6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA-HQ-OAR-2009-0234; FRL-9939-45-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: Proposed supplemental finding and request for comment.

SUMMARY: The Environmental Protection Agency (EPA) is soliciting comment on a proposed supplemental finding that consideration of cost does not alter the agency's previous conclusion that 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). In light of the U.S. Supreme Court decision in *Michigan v. EPA*, 135 S.Ct. 2699 (2015), the EPA has taken cost into account in evaluating whether such regulation is appropriate. In this document, the EPA sets forth its proposed supplemental finding and requests comment on all aspects of that finding and the supporting legal memorandum in the docket for this action. This proposed supplemental finding, if finalized after consideration of comments, will conclude that coal- and oil-fired EGUs are properly included on the CAA section 112(c)

list of sources that must be regulated under CAA section 112(d).

DATES: Comments. Comments must be received on or before **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Comments. Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2009-0234 at http://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from regulations.gov. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the Web, Cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit http://www2.epa.gov/dockets/commenting-epa-dockets.

Instructions: All submissions must include the agency name and Docket ID No. (EPA-HQ-OAR-2009-0234). The EPA's policy is to include all comments received without change, including any

personal information provided, in the public docket, available online at http://www.regulations.gov, unless the comment includes information claimed to be CBI or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through http://www.regulations.gov or email. Send or deliver information identified as CBI only to the following address: OAQPS Document Control Officer (C404-02), Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, North Carolina 27711, Attention Docket ID No. EPA-HQ-OAR-2009-0234. Clearly mark the part or all of the information that you claim to be CBI. For CBI information on a disk or CD-ROM that you mail to the EPA, mark the outside of the disk or CD-ROM as CBI and then identify electronically within the disk or CD-ROM the specific information you claim as CBI. In addition to one complete version of the comment that includes information claimed as CBI, you must submit a copy of the comment that does not contain the information claimed as CBI for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

The EPA requests that you also submit a separate copy of your comments to the contact person identified below (see **FOR FURTHER INFORMATION CONTACT).** If the comment includes information you consider to be CBI or otherwise protected, you

should send a copy of the comment that does not contain the information claimed as CBI or otherwise protected.

The www.regulations.gov Web site is an "anonymous access" system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through http://www.regulations.gov, your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

Docket: All documents in the docket are listed in the http://www.regulations.gov index. Although listed in the index, some information is not publicly available (e.g., CBI 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

http://www.regulations.gov or in hard copy at the EPA Docket Center, EPA WJC West Building, Room 3334, 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 federal 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. Visit the EPA Docket Center homepage at http://www.epa.gov/epahome/dockets.htm for additional information about the EPA's public docket.

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

Public Hearing: A public hearing will be held if requested by December 6, 2015 to accept oral comments on this proposed action. The hearing will be held, if requested, on December 16, 2015 at the EPA's North Carolina Campus located at 109 T.W. Alexander Drive, Research Triangle Park, NC 27711. The hearing, if requested, will begin at 9:00 a.m. (local time) and will conclude at 1:00 p.m. (local time). To request a hearing, to register to speak at a hearing, or to inquire if a hearing will be held, please contact Ms. Virginia Hunt at (919) 541-0832 or by email at hunt.virginia@epa.gov. The last day to pre-register

to speak at a hearing, if one is held, will be December 14, 2015. Additionally, requests to speak will be taken the day of the hearing at the hearing registration desk, although preferences on speaking times may not be able to be fulfilled. Please note that registration requests received before the hearing will be confirmed by the EPA via email.

Please note that any updates made to any aspect of the hearing, including whether or not a hearing will be held, will be posted online at http://www3.epa.gov/mats/actions.html. We ask that you contact Ms. Virginia Hunt at (919) 541–0832 or by email at hunt.virginia@epa.gov or monitor our Web site to determine if a hearing will be held. The EPA does not intend to publish a notice in the **Federal Register** announcing any such updates. Please go to http://www3.epa.gov/mats/actions.html for more information on the public hearing.

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 document is organized as follows:

I. General Information

I. General Information

A. Executive Summary

The EPA is requesting comment on this proposed supplemental finding that including a consideration of cost does not alter the agency's previous determination that it is appropriate and necessary to regulate coal- and oil-fired EGUs under section 112 of the CAA. In light of the U.S. Supreme Court (Supreme Court) decision in *Michigan v. EPA*, 135 S.Ct. 2699 (2015), the EPA has taken cost into account in evaluating whether such regulation is appropriate and has determined that including such consideration does not alter the EPA's original conclusion that it is appropriate to regulate hazardous air pollutant (HAP) emissions from EGUs. This proposed supplemental finding, if made final after consideration of public comments, will conclude that coal- and oil-fired EGUs are properly included on the CAA section 112(c) list of sources that must be regulated under CAA section 112(d).

The EPA issued national emission standards for hazardous air pollutants (NESHAP) for coal- and oil-fired electric utility units, known as the Mercury and Air Toxics Standards or "MATS," on February 16, 2012. Almost 12 years earlier, 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)[1], the *Mercury Study Report to Congress* (Mercury Study),[2] the National Academies of Science's *Toxicological Effects of Methylmercury* (NAS Study)[3], and mercury data collected from coal-fired EGUs after completion of the studies. 65 FR 79826. 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 the EPA determined that there were available controls to effectively reduce mercury and other HAP emissions from EGUs. 64 FR 79825, 79830/2. 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

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[1] 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.

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

[3] 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.

from stationary sources. *Id.*

On May 3, 2011, the EPA reaffirmed the 2000 appropriate and necessary finding and listing of EGUs, and proposed MATS pursuant to CAA section 112(d). 76 FR 24976. The EPA responded to comments on the appropriate and necessary finding, as well as the proposed MATS, and issued the final MATS on February 16, 2012. 77 FR 9304. 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 U.S. Court of Appeals for the District of Columbia Circuit (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 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.

The EPA, in response to the Supreme Court's direction, has now added consideration of cost to the appropriate and necessary finding as detailed in this document. In this document, the EPA concludes that including such consideration of cost does not alter the agency's previous determination that it is appropriate to regulate HAP emissions from EGUs. The agency is taking comment on the proposed supplemental finding through this document. The EPA is also taking comment on the supporting document "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) available in the docket for this action (EPA-HQ-OAR-2009-0234).

B. Does this action apply to me?

The regulated categories and entities potentially affected by this proposed supplemental notice 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	221122[2]	Fossil fuel-fired electric utility steam generating units owned by the federal government.

State/local/ tribal government	221122[2] 921150	Fossil fuel-fired electric utility steam generating units owned by municipalities. 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. The Limited Scope of this Action

This action is in response to the Supreme Court's decision that the EPA must consider cost in the initial determination that regulation of HAP emissions from EGUs is appropriate under CAA section 112. In this document, the EPA provides detailed information on how the agency has taken cost into account in evaluating whether regulation of HAP from coal- and oil-fired electric utility steam generating units is appropriate and explains why the EPA proposes to find that including such consideration does not alter the previous determination. The EPA requests comment on this proposed supplemental finding and on

the supporting Legal Memorandum available in the rulemaking docket (EPA-HQ-OAR-2009-0234).

The EPA is accepting comment only on the consideration of cost in making the appropriate determination and listing of EGUs. The analyses presented in this document and the Legal Memorandum in support of this document do 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. These analyses also do not alter the Regulatory Impact Analysis (RIA) prepared for the final MATS. Specifically, the EPA is not accepting comment on the scientific or technical aspects of the 2000 appropriate and necessary finding and subsequent reaffirmation. These findings include that mercury and other HAP emissions are hazardous 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. We are only accepting comment on the consideration of cost aspect presented in this proposed supplementary finding. Therefore, we are not opening for comment or proposing to revise any other aspects of the appropriate and necessary interpretation or finding, or the MATS standards themselves, as part of this 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). In addition, 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.[4]

Also, the Supreme Court's decision neither calls into question nor reverses 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

[4] 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.

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 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 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 section 112(n)(1)(A) finding, all the challenges were unanimously rejected. *White Stallion Energy Center v. EPA*, 748 F.3d 1222 (April 15, 2014). Consequently, we are not soliciting comment nor are we revisiting those final actions that were unanimously upheld in *White Stallion Energy Center v. EPA*, 748 F.3d 1222 (April 15, 2014).

In addition, the EPA's 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 maximum achievable control technology (MACT) floor).

It is worth noting that the issue addressed in this document – whether a consideration of cost alters the agency's previous determination that it is appropriate and necessary to regulate HAP emissions from coal- and oil-fired EGUs — goes to the listing of EGUs under CAA section 112. Under CAA section 112, such listing decisions are not final agency actions for purposes of judicial review. Instead, the public can comment on

listing decisions during the CAA section 307(d) standard development process and challenge such decisions when the EPA issues final standards for a source category. *See* CAA section 112(e)(4)("Notwithstanding section [307 of the CAA], no action of the Administrator . . . listing a source category or subcategory under subsection (c) of this section shall be a final agency action subject to judicial review, except that any such action may be reviewed under section [307 of the CAA] when the Administrator issues emission standards for such . . . category."). Because the final standards for coal- and oil-fired EGUs have been issued, the normal vehicle for taking comment on aspects of the listing decision is not available to the EPA at this time. Consequently, the agency is providing this separate proposal to provide an opportunity for public comment on this nationally applicable proposed supplemental finding that it is appropriate and necessary to regulate coal- and oil-fired EGUs after considering cost, the cost analyses set forth below, and the supplemental legal analysis in the supporting Legal Memorandum available in the docket for this rulemaking. The EPA will issue its final determination after consideration of significant comments, consistent with the rulemaking requirements set forth in CAA section 307(d).

II. Hazards to Public Health and the Environment from HAP Emitted by EGUs

In the current action, the EPA adds a consideration of cost to the determination of whether it is appropriate to regulate HAP emissions from EGUs. As discussed in Sections III and IV.D of this document, it is the EPA's view that the consideration of cost in the appropriate finding should be weighed against, among other things, the volume of HAP emitted by EGUs and the associated hazards to public health and the environment. In this supplemental finding, therefore, the significant hazards to public health and the environment from HAP emitted by EGUs (and the substantial reductions in HAP emissions achieved by MATS that are described in Section IV.B.2 of this document) should be weighed against the costs of compliance.[5] Indeed, these hazards provided the basis for the EPA's December 2000 Finding,[6] and the agency's 2011 reaffirmation of the finding,[7,8] that regulation of

[5] The context provided by CAA section 112 generally demonstrates Congress' focus on the inherent risks posed by HAP emissions. To address those risks, Congress substantially amended CAA section 112 in 1990 to achieve prompt, permanent and ongoing reductions of HAP emissions from stationary sources and to reduce the associated risks to public health, including the effects on the most exposed and sensitive members of the population, and the environment. See *NMA v. EPA*, 59 F.3d at 1352-53 (discussing the purpose and impact of the 1990 CAA Amendments to section 112); see also *Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855, 857-58 (D.C. Cir. 2001); *Sierra Club v. EPA*, 353 F.3d at 978-80; *NRDC v. EPA*, 489 F.3d 1364, 1368-69 (D.C. Cir. 2007); *NRDC v. EPA*, 529 F.3d 1077, 1079-80 (D.C. Cir. 2008).

[6] 65 FR 79825-31.

[7] 76 FR 24976-25020.

HAP emissions from EGUs is appropriate and necessary. In this Section, we provide a summary of these hazards, which are further described in the record for the MATS.

As described in the peer-reviewed Mercury Study, mercury is a persistent, bioaccumulative toxic metal that can be emitted from coal-fired power plants in several chemical forms. Once deposited to water or land, mercury can be transformed into methylmercury (MeHg) by microbial action. MeHg is efficiently taken up by aquatic organisms and bioaccumulates in the aquatic food web. Larger predatory fish may have MeHg concentrations many times higher than, typically on the order of 1 million times, that of the concentrations in the freshwater body in which they live. Exposure to MeHg through ingestion of fish is the primary route for human exposures in the U.S. In 2000, the NAS Study reviewed the effects of MeHg on human health and concluded that mercury is highly toxic to multiple human and animal organ systems. Chronic low-dose prenatal exposure to MeHg from maternal consumption of fish has been associated with subtle neurotoxicity, which is manifest as poor performance on neurobehavioral tests, particularly on tests of attention, fine

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[8] 77 FR 9304-66.

motor-function, language, and visual-spatial ability. The NAS concluded that the population at highest risk is the children of women who consumed large amounts of fish and seafood during pregnancy and that the risk to that population is likely to be sufficient to result in an increase in the number of children who have to struggle to keep up in school.

Exposure to high levels of the various non-mercury HAP (e.g., arsenic, nickel, chromium, selenium, cadmium, hydrogen chloride, hydrogen fluoride, hydrogen cyanide, formaldehyde, benzene, acetaldehyde, manganese, and lead) emitted by EGUs is associated with a variety of adverse health effects. See, e.g., 76 FR 25003-5. These adverse health effects include chronic health disorders (e.g., irritation of the lung, skin, and mucus membranes, effects on the nervous system, and damage to the kidneys), and acute health disorders (e.g., lung irritation and congestion, alimentary effects such as nausea and vomiting, and liver, kidney and nervous system effects). Three hazardous air pollutant metals (i.e., arsenic, nickel, and chromium) have been classified as human carcinogens, and cadmium is classified as a probable human carcinogen.

In 2011, the EPA conducted additional technical analyses to support the appropriate and necessary finding reaffirmation, including peer-reviewed risk assessments on human health effects associated with mercury and non-mercury HAP emissions from EGUs,

focusing on risks to the most exposed and sensitive individuals in the population. In addition, the EPA found 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 metallic HAP emissions including arsenic, chromium, nickel, and others.[9] The revised nationwide 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 reference dose[11] for MeHg. See, e.g., 77 FR 9310-6. In addition, the inhalation risk

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[9] Specifically, the EPA estimated that in 2005 (the most recent inventory year available during the MATS rulemaking), U.S. EGUs emitted 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.

[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] A reference dose is an estimate of daily exposure, experienced over a lifetime that is likely to be without a risk of adverse health effects to humans, including sensitive subpopulations.

assessment for non-mercury HAP[12] of 16 facilities estimated a lifetime cancer risk 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.[13] 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.

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[12] 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.

[13] For context, CAA section 112(c)(9)(B) does not allow the EPA to delete a source category from the CAA section 112(c) list if any source in the category emits HAP in quantities that may cause a lifetime risk of cancer greater than 1-in-1 million to the most exposed individual.

As explained above, the agency's conclusions regarding these public health and environmental hazards are not affected by the cost analyses presented in this document and comments on the hazard conclusions will be considered outside the scope of this action. However, it is critical to note that the EPA's conclusions regarding the public health and environmental hazards associated with emissions from EGUs form the primary basis for the agency's previous determinations that regulation of HAP emissions from coal- and oil-fired EGUs is appropriate and necessary. *See* December 2000 Finding and proposed and final MATS. Furthermore, in evaluating costs (Section IV, below), the agency has considered whether the cost of compliance estimated to be incurred by the utility sector under MATS is reasonable when weighed against, among other things, the substantial hazards to public health and the environment posed by HAP emissions from EGUs.

III. Cost Consideration Under CAA Section 112(n)(1)

In *Michigan*, the Supreme Court held that the EPA erred when it concluded that it need not consider cost when determining whether the regulation of HAP emissions from coal- and oil-fired EGUs was appropriate and necessary. Because the EPA had adopted this interpretation in the December 2000 Finding and confirmed it in the MATS rulemaking, before now the agency had not evaluated the statute to determine how cost should be considered

when determining whether regulation is appropriate. The EPA has now reevaluated its interpretation of CAA section 112(n)(1) to identify how cost considerations should be incorporated into this threshold listing determination. *See* "Legal Memorandum Accompanying the Proposed Supplemental Finding that it is Appropriate and Necessary to Regulate Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units (EGUs)" (Legal Memorandum). In this Section, the EPA provides a summary of the legal conclusions relating to the consideration of cost in the appropriate finding. The Legal Memorandum lays out, in more detail, the interpretation of CAA section 112(n)(1)(A) that provides the basis for this proposed action. The EPA is requesting comment on the Legal Memorandum.[14]

In the Legal Memorandum, the EPA reevaluates the statute in light of the Supreme Court's holding in *Michigan.* The EPA considers the purpose and scope of the 1990 amendments to CAA section 112, including section 112(n)(1), to determine the cost considerations generally relevant to HAP-related actions, the advantages of regulating HAP emissions from stationary sources,

[14] Nothing in this document or the Legal Memorandum disturbs the EPA's prior interpretations of the terms "appropriate" and "necessary" set forth in the proposed and final MATS rules, except to the extent they concluded that the EPA was not required to take cost into account when deciding whether regulation is "appropriate."

and a reasonable approach to weighing the costs with the other factors relevant to determining whether regulation of HAP emissions from EGUs is appropriate. *See* Legal Memorandum, pages 6-23.

The EPA's evaluation of CAA section 112 leads us to conclude that the purpose of that section of the CAA is to achieve prompt, permanent and ongoing reductions in HAP emissions from stationary sources to reduce the hazards to public health and the environment inherent in exposure to such emissions, with the goal of limiting the risk to the most exposed and most sensitive members of the population. *See* Legal Memorandum, pages 6-13. To accomplish this goal, the statute requires as a starting point uniform levels of control from all sources in the same listed category or subcategory, and ongoing review to determine whether additional reductions can be achieved to further reduce the volume of HAP emissions. *Id.* Thus, the EPA concludes that the benefit Congress sought in amending CAA section 112 was permanent and ongoing reductions in the volume of HAP emissions. *Id.* These general goals are relevant to the EPA's evaluation of specific statutory provisions including the EGU specific requirements in CAA section 112(n)(1). *See New Jersey v. EPA*, 517 F.3d at 582 (rejecting the EPA's argument that section 112(c)(9) does not apply to EGUs, and citing section 112(c)(6) as support for the

conclusion that "where Congress wished to exempt EGUs from specific requirements of section 112, it said so explicitly.").

The EPA has also evaluated the specific section under which the appropriate and necessary determination is made - CAA section 112(n)(1) - to further inform our interpretation of the role of cost in making the appropriate determination under section 112(n)(1)(A). *See* Legal Memorandum, pages 13-17. The studies required under CAA section 112(n)(1) focus on potential hazards to public health and the environment, including the potential hazards to the most sensitive members of the population. In addition, the statute requires the agency to evaluate available control technologies for HAP emissions from EGUs, and to specifically evaluate the cost of mercury controls. *See* CAA sections 112(n)(1)(A) and 112(n)(1)(B). Thus, cost is one of the several factors that the EPA must consider in addition to the other relevant factors identified in the statute when determining whether regulation of HAP emissions from EGUs is appropriate, but CAA section 112(n)(1) does not support a conclusion that cost should be the predominant or overriding factor. *See* Legal Memorandum, pages 13-17.

CAA section 112(n)(1)(A) also does not dictate the manner in which cost is to be considered in the appropriate finding. In fact, the sole mention of cost in CAA section 112(n)(1) is the direction in section 112(n)(1)(B) to consider the costs of

mercury controls. The statute thus gives the EPA discretion to identify a reasonable approach to incorporating cost into the analysis required under CAA section 112(n)(1)(A). In addition, because section 112(n)(1)(A) is a listing provision, the EPA must focus on *whether* HAP emissions from EGUs collectively should be regulated, and not on the specific manner of regulation.[15] Under the statutory structure, this listing decision is to be made significantly before the 112(d) standards would be promulgated, and, therefore, it is reasonable for the EPA to consider what types of cost information would be available at that threshold stage when determining how to consider cost in the analysis. *See* Legal Memorandum, pages 19-21.

In determining whether it is appropriate to regulate HAP emissions from EGUs, the EPA concludes that it is reasonable to focus on whether the power sector can reasonably absorb the cost of compliance with MATS. The D.C. Circuit has previously

[15] As explained in the MATS record and the Legal Memorandum, the manner of regulation for listed source categories is established pursuant to CAA section 112(d)(2) for major stationary sources. In addition, the EPA determined in the Legal Memorandum that CAA section 112(d)(3) minimum stringency standards are technologically feasible and presumptively cost reasonable because the standards are based on existing sources in the same category or subcategory of sources. See Legal Memorandum, page 8 and Section III of this document.

provided general guidance on how to evaluate cost in the context of determining the reasonableness of New Source Performance Standards under section 111 of the CAA. The approach under CAA section 112 is somewhat different as section 112(d)(3) of the statute defines the minimum level of control based on levels that have been actually achieved by the best performing similar sources in the source category – a level deemed per se reasonable for other similar sources. Thus, the agency need not determine in the analysis the level of control that is technologically feasible and cost reasonable as is required when establishing standards under CAA section 111. Instead, the purpose of the cost analysis under CAA section 112(n)(1)(A) is to help evaluate whether the costs of regulation are reasonable when weighed against other relevant factors, most notably the identified hazards to public health and the environment from HAP emitted by EGUs that are reduced when the significant volume of HAP emission from EGUs is reduced. For EGUs, the reasonableness of the costs of CAA section 112(d) standards could be determined in part by an evaluation of this sector's ability to perform its primary and unique function – the generation, transmission and distribution of electricity. As explained below, the EPA considered several different cost metrics to evaluate whether cost of compliance with MATS are reasonable.

The statute also does not specify how much weight should be

given to cost relative to other relevant factors. It thus provides the EPA discretion to develop reasonable approaches to considering cost while taking into account the goals of the statute. Cost is but one of several factors the EPA must consider before it may add, pursuant to CAA section 112(n)(1)(A), EGUs to the list of source categories to be regulated under section 112. Specific pollutants were listed by Congress as HAP under CAA section 112 due to their inherently harmful characteristics, and this section instructs the EPA to reduce the risks to public health and the environment, including the risks to the most sensitive individuals in the population from those harms, by reducing the volume of such HAP emissions from stationary sources. Thus, the advantages of reducing identified hazards to public health and the environment must be considered and weighed against the costs or disadvantages, taking into account the statutory goals. *See* Legal Memorandum, pages 21-29.

The EPA also concludes in the Legal Memorandum that a benefit-cost analysis is not required to support a threshold finding that regulation is appropriate. However, to the extent a benefit-cost analysis is used to evaluate whether regulation of HAP emissions from EGUs is appropriate, 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. The statute does not require the EPA to compare only the monetized HAP-specific benefits to the compliance costs to support the finding. Neither does the statute direct the EPA to consider only the HAP benefits of the rule and ignore co-benefits, if the control strategies employed achieve multi-pollutant reductions. Instead, the EPA concludes that such an analysis would appropriately evaluate all of the known consequences of the rule. The Legal Memorandum concludes that the benefit-cost analysis in the RIA that accompanied the final MATS presents a reasonable evaluation of the costs and benefits of the final MATS rule.

The legal interpretations summarized above, and explained in greater detail in the Legal Memorandum, provide the basis for the evaluation of cost and conclusions presented in the remainder of this document. The EPA is requesting comment on all aspects of the Legal Memorandum and all conclusions contained therein.

IV. Considerations of Cost

A. Introduction

This Section explains how the EPA has taken cost into account in evaluating whether regulation of coal- and oil-fired EGUs under section 112 of the CAA is appropriate. As the EPA explains above, and in the Legal Memorandum, there is little guidance in CAA section 112 on how the EPA could or should

consider cost when making the threshold finding under CAA section 112(n)(1)(A) and the EPA has substantial discretion in identifying appropriate metrics for considering cost. The EPA has evaluated costs in this Section primarily through a consideration of whether the cost of compliance to the power sector is reasonable.

In Section IV.B below, the EPA discusses how it evaluated the reasonableness of the direct and indirect costs of the final CAA section 112(d) standards. As discussed earlier and in the Legal Memorandum, the EPA has substantial discretion in identifying appropriate metrics for considering cost. In evaluating how to appropriately consider costs, the EPA was mindful of Congress' statement regarding the 1990 CAA Amendments: "Our goal . . . has been to promote the public health and welfare and the productive capacity of our nation. We have given EPA both the regulatory tools to accomplish cleaner air and the flexibility to protect our industrial and productive capacity."[16] In the context of CAA section 112(n)(1), adherence to Congress' goal can be evaluated by considering whether the cost of addressing, through MATS, the significant public health and environmental hazards posed by emissions of HAP from EGUs is

[16] "A Legislative History of the Clean Air Act Amendments of 1990" (CAA Legislative History), Vol II, p. 3187.

reasonable and whether those hazards can be addressed while protecting the "productive capacity" of the power sector (i.e., without significant harm to the power sector's ability to perform its primary and unique function – the generation, transmission, and distribution of electricity.) In Section IV.B the EPA presents an evaluation of multiple metrics to determine the cost reasonableness of the CAA section 112(d) standards for EGUs.

The EPA has also identified other costs that help inform the agency's understanding of whether it is appropriate to regulate HAP emissions from EGUs. As discussed in the Legal Memorandum, the explicit reference to the cost of mercury controls in CAA section 112(n)(1)(B) and the reference to the availability of alternative control strategies in section 112(n)(1)(A) suggests that the EPA should consider the cost of controls for mercury and other HAP emitted from EGUs when determining whether regulation is appropriate.[17] The cost of the

[17] The EPA believes that it could have developed rough projections of the control technology costs of an eventual standard based on information obtained in the CAA section 112(n)(1) studies and general knowledge of the costs of controls at the time the agency made the appropriate finding. For example, the Mercury Study estimated the potential cost of mercury controls for EGUs and other sources, and the EPA could have attempted to provide similar cost estimates for the other HAP emissions from EGUs based on available information,

ARP is also worth noting in light of its relationship to the inclusion of CAA section 112(n)(1)(A) in the 1990 CAA amendments. Thus, in Section IV.C below, the EPA discusses briefly the cost of the ARP, the evolution of mercury controls and the reduction in the cost of such controls since the EPA issued the Mercury Study. The EPA also discusses the controls for other HAP emissions from EGUs.

Finally, while the EPA recognizes that cost is an important consideration in the determination of whether it is appropriate to regulate HAP emissions from EGUs, it is not the only consideration and CAA section 112(n)(1) does not support a conclusion that cost should be the predominant or overriding factor. As stated earlier, and detailed in the Legal Memorandum, the EPA must weigh the cost of compliance against other relevant factors – such as the advantages of regulation and achievement of statutory goals – in determining whether such consideration

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including information in the Utility Study. However, the agency now has an updated and further refined cost estimate of the cost of compliance with the final MATS rule, and the EPA is using this cost information in this action because it was developed at the time the EPA reaffirmed the finding that regulation of HAP emissions from EGUs is appropriate and necessary. See U.S. EPA. 2011. *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards*. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-452/R-11-011. Docket ID No. EPA-HQ-OAR-2009-0234-20131.

of cost causes the agency to alter its previous determination that it is appropriate to regulate HAP emissions from EGUs. This is discussed below in Section IV.D. As noted in Section I.C of this document, the public had ample opportunity to comment on all aspects of the MATS RIA, and the EPA responded to all of the significant comments.[18] Although the EPA is not accepting comments on the methods applied in the MATS RIA, the agency requests comments on the use of the MATS RIA results as a way to consider cost in the CAA section 112(n)(1)(A) determination.

B. Consideration of Cost to the Power Sector

1. Introduction

In light of the statutory ambiguity regarding how to consider cost in making the appropriate and necessary finding, the EPA has exercised the discretion granted to it and applies several metrics relevant to the power sector to determine whether the estimated cost of compliance with MATS is reasonable. The EPA has also considered the reasonableness of the direct and indirect costs of compliance with MATS and the power sector's ability to maintain performance of its primary

[18] See pp. 477-660 of the 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*. Volume 2. Docket ID No. EPA-HQ-OAR-2009-0234-20126.

and unique function – the generation, transmission, and distribution of electricity.

As explained below, the EPA considered direct and indirect costs at the sector level because of the interconnectedness of the electricity grid and the fact that most power companies own diverse inventories of power generating units, including coal- and oil-fired EGUs. In this Section, the EPA has applied a number of different analyses (metrics) to assess whether the power sector's costs of compliance with the CAA section 112(d) standard is reasonable. Each of these analyses independently support a conclusion that the estimated costs of compliance with MATS are reasonable.

In 2012, the EPA reaffirmed the appropriate and necessary finding and established CAA section 112(d) standards, and, as part of that rulemaking, the EPA estimated the cost of compliance with the proposed and final MATS standards pursuant to Executive Orders 12866 and 13563 and other applicable statutes and executive orders. In this Section, the EPA is evaluating whether the costs of compliance with MATS is reasonable, based on the RIA cost estimates.

In the following Sections, the EPA presents the methodology used to estimate annual compliance costs for MATS. The EPA then evaluates the estimates of the total annual costs of compliance with the standards, including a focus on estimates of total

annualized costs of compliance compared to power sector retail sales and a comparison of capital expenditures required under MATS to overall power sector capital expenditures. We also present analyses of the impacts these costs are projected to have on the power sector and its consumers, including estimates of impacts on the average retail price of electricity and the characteristics of the units choosing to retire as a result of MATS.

2. Predicted compliance costs for MATS

In this and the following Sections, we present compliance cost and impact estimates from the MATS RIA for the year of 2015 in the broader historical context of power sector trends. The analyses demonstrate that the projected costs and impacts of MATS requirements are reasonable.

We focus on the 2015 impacts presented in the RIA because these results represent the first year of compliance with the MATS rule, and those compliance cost estimates would be the most relevant to the threshold determination. As discussed later, of the years analyzed in the MATS RIA, the compliance costs are highest in 2015, and thus we focus on it here as a representation of the maximum impact. The analyses in the final MATS RIA represented the best forecast of cost and impacts available to the EPA when MATS was promulgated.

In accordance with guidance issued by the Office of Management and Budget (OMB)[19] and the EPA[20], the EPA developed RIAs for the proposed[21] and final[22] MATS rulemakings. In the MATS RIAs, the compliance cost estimates were established using the Integrated Planning Model (IPM).[23] IPM, developed by ICF International, is a state-of-the-art, peer-reviewed dynamic, deterministic linear programming model of the contiguous U.S. electric power sector. IPM provides forecasts of least-cost capacity expansion, electricity dispatch, and emission control strategies while meeting electricity demand and various

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[19] 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.

[20] U.S. EPA. 2010. *Guidelines for Preparing Economic Analyses*. EPA 240-R-10-001. National Center for Environmental Economics, Office of Policy Economics and Innovation. Washington, DC. December. Available at http://yosemite.epa.gov/ee/epa/eerm.nsf/vwAN/EE-0568-50.pdf/$file/EE-0568-50.pdf.

[21] U.S. EPA. 2011. Regulatory Impact Analysis of the Proposed Toxics Rule. March 2011. Docket ID No. EPA-HQ-OAR-2009-0234-3051.

[22] U.S. EPA. 2011. Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards. EPA-453/R-11-011. December 2011. Docket ID No. EPA-HQ-OAR-2009-0234-20131.

[23] Detailed IPM documentation and run files for MATS are available in the docket (see, for example, EPA-HQ-OAR-2009-0234-19996 and EPA-HQ-OAR-2009-0234-3071). The underlying data inputs to IPM continually evolve as the emissions profile of the power sector changes with time in response to control technology advances, environmental regulation, and economic influences, such as changes in fuel prices. The EPA provides information on, and documentation of, underlying assumptions and any changes to the IPM each time it is used in a regulatory context.

environmental, transmission, dispatch, and reliability constraints. The EPA has used IPM for over 2 decades to understand power sector behavior under future business-as-usual conditions and to evaluate the economic and emission impacts of prospective environmental policies. The model is designed to reflect electricity markets as accurately as possible using the best available information from utilities, industry experts, gas and coal market experts, financial institutions, and government statistics. Notably, the model includes state-of-the-art estimates of the cost and performance of air pollution control technologies with respect to mercury and other HAP controls.[24]

In the MATS RIA, the power sector's "compliance costs" are estimated in IPM as the change in electric power generation costs between a base case without MATS and a policy case where the sector complies with the HAP emissions limits in the final MATS. The base case provides a future projection of the power sector in the absence of MATS, and serves as the baseline against which projections under policy cases are compared. The policy case examined in the MATS RIA introduces the requirements of the rule as constraints on affected EGUs, which results in

[24] See, for example, USEPA Base Case v.4.10 Documentation (EPA-HQ-OAR-2009-0234-3049) and Documentation Supplement for EPA Base Case v.4.10_MATS – Updates for Final Mercury and Air Toxics Standards (MATS) (EPA-HQ-OAR-2009-0234-19996)

new projections of power sector outcomes under MATS. In simple terms, these compliance costs are an estimate of the increased expenditures by the entire power sector to comply with the EPA's requirements while continuing to serve a given level of electricity demand. Therefore, the projected compliance cost estimate is not limited to the increase in expenditures by those EGUs directly affected by MATS, nor does it account for the ability of many electricity producers to reduce the costs they bear by passing along their costs to consumers of electricity through higher electricity prices.[25]

The EPA notes that the projected compliance cost estimate represents the incremental costs to the entire power sector to generate electricity, not just the compliance costs projected to

[25] The MATS RIA does not clearly distinguish how much of the increased expenditures are incurred by owners of EGUs and how much are borne by consumers of electricity. Therefore, the $9.6 billion in compliance costs are relevant to all participants in the U.S. economy, not just individuals that own EGUs. In addition, these compliance costs do not account for changes in profits for firm owners who supply inputs such as coal and natural gas to the electricity sector. The compliance costs for MATS are, in part, attributable to higher fuel prices due to higher fuel demand, particularly natural gas, which would likely increase the profits for those fuel producers. A more comprehensive assessment of costs that accounted for these net changes in profits and consumer welfare would also subtract the higher profits to fuel producers from the compliance costs. Similarly, such an assessment would also subtract from the compliance costs changes in tax payments by electricity producers, which are transfers rather than the use of real resources that have an opportunity cost to society as a whole.

be borne by coal-fired and oil-fired EGUs regulated under MATS. EGUs operate interdependently within a large and complex system. While the MATS requirements are directed at a subset of EGUs in the power sector, the compliance actions of the MATS-regulated EGUs will affect production costs and revenues of other units due to fuel and electricity price changes. Furthermore, EGUs are often owned and operated by firms with multiple generating sources, many of which are not subject to MATS requirements. Therefore, limiting the consideration of costs only to those expenditures incurred by EGUs directly regulated by MATS, and not the other costs expended by their owners, would provide an incomplete assessment of the costs of the rule. Thus, analyses that compare system-wide (or sector-level) compliance cost impacts of MATS to sector-level economic indicators are appropriate for considering whether the power sector can absorb compliance costs, and do so without diminishing its ability to supply electricity. This approach is also consistent with the EPA's analytical objective to evaluate as best as is reasonable and possible all consequences of economically significant regulatory actions.

Using IPM, the EPA estimated the emissions reductions and annual incremental costs resulting from MATS, including the costs of installing and operating additional pollution controls, investments in new generation capacity, shifts between or

amongst various fuels, and other actions associated with compliance. The EPA estimated that, relative to the base case, the final MATS rule would reduce annual emissions of mercury by 75 percent, hydrogen chloride by 88 percent, and fine particulate matter ($PM_{2.5}$) (filterable PM is a surrogate for non-mercury metal HAP) by 19 percent from coal-fired EGUs greater than 25 megawatts (MW) projected for 2015. IPM was also used to estimate reductions of other pollutants that resulted from the application of the MATS emissions limits. The EPA projected sulfur dioxide (SO_2) emissions reductions of 41 percent and carbon dioxide (CO_2) reductions of one percent from coal-fired EGUs greater than 25 MW in 2015, relative to the base case. The EPA projected that the annual incremental cost of final MATS would be $9.6 billion in 2015.[26] The MATS RIA also reports

[26] As described in the MATS RIA, IPM was used to estimate the compliance costs to the sector associated with applying MATS emissions limitations to coal-fired EGUs. The EPA did not use IPM, however, to estimate compliance costs to the sector associated with applying MATS emissions limitations to oil-fired steam boilers or to estimate monitoring, reporting, and recordkeeping (MR&R) costs for MATS-regulated EGUs. The cost of control for oil-fired steam boilers was estimated separately in the RIA, and then added to the IPM-based compliance costs for coal-fired unit emissions limitations. The cost of control for the oil-fired steam boilers was either the expenditures by these units to install pollution controls or increased expenditures of switching to lower-emitting fuels. Broken into the three components, IPM-based compliance costs were $9.4 billion, the separately estimated cost of control for oil-fired steam boilers

estimates of compliance costs of $8.6 billion and $7.4 billion in 2020 and 2030, respectively. Compliance cost estimates are, therefore, highest in 2015. Incremental annual capital expenditures represent approximately $2.4 billion of the $9.6 billion in annual costs in 2015.[27] All costs in this and subsequent Sections are reported in 2007 dollars.

3. Annual compliance costs as a percent of power sector sales

We compare annual compliance costs to electricity sales at the power sector-level, often called a sales test. The sales test is a frequently used indicator of potential impacts from compliance costs on regulated industries.[28]

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was $56 million, and MR&R costs were $158 million, totaling the $9.6 billion compliance cost estimate. Note the sum does not total exactly because of independent rounding.

[27] The $2.4 billion increase in capital expenditures under MATS is found by taking the difference between capital expenditures in the IPM MATS policy case and the capital expenditures in the IPM MATS base case. These values are found in Table 15 of "MATS Policy Case Summary Report" (Docket ID No. EPA-HQ-OAR-2009-0234-19985) and Table 15 in "MATS Base Case Summary Report" (Docket ID No. EPA-HQ-OAR-2009-0234-19984).

[28] For example, the sales test is often used by the EPA when evaluating potential economic impacts of regulatory actions on small entities. In the context of a small entity analysis, an evaluation of the change in profits to owners is likely the best approach to assessing the economic burden to owners from a regulatory action. In the analysis provided in this section, the sum of the change in profits to EGU owners in the entire sector and the increased electricity bills of consumers of electricity is compared to total revenues. Data limitations prevent solely

Table 2 presents the value of retail electricity sales from 2000 to 2011, based on information from the U.S. Energy Information Administration (EIA).[29]

Table 2. Retail Electricity Sales, All Sectors, 2000 to 2011 (2007 dollars)

Year	Revenue from Retail Sales (billions of 2007 dollars)
2000	277.2
2001	287.5
2002	285.5
2003	291.5
2004	295.0
2005	315.3
2006	335.2
2007	343.7
2008	356.6
2009	343.9
2010	354.8
2011	349.6

Source: U.S. Energy Information Administration, Form-826 Detailed Data, http://www.eia.gov/electricity/data/eia826/, accessed 10/14/15.
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.

Revenues from retail electricity sales increased from $277.2 billion in 2000 to a peak of $356.6 billion in 2008 (an increase of 29 percent during this period). As would be

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analyzing profit changes to EGU owners as a result of MATS in this proposed supplemental finding.

[29] We do not include figures for years after 2011 in this and later comparisons as this information would not have been available during the development of the MATS RIA.

expected, the general increase in sales (in dollar terms) over this time period is partly due to increases in electricity sales (in electricity sold) and increases in prices over the same time period. The $9.6 billion in annual compliance costs of MATS projected for 2015 would represent about 2.7 percent of 2011 power sector revenues from retail electricity sales. If retail sales were to return to their 2008 peaks, the annual compliance costs would also represent about 2.7 percent of sales. If retail electricity sales were to decline to 2000 levels, the estimated annual compliance costs for MATS would represent approximately 3.5 percent of retail sales. Thus, the projected annual compliance costs of MATS represent a small fraction of the value of overall sales.

After considering the potential costs of MATS in light of power sector sales, the EPA concludes that the costs to the power sector are reasonable. As noted above, the EPA is not accepting comments on the methods applied in the MATS RIA, but rather the agency requests comments on the use of incremental compliance costs from the MATS RIA results as a way to consider costs in the CAA section 112(n)(1)(A) determination.

4. Annual compliance capital expenditures compared to the power sector’s annual capital expenditures

Another way in which cost can be evaluated is by comparing the annual capital expenditures required by MATS to the range of

variation in capital expenditures from year to year. 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. Table 3 presents two sets of estimates for trends in the annual capital expenditures by the electric power sector. This information informs the second metric used to consider the costs of MATS to the power sector, namely a ratio of annual capital expenditures estimated to be needed for MATS compliance to historical power sector-level overall capital expenditures.

For power sector-level capital expenditures, the EPA relies on two sets of information. The first set of information is from the U.S. Census Bureau's Annual Capital Expenditures Survey. The second set of information is from information compiled by SNL, a private sector firm that provides data and analytical services. While each dataset has limitations, the estimates from each correspond to one another reasonably well. The annual sector-level capital expenditures reported by SNL are generally lower than the information from the Census Bureau. This is in part because SNL captures information on capital expenditures from Securities and Exchange Commission (SEC) filings, which are submitted by most but not by all entities in the power sector, whereas the U.S. Census Bureau's estimate of capital

expenditures in the power sector is intended to capture capital expenditures for all entities in the power sector. For this reason, we present both sets of information to better depict capital expenditures in the power sector.

Table 3. Total Capital Expenditures for the Electric Power, Generation, Transmission, and Distribution Sector, 2000 to 2011

	Capital Expenditures Collected by SNL from SEC Filings[1]		Capital Expenditures Based on U.S. Census Bureau Annual Capital Expenditures Survey[2]	
Year	Capital Expenditures (billions of 2007 dollars)	Change from Previous Year (billions of 2007 dollars)	Capital Expenditures (billions of 2007 dollars)	Change from Previous Year (billions of 2007 dollars)
2000	51.8	---	62.5	---
2001	70.1	18.2	85.9	23.4
2002	56.4	-13.6	66.4	-19.6
2003	43.8	-12.6	52.7	-13.7
2004	40.4	-3.4	45.0	-7.7
2005	46.7	6.3	50.0	5.0
2006	57.6	10.9	61.6	11.6
2007	66.9	9.3	73.9	12.3
2008	78.1	11.2	83.5	9.6
2009	76.6	-1.5	87.9	4.4
2010	75.1	-1.5	79.8	-8.2
2011	79.6	4.5	79.2	-0.6
[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.				
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.				

Capital expenditures generally increase from 2000 to 2011 but not in a linear fashion, partly a result of increased demand. In 2000, capital expenditures for the electric power sector are estimated to be $51.8 billion (based on SNL) and $62.5 billion (based on Census). Capital expenditures for this sector reached a low in 2004 at $40.4 billion (based on SNL) and $45.0 billion (based on Census), rising to their peak in 2011 at $79.6 billion (based on SNL) or in 2009 at $87.9 billion (based on Census).

The final MATS RIA estimated the incremental capital expenditures to be $2.4 billion for 2015, which represent about 3.0 percent of 2011 power sector-level capital expenditures using either SNL or Census information.[30] If power sector-level capital expenditures declined to 2004 levels, the incremental capital expenditures estimated for MATS would represent about 5.9 percent (based on SNL) or 5.3 percent (based on Census).

[30] As noted above in this Section, the incremental annual capital expenditures represent approximately $2.4 billion of the $9.6 billion in annual compliance costs in 2015. The incremental capital expenditures is the change in capital expenditures for the entire sector as a result of the MATS emissions limitations (that is, above those estimated in the base case). As a result, the estimate includes the change in capital expenditures from installing pollution controls and the capital expenditures of new generating technologies in the MATS policy case relative to the base case.

The increased capital expenditures estimated to be required under MATS represent a small fraction of the power sector's overall capital expenditures in recent years. Additionally, the EPA notes that the projected $2.4 billion in incremental capital costs is well within the range of annual variability over the 2000-2011 period. During this period, based on the Census information for example, the largest year-to-year decrease in power sector-level capital expenditures was $19.6 billion (from 2001 to 2002) and the largest year-to-year increase in power sector-level capital expenditures was $23.4 billion (from 2000 to 2001). This wide range indicates substantial year-to-year variability in industry capital expenditures, and the projected $2.6 billion increase in capital expenditures in 2015 projected under MATS falls well-within this variability. Similar results are found using the SNL information.

After considering the potential impacts of MATS on industry capital expenditures, the EPA concludes that the costs to the power sector are reasonable. As noted above, the EPA is not accepting comments on the methods applied in the MATS RIA, but rather the agency requests comments on the use of incremental compliance expenditures from the MATS RIA results as a way to consider costs in the CAA section 112(n)(1)(A) determination.

5. Impact on retail price of electricity

In electricity markets, costs imposed on utilities can be fully or partly passed through to consumers, which can result in increased retail electricity prices. Evaluating the projected effect on retail electricity prices against the variations in electricity prices from year to year therefore provides an additional way to evaluate the "cost" or impact of MATS, in this instance on electricity consumers, instead of on owners of EGUs in the power sector. Using data from the EIA, Table 4 presents trends in the average retail price of electricity for all sectors (residential, commercial, industrial, transportation, and other sectors) from 2000 to 2011. This information informs the comparison of the percent increase in retail electricity prices projected to result from MATS for 2015 to historical levels of variation in electricity prices.

While compliance costs and electricity prices are evaluated independently when considering whether it is appropriate to regulate steam-fired EGUs under MATS, they are not independent or separable economic indicators. The cause of higher electricity prices is the increase in expenditures by the power sector described earlier. Therefore, the electricity price impacts and the associated increase in electricity bills by consumers are not costs that are in addition to the compliance costs described earlier in this section, and, in fact, to the

extent the compliance costs are passed on to electricity consumers, the costs to the EGU owners in the power sector are reduced.

Table 4. Average Retail Price of Electricity, All Sectors, 2000 to 2011

Year	Average Electricity Retail Price (cents per kilowatt-hour in 2007 dollars)	Change from Previous Year (cents per kilowatt-hour in 2007 dollars)
2000	8.10	---
2001	8.47	0.38
2002	8.24	0.23
2003	8.35	0.11
2004	8.31	0.04
2005	8.61	0.30
2006	9.14	0.52
2007	9.13	-0.01
2008	9.55	0.42
2009	9.56	0.01
2010	9.45	-0.11
2011	9.33	-0.13
Source: U.S Energy Information Administration, Electricity Data Browser, http://www.eia.gov/electricity/data/browser, accessed 10/14/15.		
Notes: 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 final RIA estimated that MATS would result in relatively small changes in the average retail price of electricity. Retail electricity prices for 2015 were projected to increase from 9.0 cents per kilowatt-hour on average in the base case to 9.3 cents per kilowatt-hour with MATS, an increase of about 3.1 percent. The regional price increases projected for MATS ranged from 1.3 percent to 6.3 percent. Four regions out of

the 13 regions for which retail prices were estimated (encompassing all lower 48 states) were projected to have a higher percentage increase in prices than the national average increase of 3.1 percent. However, each of these four regions also has a price that is lower than the national average.

The EPA notes that the projected 0.3 cents per kilowatt-hour increase in national average retail electricity price under MATS is well within the range of annual variability over the 2000-2011 period. During this period, based on the EIA information, the largest year-to-year decrease in national average retail electricity price was -0.2 cents per kilowatt-hour (from 2001 to 2002) and the largest year-to-year increase in national average retail electricity price was 0.5 cents per kilowatt-hour (from 2005 to 2006). This wide range indicates substantial variability, and the 0.3 cents per kilowatt-hour increase in the national average retail electricity price under MATS is well-within normal historical fluctuations.

After considering the potential impacts of MATS on retail electricity prices, the EPA concludes that the estimated increase in electricity prices is within the historical range and is reasonable. In addition, because the increase in electricity prices is in part due to the ability of many EGUs to pass their costs on to consumers, the estimated MATS compliance costs discussed above are in fact less of a burden on owners of

EGUs in the power sector. As noted above, the EPA is not accepting comments on the methods applied in the MATS RIA, but rather the agency requests comments on the use of average retail price increases from the MATS RIA results as a way to consider costs in the CAA section 112(n)(1)(A) determination.

6. Impact on power sector generating capacity

The EPA believes the statutory concern with the cost of compliance expressed in CAA section 112(n)(1) can reasonably be tied to a concern with the ability of EGUs to comply with the ARP and other CAA requirements, as well as CAA section 112(d)(3) standards, while at the same time maintaining a reliable supply of electricity.[31] Therefore, the EPA recognized the importance of considering the ability of EGUs to comply with MATS and maintain a reliable supply of electricity.

The MATS RIA reported projected net changes in generation capacity under MATS, as compared to the base case. Relative to the base case, about 4.7 gigawatts (GW) of additional coal-fired

[31] The EPA generally uses the term "reliability" to refer to the ability to deliver the resources to the projected electricity loads so the overall power grid remains stable, and the term "resource adequacy" generally refers to the provision of adequate generating resources to meet projected load and generating reserve requirements in each region.

capacity was projected to retire by 2015 as the result of MATS.[32] These projected retirements reflect less than two percent of all coal-fired generation capacity projected in 2015 (310 GW in the base case without MATS) and less than 0.5 percent of total projected capacity (1,026 GW in the base case without MATS). As with the estimate of compliance costs and capital expenditures projected by IPM and described above in this Section, this projection was based on assumptions about a number of factors that affect the power sector (e.g., other available capacity, demand for electricity, fuel supply and fuel prices) and unit attributes (e.g., efficiency).[33] In addition, as Table 6 shows, the units that were projected to retire under MATS are, on average, older, smaller in terms of capacity, and less frequently used as indicated by capacity factors.

Table 6. Characteristics of Covered Operational Coal Units and Additional Coal Units Projected to Retire under MATS, 2015

	Average Age (Years)	**Average Capacity (MW)**	**Average Capacity Factor in Base Case**
Retire	52	129	54%
Operational	43	322	71%

[32] In this analysis, changes in generation capacity levels should be viewed as "net" changes as some units that retire from service in the base case do not do so in the MATS policy case.
[33] A number of these factors have changed since promulgation and as a result there were additional retirements that are not directly attributed to MATS. The EPA's projections under MATS are based on information available at the time of MATS promulgation.

Source: Integrated Planning Model run by the EPA, 2011. Table 3-7 in final MATS RIA.

This analysis 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. In order to ensure that any retirements resulting from MATS would not adversely impact the ability of affected sources and electric utilities from meeting the demand for electricity, the EPA conducted an analysis of the impacts of projected retirements on electric reliability. These resource adequacy analyses found that reserve margins could be maintained over a three-year MATS compliance period indicating that reliability could be maintained as the power sector complied with MATS.[34]

After considering the potential impacts of MATS on power sector generation capacity, the EPA concludes that the costs to the power sector are reasonable. As noted above, the EPA is not accepting comments on the methods applied in the MATS RIA, but rather the agency requests comments on the use of the MATS RIA results as a way to consider costs in the CAA section

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[34] 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.

112(n)(1)(A) determination and on the analyses (metrics used to assess whether the power sector's cost of compliance with the CAA section 112(d) standards are reasonable).

7. Conclusions of considerations of costs to power sector

In this Section, the EPA considers the costs of MATS to the power sector from a variety of perspectives. First, the EPA estimates that the total projected cost of the MATS rule to the power sector in 2015 represents between 2.7 and 3.5 percent of annual electricity sales when compared to years from 2000 to 2011, a small fraction of the value of overall sales. Second, the EPA demonstrates that the projected capital expenditures in 2015 represent between 3.0 and 5.9 percent of total annual power sector capital expenditures when compared to years leading up to the finalization of the MATS rule. This investment by the power sector comprises a small percentage of the sector's historical annual capital expenditures on an absolute basis and also falls within the range of historical variability in such capital expenditures. Third, the EPA finds the projected average retail price increases are within the range of historical variability as well as lower than their peak on an absolute basis. The EPA has compared the projected national average retail electricity price for 2015 under MATS to the period from 2000 to 2011 and has shown that the projected increase in electricity rates of 0.3 cents/kWh for 2015 represents an increase of 3.1 percent,

well within the range of retail price fluctuations over the 2000 to 2011 period. Finally, this analysis indicates that the vast majority of the generation capacity in the power sector would be able to absorb the anticipated compliance costs and remain operational and that the generating capacity the EPA estimated would retire as a result of the rule was generally older and less efficient than the capacity projected to operate.

The EPA judges each of these analyses to be appropriate bases for evaluating whether the costs to the power sector are reasonable. Having performed these analyses independently, the EPA concludes that every one of them supports its conclusion that costs are reasonable.

C. Other Costs

1. Introduction

In addition to the cost considerations described in Section IV.B above, the EPA considered the cost of mercury controls consistent with the requirement in CAA section 112(n)(1)(B), and the cost of controls for other HAP emissions from EGUs. In addition, we discuss the cost of implementing the ARP because of its relationship to the inclusion of section 112(n)(1)(A) in the 1990 CAA Amendments. Below we first address the ARP and then the costs of mercury and other controls.

2. Cost of the Acid Rain Program (ARP)

As explained above and in the MATS record, section 112(n)(1)(A) was added to the CAA in 1990 along with other significant revisions to section 112, and that provision requires the EPA to conduct the Utility Study and determine the hazards to public health reasonably anticipate to occur after imposition of the other requirements of the CAA. In addition to significantly revising section 112, the 1990 amendments to the CAA included the utility specific ARP. The ARP was established with the goal of reducing emissions of SO_2 and nitrogen oxides (NO_x) from the power sector, and there was an expectation that compliance with the ARP could result in widespread installation of control technologies that would also lead to ancillary or co-benefit reductions in HAP emissions.[35] The ARP was also projected to be costly - estimates of the cost of the program ranged from $6 to $9 billion per year (2000 dollars).[36] Notably, the ARP has

[35] For example, flue gas scrubbers that control SO_2 can also be effective at controlling acid gas HAP such as hydrogen chloride, hydrogen fluoride, and selenium oxide. Note, however, that NO_X controls are not effective at directly controlling HAP (though selective catalytic reduction units can promote improved mercury control in scrubbers).

[36] U.S. EPA Clean Air Markets Div., 2005, *National Acid Precipitation Assessment Program Report to Congress 2005: An Integrated Assessment*, National Science and Technology Council, Washington, DC; Note: these estimates would be approximately $7 to $11 billion in 2007 dollars using a GDP deflator.

been extremely successful in reducing emissions of SO_2 and NO_x from the utility power sector, and the cost of the ARP has been shown to be much less than what was initially estimated (up to 70 percent lower than initial estimates).[37] In addition, the compliance choice to not use scrubbers reduced the cost of the ARP and significantly reduced the co-benefit reductions in HAP emissions that would have occurred if more EGUs installed SO_2 scrubbers. As a result, in both 2000 when the EPA made its initial finding and in 2011 when it reaffirmed the finding that it is appropriate and necessary to regulate HAP from EGUs, those sources were still significant emitters of HAP, and almost all EGUs are major sources of HAP.

3. Consideration of the cost of HAP control technologies

As described below, the EPA first considers the cost of mercury control technologies, consistent with CAA section 112(n)(1)(B), focusing on information available at the time the agency issued the Mercury Report through the time the EPA reaffirmed the appropriate and necessary finding in 2011. The EPA then considers the cost of control technologies for non-mercury HAP, and the changes in those costs over time.

[37] U.S. EPA Clean Air Markets Div., 2011, *National Acid Precipitation Assessment Program Report to Congress 2011: An Integrated Assessment*, National Science and Technology Council, Washington, DC.

The Mercury Study estimated the potential cost of mercury controls for EGUs and other sources,[38] and the agency updated and further refined the mercury control cost estimate information in the RIA conducted for the final MATS rule.[39] The EPA also estimated the cost of controls for other HAP in the RIA. These analyses show that mercury control is more effective and less costly than initially estimated in 1997. The cost of non-mercury HAP control has also generally decreased since 1990.

a. Cost of technologies for control of mercury emissions

Pursuant to CAA section 112(n)(1)(B), the EPA completed the peer-reviewed Mercury Study in 1997, and it considered, among other things, the availability and cost of mercury controls. The EPA used the findings in the Mercury Study to develop the mercury-related findings contained in the Utility Study.

Based on data available at the time, detailed estimates of

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[38] At the time the Mercury Study was developed, mercury controls for utility boilers were still in the research, development and pilot program phase. The Mercury Study concluded that full-scale emission tests were needed and that the presented cost estimates were highly uncertain. The Mercury Study also noted that significant research on mercury emission control was underway and concluded that there were strong incentives for technology innovation and that the development of more cost-effective controls was likely.

[39] U.S. EPA. 2011. *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards*. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-452/R-11-011. Docket ID No. EPA-HQ-OAR-2009-0234-20131.

mercury control costs were developed for several model plants that represented electric power generation at coal-fired power plants. For the EGUs, the Mercury Study evaluated the costs of activated carbon injection and carbon filter beds at model plants with different pre-existing controls. The Mercury Study also described the potentially significant co-benefit control of mercury emissions by conventional SO_2 scrubbers and PM controls. At the time the Mercury Study was developed, mercury controls for utility boilers were still in the research, development and pilot program phase. The Mercury Study concluded that full-scale emission tests were needed and that the presented cost estimates were highly uncertain. The Mercury Study also noted that significant research on mercury emission control was underway and concluded that there were strong incentives for technology innovation and that the development of more cost-effective controls was likely. Because the EPA did not incorporate consideration of cost into the December 2000 Finding, no conclusions were reached at that time regarding whether the costs of the technologies outlined in the Mercury Study were reasonable for purposes of the mercury reductions that could be achieved.

The agency also considered alternative control strategies that were available and effective in reducing HAP emissions from EGUs pursuant to CAA section 112(n)(1)(A). In fact, in the

December 2000 Finding, the EPA stated that "the application of technologies used to control mercury emissions in conjunction with technologies used to control other pollutants, an approach called multi-pollutant control, can substantially reduce or offset the costs of HAP control." 65 FR 79825, at 79828 (December 20, 2000). The EPA also discussed new methods in development to adsorb mercury onto injected particles (sorbents) so that the mercury could be more readily removed by PM controls. Id. at 79829. While the EPA did not explicitly consider costs in the December 2000 Finding, the inclusion of this information demonstrates that the EPA was mindful even then of mercury controls and associated costs.

The EPA similarly concluded in the MATS rule that there were available mercury controls (76 FR 25014), and the record reflects that mercury control costs have declined considerably since 2000.[40] In fact, the mercury sorbents discussed in the Mercury Study and the December 2000 Finding are now routinely used and newer and more effective mercury sorbents and other control strategies have been developed prior to and during the MATS rulemaking process.

b. Cost of technology for control of non-mercury HAP

[40] For example, see Docket ID No. EPA-HQ-OAR-2009-0234-20232.

The EPA considered the cost of controls for the non-mercury metal, acid gas, and organic HAP. In 1990, the types and costs of control technologies were generally known (e.g., PM controls (bag-houses and electrostatic precipitators) were the best controls for non-mercury metal HAPs and SO_2 scrubbers were the best controls for acid gas HAP, and the costs of those controls were known in 1990). CAA section 112(n)(1)(A) thus reasonably required the EPA to "develop and describe . . . alternative control strategies for [HAP] emissions which may warrant regulation under this section"[41], but did not require the EPA to consider the cost of such alternative controls. In the Utility Study, the EPA developed and described many pre- and post-combustion controls, both proven and being developed, for HAP emissions, and many of those control approaches are in use today at other HAP sources to reduce the cost of compliance with CAA section 112(d) standards. The EPA believes that many EGUs will use these approaches to reduce the cost of compliance with MATS.

Concerning the cost of non-mercury controls, we considered

[41] The EPA states in the Utility Study that "[t]he HAPs of concern include the trace elements identified in chapter 5 as potential health risks. These consist of arsenic, cadmium, chromium, lead, manganese, mercury, and nickel; dioxins and furans (due to the toxicity of the organic chemical); and HCl [hydrogen chloride] and HF [hydrogen fluoride] (due to the estimated emission quantities of the compounds)." Utility Study, 13-1.

flue gas desulfurization (FGD) controls that can effectively reduce acid gas HAP and can also reduce mercury and other non-mercury HAP to varying degrees based in part on control configuration (e.g., some NO_x controls facilitated the removal of mercury with a wet scrubber). The cost to reduce acid gas HAP using SO_2 controls has declined over time with the increased use of alternative technologies such as spray drier absorber and dry sorbent injection.

D. Incorporating Cost into the Appropriate Finding

In response to the Supreme Court's holding in *Michigan* that the EPA erred in concluding that it was appropriate and necessary to regulate EGUs without considering cost, the EPA has now evaluated cost. The EPA must now, because it has already determined that HAP emissions from EGUs present significant hazards to public health and the environment, consider its conclusions regarding the cost of MATS in light of other factors relevant to the appropriate determination. Other relevant factors include the EPA's prior conclusions that HAP emissions from EGUs pose significant hazards to public health and the environment that will not be addressed through imposition of the other requirements of the CAA and that there are controls available to reduce HAP emissions from EGUs. The EPA must also consider its prior conclusion that EGUs are by far the largest remaining source of mercury, selenium, hydrogen chloride, and

hydrogen fluoride emissions, and a major source of metallic HAP emissions including arsenic, chromium, nickel, and others,[42] and that MATS will significantly reduce EGU emissions of many HAP. The EPA has estimated that MATS would reduce annual emissions from EGUs of mercury by 75 percent, hydrogen chloride (a surrogate for all acid gas HAP) by 88 percent, and $PM_{2.5}$ (filterable PM is a surrogate for all non-mercury metal HAP) by 19 percent.[43]

These conclusions, contained in the December 2000 Finding and the 2011 MATS rule[44] were not affected by the Supreme Court decision in *Michigan*. Instead, the Supreme Court concluded that the appropriate finding could not be made without also considering cost. *Michigan*, 135 S.Ct. at 2711.

The EPA has now evaluated cost and considered cost in light of the other factors relevant to determining whether regulation of HAP emissions from EGUs is appropriate. Based on a consideration of these factors, the EPA concludes that the consideration of cost does not cause us to alter our

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[42] See Section II of this document and *Emissions Overview: Hazardous Air Pollutants in Support of the Final Mercury and Air Toxics Standard*, Docket ID No. EPA-HQ-OAR-2009-0234-19914.
[43] *See* Section IV.B.2 of this document and 77 FR 9424.
[44] December 2000 Finding, 65 FR 79825-31; Proposed MATS, 76 FR 24976-25020; Final MATS, 77 FR 9304-66.

determination that regulation of HAP emissions from EGUs is appropriate.

The EPA concludes above that the direct and indirect costs to the power sector to comply with the final MATS standards based on several different metrics. The EPA also concludes above that the costs of compliance with the CAA section 112(d) standards established in MATS are reasonable and do not jeopardize the power sector's ability to perform its primary and unique function - the generation, transmission and distribution of electricity.

The EPA has considered the conclusion that the costs of compliance with the final MATS rule are reasonable in conjunction with the other relevant factors to determine whether the cost of regulation causes us to conclude that, despite the advantages of regulation such as the progress regulation will make toward reducing the identified hazards to public health, it would not be appropriate to regulate HAP emissions from EGUs. Specifically, the EPA considered the cost in light the findings that mercury and non-mercury HAP from EGUs pose significant hazards to public health and the environment that will not be addressed through imposition of the other requirements of the CAA. *See* Section II of this document, the December 2000 Finding, and the MATS record. The EPA also considered the fact that coal- and oil-fired EGUs are the predominant anthropogenic source in

the U.S. of several listed HAP, including mercury, hydrogen chloride, selenium, and hydrogen fluoride, and all but a handful of EGUs are major sources of HAP.

The EPA also considered the purpose of CAA section 112 to achieve prompt, permanent and ongoing reductions in the volume of HAP emissions that pose identified or inherent hazards to public health and the environment to reduce the risks posed by such emissions, including risks to the most exposed and most sensitive members of the population. The EPA considered the fact that absent regulation of HAP emissions from EGUs, such units would continue to emit significant volumes of HAP emissions without a need to reduce or even monitor such emissions. This is particularly problematic for persistent HAP such as mercury, which, once emitted, can be re-emitted in the future, and as a result continue to contribute to mercury deposition and associated health and environmental hazards.[45] The EPA also considered the fact that the statute contemplates that all major sources of HAP will be subject to standards and that all listed sources will be evaluated every 8 years to determine if additional reductions in HAP emissions can be achieved at a

[45] EGUs have emitted many hundreds of tons of mercury into the environment and those emissions will continue to pose hazards to public health and the environment into the future. 76 FR 25015.

reasonable cost, based on the availability of new controls or work practices. The statutory structure generally supports the regulation of all significant sources of HAP emissions, and the EPA has demonstrated that HAP are emitted in significant volumes by EGUs and such emissions have been determined to pose ongoing hazards to public health and the environment.

Having considered all of the relevant factors, including cost, the EPA finds that the cost of compliance with CAA section 112(d) standards does not cause us to alter our determination that regulation of HAP emissions from EGUs is appropriate. Numerous independent metrics support the conclusion that MATS, the regulation promulgated by the EPA to address HAP emissions from EGUs, is reasonable. MATS makes significant progress toward implementing the statutory goals of reducing the inherent hazards associated with HAP emissions and to reduce the risks posed by such emissions, including risks to the most exposed and most sensitive members of the population. In light of the meaningful progress MATS makes towards the important statutory objectives, and the EPA's conclusion that its associate costs are reasonable and will not affect the power sector's ability to continue supplying reliable power, the EPA concludes that it is appropriate to regulate HAP emissions from EGUs after considering cost.

Moreover, many of the congressional concerns related to costs and regulatory burden on the power sector, which led to the inclusion of section 112(n)(1) in the CAA, have been mitigated by more recent developments and consideration of these developments further supports the EPA's proposed conclusion. The EPA is expressly required to consider the cost of mercury controls in CAA section 112(n)(1)(B). The EPA has done so and determined that the estimated cost of mercury control has decreased significantly since 1997 when the EPA issued the Mercury Study. In the MATS rule, the EPA determined that there were available mercury controls (76 FR 25014), and the record reflects that mercury control costs have further declined since 2000.[46] In fact, the mercury sorbents discussed in the Mercury Study and the December 2000 Finding are now routinely used and new, more effective mercury sorbents and other control strategies have been developed prior to and during the MATS rulemaking process. The decreased cost of mercury controls and further supports our conclusion that consideration of cost does not cause us to alter our conclusion that it is appropriate to regulate HAP emissions from EGUs.

[46] For example, see Docket ID No. EPA-HQ-OAR-2009-0234-20232.

Finally, the EPA considered the fact that CAA section 112(d) ensures that the MACT floor level of control is technologically feasible and presumptively cost reasonable because it is based on the level of control actually achieved by existing sources in the same category or subcategory. See Legal Memorandum, Section III. In addition, while the statute requires a minimum level of control, the EPA maintains discretion under CAA section 112(d) to minimize the cost of compliance, for example, through subcategorization and emissions averaging. *See* December 2000 Finding, 65 FR 79830. The inherent reasonableness of MACT floor standards and the flexibility included in the standard setting process further support the EPA's proposed supplemental finding.

By adding cost considerations into the EPA's evaluation of whether regulation of HAP emissions from EGUs is appropriate, the EPA has corrected the deficiency identified by the Supreme Court in *Michigan*. Now, having considered cost and for all of the reasons explained above, the EPA is proposing this supplemental finding that, as the costs imposed by MATS are reasonable, it is appropriate for the EPA to regulate HAP emissions from EGUs in light of the meaningful progress the rule makes toward achieving key statutory goals and reducing the previously identified significant hazards to public health and

the environment. In sum, the significant advantages of regulating these emissions outweigh the costs of regulation.

V. Consideration of the Benefit-Cost Analysis in the MATS RIA

A. Introduction

As discussed above and in the Legal Memorandum, the EPA has discretion to determine the manner in which to consider cost under CAA section 112(n)(1). The EPA does not interpret CAA section 112(n)(1)(A) as requiring a formal benefit-cost analysis in which benefits are monetized and compared against the monetary costs of an action. Further, it is the EPA's judgment that a formal, monetized benefit-cost analysis is not the preferred approach for weighing the advantages and disadvantages of regulating HAP emissions from EGUs. See Section IV.D (setting forth the EPA's preferred approach to incorporating cost in the appropriate finding). However, a formal benefit-cost analysis was conducted in accordance with all relevant guidance and is presented in the final MATS RIA. In this Section, the EPA provides background on the benefit-cost approach and considers the results of the benefit-cost analyses developed for MATS. As explained herein, the final MATS RIA demonstrates that the benefits of the rule significantly outweighed the costs of the rule and thus fully and independently supports the EPA's proposed supplemental finding.

As noted in Section I.C of this document, the public had ample opportunity to comment on all aspects of the MATS RIA, including the benefits analysis, and the EPA responded to all of the significant comments.[47] Although the EPA is not accepting comments on the methods applied in the MATS RIA, the agency requests comments on the use of the MATS RIA results as a way to consider costs in the CAA section 112(n)(1)(A) determination.

B. Background on Benefit-Cost Analyses

The EPA developed RIAs for both the proposed and final MATS rule pursuant to Executive Orders 12866 and 13563, as well as other applicable statutes and executive orders. Among other requirements, these executive orders require agencies to assess the costs and benefits of significant regulatory actions with the recognition that some impacts are difficult to quantify. Agencies are also required to make a reasoned determination that the benefits of an action justify its costs. The final MATS RIA met these requirements and followed all applicable guidance documents by closely examining all of the important consequences of the rule and applying rigorous, peer-reviewed methods to calculate the monetized costs and benefits, when possible.

[47] See pp. 477-660 of the 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*. Volume 2. Docket ID No. EPA-HQ-OAR-2009-0234-20126.

According to the EPA's guidance, the foundation of benefit-cost analysis is determining whether a policy's overall net benefits to society are positive.[48] Net benefits are derived by summing all of the benefits that result from a policy change less the costs of that policy, including all ancillary consequences (positive and negative). Further, OMB's guidance notes that benefit-cost analysis can be used to indicate which policy option generates the largest net benefits to society, at least to the extent that all benefits and costs can be quantified and expressed in monetary units.[49] OMB also notes that this information can be useful for decision makers and the public, even when economic efficiency (e.g., maximizing net benefits) is not the overriding public policy objective, such as when a policy is explicitly designed to address distributional unfairness.[50]

In addition to interpreting CAA section 112 (n)(1)(A) as not requiring a benefit-cost analysis, the EPA does not consider a formal, monetized benefit-cost analysis to be the preferred

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[48] *See* p. 1-4 of the EPA's *Guidelines for Preparation of Economic Analyses*.
[49] *See* p. 2 of OMB's *Circular A-4*.
[50] OMB's guidance also recognizes that there may be other social purposes for regulation beyond economic purposes such as removing distributional unfairness. *See* p. 5 of OMB's *Circular A-4*.

approach for weighing advantages and disadvantages under that section for several important policy reasons. First, it is well-recognized that some categories of benefits can be difficult to monetize,[51] and this incomplete quantitative characterization of the positive consequences can underestimate the monetary value of net benefits. As discussed in Sections V.C. and V.D. of this document, the numerous categories of benefits that the EPA was unable to quantify leads to an underestimate of the benefits in the MATS RIA. Second, national-level benefit-cost analyses may not account for important distributional effects, such as impacts to the most exposed and most sensitive individuals in a population. Thus, these equity considerations that are difficult to quantify are often considered outside of analyses that test (or determine) whether actions strictly improve economic efficiency (i.e., increase net benefits).

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[51] See Executive Order 13563; pp. 2 of OMB's Circular A-4 ("It will not always be possible to express in monetary units all of the important benefits and costs. When it is not, the most efficient alternative will not necessarily be the one with the largest quantified and monetized net-benefit estimate."; and pp. 7-49 of the EPA's Guidelines for Preparation of Economic Analyses ("It often will not be possible to quantify all of the significant physical impacts for all policy options...When there are potentially important effects that cannot be quantified, the analyst should include a qualitative discussion of benefits results. The discussion should explain why a quantitative analysis was not possible and the reasons for believing that these non-quantified effects may be important for decision making.").

Using peer-reviewed methods consistent with the agency's standard practices and the EPA's and OMB's guidance, the final MATS RIA found significant net benefits. As described in Section IV.B.2 of this document, the EPA estimated the changes in costs and emissions from MATS by using IPM to model the consequences of achieving the HAP emission limits on the power sector (specifically, for coal-fired EGUs). As described in the MATS RIA, the EPA evaluates the health benefits associated with these changes in emissions using a multi-step process. First, the EPA models the chemical transport of those emission reductions and the associated change in exposure. Next, the EPA estimates the number of specific health effects associated with the modeled exposure changes using relationships from health studies. Lastly, the EPA assigns a dollar value to those health effects based on the economic literature.

C. Consideration of HAP Benefits

The EPA estimated in the final RIA that MATS would reduce annual emissions from EGUs of mercury by 75 percent, hydrogen chloride (a surrogate for all acid gas HAP) by 88 percent, and $PM_{2.5}$ (filterable PM is a surrogate for all non-mercury metal HAP) by 19 percent.[52] Hazardous metals, acid gases, and organic

[52] *See* 77 FR 9424.

pollutants can cause various adverse cancer and noncancer health effects including many chronic and acute health disorders, but the EPA was unable to quantify many of the health effects attributable to these emission reductions because data and methods available do not currently exist in the scientific literature.[53] Nevertheless, the EPA qualitatively accounted for these benefits from HAP emission reductions in Chapter 4 of the final MATS RIA, and the EPA maintains that the HAP-specific consequences of the rule are vital and further the goals of the statute.[54] In fact, the MATS RIA specifically accounted for these benefits in the comparison of monetized benefits to costs by adding a "+B" to denote the sum of all unquantified benefits (see Table ES-1 of the final MATS RIA).

In the MATS RIA, the EPA could only quantify and monetize a small subset of the health and environmental benefits

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[53] The EPA explained in the MATS RIA that there are significant obstacles to successfully quantifying and monetizing the public health benefits from reducing HAP emissions. These obstacles include 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.

[54] *See* p. 73-79 of the final MATS RIA for discussions of the health effects associated with reducing emissions of 13 non-mercury HAP emitted by EGUs.

attributable to reducing mercury emissions. Specifically, among neurodevelopmental effects, the EPA was only able to quantify and monetize IQ loss among a small subset of recreational fishers. The analyses the EPA conducted for this endpoint generated an estimate of $4 to $6 million annually, which reflects the dollar value of the reduction in IQ loss associated with changes in mercury exposure for typical recreational fishers who consume fish during pregnancy from the freshwater watersheds where the EPA had fish tissue data. While IQ loss is the only health effect that could be quantified and monetized, the EPA's independent Science Advisory Board noted that it is not the most potentially significant health effect associated with mercury exposure as other neurobehavioral effects, such as language, memory, attention, and other developmental indices, that are more responsive to mercury exposure.[55] This estimate of

[55] U.S. Environmental Protection Agency-Science Advisory Board. 2011. Peer Review of EPA's Draft National-Scale Mercury Risk Assessment. EPA–SAB–11–017. September. Docket ID No. EPA-HQ-OAR-2009-0234-19689. Available at: http://yosemite.epa.gov/sab/sabproduct.nsf/BCA23C5B7917F5BF8525791A0072CCA1/$File/EPA-SAB-11-017-unsigned.pdf. See p. 2 ("IQ loss is not a sensitive response endpoint for methylmercury and its use likely underestimates the impact of reducing methylmercury in water bodies") and p. 8 ("[I]n the Faroe Island study the most sensitive indicators were in the domains of language (Boston Naming Test), attention (continuous performance) and memory (California Verbal Learning Test)... In

the monetized benefits of reducing mercury emissions 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. Thus, the limited estimate for the single neurodevelopmental endpoint that could be monetized (IQ loss among certain recreational fishers) is a substantial underestimate of the total mercury impacts among affected populations. These monetized estimates also do not reflect any benefits associated with reducing non-mercury HAP emissions.

D. Consideration of Total Benefits and Benefit-Cost Comparisons

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the Seychelles study, the Psychomotor Development Index was the most sensitive measure").

Because the subset of mercury-only benefits that the EPA could quantify from MATS does not account for many of the important benefits associated with reducing HAP emissions from EGUs, it would be unreasonable to draw any conclusions from a comparison of the mercury-only benefits to the full costs of MATS. Instead, a complete benefit-cost comparison would account for all of the consequences of achieving the HAP emission limits (i.e., direct and indirect as well as quantified and unquantified).[56] The MATS RIA contains a benefit-cost comparison that reflects only certain categories of benefits that could be confidently quantified and/or monetized. Reflecting just these impacts, the EPA estimated that the final MATS would yield 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. Despite the fact that these estimates capture only a portion of the benefits of the rule, it is clear that the benefits of MATS outweigh the costs substantially. Specifically, the monetized benefits outweigh the estimated $9.6 billion in annual costs by between 3-to-1 or 9-to-1 depending on the benefit estimate and

[56] For example, as described in Section IV.B.2 of this document, the estimated costs of MATS reflect consequences beyond just the affected units.

discount rate used. As noted above, these total monetized benefits are underestimated due to the numerous categories of HAP and other benefits that were not monetized in the MATS RIA.

As discussed above in Section IV.B, 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 (a $PM_{2.5}$ precursor). $PM_{2.5}$ 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). The benefits associated with reducing other pollutants (e.g., $PM_{2.5}$ and SO_2) are substantial and comprise a primary portion of the monetized benefits of MATS, and the quantification of $PM_{2.5}$-related health effects is strongly supported by hundreds of peer-reviewed

scientific studies.[57] While these reductions are not the objective of the MATS rule, the reductions are, in fact, a direct consequence of regulating the HAP emissions from EGUs. Consideration of known and quantifiable co-benefits such as these in a benefit-cost analysis is fully consistent with economic principles and is directed by guidance documents for conducting benefit-cost analyses of federal regulations from the EPA and OMB.[58]

Further, as discussed in the Legal Memorandum, CAA section 112(n)(1)(A) itself supports the inclusion of co-benefits because the statute directs the EPA to perform a study of the hazards to public health from HAP emissions from EGUs that are

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[57] U.S. Environmental Protection Agency (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.

[58] Consideration of ancillary benefits in benefit-cost analysis is directed by OMB (*Circular A-4*, 2003, p. 26): "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." It is also directed by the EPA's *Guidelines for Preparation of Economic Analyses* (2010, p. 11-2): "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."

likely to remain after imposition of the other provisions of the CAA, including the ARP. In other words, Congress directed the EPA to consider the HAP co-benefits attributable to the regulation of SO_2 and nitrogen oxides in the ARP and other CAA programs. Thus, it is reasonable to conclude that the statute would also allow the EPA to consider other pollutant reductions directly resulting from regulation of HAP emissions if a benefit-cost analysis were required to support the appropriate finding. Because the co-benefits are a direct consequence of actions to reduce HAP emissions, are consistent with economic guidance documents, and are consistent with statutory requirements in CAA section 112(n)(1)(A), it would be unreasonable for the EPA to ignore co-benefits in the comparison of monetized benefits to monetized costs for MATS.

E. Conclusions Regarding the Benefit-Cost Analysis

Although data and methodological limitations did not allow the EPA to calculate all of the benefits that would result from reducing HAP emissions, the benefits (monetized and non-monetized) of MATS are substantial and far outweigh the costs, thus, the benefit-cost analysis presented in the RIA for MATS fully and independently supports the EPA's determination that it is appropriate to regulate HAP emissions from EGUs. The EPA requests comments on this conclusion.

VI. Conclusion

As directed by the Supreme Court, the EPA has now taken cost into account in evaluating whether it is appropriate to regulate coal- and oil-fired EGUs under section 112 of the CAA. As explained in Section IV of this document, the EPA considered the reasonableness of the direct and indirect compliance costs of MATS based on several metrics and weighed the cost of regulation with other factors relevant to a decision to regulate HAP emissions from EGUs. The EPA found based on that evaluation that including a consideration of cost does not cause the agency to alter its determination that regulation of HAP emissions from EGUs is appropriate. The EPA also found that other cost considerations further support this conclusion.

In addition, though the EPA does not view formal benefit-cost analysis as required to support the appropriate finding, the EPA conducted a formal benefit-cost analysis in the RIA for MATS and that analysis demonstrates that the monetized and non-monetized benefits of MATS are significant and far exceed the cost. The benefit-cost analysis thus supports the finding that it is appropriate to regulate HAP emissions from EGUs.

The EPA finds that the analysis set forth in Section IV of this document and the benefit-cost analysis in the RIA for MATS (and summarized in Section V) each provide independent support for a conclusion that regulation of HAP emissions from EGUs is appropriate. Based on these findings, the EPA proposes that the

agency's previous determination that it is appropriate to regulate HAP emissions from EGUs under section 112(d) of the CAA is not altered by a consideration of cost and that coal- and oil-fired EGUs are properly listed pursuant to section 112(c).

VII. Statutory and Executive Order Reviews

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 potential costs or benefits associated with this action.

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 proposed 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 potential costs or benefits associated with this action.

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.

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

cost of whether it is appropriate to regulate HAP emissions from electric utility steam generating units.

K. 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. Section 307(d)(1)(V) provides that the provisions of section 307(d) apply to "such other actions as the Administrator may determine."

VIII. 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: November 20, 2015.

Gina McCarthy,

Administrator.

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