findings were challenged in the D.C. Circuit Court in petitions to review MATS, and some were not. With the exception of the cost issue, the challenges were unanimously rejected by that Court in the *White Stallion* decision.[51]

The EPA's approach to evaluating cost is also supported by the *Michigan* decision wherein the Court directed the agency to ''consider cost—including, most importantly, cost of compliance—before deciding whether regulation is appropriate and necessary.'' 135 S. Ct. 2711. The ''cost of compliance'' at issue in that case was the cost of MATS, and, as the EPA finds that the costs associated with the rule are reasonable under several different metrics, the agency cannot and should not ignore those conclusions. The *Michigan* decision itself does not, as some commenters appear to suggest, draw any conclusions regarding whether the cost of MATS is reasonable, or otherwise undermine the EPA's conclusion that the costs are reasonable. In addition, the EPA does not rely on this conclusion alone to support a determination that regulation is appropriate and necessary. Instead, as explained in greater detail in the proposed notice and this final action, the EPA's conclusion that the cost of MATS is reasonable is but one of the factors the agency considers when determining whether regulation is appropriate and necessary.

2. Cost considerations can reasonably be incorporated as an additional factor to be considered under CAA section 112(n)(1)(A) without disturbing the EPA's prior interpretation of the statutory structure.

The agency has reversed its prior conclusion that cost need not be considered when making an appropriate and necessary finding and adopted a new interpretation of the role of cost in that finding. That new interpretation is consistent with the *Michigan* decision and the EPA's non-cost-related interpretations of CAA section 112(n)(1)(A) that went through notice and comment during the MATS rulemaking and were upheld in *White Stallion.* The commenters appear to assume, without much explanation, that the requirement to consider cost renders the EPA's prior interpretation unreasonable because, according to the commenters, the approach set forth in the proposed supplemental finding did not, in their view, give sufficient weight to cost. The commenters seek to overturn several of the EPA's prior conclusions regarding CAA section 112(n)(1)(A) such as: (1) The appropriate and necessary finding can be based on a finding that significant hazards to public health and/or the environment remain after imposition of the requirements of the Act; (2) the finding can be based on an identified hazard for any one HAP; and (3) the most reasonable approach to regulating HAP emissions from EGUs is listing under CAA section 112(c) and regulation under CAA section 112(d) after a finding that regulation is appropriate and necessary. The *Michigan* decision does not undermine the legitimacy of any prior interpretation except the conclusion that cost need not be considered. It was thus reasonable for the EPA to take these prior conclusions into consideration when determining the manner in which to incorporate a consideration of cost into the appropriate and necessary finding.

The EPA discussed the *Michigan* decision in the proposed supplemental finding and explained how cost can be reasonably incorporated into the statutory structure that was otherwise unanimously affirmed by the D.C. Circuit. Thus, the agency expressly stated in the proposed supplemental finding that it was not reopening or requesting comment on issues beyond its proposed approach to incorporating a consideration of cost as an additional factor into the appropriate and necessary finding. 80 FR 75028. Comments on other interpretations are therefore outside the scope of this rulemaking. Nonetheless, the EPA explains below why it disagrees with the comments and also addresses the specific arguments raised by the commenters in support of their positions.

As background, the EPA issued MATS in response to the *New Jersey* decision vacating the EPA's CAA Section 112(n) Revision Rule removing coal- and oil-fired EGUs from the CAA section 112(c) list and CAMR regulating such units under CAA section 111(d) instead of CAA section 112(d). *New Jersey* v. *EPA,* 517 F.3d 574 (D.C. Cir. 2008) (vacating the delisting action as inconsistent with the statute because the EPA did not comply with the requirements for delisting in CAA section 112(c)(9), and also vacating CAMR because the EPA stated that the rule could not be legally supported if EGUs remained on the CAA section 112(c) list). The *New Jersey* court did not address the legal interpretations of CAA section 112(n)(1)(A) nor the conclusions that HAP emissions from EGUs did not pose a hazard to public health that supported the appropriate and necessary finding.[52]

The EPA recognized in MATS that it must reevaluate the prior interpretations of the statute and the technical findings concerning the hazards to public health from HAP emissions from EGUs as part

[50] In light of *New Jersey* v. *EPA,* 517 F.3d 574 (D.C. Cir. 2008), the EPA may only remove coal and oil-fired EGUs from the CAA section 112(c) list if it demonstrates that the delisting criteria in CAA section 112(c)(9) have been met. A finding by the EPA that regulation of these sources is not appropriate or necessary would not be a sufficient basis for the EPA to remove EGUs from the CAA section 112(c) list, but the D.C. Circuit Court could vacate the rule upon review if the court concluded the agency's revised finding was unreasonable.

[51] Judge Kavanaugh dissented on the cost issue but otherwise joined the majority on all other challenges to the appropriate and necessary finding and HAP standards, including the EPA's decision to decline to establish a health based emission limit for acid gas HAP under section 112(d)(4) and to establish a more stringent beyond-the-floor standard for Hg from certain coal-fired EGUs. The fact that Judge Kavanaugh dissented on the cost issue alone suggests that it is separate and distinct and that a decision that cost must be taken into consideration does not upend the other holdings in *White Stallion.*

[52] Several commenters wrongly asserted that the Section 112(n) Revision Rule was based on a determination that it was neither appropriate nor necessary to regulate HAP emissions because of cost. In fact, the EPA concluded that cost need not be considered in that revised finding because the agency concluded that HAP emissions from EGUs did not pose a hazard to public health warranting regulation based on the agency's interpretations of the statute in the 112(n) Revision Rule.

of the appropriate and necessary finding. In the process of reviewing the conclusions in the Section 112(n) Revision Rule, the EPA determined that the interpretations contained in that rule should be revised to better reflect the structure and intent of the statute and concluded that the prior technical findings were either insufficient (*e.g.,* for mercury) or essentially absent (*e.g.,* non-mercury metal HAP and acid gas HAP). Thus, the agency addressed in detail how it intended to interpret the statute going forward, how the interpretation of the statute in MATS was consistent with the 2000 Finding, and how the new interpretation differed from the interpretation in the Section 112(n) Revision Rule. *See* 76 FR 24986–24998. The agency received numerous comments on the interpretations and the EPA responded to those comments in the final MATS rule and the RTC document. *See* 77 FR 9319–9336; see also MATS RTC, Vol. I.[53] In affirming all of the changes in interpretation, the *White Stallion* court found that the agency has authority to change its interpretation of CAA section 112(n)(1)(A) as long as ''the policy is permissible under the statute, that there are good reasons for it, and that the agency believes it to be better.'' *White Stallion,* 748 F.3d at 1235. Stated another way, a change is prohibited unless the agency determines that the alternative is legally permissible, that there is a good reason for the change, and that the alternative interpretation is better. *Id.* As explained further below, the commenters' suggested alternatives may not be reasonably supported under the terms of the statute. In addition, the EPA neither believes there are good reasons to adopt the alternatives offered nor finds that they would better address the identified risks and further the goals of the statute. The commenters appear to (and in at least one case expressly) place cost above all other considerations and the agency does not see ''good reasons'' for adopting that interpretation above our own in the comments, in the statute, or in the legislative history. *See* Legal Memorandum. There is no basis for concluding that any of these alternative approaches are mandatory, and the agency does not believe they are ''better'' than the approach we set forth in the MATS rule and the proposal notice. Among other things, as discussed below, the alternatives offered by commenters lack structure, are not easily supported by the statutory language, and do not further the statutory goals better than the EPA's approach.

Under the commenters' approaches, the EPA would be required to make specific separate cost findings for each HAP, but only if the EPA has determined that the HAP at issue poses a hazard to public health (not the environment). The commenters argued that the *Michigan* decision mandates this approach, but it does not. The Supreme Court did not disturb the EPA's prior conclusions (which were upheld in *White Stallion*) that the appropriate and necessary finding can be based on a finding that any one HAP emitted by EGUs poses a hazard to public health *or* the environment, that the statute contemplates that regulation under CAA section 112 will occur by listing pursuant to CAA section 112(c) based on the appropriate and necessary finding, and that EGUs are regulated like other sources once listed. In fact, the Supreme Court specifically limited its grant of certiorari and did not, as some petitioners had requested, grant certiorari on the question of whether the EPA ''may regulate EGU HAP emissions that pose no hazard to public health.'' See UARG Petition for Writ of Certiorari, July 14, 2014.[54] The request for certiorari on this question focused on the lower court's conclusion that it was permissible for the EPA to regulate acid gas HAP from EGUs absent specific conclusions regarding public health hazards associated with such emissions from EGUs. The Supreme Court also explicitly acknowledged and did not disturb the conclusion that once the agency finds it appropriate and necessary to regulate HAP emissions from EGUs, power plants are regulated like other sources. *See Michigan* at 2705. The approach selected by the EPA is consistent with these undisturbed prior conclusions, and nothing in *Michigan* mandates that the EPA take a different approach now.

The rationale for these conclusions is valid and in no way undermined by the conclusion that the EPA must incorporate cost considerations into the appropriate and necessary finding. The EPA stated in MATS that ''the use of the terms section, subsection, and subparagraph in section 112(n)(1)(A) demonstrates that Congress was consciously distinguishing the various provisions of section 112 in directing EPA's action under section 112(n)(1)(A). Congress directed the agency to regulate utilities ''under this section'' not ''under this subparagraph [112(n)],'' and accordingly EGUs should be regulated under section 112 in the same manner as other categories for which the statute requires regulation.'' *See* Final MATS, 77 FR 9326. The agency also cited the *New Jersey* case wherein the D.C. Circuit Court found that CAA section 112(n)(1) ''governs how the Administrator decides whether to list EGUs'' and that once listed, EGUs are subject to the requirements of section 112. *Id. citing New Jersey,* 517 F.3d at 583 The *New Jersey* court expressly noted that ''where Congress wished to exempt EGUs from specific requirements of section 112, it said so explicitly,'' noting that ''section 112(c)(6) expressly exempts EGUs from the strict deadlines imposed on other sources of certain pollutants.'' *Id.* The EPA concluded that ''Congress did not exempt EGUs from the other requirements of section 112, and, once listed, the EPA is reasonably regulating EGUs pursuant to the standard-setting provisions in section 112(d), as it does for all other listed source categories.'' Id.

During the MATS rulemaking, the EPA explicitly considered and rejected comments suggesting that the agency could regulate under CAA section 112(n)(1), and neither the EPA's conclusion nor its rationale are affected by the *Michigan* decision. As the agency explained ''even assuming for the sake of argument, that we could issue standards under section 112(n)(1), we would decline to do so because there is nothing in section 112(n)(1)(A) that provides any guidance as to how such standards should be developed.'' Id. The EPA noted that ''[a]ny mechanism we devised, absent explicit statutory support, would likely receive less deference than a CAA section 112(d) standard issued in the same manner in which the Agency issues standards for other listed source categories.'' Id.[55] A requirement to consider cost does not change these conclusions.

[53] The commenters do not in any meaningful way attempt to demonstrate why the prior reasoned interpretations are suddenly unreasonable because of cost. The agency maintains the lack of specificity and failure to explain more fully why those prior interpretations must be rejected because of cost is a significant flaw in the comments. *See* CAA section 307(d)(7)(B) (''Only an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment . . . may be raised during judicial review.'').

[54] Docket ID No. EPA–HQ–OAR–2009–0234–20563.

[55] Several commenters asserted that the EPA indicated that it must regulate HAP emissions from EGUs under CAA section 112(d), but this argument is contradicted by the quoted statement from the final rule explaining that any other mechanism would likely receive less deference. The EPA maintained in the MATS rule that the best reading of the statute was that an affirmative appropriate and necessary finding should be followed by listing under CAA section 112(c) and regulation under CAA section 112(d). *See e.g.,* 77 FR 9326. The EPA did not, however, identify an alternative approach to regulation ''under this section [112]'' that is as reasonable or defensible as the approach we followed, and the commenters have not provided any.

The *White Stallion* court upheld the EPA's determination to regulate under CAA section 112(d) and held:

> EPA acted properly in regulating EGUs under § 112(d). Section 112(n)(1)(A) directs the Administrator to ''regulate electric steam generating units under this section, if the Administrator finds such regulation is appropriate and necessary.'' CAA § 112(n)(1)(A). EPA reasonably interprets the phrase ''under this section'' to refer to the entirety of *section 112. See Desert Citizens Against Pollution* v. *EPA,* 699 F.3d 524 (D.C. Cir. 2012). Under section 112, the statutory framework for regulating HAP sources appears in § 112(c), which covers listing, and § 112(d), which covers standard-setting. *See* CAA § 112(c), 112(d). This court has previously noted that ''where Congress wished to exempt EGUs from specific requirements of section 112, it said so explicitly.'' New Jersey, 517 F.3d at 583. *EPA reasonably concluded that the framework set forth in § 112(c) and § 112(d)—rather than another, hypothetical framework not elaborated in the statute—provided the appropriate mechanism for regulating EGUs under § 112 after the ''appropriate and necessary'' determination was made.* Therefore, EPA's interpretation is entitled to deference and must be upheld.

White Stallion, 748 F.3d at 1243–44 (*emphasis added*).

The *White Stallion* court also addressed, and rejected, arguments that the EPA erred by regulating all HAP emissions from EGUs:

> Although the petitioners attempt to distinguish *National Lime* on grounds that it concerned ''major sources'' rather than EGUs, they have not provided any compelling reason why EGUs should not be regulated the same way as other sources once EPA has determined that regulation under § 112 is ''appropriate and necessary.'' It also bears emphasis that the plain text of § 112(n)(1)(A) directs the Administrator to ''regulate electric utility steam generating units''—not to regulate their emissions as petitioners suggest. This source based approach to regulating EGUs HAPs was affirmed in *New Jersey,* 517 F.3d at 582, which held that EGUs could not be delisted without demonstrating that EGUs, as a category, satisfied the delisting criteria set forth in § 112(c)(9). The notion that EPA must ''pick and choose'' among HAPs in order to regulate only those substances it deems most harmful is at odds with the court's precedent.

White Stallion, 748 F.3d at 1244–45.[56]

There is no basis for commenters' assertion that these interpretations are rendered unreasonable or otherwise invalid by the requirement that the EPA consider cost as part of the appropriate and necessary determination. Moreover, the agency's incorporation of a consideration of cost into the prior interpretation is reasonable, supported by the statutory text and context of the provision, and consistent with the purpose of the statute. *See* Legal Memorandum.

3. The EPA is not required to consider the potential cost of alternative approaches to regulating HAP emissions from EGUs before finding that regulation is appropriate and necessary.

As explained above, commenters maintain that listing under CAA section 112(c) and regulation under CAA section 112(d) is not reasonable for EGUs and that the EPA must instead look to other provisions of the statute to develop a regulatory approach that is only as costly as necessary to address specifically identified hazards to public health (hazards to the environment would not be sufficient to justify regulation of any HAP according to many commenters opposed to the agency's interpretation). The commenters point to various provisions including CAA sections 112(n)(1), 112(f), and 111(d), and to the potential for state action,[57] and the commenters assert that the EPA must consider all these different approaches for each HAP, in addition to, or instead of, evaluating the cost reasonableness of MATS. The EPA does not agree that these alternative approaches are mandated by the *Michigan* decision or by the statute for the reasons above and as explained further below.

As an initial matter, the commenters do not suggest a clear framework for developing standards under those alternative approaches and the statute does not provide one. The D.C. Circuit stated that the EPA is not required to adopt a ''hypothetical framework not elaborated in the statute''; thus, even if HAP emissions could theoretically be regulated under the alternative provisions of the CAA identified by the comments, the agency could reasonably decline to adopt those alternative approaches in lieu of the reasonable approach affirmed in *White Stallion. See* 748 F.3d at 1244.

The lack of a statutory framework for the alternative approaches suggested by commenters would frustrate if not wholly undermine the agency's ability to achieve prompt, permanent and ongoing reductions in HAP emissions from EGUs after completion of the studies, thus unduly frustrating the purpose of CAA section 112. As the EPA explained in the Legal Memorandum, CAA section 112(n)(1) required the agency to conduct the three studies that Congress thought most relevant to a determination of whether to regulate HAP emissions from EGUs within 4 years of the 1990 amendments to ensure that the EPA would have the information required to make the appropriate and necessary finding. Legal Memorandum at 13–18. The EPA maintains that this direction ensured that the agency could list and regulate HAP emissions from EGUs if warranted. Conversely, the commenters' different and supposedly mandated approaches would make it virtually impossible to obtain prompt reductions in HAP emissions,[58] and none of the approaches would require ongoing evaluation of HAP emissions from EGUs. In addition, because of the legal uncertainty

[56] The findings in the *White Stallion* are premised in part on the holding in the *New Jersey* decision and those findings undermine many of the commenters' arguments against the EPA's interpretation of the proper role of cost in the appropriate and necessary finding. This fact explains why the commenters opposed to EPA's interpretation argue that the *Michigan* decision demonstrates that the *New Jersey* decision was wrongly decided. The commenters are incorrect in their assertions and certain commenters petitioned the Supreme Court for certiorari to review the *New Jersey* decision, and the request was denied. The commenters point to no legal precedent for their position and rely instead on a convoluted argument associated with the EPA's inability to delist a listed sources category without complying with CAA section 112(c)(9). However, the commenters failed to acknowledge that the EPA is not the only entity that can remove a source category from the section 112(c) list, and the other entity, in this case the D.C. Circuit Court, is not required to comply with the section 112(c)(9) requirements. CAA Section 112(e)(4) of the statute clearly authorizes judicial review of any listing decision pursuant to section 307(d) when the EPA issues section 112(d) standards. The courts thus have authority to determine that a listing was improper and to vacate any such listing. In this manner, an improper source category listing could be corrected.

[57] The comments suggesting that the EPA must consider potential state action prior to making the appropriate and necessary finding is in direct conflict with CAA section 112(n)(1)(A). That provision only requires the agency to consider the potential impact of CAA requirements on HAP emissions from EGUs when determining whether hazards to public health remain ''after imposition of the requirements of this chapter [the CAA].'' See CAA section 112(n)(1)(A). In light of this limitation, we do not believe the agency could reasonably defer federal regulation of HAP emissions from EGUs because of potential state action.

[58] We note that collectively the comments would mandate a significant process after the agency completes the section 112(n) studies that would necessarily delay potential regulation indefinitely. Even if we assume that the commenters would argue that EPA need not take the time to evaluate the cost of standards under section 112(d) (*i.e.,* the MATS HAP standards), a position with which we disagree as explained above, the different approaches to considering cost under the different provisions would be difficult for a number of reasons, including the fact that there are no defined mechanisms for setting the level of the standard and there is no indication in the comments when the EPA would be authorized to conclude that sufficient alternatives had been evaluated. Even if only one of the alternative approaches were chosen, because there are no defined standards, commenters could provide endless alternative approaches with different costs and benefits. The EPA declines to interpret the statute in ways that are not mandated by the statute and that we believe would frustrate the purpose of the statute.

surrounding the alternative approaches, the potential for loss in court makes the risk that the standards will not be permanent arguably unacceptable.

We next address the commenters' assertion that the EPA could regulate under CAA section 112(f) and that such an approach is proper because CAA section 112(n)(1)(A) is a residual risk provision.[59] As a legal matter, the commenters have failed to explain how the EPA could jump to regulation under CAA section 112(f)(2) when that provision, on its face, only applies after promulgation of CAA section 112(d) standards. See CAA section 112(f)(2)(A) (requiring review ''within 8 years after promulgation of standards . . . pursuant to subsection (d) of this section''). In addition, CAA section 112(f)(2) embodies the failed approach to regulating HAP that existed prior to the 1990 amendments wherein the agency listed as HAP only those air pollutants that the agency determined pose a risk and then regulate sources of those identified HAP based solely on the risk to human health. *See* Legal Memorandum at 9. As explained in the Legal Memorandum, the statute was completely revised in 1990 to ensure that there would be prompt, permanent and ongoing reductions in HAP emissions from stationary sources that meet the listing criteria. *Id.* at 6–7. CAA section 112(d) contains the statutory mechanism adopted to ensure prompt reductions and the risk approach incorporated into CAA section 112(f) was explicitly relegated to secondary status. *Id.* at 6–11. Under this statutory scheme, the risk analysis is conducted when standards are reviewed and no provision authorizes setting standards, in the first instance, based on a CAA section 112(f) risk analysis. In addition, the fact that CAA section 112(n)(1)(A) uses the terms ''section, ''subsection'' and ''subparagraph'' in a very careful and deliberate manner is an indication that Congress consciously directed the EPA to the relevant provisions of CAA section 112. If Congress intended the EPA to regulate under CAA section 112(f), it could have directed the EPA to that provision; in fact, however, the statute directs the agency to regulate under CAA section 112 as a whole.

Commenters' challenges based on the legislative history are equally misplaced. The EPA has reviewed the legislative history cited by the commenters and the agency does not agree that it mandates or even supports the commenters' assertions concerning the proper consideration of cost. Commenters on the MATS rule used much of the same legislative history to argue against the non-cost related aspects of EPA's interpretation of CAA section 112(n)(1)(A), and the agency explained why the legislative history did not undermine the EPA's interpretation or compel a different approach. *See e.g.,* 77 FR 9320–9323. The *Michigan* decision did not rely on the legislative history at all in its opinion, much less adopt the commenters' interpretation of that history. Instead, the Supreme Court relied on the context of the statute, specifically citing the requirement to consider cost in the Mercury Study required pursuant to CAA section 112(n)(1)(B). *See Michigan,* 135 S. Ct. at 2708 and 2710. For these reasons, and after review of the additional legislative history cited, the EPA confirms that the legislative history does not mandate a particular approach to considering cost pursuant to section 112(n)(1)(A). *See* RTC, Chapter 1 (providing additional discussion of the legislative history cited by commenters).

Commenters also argue that the direction to conduct the Utility Study in CAA section 112(n)(1)(A) required the agency to consider regulation of HAP under other CAA authorities and that the agency incorrectly interpreted the scope of the study. Specifically, the commenters assert that the requirement to ''develop and describe . . . alternative control strategies'' for HAP emissions was a requirement to devise alternative regulatory approaches (other than CAA section 112(d)) for reducing HAP emissions from EGUs and further required the agency to evaluate the comparative cost of the different approaches. The commenters argue that if the EPA had done what it was ''supposed'' to do in the study, it would have had the information commenters maintain is necessary to properly consider cost. The commenters' argument is flawed for several reasons. First, a natural reading of the statute does not support the type of analysis the commenters suggest is mandated and the legislative history does not support that conclusion either. In addition, the EPA completed the Utility Study in 1998 and to comply with the requirement to consider alternative control strategies the agency considered mechanisms to reduce HAP from EGUs before, during, and after combustion. *See* Utility Study, Chapter 13. The Utility Study was the last of the CAA section 112(n)(1) studies completed and Congress never indicated that the agency erred in the conduct of that study. Conversely, in the EPA's Fiscal Year 1999 appropriations report, Congress did direct the agency to fund a NAS study to determine a reference dose for methylmercury, which is essentially the same study that was required in CAA section 112(n)(1)(C), and the appropriations report stated that the EPA should not make the appropriate and necessary finding until after consideration of the NAS study. *See* Legal Memorandum, *citing* H.R. Conf. Rep. No 105–769, at 281–82 (1998). The fact that Congress specifically requested more information in relation to one of the CAA section 112(n)(1) studies undermines the commenters' position that the EPA erred in the conduct of the Utility Study. Finally, the commenters fail to note that CAA section 112(n)(1)(A), unlike CAA section 112(n)(1)(B), did not require the agency to consider the cost of the alternative control strategies that the agency identified, thus further undermining their position that EPA erred in its conduct of the Utility Study. Congress could have explicitly required the EPA to consider the costs of alternative control strategies under CAA section 112(n)(1)(A). The fact that it did not do so is significant, particularly in light of the fact that it did include such a requirement in the very next subsection. For all these reasons, we reject the contention that the EPA erred in the conduct of the Utility Study.

4. The Michigan decision does not affect the EPA's prior analyses and conclusions regarding the risks of HAP and its prior findings of hazards to public health and the environment from EGU HAP emissions.

The commenters challenge either expressly or impliedly the legal and technical bases on which the agency determined that HAP emissions from EGUs pose hazards to public health and

[59] The characterization of CAA section 112(n)(1)(A) as a residual risk provision of a kind with the CAA section 112(f) residual risk program is not reasonable. As indicated in the Legal Memorandum, the only EGU specific regulatory program enacted in the 1990 amendments to the CAA was the title IV acid rain program (ARP). The ARP was a trading program directed at the reduction in SO_2 and NO_X. Conversely, under CAA section 112(f), the EPA evaluates whether a residual risk from HAP emissions remains within 8 years of implementation of section 112(d)(2) MACT standards. *See* CAA section 112(f)(2)(A). The requirement to comply with a trading program that does not require controls on any particular source or for any HAP does not in any meaningful way compare to the application of MACT standards that require reductions in all HAP emitted from a source category. As explained throughout the MATS rulemaking, CAA section 112(n)(1)(A) was included in the CAA in large part because EGUs were uniquely affected by the ARP and there was a belief that ARP trading program and other CAA programs applicable to all major stationary sources (*e.g.,* NSR, PSD, haze) might address any risks associated with HAP emissions from EGUs. CAA section 112(n)(1)(A) required the EPA to estimate potential HAP risk after implementation of the ARP and other programs, and the EPA found unacceptable risks remain in 2000 and again in 2012, more than 20 years after the CAA amendments.

the environment. Specifically, the commenters state that environmental harms cannot form the basis for a finding that it is appropriate to regulate HAP emissions from EGUs, that the 1-in-1 million standard is not reasonable, that HAP volume (particularly major source levels) is not a basis for determining risk, and that the agency has not demonstrated that a sufficient risk exists to warrant regulation of HAP emissions from EGUs. While we believe these comments are outside the scope of the proposed supplemental finding because they raise issues unrelated to cost, we respond briefly below.

As to the consideration of environmental harms and the 1-in-1 million standard, the *White Stallion* court unanimously affirmed the reasonableness of these standards for evaluating whether it is appropriate to regulate HAP emissions from EGUs. *White Stallion,* 748 F.3d at 1236 (finding that ''EPA reasonably relied on the § 112(c)(9) delisting criteria [including the 1-in-1 million standard] to inform the interpretation of the undefined statutory term 'hazard to public health.' ''), and 748 F.3d at 1242 (finding that ''[i]n the absence of any limiting text, and considering the context (including § 112(n)(1)(B)) and purpose of the CAA, the EPA reasonably concluded that it could consider environmental harms in making its 'appropriate and necessary' determination.''). The *Michigan* decision indirectly confirms that environmental harms are a valid basis for the finding because it is CAA section 112(n)(1)(B) that the Supreme Court cites as the context that demonstrates costs are relevant to the appropriate finding. The *Michigan* decision noted that the EPA used CAA section 112(n)(1)(B) to justify (in part) the consideration of environmental harms in support of the appropriate finding so it was unreasonable in the majority's view to ignore costs, which were also a required consideration under that provision. *Michigan,* 135 S. Ct. at 2708. It is unreasonable to conclude based on the *Michigan* decision that the statute requires a consideration of cost and precludes in any way a consideration of environmental impacts. *Id.* (''*Chevron* allows agencies to choose among reasonable interpretations of a statute; it does not license interpretive gerrymandering under which an agency keeps parts of statutory context it likes while throwing away parts it does not.'').

Commenters note that the *White Stallion* court specifically declined to determine ''whether environmental effects *alone* would allow the EPA to regulate EGUs under § 112, because EPA did not base its decision *solely* on environmental effects'', and they argue that because the agency must consider cost, the appropriate finding for acid gas HAP cannot stand because it was based only on environmental effects.[60] 748 F.3d at 1242. Initially, we note that the commenters are not correct that the appropriate finding for acid gas HAP was based solely on environmental effects, as it was also based on the major source status of almost all EGUs and the concern about the potential for these emissions to add to the already high atmospheric levels of other chronic respiratory toxicants. *See, e.g.,* 76 FR 25015–16; 77 FR 9363. More importantly, as with all of these comments, the arguments are based on an assumption that the EPA's prior interpretations of the act are invalid (*e.g.,* that the EPA will list under CAA section 112(c) and regulate under CAA section 112(d) if we determine regulation is appropriate and necessary; that the EPA can base the finding on a hazard from one HAP), and we explain above why the consideration of cost does not mandate or otherwise support a change in the agency's interpretation in the MATS rule, as supplemented by the Legal Memorandum.[61]

Concerning the consideration of the volume of HAP emissions in the appropriate finding, the EPA explained in the Legal Memorandum why volume of HAP is relevant to the appropriate finding because one of the goals of the CAA is to obtain permanent reductions in the volume of HAP emissions from major stationary sources. *See, e.g.,* Legal Memorandum at 17. The commenters do not directly address the EPA's argument and instead state that CAA section 112(n)(1)(A) clearly prohibits the consideration of the volume of HAP as a basis for regulating HAP emissions from EGUs.[62] The commenters' next point to acid gas HAP specifically and argue that the EPA cannot consider major source levels of those HAP because CAA section 112(n)(1)(A) was enacted in part because of the Acid Rain Program and if Congress wanted to regulate major source levels of HAP from EGUs it would simply have directed the agency to list and regulate EGUs. That argument is unpersuasive as Congress could have just as easily prohibited the EPA from regulating acid gas HAP emissions from EGUs if that was the intent. In addition, the EPA does not believe the commenters' interpretation is better than the agency's in light of the overall context of the CAA and the purpose of the 1990 CAA amendments. The history of CAA section 112(n)(1)(A) suggests that it was included due to uncertainty about whether the Acid Rain Program in Title IV and other CAA programs would sufficiently reduce HAP emissions from EGUs and Congress' interest in better understanding the impact of such reductions on risk before authorizing

[60] The commenters' argument against regulating acid gas HAP does not apply to the non-mercury metal HAP risk assessment because that assessment found a hazard to public health, and commenters agreed that hazards to public health form a valid basis for the appropriate finding. For this reason, the commenters instead attempt to reargue issues raised and responded to in the MATS rule and the agency's response to petitions for reconsideration. See 80 FR 24218 (April 30, 2015) (providing notice of the document titled ''Denials of Petitions for Reconsideration of Certain Issues: MATS and Utility NSPS'', March 2015. Docket ID No. EPA–HQ–OAR–2009–0234–20493). Specifically, the commenters cited data submitted after the final MATS rule was issued as supporting their conclusion that non-mercury metal HAP do not pose a significant risk. The EPA responded to the petitions in the reconsideration denials document, and certain commenters are currently challenging the agency's denial of that petition for reconsideration in the D.C. Circuit Court. For these reasons, the specific arguments challenging the sufficiency of the finding are outside the scope of this action and they require no additional response.

[61] Though some commenters acknowledged that the findings from the lower court were not disturbed, they appear to ignore the fact that the *White Stallion* court unanimously found that the hazards to public health from mercury emissions alone supported the appropriate finding. 748 F.3d at 1245. The commenters' attempt to use the limited nature of the *White Stallion* decision (*i.e.,* find the determination sufficiently supported by the mercury health risks alone) as a justification for rearguing the merits of the other technical findings the EPA cited in support of the conclusion that regulation of HAP emissions from EGUs is appropriate and necessary (*e.g.,* the non-mercury metal HAP related health findings, the mercury-related environmental findings, the acid gas HAP-related environmental findings, and the finding that the volume of HAP from EGUs support the decision to regulate). The commenters have not shown in any way how a consideration of cost necessarily implicates the actual development of the specific risks finding in the MATS record, and the agency explained in the Legal Memorandum that cost plays no role in those analyses. See Legal Memorandum at 10–11. Instead, cost is a factor only if the agency has first concluded that HAP emissions from EGUs pose a hazard to public health or the environment that will not be addressed through imposition of the other requirements of the act. Id. For these reasons, neither the requirement to consider cost nor issues related to the manner in which the EPA incorporated cost into the appropriate and necessary finding, has any impact on the health and environmental findings, and commenters' challenges are thus beyond the scope of this rulemaking.

[62] The commenters appear to assume that the EPA was concerned only with the volume of acid gas HAP emissions from EGUs. In fact, the EPA determined that EGUs emitted almost half of all U.S. anthropogenic emissions of mercury, and more than half of all U.S. anthropogenic emissions of selenium, hydrogen chloride, hydrogen fluoride, and arsenic, along with significant volumes of other HAP such as nickel. The agency maintains it would be unreasonable not to at least consider the significant contribution of HAP emissions from EGUs in light of the statutory goals as discussed in the MATS record and the Legal Memorandum.

regulation of HAP emissions from EGUs under CAA section 112. The Acid Rain Program required significant reductions in EGU SO_2 emissions and, as explained in the MATS record, other acid gases (*e.g.,* hydrogen chloride and hydrogen fluoride) are removed from flue gas more easily than SO_2 such that control of that pollutant could potentially address the acid gas HAP emissions, and to a lesser extent mercury and non-mercury metal HAP emissions. In fact, as the record reflects, the Acid Rain Program led to the installation of far fewer controls than estimated at a cost that was considerably below estimates at the time of promulgation. As a result the co-benefit HAP reductions attributable to the Acid Rain Program and other CAA programs were limited. The EPA believes adopting the commenters' interpretation that the agency must ignore the volume of HAP from EGUs would potentially undermine one of the purposes of CAA section 112, and we therefore decline to adopt that interpretation in the absence of express statutory support. For all these reasons, we maintain our position from the MATS rule that the volume of HAP emissions from EGUs, including acid gas HAP emissions, may form the basis for finding that HAP emissions from EGUs pose a hazard to public health and the environment that is appropriate to regulate. *See e.g.* Legal Memorandum at 10–11.

The EPA also disagrees with commenters' assertion that the acid gas HAP that are emitted from EGUs do not warrant regulation under CAA section 112. CAA Section 112(b) identifies the HAP that Congress determined warrant regulation under CAA section 112. Congress also provided a mechanism to remove pollutants from the CAA section 112(b) list. *See* CAA section 112(b)(3). If such HAP are not harmful to human health or the environment as the commenters contend, they may petition the Administrator to remove those pollutants from the CAA section 112(b) list. If the EPA grants such a petition, the agency would not be required to regulate such emissions from EGUs or any other sources. Absent such an action, the EPA must regulate all HAP on the CAA section 112(b) list. *See e.g., Sierra Club* v. *EPA,* 479 F.3d 875, 883 (D.C. Cir. 2007); *Nat'l Lime Ass'n* v. *EPA,* 233 F.3d 625, 634 (D.C. Cir. 2000).

Finally, the agency also does not agree that it may establish a standard under CAA section 112(d)(4), which allows the agency to factor health thresholds into its decisions on standards in cases where health thresholds have been established for pollutants, simply based on cost and the *Michigan* decision. The EPA considered and rejected the establishment of a CAA section 112(d)(4) standard in the MATS rulemaking. In the proposed MATS rule, the EPA stated its basis for declining to establish a CAA section 112(d)(4) standard, which included concern over the combination of EGU acid gases with other acid gases emitted from other sources, and the agency requested data that would support the establishment of such standard. The commenters on the MATS rule objected to the determination but provided no data to support their position. The agency's decision was challenged in *White Stallion,* and the D.C. Circuit unanimously rejected those challenges. *White Stallion,* 748 F.3d at 1248. While the commenters again renew their arguments, they still have not provided the information that the agency indicated in the MATS proposal (in May 2011) was necessary to establish a CAA section 112(d)(4) standard for acid gas HAP from EGUs with their comments on the cost proposal.

D. Comments on Topics That Are Beyond the Limited Scope of the Supplemental Finding

Because of the limited nature of the Supreme Court's remand, the EPA only solicited comments on its consideration of cost in its proposal reaffirming the appropriate determination. We explained that analyses presented in the proposed notice and in the accompanying Legal Memorandum did not affect or alter other aspects of the appropriate and necessary interpretation or finding or the CAA section 112(d) emission standards promulgated in MATS. The EPA also clearly explained that the analyses in the proposed supplemental finding did not, in any way, alter the RIA prepared for the final MATS.

Therefore, we clearly stated that we would not accept comment on the scientific or technical aspects of the prior findings or the analyses supporting our conclusions regarding the hazards to public health and environmental benefits from HAP emissions from EGUs. These findings include that mercury and other HAP emissions pose significant hazards to public health and the environment, that EGUs are the largest emitter of many HAP, that effective control strategies for HAP emissions are available, and that HAP hazards remain after implementation of other CAA provisions.

The EPA did not open for comment or propose to revise any other aspects of the appropriate and necessary interpretation or finding, or the MATS standards themselves, as part of the proposed action. The final MATS standards were supported by an extensive administrative record and based on available control technologies and other practices already used by the better-controlled and lower-emitting EGUs, and the EPA previously concluded that the standards are achievable and reduce hazards to public health and the environment from HAP emitted by EGUs. 76 FR 24976 (MATS proposal); 77 FR 9304 (MATS final). Further, the public had ample opportunity to comment on all aspects of the CAA section 112(d) standards, the RIA, and the appropriate and necessary finding beyond the consideration of cost; and the EPA responded to all of the significant comments.[63]

The Supreme Court's decision in *Michigan* neither called into question nor reversed the portions of the D.C. Circuit Court's opinion unanimously rejecting all other challenges to the appropriate and necessary interpretation and finding and the HAP emission standards that the EPA promulgated in the final MATS rule. Industry, states, environmental organizations, and public health organizations challenged many aspects of the EPA's appropriate and necessary finding and the MATS emissions standards, including: (1) The EPA's reliance on the CAA section 112(c)(9) delisting criteria for determining the level of risk worth regulating; (2) the EPA's decision not to consider cost in making the appropriate and necessary determination and listing of EGUs; (3) the EPA's use of identified environmental harms as a basis for finding it appropriate and necessary to regulate HAP emissions from EGUs; (4) the EPA's consideration of the cumulative impacts of HAP emissions from EGUs and other sources in determining whether EGUs pose a hazard to public health or the environment; (5) the EPA's regulation of EGUs pursuant to CAA section 112(d) after adding EGUs to the CAA section 112(c) list pursuant to the appropriate and necessary finding; (6) the EPA's determination that all HAP from EGUs should be regulated; (7) the EPA's technical basis for concluding that EGUs pose a hazard to public health or the environment; (8) the EPA's determination to regulate all EGUs as defined in CAA section 112(a)(8) in the same manner whether or not the

[63] 77 FR 3919–62; 77 FR 9386–9423; U.S. EPA. 2011. *EPA's Responses to Public Comments on EPA's National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units.* December 2011. Volumes 1 and 2. Docket ID No. EPA–HQ–OAR–2009–0234–20126.

individual units are located at major or area sources of HAP; (9) the EPA's emissions standards for mercury and acid gas HAP, including the EPA's decision not to set health-based emission standards for acid gas HAP; (10) the EPA's use of certified data submitted by regulated parties; (11) the EPA's denial of a delisting petition filed by an industry trade group; (12) the EPA's decision not to subcategorize a certain type of EGU; and (13) the EPA's decision to allow EGUs to average HAP emissions among certain EGUs. The D.C. Circuit Court denied all challenges to the CAA section 112(n)(1)(A) appropriate and necessary finding and to the CAA section 112(d) MATS rule, and, with the exception of the cost issue relevant to the CAA section 112(n)(1)(A) finding, all the challenges were unanimously rejected. For that reason, the EPA clearly explained in the proposed supplemental finding that it was not soliciting comment nor revisiting, in any way, those final actions that were unanimously upheld in *White Stallion Energy Center* v. *EPA,* 748 F.3d 1222 (April 15, 2014). 80 FR 75028–29.

The EPA further clarified that reference or citation to any final decision, interpretation, or conclusion in the MATS record does not constitute a re-opening of the issue or an invitation to comment on the underlying decision in which the EPA considered some cost of MATS (*e.g.,* in CAA section 112(d) beyond-the-floor analyses either establishing or declining to establish a standard more stringent than the MACT floor).

Despite the very clear direction that the EPA provided in the proposal and solicitation, numerous commenters submitted comments that were beyond the limited scope identified in the proposed supplemental finding. In many cases, the submissions contained comments on issues that the EPA had considered in Petitions for Reconsideration (80 FR 24218) or that had been upheld in *White Stallion* and not disturbed by the Supreme Court's decision in *Michigan.* Those comments are noted in Section 5.0 of the Response to Comments document. However, the EPA has no obligation to respond to comments beyond the scope of the rulemaking and the EPA has not provided extensive responses to such comments.

V. Statutory and Executive Order Reviews

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

A. Executive Order 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 ''raises novel legal or policy issues arising out of legal mandates.'' Any changes made in response to OMB recommendations have been documented in the docket. The EPA does not project any incremental costs or benefits associated with this supplemental finding because this action does not impose standards or other requirements on affected sources.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA. There are no information collection requirements in this action.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities. The EPA does not project any incremental costs or benefits associated with this supplemental finding because this action does not impose standards or other requirements on affected sources.

D. 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.

E. 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.

F. 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.

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

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of ''covered regulatory action'' in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

H. 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 notable impacts on emissions, costs, or energy supply decisions for the affected electric utility industry as this action does not impose standards or other requirements on affected sources.

I. National Technology Transfer and Advancement Act (NTTAA)

This action does not involve technical standards.

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

The EPA believes the human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income, or indigenous populations because it is limited in scope and only considers the cost of whether it is appropriate to regulate HAP emissions from EGUs.

K. 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).

L. Determination Under CAA Section 307(d)

Pursuant to CAA section 307(d)(1)(V), the Administrator determines that this action is subject to provisions of section 307(d). Section 307(d) establishes procedural requirements specific to rulemaking under the CAA. CAA section 307(d)(1)(V) provides that the provisions of CAA section 307(d) apply

to ''such other actions as the Administrator may determine.''

VI. Statutory Authority

The statutory authority for this proposed action is provided by sections 112, 301, 302, and 307(d)(1) of the CAA as amended (42 U.S.C. 7412, 7601, 7602, 7607(d)(1)). This action is also subject to section 307(d) of the CAA (42 U.S.C. 7607(d)).

Dated: April 14, 2016.

Gina McCarthy,

Administrator.

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