MJB & A

CONCORD, MA - WASHINGTON, DC

47 Junction Square Drive
Concord, MA 01742

978-369-5533
www.mjbradley.com

MJB&A Summary ■ September 7, 2018

Summary of the Proposed Affordable Clean Energy Rule (Clean Power Plan Replacement)

On August 31, 2018, the U.S. Environmental Protection Agency (EPA) published a proposal to replace the Clean Power Plan (CPP) and revise implementation regulations and the New Source Review (NSR) program. Titled *Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program* (Proposed Rule) or the Affordable Clean Energy (ACE) Rule, the Proposed Rule includes three actions:

1. EPA proposes to replace the Clean Power Plan (CPP) with revised emission guidelines based on an analysis of heat rate improvements (HRIs) at coal-fired electric generating units (EGUs).
2. EPA proposes new regulations for this and future actions under Clean Air Act (CAA) section 111(d) that provide direction to EPA and states on the implementation of emission guidelines.
3. EPA proposes revisions to the New Source Review (NSR) program that are intended to address potential barriers to the implementation of HRI projects at EGUs.

Comments on these proposed actions are due on October 31, 2018.[1]

Key Takeaways

- Consistent with the legal arguments in EPA's proposed repeal of the CPP, EPA proposes emission guidelines based on a determination that technologies or systems that can be applied at an affected source (inside the fenceline) are the only options that can be considered when identifying the best system of emission reduction (BSER).
- EPA proposes emission guidelines for existing fossil-fuel fired steam generating EGUs[2] constituting a list of potential HRI measures to be considered by states for each source as BSER; combustion turbines are not included as affected units, and EPA does not propose a BSER for such units.
- The proposal authorizes states to have the primary role in developing standards of performance consistent with the application of BSER. States will be expected to conduct "evaluations of HRI potential, technical feasibility, and applicability" at each affected coal-fired EGU using a proposed list of candidate technologies.
- The Proposed Rule does not include a presumptively approvable methodology for establishing standards but suggests that states may be able to use a soon-to-be- proposed approach for establishing a standard of

[1] EPA is requesting that commenters identify the unique identifier to which the comment is responsive (e.g., C-1, C-2, etc.). The identifiers are referenced in footnotes throughout this summary and included in full in Appendix A.

[2] The proposed regulatory text is drafted to apply to all fossil-fuel fired steam generating units; however, the preamble suggests the intent is only to apply to coal-fired steam generating units. Any comments to EPA will need to indicate this distinction and suggest regulatory clarifications. For the purposes of this summary, MJB&A has used the language in the preamble of the rule—coal fired EGUs.

performance for modified units as guidance. EPA expects to propose this approach soon in a revised 111(b) proposal.

- The Proposed Rule allows states to establish less stringent standards based on the consideration of remaining useful life and other factors and to establish affected EGU compliance timelines.
- EPA is not proposing to allow averaging or trading between separate facilities for compliance.
- The Proposed Rule includes changes to the implementing regulations that modify state and EPA timelines for plan submission and review such that total maximum time from promulgation of emissions standards / standards of performance to promulgation of a Federal Implementation Plan (FIP) would be up to 6.5 years (compared to 15 months under current timelines). For example, if the rule is finalized in early 2019 and a state and EPA took the maximum time to develop and approve plans, compliance with the state plan would not be required until late 2023 and if EPA needed to develop a FIP, compliance could be as late as 2025.
- The Proposed Rule includes changes to the NSR program, specifically, the addition of a new step for a project's NSR analysis for EGUs such that a modification will not trigger NSR if that modification does not result in an hourly emissions increase.
- Relative to the emission reductions anticipated under the CPP, EPA projects emission increases in 2030 as a result of the proposed emission guidelines of 47 million to 61 million tons of carbon dioxide (CO_2), 45 thousand to 53 thousand tons of sulfur dioxide (SO_2), and 32 thousand to 39 thousand tons of nitrogen oxides (NOx). The projected compliance costs in 2030 of the emission guidelines for the power sector relative to CPP range from an avoided cost of $1.0 billion in 2030 to an additional cost of $0.2 billion.

Background

In March 2017, President Trump issued Executive Order (EO) 13873, which directed EPA to reconsider the CPP, the implementation of which had been stayed by the U.S. Supreme Court on February 9, 2016. In response, EPA proposed to repeal the CPP and published an Advance Notice of Proposed Rulemaking (ANPRM) soliciting comment on what EPA should include in a new existing source regulation under section 111(d). EPA indicates that the Proposed Rule incorporates comments submitted in response to the ANPRM and that the Agency has not made a final decision about whether it will fully or partially repeal the CPP before finalizing any revisions.

Proposed Emissions Guidelines

In the Proposed Rule, EPA proposes to promulgate emission guidelines applicable to affected coal-fired EGUs that will "provide information on the degree of emission reduction which is achievable with each system, together with information on the costs, and nonair health and environmental effects, and energy requirements of applying each system to designated facilities."

EPA notes the litigation and regulatory history underlying this proposal stating that "the Supreme Court in *Massachusetts v. EPA*…concluded that Congress had drafted the CAA broadly enough so that [greenhouse gases (GHGs)] constituted as air pollutants within the meaning of the CAA." However, the preamble also notes that carbon dioxide (CO_2) emissions from the electric sector have declined in recent years driven by "market factors, reduced electricity demand, and policy and regulatory efforts." Additionally, "[s]ome power plant generators have announced that they expect to continue to change their generation mix away from coal-fired generation toward natural-gas fired generation, renewables and more deployment of energy efficiency measures."

In light of these trends, EPA seeks comment on "whether and how to consider such trends in developing CO_2 emission guidelines for the power sector."[3] EPA states that "regulatory decisions today could be based on information that may very well be outdated within the next several years. If that is the case, work put in by federal and state regulatory agencies—as well as by the affected sources themselves—to address section 111(d) requirements could quickly be overtaken by external market forces which could make those efforts redundant or, even worse, put them in conflict with industry trends that are already reducing CO_2 emissions."

Affected Sources

EPA proposes to define affected sources as any fossil fuel-fired electric generating steam unit that is not an integrated gasification combined cycle (IGCC) that: was in operation or commenced construction as of the date of publication of the 111(b) Proposed Rule in the Federal Register;[4] serves a generator capable of selling greater than 25 MW to a utility power distribution system; and has a baseload rating greater than 250 MMBtu/h heat input of fossil fuel either alone or in combination with any other fuel. This definition does not, at this time, include stationary combustion turbines. However, EPA requests comment on the systems of emission reduction that might constitute BSER for combustion turbines and IGCC units.[5]

Additionally, EPA is proposing to exempt the following types of units:

- Modified or reconstructed units subject to GHG emission standards under 40 CFR 60 subpart TTTT;
- Steam generating units subject to permit limits for electric sales to one-third or less of its potential electric output or 219,000 MWh or less on an annual basis;
- Non-fossil units (i.e., units capable of combusting at least 50 percent non-fossil fuel) that have historically limited the use of fossil fuels to ten percent or less of the annual capacity factor or are subject to such a federally enforceable permit;
- Units that serve a generator with other steam generating unit(s) where the effective generation capacity[6] is 25 MW or less;
- Municipal waste combustor units subject to performance standards under 40 CFR 60 subpart Eb; or
- Commercial or industrial solid waste incinerators that are subject to performance standards under 40 CFR 60 subpart CCCC.

EPA solicits comments on how the Proposed Rule defines affected units.[7]

Definition of Best System of Emission Reduction

The Proposed Rule notes that the Clean Air Act authorizes EPA to determine BSER for affected sources, and EPA must identify all "adequately demonstrated" systems of emission reduction for the source category and evaluate which systems are best while "taking into account" the cost of achieving such reduction and any "nonair quality health and environmental impact and energy requirements."

Heat Rate Improvements at Coal-Fired EGUs

EPA proposes to identify HRI measures as BSER for existing fossil-fuel fired steam generating EGUs. EPA notes that the "variation in heat rates among EGUs with similar design characteristics, as well as year-to-year variation

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3 Comment C-1.

4 The prepublication version of the Proposed Rule includes a placeholder for the publication in the Federal Register but is unclear if that date will be the prior 111(b) proposed rule, January 8, 2014, or based on a new 111(b) proposed rule, which EPA is expected to release this fall.

5 Comment C-3.

6 Generation capacity determine based on prorate output of the base load rating of each steam generating unit.

7 Comment C-4.

in heat rate at individual EGUs, indicate that there is potential for HRIs that can improve CO_2 emission performance for the existing coal-fired EGU fleet, but that this potential may vary considerably at the unit level."

EPA notes that in the CPP, the Agency found that EGUs can achieve on average a 4.3 percent improvement in the Eastern Interconnection, a 2.1 percent improvement in the Western Interconnection, and a 2.3 percent improvement in the Texas Interconnection. However, the CPP concluded that it could not apply only heat rate measures by themselves because of the potential rebound effect. In this Proposed Rule, however, EPA states that the CPP's analysis for heat rate improvements (i.e., building block 1) "does not represent an appropriate BSER, and ACE better reflects important changes in the formulation and application of the BSER."

In response to the ANPRM, EPA notes that many commenters concluded that any evaluation of HRI potential of the coal-fired EGU fleet must be done on a unit-by-unit basis as the opportunities are source-specific. EPA also explains that many commenters "claimed that owners and operators of fossil-fuel fired EGUs already routinely conduct HRI efforts and, as a result, there are relatively few economic improvement opportunities available."

EPA is proposing a list of "candidate technologies" of HRI measures for states to use in establishing standards. EPA believes that it would be overly burdensome to require states to evaluate the degree of emission limitation achievable from the application of every possible HRI measure and has, therefore, identified a list of the "most impactful" HRI measures. These measures and their minimum and maximum capital costs, estimated in a 2009 Sargent & Lundy Report,[8] are included in Table 1 below (*see* Table 2 in the Proposed Rule); the Proposed Rule also includes additional detail on each proposed measure.

Table 1. Summary of Cost ($2016/kW) of HRI Measures

	< 200 MW		200 - 500 MW		> 500 MW	
HRI Measure	Min	Max	Min	Max	Min	Max
Neural Network/Intelligent Sootblowers	4.7	4.7	2.5	2.5	1.4	1.4
Boiler Feed Pumps	1.4	2.0	1.1	1.3	0.9	1.0
Air Heater & Duct Leakage Control	3.6	4.7	2.5	2.7	2.1	2.4
Variable Frequency Drives	9.1	11.9	7.2	9.4	6.6	7.9
Blade Path Upgrade (Steam Turbine)	11.2	66.9	8.9	44.6	6.2	31.0
Redesign/Replace Economizer	13.1	18.7	10.5	12.7	10.0	11.2
Improved O&M Practices	Minimal capital cost					

EPA solicits comment on additional "unlisted" HRI measures that should be added,[9] each of the listed technologies, and whether there is additional information EPA should consider.[10] EPA also solicits comment on the list of "HRI

[8] "Coal-Fired Power Plant Heat Rate Reductions" Sargent & Lundy report SL-009597 (2009) *https://www.epa.gov/sites/production/files/2015-08/documents/coalfired.pdf*.

[9] Comment C-6.

[10] Comment C-7.

Reports, Case Studies, and Analysis" on which it based its analysis and if there are any additional studies that EPA should consider.[11]

EPA's analysis for the Proposed Rule finds there will not be a "rebound effect," stating that it modeled a range of potential HRIs and predicts that "there will be no cumulative increases in system-wide emissions relative to a scenario where no action is taken." While there are scenarios that show sources increasing generation, EPA notes that "they also generally reduce emissions (as a group) because they can generate higher levels of electricity with a lower overall emissions rate. Hence, EPA analysis indicates that the system-wide emission decreases due to reduced hate rate are likely to be larger than any system-wide increases due to increased operation." EPA, however, solicits comment on this conclusion.[12]

Heat Rate Improvements at Existing Natural Gas Combined Cycle Facilities

EPA does not propose to determine BSER for NGCC units. EPA states that it had previously determined that the available emission reductions for NGCC units would "likely be expensive or would likely provide only small overall reductions relative to those that were predicted through application of other systems of emission reduction identified in the CPP building blocks." EPA notes however that, in response to the ANPRM, commenters described "state of the art" upgrades and retrofit technologies that could reduce GHG emissions "by a significant amount." These commenters did not, however, provide specific information on the availability, applicability, or cost of HRI opportunities for NGCC units or the magnitude of expected heat rate reductions.

EPA conducted a benchmarking analysis to compare the 2017 national average emissions rate of the existing NGCC fleet to the best performing in years 2007 to 2016. Nationally, the HRI evaluation suggested an average HRI potential of 3.4 percent. EPA seeks comment on estimates of potential HRI for NGCC units, the performance and cost of potential HRIs for turbines,[13] and whether, if EPA determined that HRIs in that range were available for similar costs, it would be appropriate for EPA to reconsider its determination that there are no HRIs that represent the BSER.[14]

Other Systems of GHG Emission Reductions

EPA also considered other systems of GHG emission reductions that may be applied to affected EGUs but is not proposing that they should be part of the BSER. These include:

- Carbon Capture and Storage (CCS): EPA reaffirms its previous determination that CCS (or partial CCS) should not be a part of the BSER for existing fossil fuel-fired EGUs because it is significantly more expensive than alternative options for reducing emissions and may not be a viable option for many individual facilities. EPA requests comment on new information regarding CCS.[15]
- Fuel Co-Firing (Natural Gas or Biomass): The Proposed Rule does not include fuel co-firing methods as BSER due to cost and feasibility considerations. However, EPA proposes that these strategies be allowed as compliance options and requests comment on whether co-firing methods should be included among BSER candidate technologies.[16]

State Plan Development

[11] Comment C-8.
[12] Comment C-9.
[13] Comment C-10.
[14] Comment C-11.
[15] Comment C-12.
[16] *Unnumbered comment request.*

Once EPA promulgates the emission guidelines as described above, EPA expects states to use the information to establish standards of performance to include in their state plans. States will be expected to conduct "unit-specific evaluations of HRI potential, technical feasibility, and applicability for each BSER candidate technologies." States would have the discretion to consider additional factors such as remaining useful life, even if "[c]onsideration of these factors may result in the application of the standard of performance in a less stringent manner than would otherwise be suggested by strict implementation of the BSER technologies."

EPA notes that it is not proposing a presumptively approvable methodology for establishing standards of performance because it "could be viewed as limiting a state's ability to deviate from the prescribed methodology and that the approach could ultimately be more limiting than helpful." However, EPA is soliciting comment on approaches based on the use of historical heat rate or emissions data for the individual source, noting parallels to the 111(b) process.[17] Furthermore, EPA is proposing to provide information regarding ranges of expected reductions associated with the various HRIs identified as the BSER in order to assist states in establishing appropriate standards of performance for affected EGUs.

EPA proposes that states should have broad flexibility on whether and how to group or subcategorize affected EGUs (e.g., if a state identifies an overlap in circumstances around a group of EGUs, it might make sense to implement a uniform methodology for setting a standard of performance across that group).

Compliance Timing

EPA states that it believes it is appropriate that a "state establish tailored compliance deadlines for its sources." Under the Proposed Rule, states would also have the discretion to determine the compliance period for each source. However, if a state elects to provide more than two years for compliance, the plan must also include "legally enforceable increments of progress for that source." EPA is seeking comment on whether providing this discretion to states is appropriate or whether, and for what length, a uniform compliance schedule is appropriate. [18]

Form of the Standard

EPA proposes that emission standards be in the form of an allowable emission rate (lb CO_2/MWh-gross). EPA is also proposing that state plans include only one form of a standard of performance to "create continuity across states, prevent ambiguity, and to ensure as much simplicity as possible." However, EPA is seeking comment on whether other forms of standards of performance would be allowed and whether a different form should be the primary form that is authorized.[19] EPA also seeks comment on the "merits of differentiating between gross and net heat rate" as it may be important when considering the effects of part load operations and recognizing improved efficiency to equipment that reduce the auxiliary power demand.[20]

Compliance Flexibility

EPA proposes that affected sources may use both BSER and non-BSER measures to achieve compliance with state plans; however, the Proposed Rule includes two criteria for such measures: (1) they are implemented at the source itself, and (2) they are measurable at the source of emissions using data, emissions monitoring equipment or other methods to ensure it can be easily measured, reported, and verified at a unit. EPA seeks comment on this approach and whether there are other compliance flexibilities that meet the proposed criteria or whether there are certain non-BSER measures that should not be allowed for compliance.[21]

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17 Comment C-14.
18 Comment C-13.
19 Comment C-15.
20 Comment C-16.
21 Comments C-17 and C-18.

Taking into Account Remaining Useful Life and "Other Factors"

EPA is proposing to allow states to take into account remaining useful life and other factors in establishing a standard of performance for a unit.

In addition to seeking comment on this factor, EPA further proposes as part of the new implementing regulations that the "other factors" referenced in the Clean Air Act that EPA must allow states to take into account, include:

- Unreasonable cost of control resulting from plant age, location, or basic process design;
- Physical impossibility of installing necessary control equipment; or
- Other factors specific to the facility (or class of facilities) that make application of a less stringent standard or final compliance time significantly more reasonable.

These other factors may include expected life of the source, payback period for investments, the timing of regulatory requirements, space or other physical barriers to implementing certain HRIs, or inapplicable or already implemented HRIs. Here and in the context of the "variance provisions" of the proposed revisions to the implementing regulations, EPA further solicits comments on what are other factors that states should be allowed to consider in establishing a standard of performance.[22] For units with a short remaining useful life, EPA is seeking comment on what standard might be appropriate as a state may be able to set an emission rate and compliance deadline such that the rate would only apply if the unit elected not to shut down by the compliance date.[23] For EGUs that have already implemented all of the candidate technologies, EPA explains that it would expect that a state would establish a standard for performance that would be "at least as stringent as 'business as usual' for that source" to prevent any backsliding. EPA seeks comment on both of these approaches.[24]

Averaging and Trading

EPA is proposing to allow states to incorporate, as a part of their plan, emissions averaging among EGUs across a single facility, noting that since BSER is predicated on measures that can be implemented at the facility level, averaging across the facility is consistent with BSER. EPA is seeking comment on whether this type of facility-wide averaging of affected EGUs is appropriate and whether there should be other types of considerations involved.[25] EPA also asks for comment on the possibility of averaging affected EGUs with non-affected EGUs within a facility in the limited case when they represent incremental new non-emitting capacity, to take advantage of a compliance option such as integrated solar.[26] However, this averaging within a facility is the only averaging that EPA proposes to allow.

EPA is proposing to not allow additional averaging and trading between sources. EPA notes that allowing averaging outside of a single facility could result in generation shifting to lower emitting units, which would be "contrary to the intention of the rule which is to focus on reducing the rate at coal-fired EGUs when they run, not to reduce the amount they run." EPA states that it "believes that both legal and practical concerns may weigh against the inclusion of averaging and trading between sources in state plans." First, EPA notes that averaging and trading across affected sources or with non-affected sources would be inconsistent with its interpretation of BSER because "applying a different analytical approach to standard-setting may result in asymmetrical regulation (for example, a state's implementation measures might result in a more stringent standard than could otherwise be derived from application

22 Comment C-23.
23 Comment C-24.
24 *Unnumbered comment request.*
25 Comment C-29.
26 Comment C-30.

of BSER." Additionally, if EPA interpreted section 111 to allow averaging and trading, the express provisions authorizing states to consider remaining useful life and other factors "could be viewed as superfluous." Finally, EPA also raises implementation concerns, including the need to develop appropriate evaluation, monitoring, and verification (EM&V). Additionally, EPA states that "under a trading program, a single source could potentially shut down or reduce utilization to such an extent that its reduced or eliminated operation generates adequate compliance instruments for a state's remaining sources to meet their standards of performance without implementing any additional measures at any other source. This compliance strategy might undermine EPA's BSER." Nevertheless, EPA lists a series of questions related to averaging and trading on which it is seeking comment that are listed in Appendix A.[27]

Biomass

In response to the expectation that some entities may want to use biomass as a compliance option, EPA notes that it believes it meets the compliance flexibility criteria because biomass can be burned at the source and there are different methods to monitor or calculate the amount of biogenic CO_2 emissions associated with biomass use at a unit. EPA is seeking comment on the inclusion of forest-derived and non-forest biomass as a compliance option and the value to attribute to the biogenic CO_2 emissions associated with non-forest biomass feedstocks.[28]

State Plans

Section 111(d) requires states to submit plans that provide for the implementation and enforcement of the standards of performance. EPA proposes that states can meet implementation and enforcement requirements of section 111(d) through the monitoring, reporting, and recordkeeping requirements, but asks what other measures may be necessary to meet section 111(d)(1)(B) requirements.[29] As described in more detail below, EPA proposes new implementing regulations that are proposed to satisfy states' obligations, but EPA seeks comment if additional measures are required beyond those proposed.[30] EPA also notes that if a state plan implements a rate-based standard of performance, EPA proposes that states can elect to use data collected by EPA under 40 CFR part 75 to meet the monitoring, reporting and record keeping requirements. EPA also notes that states have it within their discretion to establish averaging times for affected EGUs, and solicits comment on whether there should be any bounds or consideration to the averaging times that states are allowed to consider.[31] State plans can be submitted electronically, but EPA asks if this is appropriate and less burdensome for states and whether this should be the only means for submittal.[32]

Proposed Changes to Implementing Regulations

In order to effectuate the EPA's role under section 111(d)(1), EPA promulgated "implementing regulations" in 1975 to provide a framework for subsequent EPA rules and state plans under section 111(d).[33] EPA states that the primary role of these regulations is to "develop a procedure for states to establish standards of performance for existing sources through state plans." In the Proposed Rule, EPA states that it intends to revise certain aspects of the implementing regulations to better align with section 111(d) of the CAA in its current form, as amended in 1990.

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27 Comments C-31 through C-41.
28 Comments C-20 and C-21.
29 Comment C-19.
30 Comment C-42.
31 Comment C-43.
32 Comments C-44 and C-45.
33 As promulgated at 40 CFR 60, Subpart B, *see:* 40 Fed. Reg. 53346.

Specifically, EPA states that it believes that certain portions of the existing implementing regulations contradict section 111(d)(1)'s explicit requirement that EPA establish regulations to implement 111(d) that are "similar" to the provisions under section 110 of the CAA. The proposed changes regard deadlines for EPA and state actions, definitions, and processes regarding how states develop and submit their plans. The proposed changes are detailed below and summarized, in comparison to existing implementing regulations, in Table 2 at the end of this section.

Applicability

EPA is proposing to carry over these new and revised implementing regulations into a new subpart with the modifications noted below, leaving in place existing implementing regulations for past regulations.[34] EPA proposes to apply most revisions to the implementing regulations prospectively, starting with the Proposed Rule and applying to any future emission guideline issued under section 111(d) of the CAA. However, EPA proposes to apply timing changes to the implementation of both ongoing and prospective emissions guidelines. EPA requests comments on this proposed applicability of timing changes to both the existing and new implementing regulations.[35]

Changes to Standard Setting Process and EPA and State Role

Guideline Document

EPA does not believe anything in CAA section 111(a)(1) or section 111(d) compels it to provide a presumptive emission standard that reflects the degree of emission limitation achievable by application of the BSER. Accordingly, EPA proposes to re-define the term "emissions guideline" to make clear that EPA informs the states on the degree of emission limitations but does not require EPA to create a presumptive standard (see Table 2 for proposed definition).

Standard of Performance

As part of the 1977 amendments to the CAA, Congress replaced the term "emissions standard" in section 111(d) with "standard of performance." However, EPA has not since revised the implementing regulations to reflect this change in terminology. EPA proposes to replace the existing definition of "emissions standard" with a definition of "standard of performance" that tracks with the definition in CAA section 111(a)(1) (see Table 2 for proposed definition).

Additionally, EPA proposes that an emission guideline identify information such as a timeline for compliance with standards of performance that reflect the application of the BSER. However, given the source-specific nature of this proposed emission guideline and reasonably anticipated variation between standards established for sources within a state, EPA states that it would be more appropriate for a state to establish tailored compliance deadlines for its sources based on the standard ultimately determined for each source. Accordingly, EPA proposes to allow states to include appropriate compliance deadlines for sources based on the standards of performance determined as part of the state plan process.

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[34] For those provisions that are being carried over from the existing implementing regulations into the new implementing regulations, EPA believes the placement of those provisions under a new subpart is a ministerial action that does not require reopening the substance of those provisions for notice and comment. EPA is not intending to substantively change those provisions from their original promulgation and continues to rely on the record under which they were promulgated. Therefore, EPA is not seeking comment on the following provisions, which remain substantively the same from their original promulgation: 60.21a(a)-(d), (g)-(j) (Definitions); 60.22a(a), 60.22a(b)(1)-(3), (b)(5), (c) (Publication of emission guidelines); 60.23a(a)-(c), (d)(3)-(5), (e)-(h) (Adoption and submittal of State plans; public hearings); 60.24a(a)-(d), (f) (Standards of performance and compliance schedules); 60.25a (Emission inventories, source surveillance, reports); 60.26a (Legal authority); 60.27a(a), (e)-(f) (Actions by the Administrator); 60.28a(b) (Plan revisions by the State); 60.29a (Plan revisions by the Administrator).

[35] Comment C-49.

EPA also proposes to modify the language allowing states to establish alternate standards to make clear that states have this discretion if establishing a standard is not feasible (as opposed to the existing language, which allows for alternate standards if a standard is "clearly impracticable"). See Table 2 for proposed language changes.[36]

Changes to Plan Content Requirements

Increments of Progress

Existing implementing regulations require that any compliance schedule for state plans extending more than 12 months from the submission deadline of the plan include legally enforceable increments of progress to achieve compliance for each designated facility or category of facilities. EPA proposes to change that timing to 24 months from the date when state plans are due, in order to account for the extended submission and review period noted below. EPA is seeking comment on the 24-month timeline to trigger the requirement for increments of progress.[37]

Completeness Criteria

EPA proposes to add regulatory language that EPA would use to determine whether a state plan submission under 111(d) includes the minimum elements necessary for EPA to act on the submission, including eight administrative materials and six technical support items. EPA proposes that it will determine whether a state plan is complete (i.e., meets the completeness criteria) within six months after the date by which a state is required to submit the plan. EPA also proposes that if it has not completed its review by that time, the plan would be deemed complete by operation of law.

Variance Provision

The current implementing regulations currently contain a "variance provision" that allow for states to apply less stringent standards on sources when adverse effects on public health have not been demonstrated for the pollutant at hand.[38] However, EPA notes that CAA section 111(d)(1)(B) requires that EPA's regulations allow states to consider factors, including an affected source's remaining useful life. EPA also states that the "existing implementing regulations' distinction between public health-based and welfare-based pollutants is not a distinction unambiguously required under section 111(d) or any other applicable provision of the statute."

Accordingly, EPA proposes to replace this variance provision with a new provision that would permit states to take into account remaining useful life, among other factors, when setting a standard of performance. As discussed above, EPA is seeking comments on how a new variance provision can permit states to take into account remaining useful life and other factors, and what other factors might be appropriate.[39]

Changes to Timing and Notice Requirements for State Plan Submissions and EPA Action

EPA states that it is proposing to update timing requirements for state plan submissions in order to better align with the current timing requirements for state and federal implementation plans (SIPs and FIPs) under section 110.

As discussed above, EPA is proposing to establish plan completeness criteria for state plans, as well as an EPA deadline of six months after plan submission for EPA to review plans for completeness. In addition, EPA proposes and seeks comment on the following changes:

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36 Comment C-56.
37 *Unnumbered comment request*; related to Comment C-13.
38 40 CFR §60.24(d).
39 Comment C-57.

- Requiring states to submit state plans three years after promulgation of a final emissions guideline (compared to the current nine months).[40] EPA also proposes that it can require a shorter period for the submission of state plans particular to any emission guideline, if appropriate.
- Requiring EPA to act on a state plan submission 12 months after EPA's determination of completeness (compared to the current four months after the plan submission deadline).[41]
- Requiring EPA to promulgate a federal plan two years after an EPA finding of failure to submit a complete plan or disapproval of a state plan (compared to the current six months requirement after the plan submission deadline).[42] EPA notes this is consistent with the FIP deadline under CAA section 110(c).

In the original implementing regulations, EPA could, when it determined necessary, *extend* this series of deadlines, as it did for state plan submittal in CPP. Under proposed changes, EPA could, when it determined necessary, *shorten* this series of deadlines.

Figure 1 displays a comparison of existing and proposed timing requirements. Under the proposed changes, it could take up to 4.5 years after final emission guideline promulgation for EPA to complete its review of a plan, and it could take another two years for EPA to impose a federal plan, if required. For example, if the rule is finalized in early 2019 and a state and EPA took the maximum time to develop and approve plans, compliance with the state plan would not be required until late 2023 and if EPA needed to develop a FIP, compliance could be as late as 2025.

As noted above, EPA proposes to apply the changes to timing requirements to both all ongoing emissions guidelines already published under section 111(d) and to future 111(d) guidelines, including any published pursuant to this rulemaking.[43]

EPA also proposes changes to the hearing and notification process, including:

- Eliminating the requirement of a 30-day notice of a hearing;
- Allowing for the "notification to the public by prominently advertising" the hearing to be fulfilled by "advertisement on the internet" as well as provide access to the proposed plan or revision via internet; and
- Allowing EPA to cancel the public hearing if no request for a hearing is received within 30 days.

Summary of Proposed Changes to Implementing Regulations

Table 2 provides a summary of the key changes to implementing regulations in the Proposed Rule. Figure 1 displays a comparison of existing and proposed plan submission and review timing requirements.

[40] Comment C-52.
[41] Comment C-53. As noted above, EPA's determination of plan completeness may be up to 6 months after plan submission deadline.
[42] Comments C-54, C-55. This EPA finding might not be completed under this proposed schedule until 18 months after the plan submission deadline.
[43] Comment C-48.

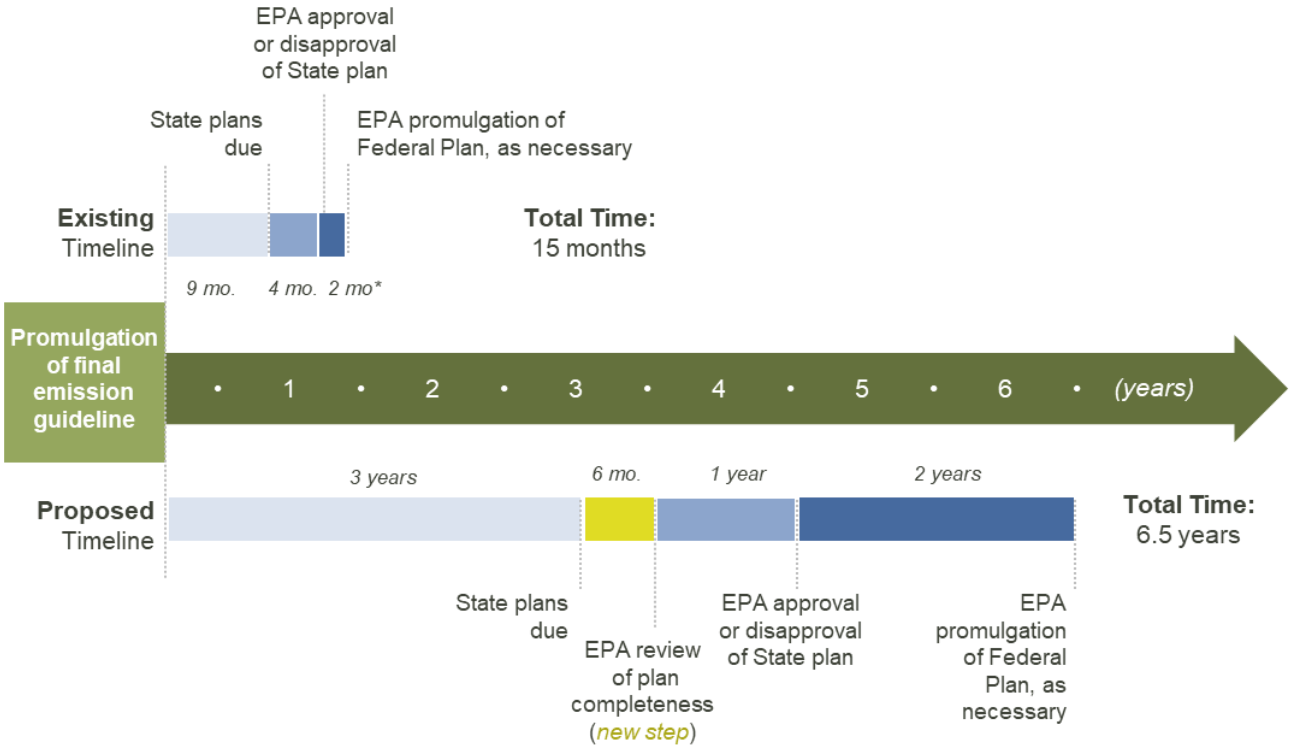
Table 2: Summary of Proposed Rule's Changes to Implementing Regulations[44]

	Existing Implementing Regulations	**Proposed** Implementing Regulations
Changes to Standard Setting Process and EPA and State Role	Use of term "**emissions guideline,**" defined as a guideline set forth in subpart C of this part, or in a final guideline document published under § 60.22(a), which reflects the degree of emission reduction achievable through the application of the best system of emission reduction which (taking into account the cost of such reduction) the Administrator has determined has been adequately demonstrated for designated facilities.	Use of term "**guideline document,**" including the following redlines to the existing definition: (e) *Emission guideline* means a ~~**guideline set forth in subpart C of this part, or in a**~~ final guideline document published under §60.22**a**(a), which ~~**reflects**~~ **includes information on** the degree of emission reduction achievable through the application of the best system of emission reduction which (taking into account the cost of such reduction **and any nonair quality health and environmental impact and energy requirements**) the Administrator has determined ~~**has been adequately demonstrated for designated facilities.**~~
	Use of term "**emissions standard**," defined as a "legally enforceable regulation setting forth an allowable rate of emissions into the atmosphere, establishing an allowance system, or prescribing equipment specifications for control of air pollution emissions."	Use of term "**standard of performance**," defined as a "standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated, including, but not limited to, a legally enforceable regulation setting forth an allowable rate or limit of emissions into the atmosphere, establishing an allowance system, or prescribing a design, equipment specifications for control of air pollution emissions, work practice, or operational standard, or combination thereof." In addition, a standard of performance would allow for states to establish their own appropriate compliance deadlines for affected EGUs.
	Allows states to establish alternate standards if the emissions standard is "**clearly impracticable**"	Allows states to establish alternate standard of performance "when it is **not feasible** to prescribe or enforce a standard of performance"

[44] Of note, the docket for this action includes a red-line strike-out of the changes that are being proposed.

	Existing Implementing Regulations	**Proposed Implementing Regulations**
Changes to Plan Content Requirements	*Increments of Progress:* Required if compliance schedule for state plan is longer than **12 months** after the plan is due	*Increments of Progress:* Required if compliance schedule for state plan is longer than **24 months** after the plan is due
	Completeness Criteria: **None** currently applicable to state plans submitted under 111(d)	*Completeness Criteria:* Details **8 administrative** and **6 technical** completeness criteria and provides a 6-month window for EPA to review plans against these criteria
	Variance Provision: Allows states to propose to apply less stringent standards for those **pollutants not deemed a health threat**.	*Variance Provision:* Removes distinction between pollutants that do and do not harm health; instead allows states to apply less stringent standards through **taking into account remaining useful life**, among other factors, in establishing source-specific standards of performance
Changes to Timing Requirements for State Plan Submission	*State Plan Submission:* **9 months** from **promulgation** of final "emissions guideline"	*State Plan Submission:* **3 years** from **promulgation** of final "guideline document"
	Completeness Review: N/A	*Completeness Review:* **6 months** after **submittal deadline**
	EPA Action on State Plan: **4 months** after **submittal deadline**	*EPA Action on State Plan:* **12 months** after **EPA determination** of plan completeness (which EPA proposes to complete within 6 months of plan submittal, i.e., total timeline may be up to **18 months** after **submittal deadline**)
	EPA Promulgation of Federal Plan (as appropriate): **6 months** after submittal deadline	*EPA Promulgation of Federal Plan (as appropriate):* **2 years** after **EPA finding** of failure to submit a complete plan, or disapproval of state plan (since this finding could take up to 18 months after submittal deadline, EPA is proposing to set a deadline of **3.5 years** after **submittal deadline**)

Figure 1. Summary of Proposed Changes to Plan Submission and Review Timelines



Under proposed changes, state plans must include legally enforceable increments of progress to begin **within 24 months** after the plan is due (compared to 12 months under current regulations).

* Implementing regulations currently read "six months after the date required for [state plan] submission," i.e., 2 months after the 4 month timeframe for EPA approval or disapproval

Proposed New Source Review Changes

Citing concerns raised by industry stakeholders in the context of the original CPP proposal and the ANPRM and its own experience, EPA proposes to revise the major source permitting requirements of the NSR program for EGUs by adding a step to the NSR process such that if a source can demonstrate that hourly emissions will not increase as a result of a modification, that modification will not trigger NSR.[45]

EPA notes that "it is possible that a source undertaking a HRI project at its EGU would project, or actually experience, an increase in operation of its EGU and a corresponding increase in annual emissions." While the CPP looked to avoid NSR concerns by allowing sources to voluntarily take enforced limits on hours of operation—through a synthetic minor source limitation—EPA explains that constraining compliance options to "within-the-fenceline" measures, as proposed, may "more directly result in individual sources making HRIs" and sources may not be able to easily avoid NSR permitting requirements. EPA notes the proposed 111(d) requirements could result in sources being required to perform HRI rather than sources independently deciding to them.

The Proposed Rule describes prior NSR litigation and makes the argument that "other than requiring that [emissions increases] be measured in terms of actual emissions, the CAA leaves to EPA the discretion to determine how emission increases will be defined for the purposes of NSR modification." EPA proposes to amend the NSR regulations to include an hourly emissions increase test for EGUs. EPA had proposed adopting an hourly emissions rate test for NSR applicability through notices in 2005 and 2007, but never completed the rulemaking. In the Proposed Rule, EPA solicits comment on three proposed alternatives (which are among those included in the 2007 proposal) for the hourly emissions test, each of which would be paired with the current NSR annual emissions test. The three proposed alternatives are:

(1) maximum achieved[46] hourly emissions calculated using a statistical approach on an input basis,[47]

(2) maximum achieved hourly emissions calculated using a one-in-five baseline approach on an input basis,[48] or

(3) maximum achieved hourly emissions calculated on an input basis.[49]

As proposed, the hourly emissions test would be the second step in a four-step NSR applicability test:

Step 1: Physical change or change in the method of operation

Step 2: Hourly emissions increase test (proposed new step)

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45 The preamble explains that a modification at an existing source is subject to major NSR permitting requirements when it is a "major modification" meaning the source undertakes a physical change or change in method of operation that would result in both: "(1) a significant emissions increase from all emission units that are part of the project, and (2) significant net emissions increase from the source, which is determined by a source-wide analysis that considers creditable emission increases and decreases occurring at the source as a result of other projects over a 5-year contemporaneous period."

46 To determine the maximum achieved hourly emissions, an EGU owner/operation would determine whether an emissions increase would occur by comparing the pre-change maximum actual hourly emissions rate to a projection of the post-change maximum actual hourly emissions rate.

47 For the statistical approach, the owner/operator would analyze the continuous emission monitoring system (CEMS) or predictive emission monitoring system (PEMS) data from the five years preceding the physical or operational change to determine the maximum actual pollutant emissions rate.

48 For the one-in-five-year baseline approach, the emissions rate would be based on what the unit actually achieved for any single hour within the five-year period immediately before the physical or operational change.

49 For the maximum achievable hourly test, the major NSR regulations would apply if a physical or operational change results in any increase above the maximum hourly emissions achievable at that unit during the 5 years prior to the change. The hourly emissions increase would be determined using emission factors, marital balances, continuous monitor data, or manual emission tests.

Step 3: Significant emissions increase determined using the actual-to-projected-actual emissions test (as in the current NSR rules)

Step 4: Significant net emissions increase (as in the current NSR rules)

For a modification to be considered a major modification under NSR, under Step 2, a physical change or change in method of operation must result in an hourly emissions increase at the existing EGU. If an hourly emissions increase is projected, a source would have to proceed to Step 3 and determine whether there is also a significant annual emissions increase and a significant annual net emissions increase.

EPA is proposing that the new Step 2 would apply to all EGUs but is also seeking comment on whether to confine applicability of the hourly test to affected EGUs that are making modifications to comply with a state's 111(d) emission guidelines.[50] EPA is also seeking comment on alternative ways to minimize or eliminate any adverse impact that NSR may have on implementing section 111(d)[51] and whether states should have flexibility in adopting the proposed NSR changes.[52]

EPA notes that it is proposing to finalize the NSR revisions as part of an integrated action with the rest of the Proposed Rule but it views the NSR as severable from the other provisions on judicial review. EPA requests comment on whether it would be appropriate to finalize the NSR revisions as a separate action from the remainder of the proposal.[53]

Projected Impacts of Proposed Rule

EPA released a Regulatory Impact Analysis (RIA) in support of the Proposed Rule in which the Agency evaluated the impacts of a full repeal of CPP and three policy scenarios. EPA's base case for these model runs assumes a mass-based implementation of the CPP with no interstate trading. The policy scenarios model different levels and costs of HRIs, uniformly applied at all coal-fired EGUs beginning in 2025. The policy scenarios are:

- Assumed 2 percent HRI at $50/kW
- Assumed 4.5 percent HRI at $50/kW
- Assumed 4.5 percent HRI at $100/kW

EPA describes the first policy scenario as reflecting "a policy case that reflects modest improvements in HRI absent any revisions to NSR." EPA describes the second two policy cases as reflecting "a range of potential costs for the proposed policy option that couples HRI with NSR reform." In the absence of NSR reform, EPA speculates that states may find the higher level of HRI (4.5

percent) too burdensome for units.

As shown in Figures 2, 3, and 4, EPA projects higher CO_2, SO_2, and NOx emissions in all scenarios relative to the CPP base case. However, EPA notes current market trends in the electric power sector will lead to lower emissions than anticipated when CPP was finalized. EPA finds three percent higher CO_2 emissions in 2025 with a full repeal of CPP (as compared to the CPP base case), climbing to four percent higher CO_2 emissions in 2035, and about one percent higher CO_2 emissions at 4.5 percent HRI at $100/kW in 2025 climbing to 2.5 percent higher in 2035.

50 Comment C-62.
51 Comment C-68.
52 Comment C-69.
53 Comment C-71.

Figure 2. Projected Carbon Dioxide Emissions (million short tons CO_2)

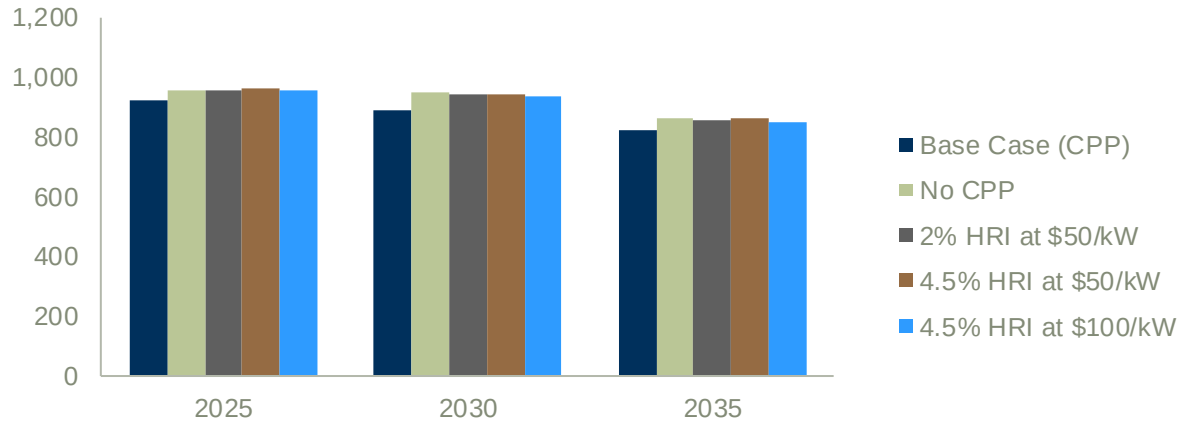


Figure 3. Projected Sulfur Dioxide Emissions (thousand short tons SO_2)

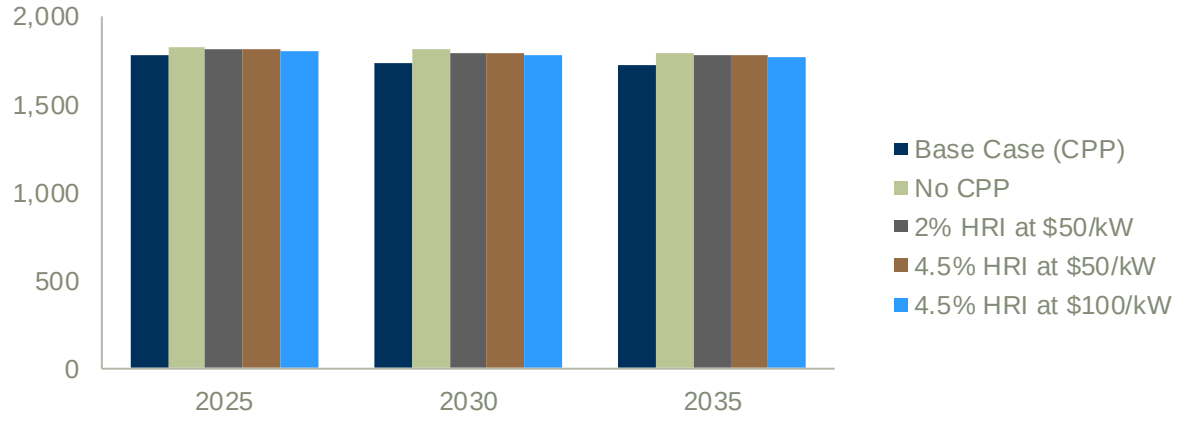
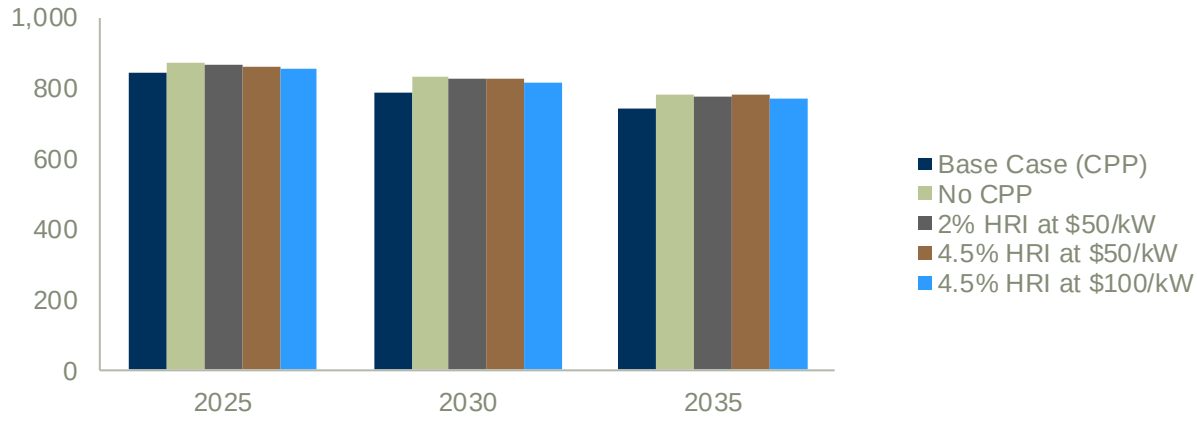
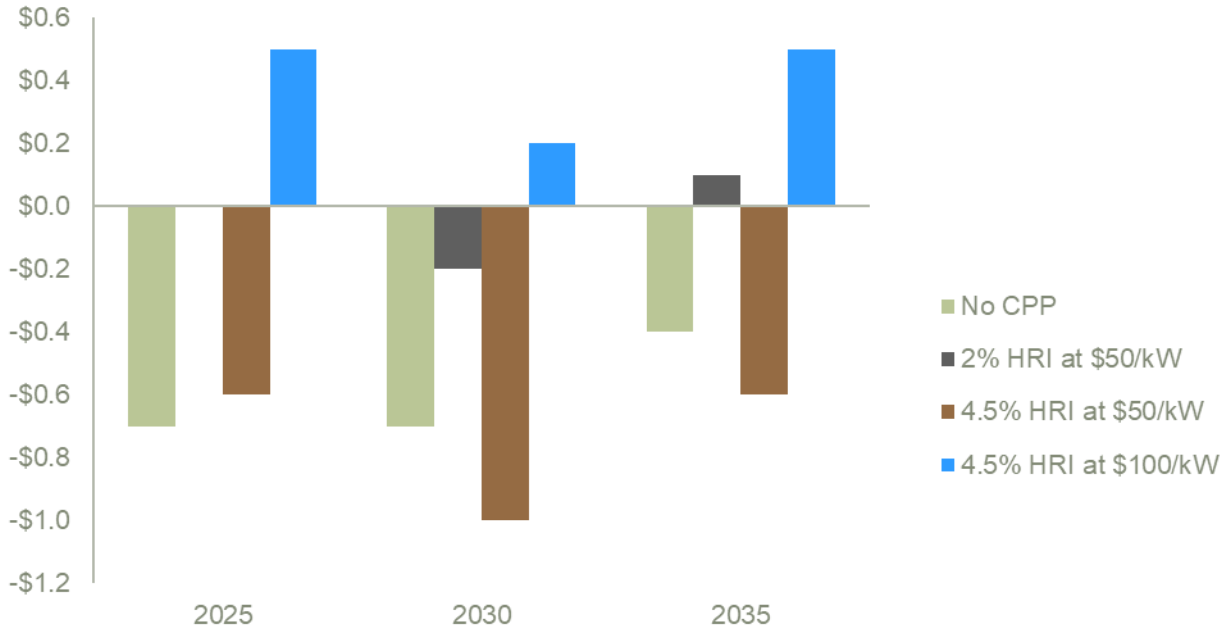


Figure 4. Projected Nitrogen Oxide Emissions (thousand short tons NOx)



EPA finds that the full repeal of CPP increases coal production for power sector use by 9.5 percent by 2035 relative to the CPP base case, the two percent HRI at $50/kW scenarios increases coal production for power sector use 8.4 percent by 2035, and the 4.5 percent HRI at $100/kW scenario increases coal production for the power sector by 7.4 percent by 2035. EPA's estimated compliance savings are $0.7 billion in 2025 with a full repeal of CPP and $0.4 billion in 2035 as compared to the CPP base case. EPA estimates compliance costs are about the same as CPP compliance costs in 2025 under the two percent HRI at $50/kW and *increase* relative to CPP by $0.1 billion in 2035. EPA projects that compliance costs *increase* relative to CPP under the 4.5 percent HRI at $100/kW scenario by $0.5 billion in 2025 and $0.5 billion in 2035.

Figure 5. Projected Change in Total Power Sector Generating Costs, Relative to Base Case (CPP) (billions of 2016$)



EPA estimated the climate benefits and health co-benefits associated with the Proposed Rule using a three percent and seven percent discount rate. Across all the scenarios, EPA found foregone benefits relative to the CPP base case. EPA's estimated forgone climate benefits and health co-benefits of the full repeal of CPP range from $3.2 billion to $7.0 billion in 2025 and $4.3 billion to $9.3 billion in 2035. Foregone benefits under the 4.5 percent HRI at $100/kW scenario are estimated to be $2.3 billion to $5.0 billion in 2025 and $2.9 billion to $6.3 billion in 2035.

Legal Authority for Proposed Emissions Guidelines

The Proposed Rule notes that the CPP concluded that the promulgation of 111(b) regulations triggered the need to regulate existing sources under section 111(d), and this proposed rule does not "re-open any issues related to [that conclusion]. EPA also notes that the section 111(b) rule "remains on the books, although EPA is currently considering revising it."

EPA is proposing in the proposed repeal of the CPP to interpret section 111(d) BSER as:

> being limited to emission reduction measures that can be applied to or at an individual stationary source. That is, such measures must be based on a physical or operational change to a building,

> structure, facility, or installation at that source rather than measures the source's owner or operator can implement at another location.

In this proposal, EPA is also soliciting comment on the additional legal discussion to support its determination that heat-rate improvements constitute BSER.[54]

First, EPA reiterates that "reduced utilization 'does not fit within our historical and current interpretation of the BSER," that it is "not a valid system of emission reduction for purposes of establishing a standard of performance," and predicating a section 111 standard on a source's non-performance would inappropriately inject the Agency into an owner/operator's production decisions.

Second, EPA states that the language in section 111(a) that applies to section 111(b) also applies to section 111(d). Further, EPA proposed in the proposed repeal that BSER must be source-specific because "best available control technology" (BACT) is statutorily linked and is source-specific. EPA also reiterates that it will not interpret BSER in a way that redefines the source beyond the individual source.

Third, EPA proposes to recognize that BSER analysis does not need to include options that would "fundamentally redefine the source" even without considering the policy under the prevention of significant deterioration (PSD) program. Thus, the preamble notes that EPA did not consider natural gas repowering (i.e., converting a coal-fired boiler to a gas-fired turbine) or refueling (i.e., converting a coal-fired boiler to a natural gas-fired boiler) as a system of emission reduction for coal-fired units.

Fourth, EPA states that the legislatives history supports that Congress intended section 111(d) to be source oriented and cites language from the 1970 Senate Committee Report. The Proposed Rule further notes that the Committee report also recognized that certain standards could be waived for older facilities that were not suited to the application of control technology. Additionally, EPA states that its area of expertise is emission control at the source and "EPA has no express legal authority and no particular expertise in [power plant dispatch]" further supporting EPA's interpretation that BSER must only reflect control measures that can be applied at or to the affected source.

EPA also notes that the power sector changes that are shifting generation away from coal-fired generation to new technologies, including renewables is "creating tremendous strain on the power infrastructure," and that "[h]ydropower, nuclear, coal, and natural gas power plants provide essential reliability services and fuel assurance critical to system reliance." EPA states that "it is not appropriate to further challenge the nation's electricity system while these important technical and policy issues are being addressed."

In response to arguments that BSER should reflect industry trends including the associated emission reductions, the Proposed Rule notes that such arguments "ignore the fact that the uncertainties that have resulted in faster than projected emission reductions are also uncertain in the opposite direction" in that costs could increase significantly if assumptions are wrong. EPA states that "[r]egardless of the path that the power sector takes, coal-fired power plants are likely to be an important part of the generation mix for the foreseeable future, therefore EPA believes that it is reasonable to ensure that the remaining coal-fired generation (which is also the most CO_2 intensive portion of the power sector) focuses on reducing that CO_2 emissions intensity to the extent technically feasible considering cost."

[54] Comment C-2.

Contacts

Carrie Jenks
Senior Vice President
cjenks@mjbradley.com
(978) 369-5533

Tom Curry
Vice President
tcurry@mjbradley.com
(202) 525-5570

Grace Van Horn
Policy Analyst
gvanhorn@mjbradley.com
(202) 525-5570

Sophia Hill
Policy Analyst
shill@mjbradley.com
(978) 369-5533

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Appendix A: Proposed Affordable Clean Energy Rule (Clean Power Plan Replacement) Requests for Comment (Unique Identifiers)

The Proposed Rule indexes each comment solicitation with an alpha-numeric identifier (*e.g.*, "C-1", "C-2", "C-3", . . .). EPA asks that commenters include the corresponding identifier when providing comments relevant to that comment solicitation, either in the heading, or within the text of each comment, to make clear which comment is being addressed.

The following lists the questions on which EPA is soliciting comment (the page numbers currently refer to the prepublication version of the Proposed Rule released on August 21, 2018):

C-1. "whether and how to consider [ongoing and projected power sector trends and a resulting decline in power sector CO_2 emissions] in developing CO_2 emissions guidelines for the power sector […]. EPA also notes that CO_2 emissions are projected to increase over time in some EIA AEO side cases, and given the uncertainties associated with long-term emissions projections, solicits comments on those alternative results." *(page 21)*

C-2. "additional legal interpretations" and "rationale to support [EPA's] determination that heat-rate improvements constitute the BSER." (*page 25)*

C-3. "systems of emissions reduction that might be the BSER" for stationary combustion turbines and IGCC units, noting that in the CPP's identification of the BSER, no HRIs were identified as the BSER for stationary combustion turbines and IGCC units. (*page 35)*

C-4. "whether there should be a different definition of affected EGUs for ACE [than the definition proposed under the CPP]." (*page 35)*

C-5. "adequately demonstrated systems of GHG emission reduction for [existing natural gas-fired stationary combustion turbines] – especially on the efficiency, applicability, and cost of such systems." (*page 38)*

C-6. "whether the other unlisted HRI measures should also be included as part of the BSER and added to the candidate technologies." *(page 42)*

C-7. "each of the candidate technologies […], including whether any additional technologies should be added to the list, and whether there is additional information that EPA should be aware of and consider in determining the BSER and establishing the candidate technologies for HRI measures." *(page 42)*

C-8. "how [reports, case studies, and analyses listed in Table 3 that examine the potential for improving heat rate in the U.S. EGU fleet or a subset of the fleet] (and any others that the Agency should be aware of) can inform our understanding of potential HRI opportunities." *(page 53)*

C-9. the conclusion that "system-wide emission decreases due to reduced heat rate are likely to be larger than any system-wide increases due to increased operation." EPA states, "While the RIA shows that, under certain assumptions, sources that adopt HRI may increase generation, due to their improved efficiency and relatively improved economic competitiveness, they also generally reduce emissions (as a group) because they can generate higher levels of electricity with a lower overall emission rate." *(page 56)*

C-10. estimates and conclusions in the paper, "Gas Turbine Performance Upgrade Options," by J. Philips and P. Levine, regarding the impact of HRIs on capacity increases. EPA also solicits "any other information commenters have about the performance and cost of potential HRIs for turbines." *(pages 58-59)*

C-11. "whether if EPA determined that HRIs in that range were available for similar costs, it would be appropriate for EPA to reconsider its determination that there are no HRIs that represent the BSER." *(page 59)*

C-12. "any new information regarding the availability, applicability, costs, or technical feasibility of CCS technologies." *(pages 59-60)*

C-13. "whether states should determine source-specific compliance schedules under this emission guideline, or if a uniform compliance schedule is appropriate, and if so, what length of time is appropriate." *(page 66)*

C-14. a potential presumptive formulaic approach to establish standards of performance based on the use of historical heat rate or emissions data for the individual source." *(page 67)*

C-15. "whether other forms of standards of performance should be allowed in state plans and whether a different form of standard should be the primary form that is authorized for state plans under a final emission guideline in response to this proposal." *(page 70)*

C-16. "the merits of differentiating between gross and net heat rate. This may be particularly important when considering the effects of part load operations (i.e., net heat rate would include inefficiencies of the air quality control system at a part load whereas gross heat rate would not). This will also be important in recognizing the improved efficiency obtained from upgrades to equipment that reduce the auxiliary power demand." *(page 71)*

C-17. whether the two proposed criteria "to demonstrate that measures taken to meet compliance obligations for a source actually reduce its emissions rate" "are appropriate or not and why, and whether there may be compliance flexibilities that might meet the two proposed criteria" *(page 73)*

C-18. "whether there are certain non-BSER measures that should be disallowed for compliance, and if so, under what criteria or rationale should measures be disallowed for compliance." *(page 73)*

C-19. "what other implementation and enforcement measures may be necessary for states to meet the requirements of section 111(d)(1)(B)," other than [those as described in Section VI.C of this proposal regarding state plan components, such as monitoring, reporting, and other recordkeeping requirements" *(page 74)*

C-20. "the inclusion of forest-derived biomass as a compliance option for affected units to meet state plan standards under this rule." *(page 75)*

C-21. "the inclusion of non-forest biomass (*e.g.*, agricultural, waste stream-derived) for energy production as a compliance option, and what value to attribute to the biogenic CO_2 emissions associated with non-forest biomass feedstocks. EPA recognizes that CCS technology could be applied in conjunction with biomass use." *(pages 75-76)*

C-22. "the matter in which states should be permitted to exercise their statutory authority to take into account remaining useful life and on what 'other factors' might appropriately be besides remaining useful life." *(page 76)*

C-23. "what are other factors that states should be allowed to consider in establishing a standard of performance, per the proposed variance provision" *(page 77)*

C-24. what a standard of performance for a unit with a short remaining life, for which criteria may result in determining that no measures in the candidate technologies are applicable, "may look like" *(page 78)*

C-25. "whether there are considerations in allowing states to utilize this proposed variance provision in the new implementing regulations in response to the final emission guideline, including the potential interaction of the compliance flexibilities proposed in this proposal with utilization of the provision." *(page 78)*

C-26. "the legality and appropriateness of utilizing [the variance provision] generally, and in the context of specific compliance flexibilities that states may employ in developing their plans." *(page 79)*

C-27. "any factors that may play a role in a state setting a standard of performance with consideration to NSR," considering that "the application of HRI may trigger NSR for some sources, and associated NSR requirements could ultimately impact the cost of HRI and the way the state applies standards to an affected EGU." *(page 79)*

C-28. "the question of whether CAA section 111(d) authorizes states to include averaging and trading between existing sources in the plans they submit to meet the requirements of a final emission guideline." *(page 80)*

C-29. "whether [facility-wide averaging of affected EGUs that mirrors the BSER determination for this rule] is appropriate and whether there should be other types of considerations involved." *(page 81)*

C-30. "the possibility of averaging affected EGUs with non-affected EGUs within a facility in the limited case when they represent incremental new non-emitting capacity. This would be consistent with a compliance option such as integrated solar." *(page 81)*

C-31. "whether there is a way to allow trading between affected EGUs across affected sources while not encouraging generation shifting." *(page 84)*

C-32. "whether section 111(d) should be read not to authorize states to include trading and averaging between sources, EPA is also interested in affording flexibility to states and sources in meeting their respective obligations and solicits public comment on whether this proposed interpretation and conclusion is compatible with that goal. EPA is primarily interested in comments pertaining to whether averaging could and should be allowed for trading, and to what degree (*i.e.*, averaging across a state, or trading)." *(page 84)*

C-33. "how [averaging across multiple affected sources as part of a state's plan] should conceptually work." *(page 84)*

C-34. "how allowing averaging across multiple affected sources would or would not undermine the BSER determination." *(page 84)* \

C-35. "what type of EM&V criteria should be included for the compliance instruments" if averaging across multiple affected sources is allowed in state plans *(page 84)*

C-36. "whether sources should be allowed to bank compliance instruments" if averaging across multiple affected sources is allowed in state plans. *(page 85)*

C-37. "what mechanisms states would need to employ to ensure compliance is maintained and tracked for purposes of providing for the implementation and enforcement of the standards of performance" if averaging across multiple affected sources is allowed in state plans. *(page 85)*

C-38. "what mechanisms states would need to employ to ensure compliance is maintained and tracked for purposes of providing for the implementation and enforcement of the standards of performance" if averaging across multiple affected sources is allowed in state plans *(page 85)*

C-39. "which and/or if technology should be limited in the averaging program" if averaging across multiple affected sources is allowed in state plans *(page 85)*

C-40. "the issues of statutory interpretation […], whether they are appropriate interpretations of section 111(d) specifically and section 111 generally, in terms of the provision's text, structure, and purpose." *(page 85)*

C-41. "whether such averaging, trading, or "bubbling" compliance flexibilities as are available under other sections of title I of the CAA suggest that such flexibilities should be afforded under state plans under section 111(d)." *(page 85)*

C-42. "whether [the implementing provisions] are appropriate to apply for purposes of meeting obligations under a final rule in response to this proposal, or whether other implementation or enforcement measures should be required." *(page 86)*

C-43. "whether there should be any bounds or consideration to the averaging times that states are allowed to consider." *(page 86)*

C-44. "electronic submittals are appropriate and less burdensome to states." *(page 87)*

C-45. "whether [electronic submittals] should be the sole means of submitting state plans." *(page 87)*

C-46. "whether [the list of what state plans must include, as detailed in section 60.740a of the regulatory text for this proposal], is comprehensive to submit a state plan."

C-47. "this proposed applicability of both the existing and new implementing regulations." *(page 88)*

C-48. "the proposed timing requirements for prospective emission guidelines under the new implementing regulations and the alignment of ongoing emission guidelines by amending their respective regulatory text to incorporate the new timing requirements." *(page 89)*

C-49. "this proposed applicability of the new implementing regulations." *(page 90)*

C-50. "on both the substance of [specific changes to the existing implementing regulations] and the proposed regulatory text." (*page 90-91)*

C-51. "the inclusion of [a provision that expressly allows for any emissions guideline to supersede the applicability of the implementing regulations as appropriate] as part of the implementing regulations for section 111(d)" *(page 91)*

C-52. "generally providing states with three years after the publication of the final emission guidelines, and solicits comment on any other timeframes that may be appropriate for submission of state plans given the flexibilities EPA intends to provide through its emission guidelines." *(page 95)*

C-53. "extending the timing of EPA's action on a state plan from 4 months of when a plan is due to 12 months from determination that a state plan submission is complete." *(page 96)*

C-54. "the change in timing for EPA to promulgate a federal plan from six months to two years." *(page 96)*

C-55. "extending deadline for promulgating a final (i.e., after appropriate notice and comment) federal plan for a state to two years after either 1) EPA finds that a state has failed to submit a complete plan, or 2) EPA disapproves a state plan submission." *(page 96)*

C-56. "all of these means of tracking and incorporating the section 111(a)(1) and 111(h) for purposes of a regulatory definition of "standard of performance," and requests comment on any other considerations for such definition." *(page 102)*

C-57. "how a new variance provision can permit states to take into account remaining useful life and other factors, and what other factors might appropriately be." *(page 103)*

C-58. "whether the factors outlined in the existing variance provision at 40 CFR 60.24(f) are appropriate to carry over to new variance provision if they adequately give meaning to the requirements of section 111(d)(1)(B)" *(pages 103-104)*

C-59. " whether it is appropriate to consider the costs of NSR compliance in the BSER analysis under section 111(d), assuming that triggering NSR cannot otherwise be avoided through actions by the source or through revisions to the NSR regulations that are proposed by EPA in this rule or if EAP does not finalize revisions to the NSR regulations." *(page 118)*

C-60. "how a state or local permitting agency may estimate or project the cost for the source to comply with any NSR requirements that may flow from a selected BSER, and on how the potential for delays because of an influx of NSR permit applications may be accounted for in setting an implementation schedule for 111(d) plans." (page 118-119)

C-61. "whether a narrower range of options for implementing an hourly emissions test for NSR for EGUs would both help promote energy efficiency and the effectiveness of implementing the ACE rule, while at the same time being consistent with the NSR provisions in CAA and past judicial decisions interpreting those provisions" (page 119)

C-62. whether to confine the applicability of the hourly test to a smaller subset of the power sector, such as only the affected EGUs that are making modifications to comply with their state's standards of performance pursuant to these section 111(d) emissions guidelines" (page 131-132)

C-63. "prior assertion [that an hourly achievable test is equivalent to a measure of actual emissions because "for most, if not all EGUs, the hourly rate at which the unit is actually able to emit is substantively equivalent to that unit's historical maximum hourly emissions] and whether recent changes to the energy sector may have rendered it invalid" (page 132)

C-64. "whether if, practically speaking, maximum achieved and maximum achievable hourly rates are equivalent for most if not all EGUs, EPA has the flexibility under the CAA to implement an hourly achievable emissions test for NSR" (page 132-133)

C-65. "the concern about the potential emission increases as part of the proposed NSR changes that some stakeholders have raised" (*page 134*)

C-66. "an important factor that EPA believes supports for moving forward with the addition of an NSR hourly emissions test for EGUs: EPA is now proposing a rule that could result in sources being required to perform HRIs (as determined by their state 111(d) plans) rather than sources independently deciding to do them" (*page 135*)

C-67. "the extent to which EPA should allow the adoption of an NSR hourly emissions test for EGUs in light of EPA's decision to issue these proposed emission guidelines for the power sector" (*page 135*)

C-68. "other ways to minimize or eliminate any adverse impact that NSR may have on implementing section 111(d) plans for EGUs" (*page 135*)

C-69. "can EPA apply the reasoning of *UARG* to read the definition of "modification" in this context to afford more flexibility to exempt sources from NSR requirements when they are compelled to make changes by an NSPS" (*page 137*)

C-70. "allowing states this flexibility to adopt the proposed NSR rule changes and on any other considerations with respect to state (or local/district agency) adoption and implementation of the proposed NSR changes" (*page 137*)

C-71. "whether it would be appropriate to finalize the NSR revisions as a separate action from the remainder of the proposal" (*page 138*)