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ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

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MEMORANDUM

October 6, 2015

To: Subcommittee on Energy and Power Democratic Members and Staff

Fr: Committee on Energy and Commerce Democratic Staff

Re: Hearing on "EPA's CO_2 Regulations for New and Existing Power Plants"

On Wednesday, October 7, 2015, at 10:00 a.m. in room 2123 of the Rayburn House Office Building, the Subcommittee on Energy and Power will hold a hearing on a suite of Environmental Protection Agency (EPA) rules to regulate carbon pollution from power plants.

On August 3, 2015, EPA announced the final rule to regulate carbon pollution from existing power plants - known as the "Clean Power Plan."[1] The rule establishes emission guidelines for states to follow in developing plans to control carbon pollution from existing coal-fired and natural gas-fired power plants under section 111(d) of the Clean Air Act.[2] That same day, EPA also announced final standards limiting carbon pollution from new, modified, and reconstructed power plants;[3] and a proposed federal plan and model trading rules[4] that

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[1] U.S. Environmental Protection Agency, *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units* (Aug. 3, 2015) (Final Rule) (online at www2.epa.gov/sites/production/files/2015-08/documents/cpp-final-rule.pdf) (hereinafter *Clean Power Plan*).

[2] U.S. Environmental Protection Agency, *Clean Power Plan.*

[3] U.S. Environmental Protection Agency, *Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Generating Units* (Aug. 3, 2015) (Final Rule) (online at www3.epa.gov/airquality/cpp/cps-final-rule.pdf) (hereinafter *GHG Standards for New, Modified, and Reconstructed Power Plants*).

[4] U.S. Environmental Protection Agency, *Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units Constructed on or Before January 8, 2014*; *Model Trading Rules*; *Amendments to Framework Regulations* (Aug. 3, 2015) (Proposed Rule) (online at www3.epa.gov/airquality/cpp/cpp-proposed-federal-plan.pdf) (hereinafter *Proposed Federal Plan and Model Rules*).

"demonstrate a readily available path forward for Clean Power Plan implementation, and present flexible, affordable implementation options for states."[5]

I. EPA ACTIONS ON POWER PLANT EMISSIONS OF CARBON POLLUTION

Fossil fuel-fired power plants are by far the largest emitters of greenhouse gases from stationary sources in the United States; they are responsible for about one-third of the total United States greenhouse gas emissions.[6] Before the Clean Power Plan, there were no federal limits on their emissions of carbon pollution.

In June 2013, President Obama announced a Climate Action Plan to cut carbon pollution and to prepare for the effects of climate change.[7] As part of that Plan, the President directed EPA to use its existing authority under the Clean Air Act to control carbon pollution from new and existing fossil fuel-fired power plants.[8] President Obama simultaneously issued a Presidential Memorandum on Power Sector Carbon Pollution Standards providing more detailed direction to EPA.[9] It set deadlines of September 20, 2013, for a proposed rule for new plants; June 1, 2014, and June 1, 2015, for proposed and final rules, respectively, for existing plants; and June 30, 2016, for state submission of plans regulating existing plants.[10] EPA issued its final standards for new, modified and existing sources under Clean Air Act section 111 on August 3, 2015, and moved the deadline for state submission of implementation plans to September 2016.[11]

A. Clean Air Act Authority

[5] U.S. Environmental Protection Agency, *Proposed Federal Plan and Proposed Model Rules* (Aug. 3, 2015) (online at www3.epa.gov/airquality/cpp/fs-cpp-proposed-federal-plan.pdf).

[6] U.S. Environmental Protection Agency, *Fact Sheet: Clean Power Plan, By the Numbers, Cutting Carbon Pollution from Power Plants* (Aug. 3, 2015) (online at www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-by-the-numbers.pdf).

[7] Executive Office of the President, *The President's Climate Action Plan* (June 2013) (online at www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf).

[8] *Id.* at 6.

[9] President Barack Obama, *Presidential Memorandum – Power Sector Carbon Pollution Standards* (June 25, 2013) (online at www.whitehouse.gov/the-press-office/2013/06/25/presidential-memorandum-power-sector-carbon-pollution-standards).

[10] *Id.*

[11] By September 2016, states will need to submit either a final plan or an initial submittal with a request for an extension. States requesting an extension will have until September 2018, to submit final plans either alone or in cooperation with other states. U.S. Environmental Protection Agency, *Fact Sheet: Clean Power Plan, Key Changes and Improvements* (Aug. 3, 2015) (online at www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-key-changes.pdf).

Section 111 of the Clean Air Act directs EPA to set performance standards to control air pollution from new stationary sources.[12] These "new source performance standards" under section 111(b) establish limits on air pollution for sources in a given category (e.g., fossil fuel-fired power plants, oil refineries, pulp and paper plants, etc.) based on what can be achieved through "the best system of emission reduction. . .adequately demonstrated."[13] In determining the "best system of emission reduction" (BSER), EPA must take into account cost and "any nonair quality health and environmental impact and energy requirements."[14]

For existing sources in a category covered by a new stationery source performance standard, section 111 would defer to other Clean Air Act provisions for pollutants that are: (1) covered by a National Ambient Air Quality Standard (NAAQS); or (2) listed as a hazardous air pollutant under section 112.[15] Pollutants from existing sources that are not otherwise regulated under either of these provisions are addressed under section 111(d). With respect to such pollutants, section 111(d) would require EPA to issue rules directing the states to reduce pollution from existing sources that would have been covered by a section 111(b) standard if they were new sources.[16]

Pursuant to EPA's direction, state plans for existing sources must apply a "standard of performance" for emissions of air pollutants that reflects the degree of emission limitation achievable through BSER, as applied to existing sources.[17] EPA would determine the BSER and the emission limitation it can achieve. States have considerable flexibility, however, in deciding how to achieve the overall pollution reduction goals for these sources. The state may take into consideration, for example the remaining useful life of the existing source, as well as other factors.[18]

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[12] EPA proposed performance standards for new coal- and natural gas-fired power plants in September 2013. *See* U.S. Environmental Protection Agency, *Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units* 79 Fed. Reg. 1430 (Jan. 8, 2014) (Proposed Rule) (online at www.gpo.gov/fdsys/pkg/FR-2014-01-08/pdf/2013-28668.pdf).

[13] Clean Air Act §§ 111(a)(1); 111(b).

[14] *Id.* at § 111(a)(1).

[15] Clean Air Act § 111(d)(1).

[16] *Id.*

[17] EPA must establish procedures for states to submit state plans to regulate existing sources that are similar to the procedures and requirements for State Implementation Plans under section 110. Clean Air Act § 111(d)(1).

[18] *Id.*

B. Final Clean Power Plan

1. *Outreach Process*

In developing the final rule, EPA engaged in an unprecedented level of outreach, and the final Clean Power Plan reflects extensive stakeholder input.[19] Between August 2013 and June 2014, EPA held an overview webinar and four national teleconferences with states and a wide variety of stakeholders; established a mechanism to accept input by e-mail and web (receiving more than 2,000 emails); held 11 public listening sessions across the country; sent consultation letters to tribal leaders; and organized and participated in hundreds of meetings.[20] EPA indicated that the public submitted over 4.3 million public comments on the proposed Clean Power Plan.[21]

Among others, EPA met with state leaders, including governors, environmental commissioners, energy officers, public utility commissioners and air directors; industry leaders and trade association representatives; private, investor-owned, public and cooperative utilities and their associations; Independent System Operators and Regional Transmission Organizations; environmental and environmental justice organizations; religious groups; public health groups, doctors and health care providers; consumer groups; and individual unions, including the United Mine Workers of America, the International Brotherhood of Boilermakers, the International Brotherhood of Electrical Workers, and the AFL-CIO.[22]

2. *Final Emission Guidelines for State Plans*

Consistent with previous BSER determinations in 111(d) rulemakings, EPA considered the types of strategies, technologies and measures that states and utilities are already using to reduce CO_2 from fossil fuel-fired power plants. In the final Clean Power Plan, EPA determined that BSER consists of three building blocks.[23]

- Building Block 1 - reducing the carbon intensity of electricity generation by improving the heat rate of existing coal-fired power plants.

- Building Block 2 - substituting increased electricity generation from lower-emitting, existing natural gas plants for reduced generation from higher-emitting coal-fired power plants.

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[19] U.S. Environmental Protection Agency, *Clean Power Plan* at 211.

[20] *Id.* at 212.

[21] *Id.*

[22] *Id.* at 226.

[23] U.S. Environmental Protection Agency, *Fact Sheet: Clean Power Plan, Key Changes and Improvements* (Aug. 3, 2015) (online at www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-key-changes.pdf).

- Building Block 3 - substituting increased electricity generation from new zero-emitting renewable energy sources (like wind and solar) for reduced generation from existing coal-fired power plants.[24]

As a result of the comments received on the proposal,[25] EPA made significant changes to the final Clean Power Plan, including:

- *Changes to the first three building blocks:* in particular, for building block 1, the heat rate improvement was made less stringent (2.1 percent-4.3 percent at final, compared to 6 percent at proposal); and for building block 2, the metric was changed to "net summer capacity factor" – instead of "nameplate capacity" – to better reflect real world operating conditions.[26]

- *Three Building Blocks (instead of four that were included in the proposal):* the final BSER focuses on supply-side measures that reduce emissions from power plants, and does not rely on demand side energy efficiency (EE) as a building block. States still have the option of including EE as a component of their state plans.[27]

- *Timing:* EPA made three significant changes on the timing of the final rule:

  i. Moved the compliance period to commence in 2022 (in the proposal, it was 2020);

  ii. Made the interim reductions more gradual between 2022 and 2029, to address what some commenters called a "cliff," and provided additional flexibility for states to determine their own glide path of emissions reductions from 2022 to 2030 with a less stringent starting point (this also addresses stakeholders' reliability concerns); and

  iii. Allowed any state that needs extra time to submit a state plan to EPA up to three years to do so.

- *Model Rule:* EPA proposed a model rule that states can – though are not required to – adopt as their state plans. This makes it easier for states to adopt interstate trading – a feature for which many utilities and system operators advocated.

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[24] *Id.*

[25] For a more detailed summary of the proposed Clean Power Plan, please see the Subcommittee memo from the March 17, 2015 hearing.

[26] U.S. Environmental Protection Agency, *Fact Sheet: Clean Power Plan, Key Changes and Improvements* (Aug. 3, 2015) (online at www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-key-changes.pdf).

[27] *Id.*

- *Reliability:* To address reliability concerns expressed by stakeholders during the comment period, the final rule includes: (1) a requirement that states consider reliability as they develop their state plans; (2) a basic design that allows states and affected power plants flexibility to include a variety of approaches and measures to achieve their goals, including trading within and between states, and other multi-state approaches; and (3) a reliability safety valve to address situations where, due to an unanticipated event or other extraordinary circumstances, there is a conflict between the requirements imposed on an affected power plant and maintaining reliability. EPA also continues to coordinate with the Department of Energy and the Federal Energy Regulatory Commission to monitor the implementation of the final rule to help preserve continued reliable electricity generation and transmission.

- *Clean Energy Incentive Program (CEIP):* to provide an extra incentive for states to move forward with planned investments, EPA created a Clean Energy Incentive Program that will reward early investments in wind and solar generation, as well as demand-side energy efficiency programs implemented in low-income communities. EPA is currently taking comments on the CEIP.

- *Rate vs. Mass Goals:* to maximize the range of choices available to states in implementing the standards and to utilities in meeting them, EPA established rate-based state goals and mass-based state goals.

4. *Benefits and Costs of the Proposal*

As a result of the final Clean Power Plan, EPA estimates that in 2030, carbon pollution from the power sector will be reduced by 32 percent compared to 2005 levels.[28] In addition, this rule will cut other harmful pollution. By 2030, for example, emissions of CO_2 will be 90 percent lower, and emissions of NO_x will be 72 percent lower (compared to 2005 levels).[29]

EPA estimates the climate and public health benefits of these pollution controls will range between $34 billion and $54 billion in 2030. They will help avoid between 1,500 and 3,600 premature deaths and 90,000 asthma attacks in children in 2030 alone.[30] EPA estimates that for every dollar invested through the Clean Power Plan, American families will see up to $4 in health benefits.[31] In addition, while electricity prices may increase somewhat, EPA estimates

[28] U.S. Environmental Protection Agency, *Fact Sheet: Clean Power Plan, By the Numbers, Cutting Carbon Pollution from Power Plants* (Aug. 3, 2015) (online at www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-by-the-numbers.pdf).

[29] *Id.*

[30] *Id.*

[31] U.S. Environmental Protection Agency, *Fact Sheet: Clean Power Plan, Benefits of a Cleaner, More Efficient Power Sector* (Aug. 3, 2015) (online at www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-benefits.pdf).

that, due to increased use of cost-effective energy efficiency measures, actual electricity bills will fall by roughly $7 per month in 2030.[32]

II. FINAL STANDARDS FOR NEW POWER PLANTS

A. Standards of Performance

On August 3, 2015, EPA finalized standards to limit CO_2 emissions from two types of fossil-fuel fired sources: stationary combustion turbines, generally natural gas fired; and electric utility steam generating units, generally coal fired. The standards reflect the degree of emission limitation achievable through the application of BSER that EPA has determined has been adequately demonstrated for each type of unit.

For natural gas units, EPA determined that the BSER is natural gas combined cycle (NGCC) technology and the final standard is 1,000 pounds of CO_2 per megawatt-hour on a gross-output basis (lbs CO_2/MWh-gross). For coal units, EPA determined that the BSER is a new highly efficient supercritical pulverized coal unit with partial carbon capture and storage (CCS) and the final standard is 1,400 lbs CO_2/MWh-gross. This final standard is less stringent than the proposed level of 1,100 CO_2/Mwh-gross and reflects the performance of a unit capturing about 20 percent of its carbon.[33]

According to EPA, available data from utilities and the Energy Information Administration (EIA) indicate that, even in the absence of the final rule, few, if any, fossil fuel-fired steam-generating units will be built in the foreseeable future. EPA expects developers to favor NGCC units for fossil-fired generation or renewable, non-emitting technologies. Therefore, the final rule will result in negligible CO_2 emission changes, quantified benefits, and costs by 2022.[34]

B. Status of CCS Technology

As noted above, the final rule assumes a standard for new coal units that incorporates partial use of CCS. EPA indicates that CCS is technologically feasible for coal-fired generation and currently in use or under construction in various industrial sources, including the power

[32] U.S. Environmental Protection Agency, *Fact Sheet: Clean Power Plan, By the Numbers, Cutting Carbon Pollution from Power Plants* (Aug. 3, 2015) (online at www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-by-the-numbers.pdf).

[33] U.S. Environmental Protection Agency, *Fact Sheet: Carbon Pollution Standards, Final Limits on Carbon Pollution from New, Modified and Reconstructed Power Plants* (Aug. 3, 2015) (online at www3.epa.gov/airquality/cpp/fs-cps-overview.pdf).

[34] U.S. Environmental Protection Agency, *GHG Standards for New, Modified, and Reconstructed Power Plants* at 28.

sector.[35] Technologies to separate CO_2 from industrial gas streams have existed since the 1930s.[36]

In the power sector, Boundary Dam Unit #3 in Saskatchewan is a full-scale, fully integrated, CCS project that is currently operating and is designed to capture more than 90 percent of its CO_2 emissions.[37] Other commercial scale CCS projects being developed include Southern Company's Kemper County Energy Facility in Mississippi, which will capture 65 percent of its CO_2 emissions for enhanced oil recovery, and Summit Power's Texas Clean Energy Project.[38]

III. WITNESS

The following witness is expected to testify:

The Honorable Janet McCabe
Acting Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection Agency

[35] U.S. Environmental Protection Agency, *Fact Sheet: Carbon Pollution Standards, Final Limits on Carbon Pollution from New, Modified and Reconstructed Power Plants* (Aug. 3, 2015) (online at www3.epa.gov/airquality/cpp/fs-cps-overview.pdf).

[36] U.S. Environmental Protection Agency, *GHG Standards for New, Modified, and Reconstructed Power Plants at* 314.

[37] U.S. Environmental Protection Agency, *GHG Standards for New, Modified, and Reconstructed Power Plants* at 17.

[38] *Id.* at 229-230.