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EPA's Proposed Greenhouse Gas Regulations for Existing Power Plants: Frequently Asked Questions

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Summary

Taking action to address climate change by reducing U.S. emissions of greenhouse gases (GHGs) is among President Obama's major goals. At an international conference in Copenhagen in 2009, he committed the United States to reducing emissions of greenhouse gases 17% by 2020, as compared to 2005 levels. At the time, 85 other nations also committed to reductions. In November 2014, the President set a further goal: a 26% to 28% reduction to be achieved in 2025—jointly announced with China's Xi Jinping, who set a goal for China's emissions to peak by 2030.

Since U.S. GHG emissions peaked in 2007, a variety of factors—some economic, some the effect of government policies at all levels—have brought the United States more than halfway to reaching the 2020 goal. Getting the rest of the way and reducing emissions further by 2025 would likely depend, to some degree, on continued GHG emission reductions from electric power plants, which are the largest source of U.S. emissions.

In June 2013, the President released a Climate Action Plan and directed the Environmental Protection Agency (EPA) to propose standards for "carbon pollution" (i.e., carbon dioxide, the principal GHG) from existing power plants by June 2014 and to finalize the standards in June 2015. Under the President's timetable, by June 2016, states would be required to submit to EPA plans to implement the standards.

On June 2, 2014, EPA responded to the President's directives by proposing the standards for existing power plants. The proposed rule was published in the *Federal Register* on June 18, 2014.

The proposal relies on authority given EPA by Congress decades ago in Section 111(d) of the Clean Air Act (CAA). This section has been little used—the last use was in 1996—and never interpreted by the courts, so a number of questions have arisen regarding the extent of EPA's authority and the mechanisms of implementation. EPA tends to refer to the regulations as "guideline documents"—although that term is not used in the statute—perhaps to indicate that the section is intended to give primary authority to the states. The proposed guideline document would set interim (2020-2029 averages) and final (2030) emission rate goals for each state based on its unique circumstances. The goal for each state was derived from a formula based on four "building blocks"—broad categories that describe different reduction measures; in general, however, the policies to be adopted to reach these goals would be determined by the states, not EPA. Each state has the flexibility to reach its goal however it chooses, without needing to "comply" with the assumptions in its building blocks.

EPA faced a number of issues in developing the proposed regulations:

- How large a reduction in emissions would it propose, and by when?
- How much flexibility would EPA give to states?
- Would it adopt a "mass-based" limit on total emissions or a rate-based (e.g., pounds of carbon dioxide per megawatt-hour of electricity) approach?
- What role might state emissions cap-and-trade systems play in meeting the goals?

- Will compliance be determined only by the actions of power companies (i.e., "inside the fence" actions) or will actions by energy consumers ("outside the fence") be part of compliance strategies?
- Would states and power companies that have already reduced GHG emissions receive credit for doing so? Would account be taken of states and power generators with high levels of emissions, perhaps due to heavy reliance on coal-fired power? Would they be required to reduce emissions more than others, less than others, or the same?
- What role would there be for existing programs at the state and regional levels, such as the Regional Greenhouse Gas Initiative (RGGI), and for broader greenhouse gas reduction programs such as those implemented pursuant to California's AB 32?

This report summarizes EPA's proposal and describes how EPA answered these questions. In addition to discussing details of the proposed rule, the report addresses a number of questions regarding the reasons EPA is proposing this rule; EPA's authority under Section 111 of the CAA; EPA's previous experience using that authority; the steps the agency must take to finalize the proposed rule; and other background questions.

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On June 2, 2014, the Environmental Protection Agency (EPA) proposed standards for greenhouse gas (GHG) emissions from existing fossil-fueled power plants under Section 111(d) of the Clean Air Act.[1] The proposal appeared in the *Federal Register*, June 18, 2014.[2] The rule and various supporting materials are posted on EPA's website: http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule.

Publication in the *Federal Register* began a public comment period, which ran until December 1, 2014. EPA received almost 1.5 million comments on the proposal.[3] The agency also held public hearings in Denver, Atlanta, Pittsburgh, and Washington, DC, during the week of July 28, 2014.

Prior to this rule's release, EPA conducted significant outreach to interested parties. According to Bloomberg BNA, "Senior Environmental Protection Agency officials consulted with at least 210 separate groups representing a broad range of interests in the Washington, DC, area and held more than 100 meetings and events with additional organizations across regional offices as the agency prepared its carbon pollution regulation for existing power plants."[4]

The proposal generated substantial interest even before its release. The economy and the health, safety, and well-being of the nation depend on a reliable and affordable power supply, which many contend would be adversely affected by controls on GHG emissions. At the same time, an overwhelming scientific consensus has formed around the need to slow long-term global climate change. To determine how the rule addresses these issues, congressional committees have asked EPA officials numerous questions about the rule, and individual Members have written EPA seeking additional information about the rule's potential impacts.[5]

In order to provide basic information about EPA's pending action, this report addresses the proposal in a Q&A format.

Background

Q: Why did EPA propose this rule?

A: EPA proposed emissions guidelines to limit carbon dioxide (CO2) emissions from existing power plants under Section 111(d) of the Clean Air Act (CAA) for a variety of reasons. Some important context includes the following:

[1] 42 U.S.C. §7411(d).

[2] U.S. EPA, "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units," Proposed Rule, 79 *Federal Register* 34830, June 18, 2014.

[3] More than 22,000 public submissions on the proposal can be viewed at http://www.regulations.gov/#!docketDetail;D=EPA-HQ-OAR-2013-0602. An interactive map allowing users to search for comments by state officials can be found at http://bipartisanpolicy.org/energy-map/?_cldee=am1jY2FydGh5QGNycy5sb2MuZ292.

[4] "EPA Consulted with Hundreds of Groups on Carbon Rule for Existing Power Plants," *Daily Environment Report*, April 8, 2014. For EPA's discussion of the pre-proposal outreach effort, see Section III of the Preamble to the proposed rule, "Stakeholder Outreach and Conclusions," 79 *Federal Register* 34845-34851.

[5] See, for example, the letter from a bipartisan group of 47 Senators to EPA Administrator Gina McCarthy, May 22, 2014, at http://www.fischer.senate.gov/public/_cache/files/79d2321e-175c-4456-b4c7-f9b600e15288/5.22.14-senate-ghg-dear-colleague-letter.pdf.

- The Supreme Court in Massachusetts v. EPA in 2007 determined that "air pollutant," as used in the CAA, covers GHGs.[6]
- In December 2010, EPA entered into a settlement agreement to issue New Source Performance Standards for GHG emissions from electric generating units (EGUs) under Section 111(b) of the CAA, which standards, once finalized, trigger EPA's responsibilities under Section 111(d) covering existing EGUs.[7]
- In the context of U.S. commitments under a 1992 international treaty, the United Nations Framework Convention on Climate Change (UNFCCC), President Obama pledged in 2009 to reduce U.S. GHG emissions by 17% below 2005 levels by 2020 and by 80% by 2050.[8] In November 2014, President Obama announced an additional interim goal to reduce U.S. GHG emissions by 26%-28% by 2025, in the context of negotiations toward a 2015 agreement applying to all countries to address climate change beyond 2020.

EPA had already addressed GHG emissions from the other main source of GHG emissions, motor vehicles. Simultaneously with President Obama, China's President Xi Jinping announced a voluntary target to "peak" China's CO_2 emissions by 2030 and increase its use of non-fossil energy to around 20% by 2030. The European Union is "on track" to reach its target of 20% below 1990 levels by 2020 and has pledged to reduce its GHG emissions to 30% below 1990 levels by 2030.

Q: What other steps has EPA taken to reduce GHG emissions?

A: EPA has already promulgated GHG emission standards for light-duty and medium- and heavy-duty vehicles, using its authority under Section 202 of the CAA.[9] Light-duty vehicles (cars, SUVs, vans, and pickup trucks) and medium- and heavy-duty vehicles (including buses, heavy trucks of all kinds, and on-road work vehicles) are collectively the largest emitters of GHGs other than power plants. Together, on-road motor vehicles accounted for nearly 25% of U.S. GHG emissions in 2012.

Under the promulgated rules, standards for light-duty vehicles first took effect for Model Year (MY) 2012. Allowable GHG emissions will be gradually reduced each year from MY2012 through MY2025. In MY2025, emissions from new vehicles must average about 50% less per mile than in MY2010. The standards for heavier-duty vehicles began to take effect in MY2014. They will require emission reductions of 6% to 23%, depending on the type of engine and

[6] Massachusetts vs. EPA, 549 U.S. 497 (2007), actually involved GHG emissions from motor vehicles, not power plants. In 2011, however, the Court explicitly ruled that "air pollutant" includes GHGs when applied to power plants under Section 111. American Elec. Power Co., Inc. vs. Connecticut, 131 S. Ct. 2527, 2537-38 (2011).

[7] See CRS Report R41103, *Federal Agency Actions Following the Supreme Court's Climate Change Decision in Massachusetts v. EPA: A Chronology*, by Robert Meltz, p. 6.

[8] See CRS Report R40001, *A U.S.-Centric Chronology of the United Nations Framework Convention on Climate Change*, by Jane A. Leggett; and CRS Report R43120, *President Obama's Climate Action Plan*, coordinated by Jane A. Leggett.

[9] See CRS Report R40506, *Cars, Trucks, and Climate: EPA Regulation of Greenhouse Gases from Mobile Sources*, by James E. McCarthy and Brent D. Yacobucci; and CRS Report R42721, *Automobile and Truck Fuel Economy (CAFE) and Greenhouse Gas Standards*, by Brent D. Yacobucci, Bill Canis, and Richard K. Lattanzio.

vehicle, when fully implemented in MY2018. A second round of standards, to address MY2019 and later medium- and heavy-duty vehicles, is currently under development at EPA.[10]

The promulgation of standards for motor vehicles also triggered Clean Air Act requirements that new major stationary sources of emissions (power plants, refineries, etc.) obtain permits for their GHG emissions, and install the Best Available Control Technology, as determined by state and EPA permit authorities on a case-by-case basis, prior to construction. The Supreme Court upheld that position on June 23, 2014, provided that the sources were already required to obtain permits for other conventional pollutants.[11]

The GHG permitting requirements for stationary sources have been in place since 2011, but have been limited by EPA's "Tailoring Rule" to the very largest emitters—about 200 facilities, so far. The Court's June 2014 decision invalidated the Tailoring Rule, but found that EPA could limit GHG permit requirements to "major" facilities, so-classified as a result of their emissions of conventional pollutants. In so doing, the Court limited the pool of potential GHG permittees to a number similar to what the Tailoring Rule would have provided.

Q: How much progress has the United States made in reducing GHG emissions?

A: The question of how much progress has been made depends on the base year chosen for comparison. In 2012, U.S. GHG emissions were 6,526 million metric tons (mmt) of CO_2-equivalent[12]—slightly less than 5% above 1990 emission levels. This is 10% below GHG emission levels in 2005, and more than halfway toward meeting President Obama's pledge to reduce U.S. GHG emissions to 17% below 2005 levels by 2020. U.S. GHG emissions peaked in 2007 at 7,325 mmt CO_2e.

As shown in **Figure 1**, during the period from 1990 to 2012, U.S. economic activity, measured as gross domestic product (GDP, adjusted for inflation), rose 73% while population increased 26%.[13]

Q: How much does the generation of electricity contribute to total U.S. GHG emissions?

Electricity generation accounted for about 31% of all U.S. GHG emissions in 2012. GHG emissions from electricity generation rose during 1990 to 2012 by 11%, while all other sources of GHG emissions grew by an average of 2%. GHG emissions from electricity generation in 2005 were 32% above 1990 levels, peaking in 2007 at 2,413 mmt CO_2e.

[10] For additional information on these requirements, see CRS Report R40506, *Cars, Trucks, and Climate: EPA Regulation of Greenhouse Gases from Mobile Sources*, by James E. McCarthy and Brent D. Yacobucci.

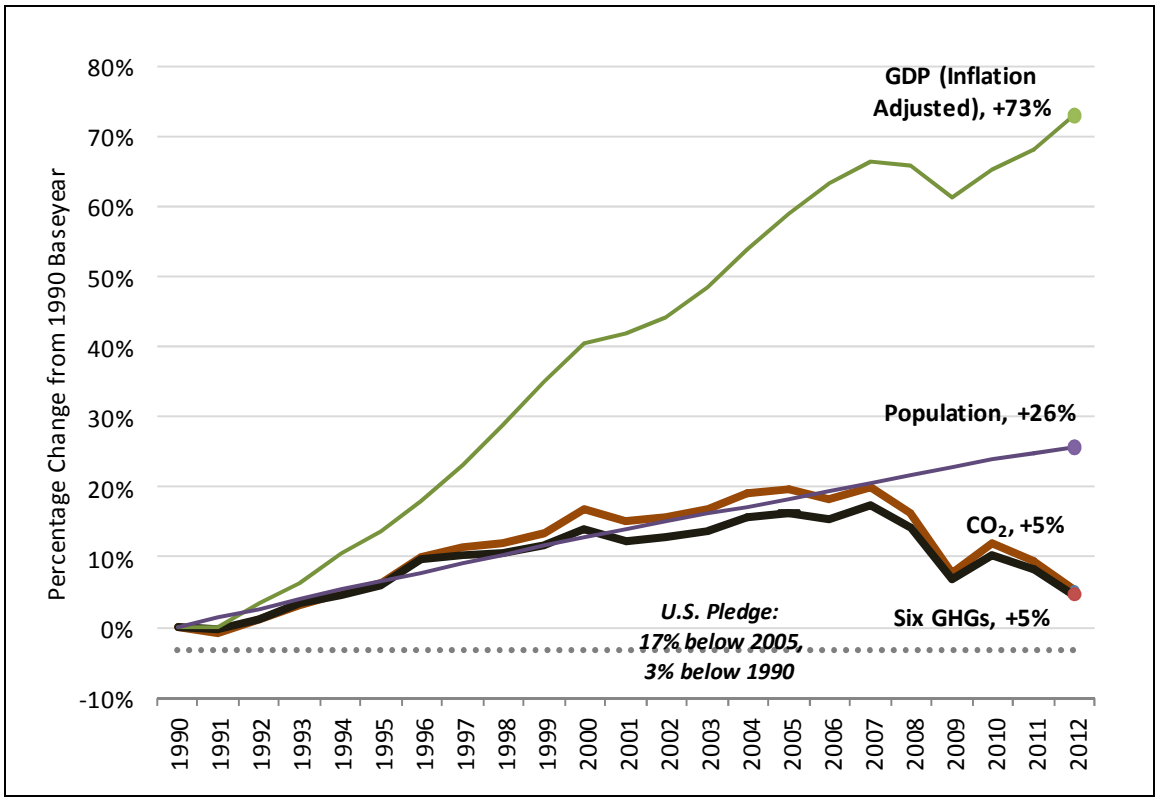
[11] Utility Air Regulatory Group vs. Environmental Protection Agency, No. 12-1146, 2014 Westlaw 2807314 (U.S. June 23, 2014).

[12] CO_2-equivalents (CO_2e) result from weighting the mass of emissions of a GHG (e.g., methane, sulfur hexafluoride, etc.) by its effect, relative to the effect of CO_2, on radiative forcing of the climate system over a specified time period (usually 100 years). Using this method, gases of different atmospheric lifetimes and potencies can be compared or added. Various assumptions affect the relative warming potential of different GHG compounds.

[13] For a further discussion, see CRS Report R43795, *U.S. Greenhouse Gas Emissions: Recent Trends and Factors*, by Jonathan L. Ramseur.

In its 2014 Annual Energy Outlook, the U.S. Energy Information Administration (EIA) projected emissions from electricity generation to rise 3.6% from 2012 to 2020, assuming no further regulatory actions.[14] EIA's reference case projection would put electricity generation emissions at 12% below 2005 levels in 2020. Presumably, the EPA-proposed regulations for existing power plants will lower any future EIA projections.

Figure 1. Percent Change in U.S. Greenhouse Gas (GHG) Emissions, the Economy, and Population



Source: CRS figure, using GHG emissions data from United States Environmental Protection Agency, *The U.S. Inventory of Greenhouse Gas Emissions and Sinks: 1990-2012*, EPA 430-14-003, April 15, 2014; and GDP and population data from U.S. Bureau of Economic Analysis, National Economic Accounts, "Table 7.1. Selected Per Capita Product and Income Series in Current and Chained Dollars," accessed May 27, 2014.

Note: GDP, or "gross domestic product," is one measure of national economic activity.

[14] U.S. Energy Information Administration (EIA), "Annual Energy Outlook 2014," Table 18. Carbon Dioxide Emissions by Sector and Source, May 7, 2014, http://www.eia.gov/forecasts/aeo/tables_ref.cfm.

Statutory Authority

Q: Under what authority is EPA proposing these regulations?

A: EPA's proposed regulations are required by CAA Section 111(d).[15] This provision calls on states to submit plans to EPA imposing "standards of performance" for pollutants emitted by existing stationary sources. The Section 111(d) mandate applies narrowly, however. It applies only when the pollutant (1) is neither covered by a National Ambient Air Quality Standard nor listed as a "hazardous air pollutant" under CAA Section 112,[16] and (2) would be regulated under a "new source performance standard" (NSPS) under Section 111(b) if the existing source were a new source. CO_2 already meets precondition (1).[17] CO_2 will meet precondition (2) once EPA's proposed NSPS for CO_2 emissions from fossil-fuel power plants are finalized, probably early next year.

The trigger that requires EPA to use Section 111(d) is Section 111(b). Section 111(b) requires EPA to issue NSPSs for any stationary source category on an EPA-maintained list of source categories that "cause[], or contribute[] significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." Once an NSPS is promulgated—to reiterate, for new sources in the source category—Section 111(d) is triggered for emissions of the same pollutant from existing sources in the source category, if the preconditions described above are met.[18] That is the basis for EPA's June 2014 proposal. The intersection between these two rules is addressed below.

[15] 42 U.S.C. §7411(d).

[16] The CAA regulates emissions from stationary sources in multiple ways, three of which are relevant here. The first way is by National Ambient Air Quality Standards, reserved for harmful but not extremely hazardous pollutants from "numerous or diverse mobile or stationary sources." CAA §108(a)(1)(B); 42 U.S.C. §7408(a)(1)(B). NAAQSs are implemented by source-specific emission limits imposed by states in "state implementation plans." CAA §110; 42 U.S.C. §7410. The second way is by federally prescribed national emission standards for hazardous air pollutants, that is, particularly harmful pollutants. CAA §112; 42 U.S.C. §7412. And the third, of interest here, is by federally prescribed standards of performance for new stationary sources. CAA §111; 42 U.S.C. §7411.

[17] There is an alternate reading of this precondition, owing to the fact that in the 1990 amendments to the CAA, inconsistent House and Senate amendments to Section 111(d) were enacted. Under the House amendment, Section 111(d) standards of performance are barred for air pollutants "emitted from a *source category* ... regulated under Section 112" (emphasis added), the section covering hazardous air pollutants. Because fossil-fuel power plants are indeed a source category regulated under Section 112, this argument concludes that Section 111(d) does not allow EPA to restrict GHG emissions from existing such plants. The Senate amendment, on the other hand, places off limits only *air pollutants*, rather than source categories, regulated under Section 112. GHGs are not regulated under Section 112, so the Senate amendment poses no obstacle to EPA's June 2 proposal.

EPA's Legal Memorandum accompanying the June 2 proposed regulations explains that the agency has adopted a hybrid of the House and Senate amendments under which use of Section 111(d) is barred for air pollutants that are *both* regulated under Section 112 *and* emitted from a source category regulated under Section 112. Because CO_2 emitted by fossil fuel-fired power plants satisfies only the second of these triggers for exclusion, EPA believes that the June 2 proposal's invocation of Section 111(d) is proper.

[18] See, e.g., American Elec. Power Co., Inc. vs. Connecticut, 131 S. Ct. 2527, 2537 (2011).

Q: How is the term "standards of performance," required by Section 111(d), defined in statute and case law?

A: The act defines "standard of performance" 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.[19]

This definition makes clear that EPA's main task is to define the "best system of emission reduction," considering the indicated factors, on which the standard for emissions will be based. Most of the terms in the definition are themselves undefined in the act, leaving wide latitude for EPA interpretation.[20] This wide latitude is important in part because CAA Section 111 applies the phrase "standard of performance" to *both new and existing* facilities in the listed source category, yet is generally assumed to be more flexible and less stringent when applied to existing sources, reflecting implementation challenges in existing facilities compared to new ones. Supporting this assumption is that certain definition terms—such as "best," "taking into account cost," and "adequately demonstrated"—seem to accommodate comfortably the different technological and economic circumstances of existing facilities versus new ones. It should also be noted that Section 111(d) itself says that states may consider an existing facility's remaining useful life "among other factors."

Although all of the court interpretation of the CAA's definition of "standard of performance" stems from the phrase's use for new stationary sources, the cases arguably still shed light on how the definition might apply under Section 111(d) to the standards of performance that states are required to submit for *existing* sources. A full review of this case law is beyond the scope of this report. (EPA recently has offered its own, however.)[21] However, in light of ubiquitous claims that Section 111(d) affords EPA great flexibility as to what it may accept in state plans, it is worth keeping in mind that whatever states submit must, as Section 111(d) explicitly requires, include "standards of performance." That means that EPA's calculation of each state-specific emission-reduction goal must be based on measures that are "system[s] of emission reduction."[22] Whether some of the "building blocks" EPA proposed in June 2014 as components of a system of emission reduction—such as boosting use of renewable fuels, reducing electricity demand, and investing in "smart grid" technology—constitute "systems of emission reduction" is not clear.

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[19] CAA §111(a)(1); 42 U.S.C. §7411(a)(1).

[20] The term "air pollutant" *is* defined in CAA Section 302 and, important here, has been held by the Supreme Court, with specific reference to Section 111, to include GHGs. *American Elec. Power*, 131 S. Ct. at 2537.

[21] EPA's legal interpretation of "standard of performance" can be found in three places: (1) the preamble to the agency's proposed rule for new power plants: Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units, 79 *Federal Register* 1430, 1462-1467 (January 8, 2014); (2) the preamble to the June 2 proposed rule; and (3) an EPA-prepared Legal Memorandum accompanying the June 2 proposed rule, available at http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents. See, e.g., Essex Chemical Corp. vs. Ruckelshaus, 486 F. 2d 427, 433 (D.C. Cir. 1973) (to be "adequately demonstrated," the "system of emission reduction" must be "reasonably reliable, reasonably efficient, and reasonably expected to serve the interests of pollution control without becoming exorbitantly costly in an economic and environmental way").

[22] 42 U.S.C. §7411(a)(1).

The shorthand for this flexibility issue that EPA faces is whether the state-specific emission-reduction goals EPA prescribes must be based solely on measures taken "inside the fence line" of specific plants, or whether "outside the fence line" measures can be considered part of a system of emission reduction.

Finally, the emission standards prescribed in EPA's June 2014 proposal must be based on state approaches that are not only "system[s] of emission reduction," but also the "best" of such systems, considering the factors in the standard of performance definition.[23] Case law holds that EPA has "broad discretion" to weigh these factors.[24]

Q: When has EPA previously used this authority?

A: EPA has only promulgated rules under Section 111(d) a handful of times. Excluding guideline documents for incineration facilities, which rely in large part on a different section of the act, the *Code of Federal Regulations* contains only two Section 111(d) guideline documents.[25]

EPA's most recent attempt to use the authority was in the Clean Air Mercury Rule (CAMR, 2005), when EPA promulgated standards for mercury emissions from new power plants under Section 111(b) and set up a cap-and-trade system under Section 111(d) for existing power plants. In the final CAMR rule,[26] EPA apportioned a nationwide budget for mercury emissions among individual states. Each state was required to submit an implementation plan to EPA within 18 months of the rule's promulgation, detailing the controls it would impose on the coal-fired power plants within the state to meet the state's emissions budget. States could adopt EPA's emissions trading rule or choose to achieve the mandated reductions in some other way. If a state did neither, the cap-and-trade program outlined in CAMR was proposed as a Federal Implementation Plan (FIP). EPA set state-level budgets for a period beginning in 2010 (four and a half years after promulgation), and for a second period beginning in 2018.

The D.C. Circuit Court of Appeals vacated CAMR's 111(b) standards for new power plants in a 2008 decision,[27] so these 111(d) guidelines for existing power plants were never implemented. The court did not rule on whether the flexible approach taken by EPA for mercury controls (i.e., a cap-and-trade system) met the requirements of Section 111(d).

The most recent successful use of Section 111(d) came in 1996, when EPA used the authority to impose requirements on emissions of methane and non-methane organic compounds from landfills.[28] These regulations required the use of control equipment and set numeric emission

[23] Ibid.

[24] Sierra Club vs. Costle, 657 F.2d 298, 321 (D.C. Cir. 1981). *Accord*, Lignite Energy Council vs. U.S. EPA, 198 F.3d 930, 933 (D.C. Cir. 1999).

[25] The two guideline documents in the C.F.R. are "Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills," at 40 C.F.R. 60.30c, and "Emission Guidelines and Compliance Times for Sulfuric Acid Production Units," at 40 C.F.R. 60.30d. EPA also appears to have issued four guideline documents that do not appear in the C.F.R.

[26] U.S. EPA, Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, Final Rule, 70 *Federal Register* 28606, May 18, 2005.

[27] New Jersey vs. EPA, 517 F.3d 574 (D.C. Cir. 2008). The court found that EPA was obligated to promulgate standards for mercury and other hazardous air pollutants under Section 112 of the act, and therefore vacated the NSPS under Section 111(b).

[28] U.S. EPA, Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills, Final Rule, 61 *Federal Register* 9905, March 12, 1996.

limits for designated facilities (large landfills), with a compliance deadline of 30 months after the effective date of the state plan submitted to EPA. State plans were required to be submitted within nine months of promulgation of the Section 111(d) rule.

Q: Why has Section 111(d) been infrequently used?

A: As mentioned earlier, Section 111(d) can be used only for pollutants that are neither criteria pollutants (i.e., EPA has not set National Ambient Air Quality Standards for them under Section 109 of the act) nor hazardous air pollutants (HAPs), as identified in Section 112 of the act.[29] This is a relatively small number of pollutants. CO_2, being neither a criteria pollutant nor a HAP, falls into that universe.[30]

Q: What relationship does this proposal have to EPA's January 2014 proposal of GHG standards for *new* fossil-fueled power plants?

A: EPA's January 2014 proposal for *new* fossil-fuel power plants was made under CAA Section 111(b). As discussed earlier, once EPA sets such a New Source Performance Standard under Section 111(b), Section 111(d) is triggered for existing sources in the same source category if the pollutant in question is neither covered by a NAAQS nor listed as a hazardous air pollutant.[31] CO_2 satisfies this precondition, so EPA's January 2014 proposal for new power plants, once made final, will obligate the agency and the states to regulate CO_2 emissions from *existing* fossil-fueled power plants.

Those likely to be regulated under Section 111(d) presumably are well aware of the 111(b)-111(d) linkage—no 111(b) NSPS means no 111(d) standards of performance for existing sources in the same category. Thus, even though the January 2014 proposal of NSPSs for new power plants will affect very few plants, it is nearly certain that once finalized, the rule will be vigorously challenged in court by utilities operating existing power plants potentially subject to the June 2014 proposal under Section 111(d).

Q: Is the rule released on June 2, 2014, a final rule?

A: No. It is a proposed rule, on which EPA took public comment through December 1, 2014. Under Section 307(d) of the CAA,[32] EPA is required to issue a proposed rule and hold a public comment period before issuing a final rule. The final rule may be changed from the proposal, so long as EPA provides an explanation in the *Federal Register* of the reasons for any major changes. At the least, when the agency promulgates a final version of the rule, it must provide a response to each of the significant comments, criticisms, and new data submitted during the proposed rule's public comment period.

[29] But see footnote 17 above.

[30] See also the first question under "Statutory Authority," above.

[31] However, see footnote 17above.

[32] 42 U.S.C. §7607(d).

The Proposed Rule

Q: By how much would the proposed rule reduce CO2 emissions?

A. EPA's proposed Section 111(d) rule does not set a future level of emissions from existing electricity generators. The proposal sets state goals for emission *rates*—as pounds of CO_2 emissions per megawatt-hour of electricity produced—not absolute emissions. It has been widely reported that the rule would require a 30% reduction in CO_2 emissions from the electricity sector by 2030, compared to the level of emissions in 2005; but this is simply EPA's estimate of the rule's effect nationwide, not what the rule *requires*.

Effects on CO_2 emissions are calculated by computer models projecting the quantity of electricity produced by each state under the rule, multiplied by EPA's proposed state emission-rate goals. The actual emissions in the future will depend on how states choose to comply with the promulgated rule and how much electricity is generated (and at what type of generation units).

In 2012, CO_2 emissions from electricity generation were 2,023 million metric tons (mmt), or about 38% of total U.S. CO_2 emissions (excluding emissions and removals by land use and forestry).[33] EPA projects that the proposed Section 111(d) rule, Option 1—State Compliance, would reduce CO_2 emissions from electricity generation to 1,682 mmt when states reach their "final" emission rate goals in 2030. This would be an approximate absolute emissions reduction of 17% from 2012 levels, the base year for the proposed rule, and about 30% below the 2005 level of CO_2 emissions from U.S. electricity generation.[34] EPA's modeling of the rule also estimates interim reductions, as illustrated in **Figure 2**.

The 2030 "final goals" for states' emissions rates would continue as long as the rule remains in place. As **Figure 2** illustrates, absolute CO_2 emissions from electricity generation would likely increase after 2030 at the rate of growth of electricity production (unless very low- or no-emitting fuels make going beyond the emissions rate standard economically attractive).

Q: Did EPA propose more than one option for the standards?

A: EPA proposed only one set of emission rate standards (labeled Option 1 in the proposal), but it asked for comment on an alternative set (labeled Option 2) in which the final state goals would be less stringent and would have to be attained more quickly—by 2025, five years earlier than under Option 1.

Besides offering an alternative option for comment, the agency also identified two ways in which states could comply with either the proposed standards or the alternative: a State Compliance Approach or a Regional Compliance Approach. The goals would be the same for the two compliance approaches. Under the State Compliance Approach, each state would pursue its goal on its own—as is typically the case in CAA State Implementation Plans. However, under the

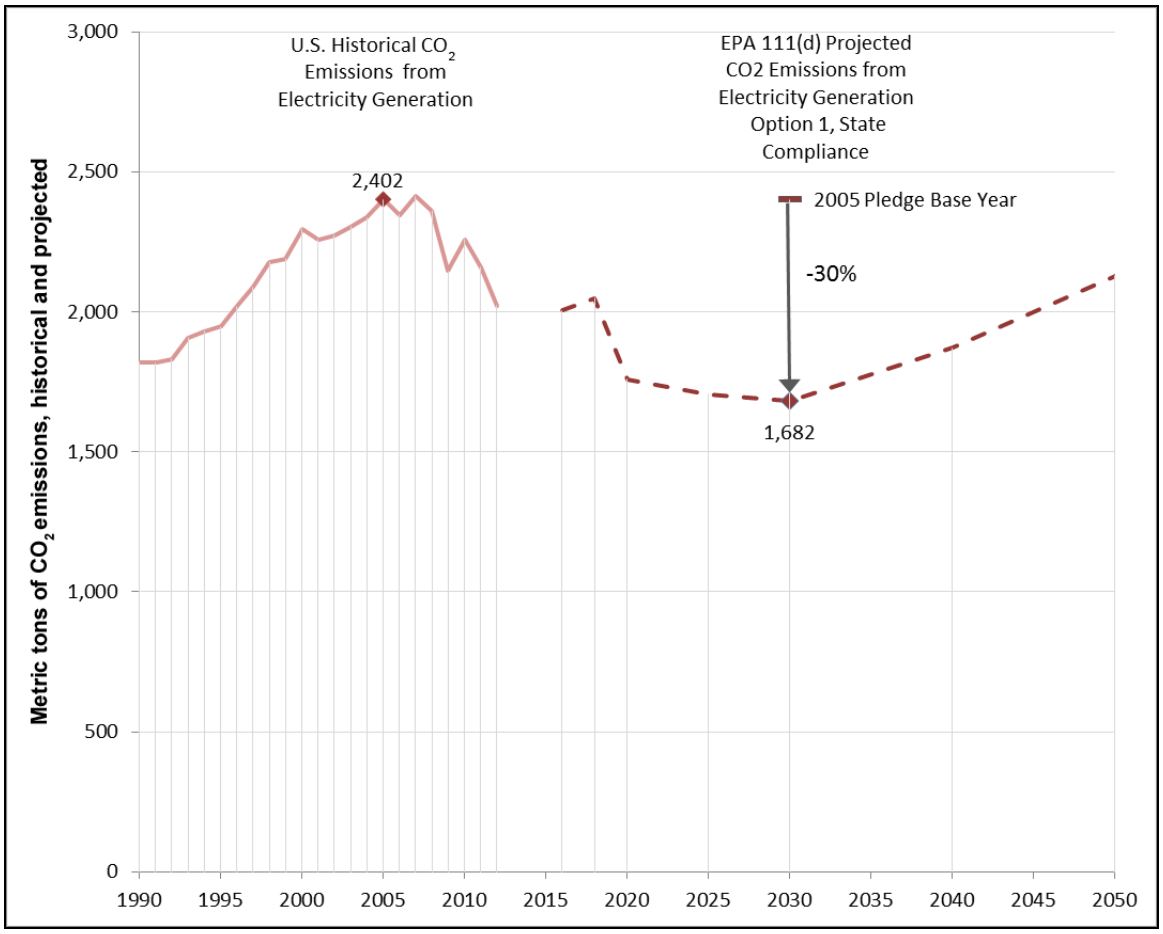
[33] U.S. Environmental Protection Agency, *The U.S. Inventory of Greenhouse Gas Emissions and Sinks: 1990-2012*, Washington, DC: 2014.

[34] The base year for the proposed rule is 2012, although some have reported it as 2005. The comparison with emissions in 2005 may be relevant because of President Obama's pledge in 2009 to reduce total U.S. GHG emissions 17% below the 2005 level by 2020.

Regional Approach, states voluntarily could join with other states to implement multistate compliance approaches (e.g., maintaining the nine-state cap-and-trade system under the Regional Greenhouse Gas Initiative). Under the Regional Compliance Approach, states would have additional time to submit implementation plans, and the costs and benefits of compliance are estimated by EPA to be somewhat lower than under the State Compliance Approach.

Because it serves as the base of EPA's proposal, in the remainder of this report, we generally focus on the Option 1—State Compliance Approach.

Figure 2. U.S. CO_2 Emissions from Electricity Generation, Historical and Projected



Source: CRS figure from U.S. Environmental Protection Agency, *The U.S. Inventory of Greenhouse Gas Emissions and Sinks: 1990-2012*, Washington, DC: 2014; and EPA spreadsheet "Illustrative State compliance scenario for Option 1," available at http://www.epa.gov/airmarkets/powersectormodeling/cleanpowerplan.html.

Note: EPA-projected emissions converted from short tons to metric tons by CRS.

Q: What is the range of state emission-rate goals?

A: The proposal sets interim emission-rate goals for each state for the period from 2020 to 2029 and a final goal for 2030. The proposed 2030 goals range from 215 pounds of CO_2 per megawatt-hour in Washington State to 1,783 pounds in North Dakota. In general, states that rely on coal for a high percentage of their total power generation would be allowed higher emission rates than

states that rely more heavily on natural gas, nuclear, and renewable power. **Table 1** shows the final (2030) goals for each state in alphabetical order.

The data presented here are based on the agency's proposed approach. The agency also asked for comment on an alternative option that would shorten the compliance period from 10 years to 5 (i.e., a final goal reached in 2025), with a less stringent set of CO_2 emission rates. Under both the proposed and alternative options, the agency also proposes to allow submission of multistate plans, the effects of which might differ slightly from the single-state approach.

Q: How did EPA establish the state-level goals in the proposed rule?

A: EPA describes the rule as having four "building blocks," which were used to generate state-specific emission rate goals. The first of these calls for "heat-rate" (i.e., efficiency) improvements at coal-fired, steam power plants (i.e., reductions in the amount of heat, as measured in Btus, necessary to generate a megawatt-hour of electricity). Since CO_2 emissions are directly related to the amount of coal burned, a reduction in the heat rate of a given percentage would lead to a reduction in CO_2 emissions of the same percentage. For each state's coal-fired power plants, the agency began by determining an average CO_2 emission rate (in pounds of CO_2 per megawatt-hour), using data for 2012. Based on its review of relevant engineering studies and emissions data, EPA determined that coal-fired plants could reasonably be expected to reduce their average heat rate by 6%, so the agency reduced each state's 2012 CO_2 emission rate from coal-fired units by that percentage. For example, if a state's coal-fired power plants averaged 2,000 pounds of CO_2 emissions per megawatt-hour in 2012, the first building block would lower the state's average emission rate for those coal-fired units to 1,880 pounds per megawatt-hour. A decreased average rate at a state's coal-fired units would contribute toward a decrease in the state's overall emission rate.

The second building block is based on "dispatch changes" among a state's electric generating units (EGUs). As demand for power rises over the course of a day, the system operator or regional transmission organization calls into service ("dispatches") additional generating units. As demand decreases in the evening, these additional units are taken off-line. The same principle applies as demand fluctuates over the course of a year. Because coal-fired plants take hours or days to ramp up to their design capacity, and because they have traditionally been cheaper to operate than most other sources, they have tended to be dispatched before natural-gas-fired units. In the last five years, this order of dispatch has been changing, however, and the rule would set a goal of increasing the dispatch of natural-gas-combined-cycle (NGCC) plants, which have lower CO_2 emissions per megawatt-hour generated, in place of higher emission coal- and oil-fired power.[35] The agency estimated that, in aggregate, NGCC units used about 46% of their total generating capacity in 2012. EPA determined that this NGCC capacity use could be increased to 70%. For goal-setting purposes, the second building block assumes that a state's NGCC plants will, in aggregate, use up to 70% of their capacity, rather than the current averages, which range from 1% in South Dakota to 63% in Connecticut. The additional NGCC power is assumed to replace a portion of the state's coal-fired and other higher CO_2 emitting sources, thus reducing the rate of CO_2 emissions per megawatt-hour generated.

[35] According to EPA, NGCC units can produce as much as 46% more electricity from a given input of Btus than coal-fired steam EGUs.

The third building block assumes the use of additional low- or no-carbon emitting power sources, principally renewable energy. To estimate how much power could be expected to come from renewable sources, EPA grouped the states into six regions and developed state-specific goals based on the average of existing renewable portfolio standards[36] applicable in 2020 in each region. The agency used these averages to compute regional growth factors for renewable electricity, which it applied to each state's initial (2012) renewable energy generation level. This additional electricity from zero-emission energy sources lowers the states' CO_2 emission rates.

Building block 3 also includes adjustments for "at-risk" and "under construction" nuclear power. The "at-risk" nuclear power, which exists in 30 states, was factored into both the state 2012 baseline emission rates and the emission rate targets, creating an incentive for states to maintain their existing nuclear generation. In addition, EPA added projected electricity generation from nuclear power units that are currently under construction in three states.[37]

The fourth building block reduces the emissions rate by including demand-side energy efficiency programs. Although some states currently have more stringent energy efficiency requirements than others, EPA assumes that by 2030, all states can implement such programs, with roughly similar results. These programs are assumed to reduce electricity generation by roughly 9% to 12% in each state by 2030.

For an example of how these building blocks were used to produce a state emission-rate goal, see EPA's "Goal Computation Technical Support Document" at http://www2.epa.gov/sites/production/files/2014-05/documents/20140602tsd-goal-computation.pdf. For additional discussion, see CRS Report R43652, *State CO_2 Emission Rate Goals in EPA's Proposed Rule for Existing Power Plants*, by Jonathan L. Ramseur.

Table 1 provides each state's 2012 emission rate baseline, 2030 emission rate target, and the percentage reduction from the 2012 baseline.

Table 1. State CO_2 Emission Rate Baseline (2012) and Emission Rate Goal (2030)

Pounds of CO_2 emitted per net megawatt-hour of electricity generated

State	2012 Emission Rate Baseline	2030 Emission Rate Goal	Percentage Reduction from 2012 Baseline
Alabama	1,444	1,059	27%
Alaska	1,351	1,003	26%
Arizona	1,453	702	52%
Arkansas	1,634	910	44%
California	698	537	23%
Colorado	1,714	1,108	35%

[36] Renewable portfolio standards, adopted by about 29 states and the District of Columbia (as of March 2013), require retail electricity suppliers to supply a minimum percentage or amount of their retail electricity load with electricity generated from eligible sources of renewable energy, as defined by the state. For additional information, see the Database of State Incentives for Renewables and Efficiency, at http://www.dsireusa.org/.

[37] EPA identified five nuclear units under construction in Georgia, South Carolina, and Tennessee, and 5.7 gigawatts of nuclear units (about 6% of the nation's nuclear capacity) at risk of retirement.

State	2012 Emission Rate Baseline	2030 Emission Rate Goal	Percentage Reduction from 2012 Baseline
Connecticut	765	540	29%
Delaware	1,234	841	32%
Florida	1,199	740	38%
Georgia	1,500	834	44%
Hawaii	1,540	1,306	15%
Idaho	339	228	33%
Illinois	1,894	1,271	33%
Indiana	1,924	1,531	20%
Iowa	1,552	1,301	16%
Kansas	1,940	1,499	23%
Kentucky	2,158	1,763	18%
Louisiana	1,455	883	39%
Maine	437	378	14%
Maryland	1,870	1,187	37%
Massachusetts	925	576	38%
Michigan	1,690	1,161	31%
Minnesota	1,470	873	41%
Mississippi	1,093	692	37%
Missouri	1,963	1,544	21%
Montana	2,246	1,771	21%
Nebraska	2,009	1,479	26%
Nevada	988	647	34%
New Hampshire	905	486	46%
New Jersey	928	531	43%
New Mexico	1,586	1,048	34%
New York	978	549	44%
North Carolina	1,647	992	40%
North Dakota	1,994	1,783	11%
Ohio	1,850	1,338	28%
Oklahoma	1,387	895	35%
Oregon	717	372	48%
Pennsylvania	1,531	1,052	31%
Rhode Island	907	782	14%
South Carolina	1,587	772	51%
South Dakota	1,135	741	35%
Tennessee	1,903	1,163	39%

State	2012 Emission Rate Baseline	2030 Emission Rate Goal	Percentage Reduction from 2012 Baseline
Texas	1,284	791	38%
Utah	1,813	1,322	27%
Virginia	1,302	810	38%
Washington	756	215	72%
West Virginia	2,019	1,620	20%
Wisconsin	1,827	1,203	34%
Wyoming	2,115	1,714	19%

Source: Prepared by CRS using data from EPA's technical support document ("Clean Power Plan Proposed Rule: Goal Computation") and accompanying spreadsheet.

Notes: Because Vermont and the District of Columbia lack affected sources, no goals were proposed for these jurisdictions. The emission rate goals for three areas of Indian country and two U.S. territories are discussed below.

Q: Would states and companies that have already reduced GHG emissions receive credit for doing so?

A: States do not receive "credit" in their goals for emission reduction measures already taken. Whether individual power companies will receive credit will be decided by states as they develop their implementation plans. The rule requires each state to submit an implementation plan to EPA that identifies what measures/regulations the state will implement to reach its goal.

EPA used 2012 data to prepare each state's emission rate goals. The proposed rule does not have a process for providing credit for emissions reductions made prior to 2012. However, EPA points out that states that began action prior to 2012, including a shift to less carbon-intensive energy sources or energy efficiency improvements, will be "better positioned" to meet state-specific emission rate goals.[38]

In addition, a few states with high percentages of renewable power in their total power supply do effectively receive credit for the levels of renewable power already achieved, because a state's interim and final emission rate goals are based in part on the amount of renewable power expected in the *region* to which it belongs. If a state's current renewable generation percentage exceeds its regional percentage target, EPA's goal calculation methodology assumes the state would adjust its renewable energy generation to match the regional target. For example, Iowa, South Dakota, Minnesota, and Maine all have renewable energy goals calculated by EPA that are lower than their 2012 generation levels. Assuming these states continue to use renewable energy at their 2012 levels, the renewable energy building block would effectively give them credit for early action.

[38] 79 *Federal Register* 34918.

Q: How does EPA's proposed rule interact with existing GHG emission reduction programs in the states, namely the Regional Greenhouse Gas Initiative and California's cap-and-trade system?

A number of U.S. states have taken action requiring greenhouse gas (GHG) emission reductions. The most aggressive actions have come from a coalition of states from the Northeast and Mid-Atlantic regions—the Regional Greenhouse Gas Initiative[39]—and California.[40]

The Regional Greenhouse Gas Initiative (RGGI) is a cap-and-trade system involving nine states that took effect in 2009.[41] RGGI applies to CO_2 emissions from electric power plants with capacities to generate 25 megawatts or more.

Pursuant to legislation passed in 2006, California established a cap-and-trade program that took effect in 2013. California's cap covers multiple GHGs and when fully implemented in 2015 will apply to multiple sectors, covering approximately 85% of California's GHG emissions.

Although EPA's proposed rule measures state compliance in terms of a CO_2 emissions rate, EPA allows states considerable flexibility in terms of meeting its emissions rate goals. For example, states can establish new programs to meet their goals or use existing programs and regulations. Moreover, states can meet their goals individually or collaborate with other states to create (or use existing) multistate plans. EPA provides states with additional time to submit their plans if states decide to combine their efforts.

It is uncertain whether the scope and stringency of the RGGI program or the California system would be sufficient to meet the targets in EPA's proposed rule. In particular, the emission caps in both programs do not go beyond 2020.

Q: What role is there for "outside-the-fence" emission reductions?

A: The role of "outside-the-fence" emission reductions will depend on the policies and requirements states use to meet their emission rate targets. In setting the goals for each state, EPA clearly anticipated that some reductions will come from actions taken by actors other than power companies or specific EGUs (actions that have been referred to as "outside-the-fence" reductions). For example, one of the four building blocks of the proposed rule is the application of demand-side energy efficiency measures, such as the installation of more efficient lighting products, better insulation, and more efficient electric appliances. In the Preamble to the proposed rule, EPA states its intention to establish a "toolbox of decision support resources" for the states, which will include outside-the-fence measures such as energy efficiency and renewable energy policies and programs.[42]

[39] See CRS Report R41836, *The Regional Greenhouse Gas Initiative: Lessons Learned and Issues for Policy Makers*, by Jonathan L. Ramseur.

[40] In addition, EPA notes that 38 states have renewable portfolio standards or goals, and utilities in 47 states have demand-side energy efficiency programs. See Preamble to the proposed rule, at 79 *Federal Register* 34835.

[41] Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. New Jersey participated in the program from 2009 through the end of 2011.

[42] 79 *Federal Register* 34928.

Q: Does EPA's proposal allow states to convert their emission rate targets into mass-based, emission targets?

A: EPA's proposed rule allows states to convert their emission rate targets (lbs. of CO_2 per MWh) into mass-based emission targets (lbs. or metric tons of CO_2). When EPA issued its proposal, the agency published a technical support document ("Projecting EGU CO_2 Emission Performance in State Plans") that provided one option for converting from rate-based to mass-based targets. After receiving feedback from states about the conversion process, EPA provided additional information in November 2014,[43] including a new technical support document: "Translation of the Clean Power Plan Emission Rate-Based CO_2 Goals to Mass-Based Equivalents."[44]

The new document describes two approaches states can use to convert their emission rate targets to mass-based targets. The first approach is based on historical emissions from existing sources. The second is based on historical emissions from existing sources and projected emissions from existing and new sources.[45] With each approach, EPA prepared state-specific mass-based targets, which, according to EPA, "could be considered equivalent to the proposed rate-based goals."[46]

Table 2 lists the state-specific, mass-based targets (2030) that EPA prepared using both approaches and compares these targets to each state's 2012 CO_2 emission baseline.

Table 2. EPA's Conversion of CO_2 Emission Rates to Mass-Based Emission Targets

2012 CO_2 Emission Baseline Compared to 2030 CO_2 Emission Targets—Alphabetical by State

State	2012 CO_2 Emission Baseline	2030 CO_2 Emission Goal (Existing Sources)	2030 CO_2 Emission Goal (Existing and New Sources)
Alabama	68,558	50,267	59,214
Alaska	1,963	1,457	1,912
Arizona	36,709	17,734	24,193
Arkansas	36,095	20,096	23,527
California	43,688	35,805	45,171
Colorado	38,442	25,335	31,935
Connecticut	6,038	4,265	4,661
Delaware	4,363	2,972	3,435
Florida	107,509	68,221	83,259
Georgia	57,017	31,676	42,394

[43] U.S. EPA, "Carbon Pollution Emission Guidelines for Existing Stationary Sources: EGUs in Indian Country and U.S. Territories; Multi-Jurisdictional Partnerships," Notice of additional information, 79 *Federal Register* 67406, November 13, 2014.

[44] Available at http://www2.epa.gov/sites/production/files/2014-11/documents/20141106tsd-rate-to-mass.pdf.

[45] In its June 2014 proposal, EPA asked for comment on whether new, fossil-fuel fired sources could be included as a component in a state plan (see 79 *Federal Register* 34923-34924).

[46] 79 *Federal Register* 67408.

State	2012 CO_2 Emission Baseline	2030 CO_2 Emission Goal (Existing Sources)	2030 CO_2 Emission Goal (Existing and New Sources)
Hawaii	4,729	4,010	4,899
Idaho	638	468	990
Illinois	87,133	58,471	65,574
Indiana	91,831	73,090	79,341
Iowa	34,674	25,749	28,496
Kansas	31,156	24,081	26,696
Kentucky	82,893	70,203	81,953
Louisiana	44,186	26,823	32,839
Maine	1,629	1,323	1,432
Maryland	18,300	11,613	15,148
Massachusetts	11,910	7,414	8,204
Michigan	63,164	43,403	46,725
Minnesota	25,416	14,474	17,218
Mississippi	23,500	16,449	18,916
Missouri	70,926	55,792	60,173
Montana	16,266	12,828	15,190
Nebraska	24,639	18,142	20,233
Nevada	14,049	9,209	11,396
New Hampshire	4,212	2,262	2,392
New Jersey	11,774	6,741	8,649
New Mexico	15,730	10,391	13,337
New York	31,441	17,649	19,310
North Carolina	53,169	36,918	45,165
North Dakota	30,274	27,069	28,270
Ohio	92,861	68,751	75,116
Oklahoma	47,859	30,892	35,127
Oregon	6,956	3,614	5,293
Pennsylvania	105,184	72,272	79,618
Rhode Island	3,389	2,924	3,074
South Carolina	32,565	15,816	22,014
South Dakota	3,018	1,602	2,000
Tennessee	37,410	22,837	32,992
Texas	220,740	135,937	158,775
Utah	27,961	20,384	24,165
Virginia	24,914	18,923	24,494
Washington	6,617	2,862	4,772

State	2012 CO_2 Emission Baseline	2030 CO_2 Emission Goal (Existing Sources)	2030 CO_2 Emission Goal (Existing and New Sources)
West Virginia	65,614	52,636	54,566
Wisconsin	38,390	25,275	28,102
Wyoming	45,358	37,590	39,550

Source: Prepared by CRS using data from EPA's technical support document ("Translation of the Clean Power Plan Emission Rate-Based CO_2 Goals to Mass-Based Equivalents") and accompanying spreadsheet (November 2014).

Notes: Because Vermont and the District of Columbia lack affected sources, no goals were proposed for these jurisdictions. In the November 2014 support document, the agency also provided mass-based equivalents for three areas of Indian country—the Navajo Nation, the Ute Tribe of the Uintah and Ouray Reservation, and the Fort Mojave Tribe—and two U.S. territories—Guam and Puerto Rico.

Q: Would EPA's rulemaking require states to reduce their emission rates in 2020?

A: In the building block formula that EPA used to establish state-specific emission rate targets (both interim and final), the agency prepared state emission rates for each year, starting in 2020 and ending in 2029. These rates are available in a technical support document spreadsheet.[47] Although states are not specifically required to meet the 2020-2029 annual emission rates, states would likely need to reduce their emission rates on a pathway that is similar to these annual emission rates, because the state-specific interim targets (2029) were constructed by taking the average of the 2020-2029 annual emission rates.

For this reason, some stakeholders have characterized EPA's proposed CO_2 emission rate targets for existing power plants as "front-loaded," with a disproportionate percentage of emission rate reductions required in the early years of the program (2020-2024). For further discussion, see CRS Insight IN10172, *EPA's Clean Power Plan Proposal: Are the Emission Rate Targets Front-Loaded?*, by Jonathan L. Ramseur.

Q: How would new fossil-fuel fired power plants and their resulting electricity generation and emissions factor into a state's emission rate calculations?

A: In general, EPA's June 2014 proposed rule addresses "affected EGUs [electric generating units]," which include fossil fuel-fired units that were in operation or had commenced construction as of January 8, 2014, have a generating capacity above a certain threshold, and sell a certain amount of their electricity generation to the grid. As discussed above, newly constructed power plants would likely be subject to the New Source Performance Standard proposed by EPA in January 2014.[48]

[47] See EPA, Technical Support Document, Clean Power Plan Proposed Rule: Goal Computation, and accompanying spreadsheet, at http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents.

[48] U.S. EPA, "Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units," Proposed rule, 79 *Federal Register* 1430, January 8, 2014.

However, in its June 2014 proposal for existing power plants, EPA discussed potential ways in which certain types of fossil-fuel fired units, built after January 2014, could interact with the states' emission rate targets. For example, EPA did not include the construction of new NGCC units as part of its emission rate methodology, but the agency sought comment on whether states could include new NGCC units in their emission rate calculations. Considering the legal structure of CAA section 111(d), EPA stated: "should the calculation consider only the emission reductions at affected EGUs, or should the calculation also consider the new emissions added by the new NGCC unit, which is not an affected unit under section 111(d)?"[49]

In addition, EPA solicited comments on whether incremental emission reductions from new fossil fuel-fired boilers and integrated gasification combined cycle (IGCC) units with carbon capture and sequestration should be allowed as a compliance option to help meet the emission rate targets.

Q: What role does nuclear power play in EPA's proposal?

A: EPA's emission rate methodology accounts for "at-risk" nuclear power and "under-construction" nuclear power. Using projections from the Energy Information Administration, EPA determined that 5.8% of total U.S. nuclear power capacity was at risk of being retired in the near future.[50] The "at-risk" nuclear power, which exists in 30 states, was factored into the 2012 baseline emission rates and the emission rate targets (via building block 3, discussed above). Including the "at-risk" generation in the baseline and the emission target creates an incentive for states to maintain their "at-risk" nuclear generation: If a state were to retire some portion of its "at-risk" nuclear generation, the state's emission rate would increase (all else being equal). Some stakeholders have requested that EPA provide an incentive to maintain a higher percentage of nuclear power generation.[51]

In addition, EPA's emission rate methodology includes projected electricity generation from nuclear power units that are currently "under construction." EPA identified five such units at three facilities in Georgia, South Carolina, and Tennessee. Including the estimated generation from these anticipated units in the emission rate equation substantially lowers the emission rates of these three states. If these anticipated units do not complete construction and enter service, these states would likely have more difficulty achieving their emission rate goals. EPA specifically asked for comments on the treatment of these under construction units.

EPA did not include the addition of new nuclear generation in the agency's emission rate methodology. However, EPA stated that "any additional new nuclear generating units or uprating of existing nuclear units, relative to a baseline of capacity as of the date of proposal of the emission guidelines, could be a component of state plans."[52]

[49] 79 *Federal Register* 34924.

[50] See EPA, Technical Support Document, GHG Abatement Measures.

[51] See, e.g., Nuclear Energy Institute, Press Release, December 2, 2014, at http://www.nei.org.

[52] 79 *Federal Register* 34923.

Q: What additional information did EPA provide in its October 2014 notice of data availability?

A: EPA published a notice of data availability (NODA) in the *Federal Register* on October 30, 2014, providing additional information on several issues raised by stakeholders.[53] EPA asked for comments on the information presented to be provided by December 1, 2014, the same deadline as the proposed rule.

The issues discussed in the NODA include the following:

- the timing of the emission rate reduction requirements, particularly the reductions related to electricity generation dispatch adjustments (i.e., building block 2);
- how to account for newly constructed fossil-fuel fired power plants in a state's emission rate calculations;
- the methodology for addressing renewable energy generation, particularly interstate relationships that may involve one state taking credit for renewable energy generation in another state; and
- whether to account for reductions in electricity generation and emissions that may result from increased generation in renewable energy (building block 3) and/or reduced demand from energy efficiency impacts (building block 4).

Although EPA addressed many of these topics to some degree in its June 2014 proposed rule, the NODA provides some of the alternative suggestions that EPA has received from various stakeholders.

Q: Do EPA's proposed emission rate targets apply to electric generating units in U.S. territories and/or areas of Indian country?

A: EPA proposed emission rate targets for two U.S. territories (Guam and Puerto Rico) and three areas of Indian country (the Navajo Nation, the Ute Tribe of the Uintah and Ouray Reservation, and the Fort Mojave Tribe) in a supplemental proposal that was published in the *Federal Register* on November 4, 2014.[54] **Table 3** lists the 2030 emission rate targets in comparison to the 2012 baseline emission rates.

Although EPA used the same building block calculations to generate emission rate targets for these locations, the agency is seeking comment on different approaches and options for calculating emission rates in both the territories and Indian areas. For example, EPA notes that none of the territories or Indian tribes generated electricity from (non-hydroelectric) renewable energy in 2012. Thus, applying the existing methodology in building block 3 would have no effect on emission rates in these areas.

[53] U.S. EPA, "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units," Notice of data availability, 79 *Federal Register* 64543, October 30, 2014.

[54] U.S. EPA, "Carbon Pollution Emission Guidelines for Existing Stationary Sources: EGUs in Indian Country and U.S. Territories; Multi-Jurisdictional Partnerships," Supplemental Proposed Rule, 79 *Federal Register* 65482, November 14, 2014.

In general, the U.S. territories are subject to the same implementation plan submission requirements as the states. In contrast, tribes have "the opportunity, but not the obligation," to establish and submit a plan (after obtaining the necessary authority from EPA) to meet their emission rate targets. If a tribe does not seek authority to submit its own plan, EPA is responsible for establishing a plan, if the agency determines, at a later date, that "a plan is necessary or appropriate."[55] In its November 2014 supplemental proposal, EPA did not include a proposal for a "necessary and appropriate" determination and it did not propose a federal plan for any area of Indian country.

Table 3. U.S. Territory and Indian Land CO_2 Emission Rate Baseline (2012) and Emission Rate Goal (2030)

Pounds of CO_2 emitted per net megawatt-hour of electricity generated

U.S. Territory or Area of Indian Land	2012 Emission Rate Baseline	2030 Emission Rate Goal	Percentage Reduction from 2012 Baseline
Guam	1,948	1,586	19%
Puerto Rico	1,701	1,413	17%
Fort Mojave Tribe	858	855	>1%
Navajo Nation	2,121	1,989	6%
Ute Tribe	2,145	1,988	7%

Source: Prepared by CRS using data from EPA's technical support document ("Clean Power Plan Supplemental Proposal: Calculating Carbon Pollution Goals for Existing Power Plants in Areas in Indian Country and U.S. Territories") and accompanying spreadsheet.

Next Steps

Q: What are the next steps? How will EPA finalize this rule?

A: On June 2, 2014, EPA made the rule and various supporting materials available on its website. The rule appeared in the *Federal Register* June 18, 2014. Publication in the *Federal Register* began the formal comment period, which ran until December 1, 2014. As noted earlier, EPA held four public hearings during the week of July 28, 2014 (in Atlanta, Denver, Pittsburgh, and Washington, DC), as well as taking written comments on the regulations.gov website.[56] EPA also published three other documents in the *Federal Register* during the comment period and took comment on them, as well:

- a Notice of Data Availability, providing additional information on certain topics raised by commenters on the June 2014 proposal—in particular, emission reduction compliance trajectories created by the interim CO_2 reduction goal for

[55] 79 *Federal Register* 65484.

[56] The written submissions, transcripts of any public hearings, and all EPA supporting documents are available to the public in a regulatory docket at http://www.regulations.gov. The docket number for this rule is EPA-HQ-OAR-2013-0602.

2020 to 2029, aspects of EPA's "building blocks" method, and how state-specific CO_2 reduction goals are calculated;[57]

- emission guidelines for CO_2 from existing fossil fuel-fired electric generating units located in Indian country and U.S. territories;[58] and
- additional information regarding the translation of emission rate-based CO_2 goals to mass-based equivalents."[59]

Now that the comment period has closed, EPA will consider the comments it received, revise the rule to the extent it determines to be appropriate, and prepare additional supporting materials. Then, upon completion of its internal consideration, the agency will forward a draft final rule to the Office of Information and Regulatory Affairs (OIRA) at the White House Office of Management and Budget.

Q: What role does OIRA (i.e., the White House) play in developing the final rule?

A: OIRA/interagency review is a normal part of the rulemaking process for most federal agencies. Under Executive Order (E.O.) 12866, OIRA oversees an interagency review process; it also generally conducts meetings with principal stakeholders. These meetings are known as "12866 meetings," and OIRA posts information about them on its website.[60]

This interagency review process sometimes results in significant changes to a rule. At the least, OIRA will seek to ensure that EPA has developed a rule that addresses concerns raised during the comment period, that the rule is supported by the agency's Regulatory Impact Analysis[61] and any other accompanying analyses, that the rule is legally defensible, and that the rule is consistent with the President's policy priorities.

Under E.O. 12866, OIRA reviews are to be completed within 90 days of a rule's submission by the regulatory agency, but often they extend for longer periods.[62] This rule is not likely to languish at OIRA, however. In directing EPA to develop the rule, in June 2013, the President established a schedule for promulgation and implementation, directing EPA to promulgate a final rule by June 1, 2015. Given the high priority placed on this rule by the President, both EPA and OIRA are likely to make every effort to adhere to that schedule.

E.O. 12866 requires both regulatory agencies and OIRA to disclose certain information about how OIRA's regulatory reviews are conducted. Specifically, agencies are required to identify for the public (1) the substantive changes made to rules between the draft submitted to OIRA for review and the action subsequently announced and (2) changes made at the suggestion or recommendation of OIRA. OIRA is required to provide agencies with a copy of all written

[57] 79 Fed. Reg. 64543, October 30, 2014.

[58] 79 Fed. Reg. 65481, November 4, 2014.

[59] 79 Fed. Reg. 67406, November 13, 2014.

[60] See http://www.reginfo.gov.

[61] Regulatory Impact Analyses, required under Executive Order 12866, provide an agency's analysis of the expected costs and benefits of a rule. See additional discussion under "Costs and Benefits of the Rule," below.

[62] Executive Order 12866, "Regulatory Planning and Review," 58 *Federal Register* 51735, October 4, 1993. For an electronic copy of this executive order, see http://www.whitehouse.gov/omb/inforeg/eo12866.pdf.

communications between OIRA personnel and parties outside of the executive branch, and a list of the dates and names of individuals involved in substantive oral communications.

After the completion of review, the EPA Administrator will sign the final rule and send it to the *Federal Register* for promulgation.[63]

Q: When will the final rule take effect, and how will it be implemented?

A: Once finalized, major rules generally may take effect no sooner than 60 days after publication in the *Federal Register*.[64] Assuming that the final rule is signed June 1, 2015, it would likely be effective sometime in the summer of 2015. According to the schedule announced by the President, the states would then have until June 30, 2016, to submit plans detailing how they will implement its provisions.

EPA has proposed some modifications to the schedule for the state plan submissions, however. Under the proposed rule, states will be allowed to request an additional year for submission of a complete plan, provided that they have taken "meaningful steps" toward completion by the 2016 deadline. States choosing to participate in a multistate plan would have until June 30, 2018, to submit the plan.

Q: What happens if a state fails to submit an adequate plan by the appropriate deadline?

A: EPA cannot compel a state to submit a Section 111(d) plan. Rather, should a state fail to submit a satisfactory plan by EPA's deadline, CAA Section 111(d) authorizes EPA to prescribe a plan for the state. This authority is the same, Section 111(d) says, as EPA's authority to prescribe federal implementation plans (FIPs) when a state fails to submit a state implementation plan to achieve a National Ambient Air Quality Standard (NAAQS).[65] Questions have been raised as to whether EPA has the authority to include in its EPA-promulgated plans all the measures, such as demand-side energy efficiency requirements, that states may include in their 111(d) plans.

Costs and Benefits of the Rule

Q: What role will cost play in EPA's choice of emission standards?

A: Under Section 111(a)(1)'s definition of "standards of performance," EPA must consider cost in developing the regulations. In addition, Section 111(d)(1) states, "Regulations of the Administrator under this paragraph shall permit the State in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies."

[63] For additional discussion of OIRA's role in the federal rulemaking process, see CRS Report RL32397, *Federal Rulemaking: The Role of the Office of Information and Regulatory Affairs*, coordinated by Maeve P. Carey.

[64] 5 U.S.C. §801(a)(3)(A).

[65] CAA §110(c); 42 U.S.C. §7410(c).

EPA's regulations implementing this language (40 C.F.R. 60.22(b)), which were promulgated in 1975 and 1989, provide additional detail:

> (b) Guideline documents published [by EPA] under this section will provide information for the development of State plans, such as:
>
> (1) Information concerning known or suspected endangerment of public health or welfare caused, or contributed to, by the designated pollutant.
>
> (2) A description of systems of emission reduction which, in the judgment of the Administrator, have been adequately demonstrated.
>
> (3) Information on the degree of emission reduction which is achievable with each system, together with information on the costs and environmental effects of applying each system to designated facilities.
>
> (4) Incremental periods of time normally expected to be necessary for the design, installation, and startup of identified control systems.
>
> (5) An emission guideline that reflects the application of the best system of emission reduction (considering the cost of such reduction) that has been adequately demonstrated for designated facilities, and the time within which compliance with emission standards of equivalent stringency can be achieved. The Administrator will specify different emission guidelines or compliance times or both for different sizes, types, and classes of designated facilities when costs of control, physical limitations, geographical location, or similar factors make subcategorization appropriate.
>
> (6) Such other available information as the Administrator determines may contribute to the formulation of State plans.

Q: What are EPA's estimates of the costs of this rule?

A: EPA estimates the cost of the proposed rule at $7.3 billion to $8.8 billion annually in 2030. Because states will determine how to comply with the goals established by the final rule, EPA refers to these cost estimates as "illustrative" and notes that they "do not represent the full suite of compliance flexibilities states may ultimately pursue."[66] EPA describes the cost estimate as including "the net change in the annualized cost of capital investment in new generating sources and heat rate improvements at coal steam facilities, the change in the ongoing costs of operating pollution controls, shifts between or amongst various fuels, demand-side energy efficiency measures, and other actions associated with compliance."[67]

Although the rule may impose $7.3 billion to $8.8 billion in annual control costs by 2030, EPA estimates that the average monthly residential electricity bill will decline by 9% in 2030, as consumption of electricity declines due to efficiency measures.[68]

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[66] EPA, *Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants*, June 2014, p. ES-7, at http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf.

[67] Ibid., p. ES-8 (footnote omitted).

[68] Preamble to the proposed rule at 79 *Federal Register* 34934.

Q: What are the benefits EPA estimates for the proposed Section 111(d) rule?

A: In the Preamble to the proposed rule, EPA cites monetized CO_2-reduction benefits of the rule to be $30 billion in 2030 (in 2011 dollars) and the health-related co-benefits of the rule to be an additional $23 billion to $59 billion.[69]

In the accompanying Regulatory Impact Analysis, the agency provides additional detail, including ranges of benefits based on a variety of assumptions. EPA's estimates for Option 1—State Compliance, in the Regulatory Impact Analysis range from $22 billion to $88 billion in 2020, rising to $36 billion to $150 billion in 2030.[70] These estimates include benefits of slowing climate change, as well as avoiding premature deaths and illnesses from other air pollution. With estimated compliance costs of about $7.5 billion in 2020 rising to a maximum of $8.8 billion in 2030, EPA expects that its Section 111(d) proposal would yield net benefits of $26 billion to $50 billion in 2020, rising to $49 billion to $84 billion in 2030.[71]

EPA expects its Section 111(d) proposal to avoid some degree of greenhouse gas-induced climate change, by directly reducing CO_2 (the major human-related greenhouse gas), and by reducing atmospheric concentrations of ozone, particulate matter, and other pollutants, all of which also influence climate change. EPA estimates the benefits of reducing CO_2 emissions (i.e., the climate benefits, excluding the health-related co-benefits) to range from $5 billion to $52 billion in 2020, rising to a range of $10 billion to $94 billion in 2030. The benefits of slowing climate change are about 13% to 76% of the total monetized benefits of the proposed rule, depending on the assumptions selected.

EPA calculated the benefits of avoided climate change by multiplying tons of CO_2 emission reductions in each year by corresponding ranges of "social costs of carbon" (SCC) in that year. The SCC is an estimate of the avoided costs of future climate change per ton of CO_2 avoided. EPA uses the ranges of values published by an Interagency Working Group on the Social Costs of Carbon in November 2013.[72] Stakeholders have critiqued these SCC estimates, with some arguing the range should be lower and others higher.

EPA expects that the 111(d) proposal simultaneously will reduce other air pollutants, avoid premature deaths and illnesses, and reduce material damages. Under most assumptions, the majority of monetized benefits EPA estimated for its proposal come from reductions, or "co-benefits" of pollutants other than CO_2. EPA valued the co-benefits of its Section 111(d) proposal at $24 billion to $62 billion in 2030.

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[69] This estimate is for Option 1—Regional Compliance, using a 3% discount rate, which reflects the preference of most people to have money now rather than in the future. 79 *Federal Register* 34839.

[70] All in 2011 dollars. These estimates are for EPA's Option 1 proposal with state compliance, on which CRS focuses as it best reflects the rule as proposed by EPA. Benefits for Option 2 and/or regional compliance would be slightly lower, particularly because EPA estimates that the regional compliance alternative would achieve fewer emission reductions. EPA, *Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants*, June 2014, at http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf.

[71] Using the full range of benefits reported in the Regulatory Impact Analysis using several discount rates.

[72] Interagency Working Group on Social Cost of Carbon, United States Government. Technical Support Document: - Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866. Washington, DC: Office of Management and Budget, November 2013. http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf.

EPA did not quantify other expected co-benefits of this rule, including reduced exposures to several hazardous air pollutants (such as mercury and hydrogen chloride), carbon monoxide, and reduced direct exposures to sulfur dioxide (SO_2) and nitrogen oxides (NOx). EPA also did not quantify pollution effects on ecosystems or visibility.

Q: Under Section 111(d), are the benefits of the rule required to exceed its cost?

A: Section 111(d) does not impose a cost-benefit test. E.O. 12866, however, states that "in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach."[73]

Congressional and Judicial Review

Q: Does the Congressional Review Act apply to the proposed rule?

A: The Congressional Review Act (CRA) provides a mechanism by which Congress may review and disapprove of agency rules through passage of a joint resolution that is eligible for expedited procedures in the Senate.[74] If passed by both houses of Congress, such a joint resolution would be sent to the President for his signature or veto.

It does not appear that the CRA applies to *proposed* rules issued by an agency. Arguably a proposed rule does not satisfy the CRA definition of a "rule."[75] A proposed rule is not "designed to implement, interpret, or prescribe law or policy";[76] instead, it is generally created by the agency as a draft with which to solicit and receive public comments.[77] Additionally, arguably a proposed rule has no "future effect" because a proposed rule may not go into effect until comments are received and considered by the agency and a final rule is published in the *Federal Register*.[78]

The Government Accountability Office (GAO) specifically advises agencies not to submit proposed rules to Congress or GAO under the CRA.[79] In January 2014, Senator Mitch McConnell requested[80] that GAO analyze Congress's authority to consider a CRA resolution disapproving of EPA's proposed rule entitled "Standards of Performance for Greenhouse Gas Emissions from

[73] Ibid., Section 1.

[74] 5 U.S.C. §§801-808.

[75] 5 U.S.C. §804(3).

[76] Ibid.; see 5 U.S.C. §551(4).

[77] See 5 U.S.C. §553(b).

[78] See 5 U.S.C. §553(c).

[79] GAO, "Congressional Review Act (CRA) FAQs," available at http://www.gao.gov/legal/congressact/cra_faq.html#6 ("[Question:] Should agencies submit proposed rules to GAO? [Answer:] No. Agencies should only submit major, nonmajor, and interim final rules to GAO.").

[80] Letter from the Honorable Mitch McConnell to the Honorable Gene L. Dodaro, Comptroller General, Government Accountability Office, January 16, 2014 [hereinafter McConnell GAO Letter].

New Stationary Sources: Electric Utility Generating Unit."[81] In his letter, Senator McConnell argued that this proposed rule was different from other proposed rules because a provision of the CAA "gives immediate legal effect to the notice of proposed rulemaking."[82] GAO responded to Senator McConnell's letter in May 2014.

In its letter, GAO limited its analysis to three questions regarding GAO's role in the CRA and its precedents analyzing whether specific agency actions are rules under the CRA.[83] It concluded that "the terms of [the] CRA, and its supporting legislative history, clearly do not provide a role for GAO with regard to proposed rules, and do not require agencies to submit proposed rules to GAO."[84] Furthermore, it stated that prior GAO decisions found "that an agency action constituted a rule for CRA purposes ... [if] the action imposed requirements that were both certain and final."[85] Since proposed rules "are proposals for future agency action that are subject to change ... and do not have a binding effect on the obligations of any party,"[86] GAO concluded they are "not a triggering event for CRA purposes."[87] However, GAO also noted that because the CRA's expedited procedure for review of agency rules was enacted pursuant to Congress's constitutional authority to establish its own procedural rules,[88] it is for "Congress to decide whether [the] CRA would apply to a resolution disapproving a proposed rule."[89]

For a broad discussion of congressional options for addressing EPA's greenhouse gas regulations, see CRS Report R41212, *EPA Regulation of Greenhouse Gases: Congressional Responses and Options*, by James E. McCarthy.

Q: How will judicial review of the proposed rule work?

A: It is virtually certain that once EPA promulgates its final Section 111(d) rule, legal challenges will be filed. CAA Section 307(b) says that such petitions for review must be filed in the U.S. Court of Appeals for the D.C. Circuit within 60 days after the rule's publication in the *Federal Register*.[90] On infrequent occasion, the D.C. Circuit has stayed agency rules pending the court's decision on the merits. Once the circuit court issues that decision, it may grant a dissatisfied party's motion asking the court to reconsider its decision, and such a party may seek Supreme Court review. Recent history suggests that the Supreme Court is interested in cases where a federal agency undertakes a broad or costly regulatory effort based on ambiguous authority such

[81] 79 *Federal Register* 1430, January 8, 2014.

[82] McConnell GAO Letter, *supra* note 80, at 1; see 42 U.S.C. §7411(a)(2).

[83] Letter from Susan A. Poling, General Counsel, Government Accountability Office, to the Honorable Harry Reid, Mitch McConnell, Barbara Boxer, and Thomas Carper, May 29, 2014 (regarding GAO's Role and Responsibility Under the Congressional Review Act) at 1 [hereinafter GAO May 2014 CRA Letter]. Specifically, GAO "agreed to answer three questions: (1) what is GAO's role under CRA and what type of agency action triggers that role; (2) what role does GAO play under CRA with regard to a proposed rule; and (3) do prior GAO opinions under CRA examining final agency actions outside of the rulemaking process provide precedent in answering these questions." Ibid.

[84] Ibid. at 5.

[85] Ibid. at 8.

[86] Ibid.

[87] Ibid. at 6.

[88] See U.S. Constitution, Article I, Section 5, Clause 2.

[89] GAO May 2014 CRA Letter, *supra* note 83, at 9.

[90] 42 U.S.C. §7607(b).

as that in Section 111(d).[91] As an aside, three cases already filed in the D.C. Circuit seek judicial review of EPA's *proposed* Section 111(d) rule, notwithstanding the general insistence of courts that judicial review await promulgation of a final rule.[92] This general principle suggests that these pre-promulgation challenges are likely to be dismissed.

A court reviewing an agency rule typically will defer to the agency's resolution of any ambiguities in the statutory provision claimed by the agency as authority for the rule. This principle of judicial deference, known as "Chevron deference" after the decision often cited for the rule,[93] obviously can affect whether a court endorses or invalidates the rule in question. A recent Supreme Court decision, however, suggests that in the particular case of EPA's final Section 111(d) rule, Chevron deference may not be a foregone conclusion. In a CAA decision in 2014, the Supreme Court opined that where a statutory interpretation by EPA "would bring about an enormous ... expansion in EPA's regulatory authority"—which, some argue, describes the proposed Section 111(d) rule—a court should demand "clear congressional authorization" and not merely the agency's say-so.[94]

For Further Information

Q: Who are the CRS contacts for questions regarding this rule?

A: CRS analysts, listed below, cover areas related to the proposed rule.

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[91] As for a "broad" EPA regulatory effort, see *Utility Air Regulatory Group v. EPA*, 134 S. Ct. 2427 (2014). The following paragraph in the text above indicates the Court in this case was concerned with the absence of clear CAA authority for an EPA program the Court regarded as expansive. As for an EPA regulatory effort that may prove "costly" to regulated entities, see the Court's recent decision to hear a CAA case challenging whether EPA unreasonably refused to consider costs in determining whether it was "appropriate," in the statute's words, to regulate hazardous air pollutants emitted by electric utilities. White Stallion Energy Center, LLP vs. EPA, 748 F.3d 1222 (D.C. Cir. 2014), *cert. granted sub nom.* Michigan vs. United States, No. 14-46 (November 25, 2014).

[92] In re: Murray Energy Corp., No. 14-112 (D.C. Cir. filed June 18, 2014); State of West Virginia v. EPA, No. 14-1146 (D.C. Cir. filed August 1, 2014); Murray Energy Corp. v. EPA, No. 14-1151 (D.C. Cir. filed August 15, 2014).

[93] Chevron vs. Natural Resources Defense Council, Inc., 467 U.S. 837, 842-843 (1984).

[94] *Utility Air Regulatory Group*, 134 S. Ct. at 2444.

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