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EPA Issues Regulations to Control Carbon Dioxide Emissions from the Power Sector

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On August 3, 2015, the Environmental Protection Agency (EPA) issued a suite of rules regulating the emission of carbon dioxide (CO_2) from new, modified and reconstructed, and existing fossil fuel-fired electric generating units (EGUs) under section 111 of the Clean Air Act (CAA or Act).

This suite of rules includes (1) a final rule under section 111(b) of the CAA setting emission standards for new EGUs, set based on the "partial" application of carbon capture and sequestration (CCS) for coal-fired EGUs; (2) in the same rule, emission standards for modified and reconstructed EGUs, which are not based on CCS for coal-fired EGUs; and (3) the final "Clean Power Plan," a rule under section 111(d) of the Act that establishes state-by-state CO_2 emission reduction "goals" starting in 2022 and directs each state to submit for EPA approval a plan demonstrating how the state's affected EGUs will meet its reduction goals. In addition, EPA released a proposed federal plan, which would establish unit-by-unit emission reduction obligations for affected EGUs in a state that did not submit an approvable state plan. The proposed federal plan also includes presumptively approvable model trading frameworks for states submitting their own plans. The pre-*Federal Register* versions of these rules run to over 3,000 pages, and EPA has issued hundreds of pages of supporting Technical Support Documents.

While many features of the final rules have changed since they were proposed, the overall structure remains largely the same. Overall, EPA projects that the suite of rules will result in power sector emission reductions of 32 percent from 2005 levels by the year 2030. In a White House speech on August 3, President Obama emphasized that these rules build on previous U.S. climate policies, and are consistent with the targets his Administration has set as part of the international climate talks.

This alert briefly outlines the various final and proposed power sector rules, highlights some key changes from the proposals, and identifies next steps. Van Ness Feldman will be preparing a more in-depth analysis. Please contact Stephen Fotis, Kyle Danish, or anyone else in the climate change or environmental practices if you are interested in such analysis.

Final Clean Power Plan

Background on Section 111(d)

Section 111(d) of the CAA directs EPA to promulgate regulations establishing a federal-state process for setting standards of performance limiting emissions from existing sources for pollutants not otherwise regulated in other specified sections of the Act. Under this process, EPA develops performance standards, states are to submit plans to EPA to meet these standards, and EPA then approves or disapproves the state plans. EPA has used this section in only a handful of rules over the forty-plus year history of section 111, and there is almost no case law interpreting EPA's authorities under section 111. In the previous rules under section 111(d), EPA has issued a "guideline document" establishing emission reduction targets and compliance deadlines for states, and has required states to implement compliance plans that ensure that the regulated sources meet those targets. The Clean Power Plan includes such a guideline, along with a requirement that states submit plans to achieve compliance with the guideline.

Emission Guideline: Source-specific CO_2 Performance Rates with a State-By State Emission Goal Option

As under the proposed rule, the final Clean Power Plan sets state-specific CO_2 emission goals to reduce statewide emissions from the power sector. These goals consist of an Interim Goal, which must be met on average during the years of 2022-2029, and a Final Goal for 2030 and beyond. In a significant change from the proposed rule, EPA has shifted the compliance start date from 2020 to 2022.

EPA projects that the implementation of these goals, averaged nationally, will result in a 32 percent reduction of CO_2 emissions from 2005 levels from existing fossil fuel power plants by 2030.

Form of State Goal. In the proposed rule, each state's goal was in the form of an average *rate* of emissions per net MWh of electricity generated by the electric power sector within the state. The proposed rule then gave states the flexibility to convert the rate-based goal into a mass-based goal using a methodology determined by the state. In the final Clean Power Plan, EPA specifically set state goals in three forms, which it deems equivalent: (1) A rate-based goal measured in pounds of CO_2 per megawatt hour (lb CO_2/MWh) of generation by the electric power sector; (2) a statewide goal covering the mass emissions of only existing affected EGUs within the state, measured in tons of CO_2; and (3) a mass-based state goal, measured in tons of CO_2, which includes emissions from both existing and new affected EGUs. States may choose which goal to use when designing and submitting their plans.

Basis for Setting State-by-State Goals. EPA's calculation of state goals in the final Clean Power Plan has changed significantly from the proposed rule. EPA established each state goal by determining a *national* "best system of emission reduction" (BSER) for EGUs in each of two EGU source categories: coal- and oil/gas-fired steam generating units (fossil steam) and base load natural gas-fired stationary combustion units for each year. EPA continues to rely, in part, on an interpretation of the term "system" that assumes action from measures occurring outside the regulated plant that reduce emissions at the plant. Specifically, EPA relied on three "building blocks" that constitute BSER at EGUs:

- **Block 1,** improving the average efficiency (or "heat rate") of coal-fired steam EGUs. The proposed rule assumed coal plants can, on average, improve heat rates by 6% by 2020. The final rule sets an expected level of heat rate improvement ranging from 2.1% to 4.3% based on the geographic location of facilities.

- **Block 2,** displacing fossil steam generation by increasing generation from existing natural gas combined cycle (NGCC) facilities. The proposed rule assumed that this redispatch could occur by 2020, that all NGCC facilities in a state could be operated at up to 70% of the unit's nameplate capacity, and that such increased utilization would reduce generation of higher emitting EGUs in the state. The final rule determines the amount of redispatch from fossil steam EGUs in each interconnected electric grid (Eastern Interconnect, Western Interconnect, and ERCOT) to underutilized existing NGCC EGUs in that region by assuming NGCC units can operate at up to 75% of net summer capacity.

- **Block 3,** reducing fossil fuel-fired generation through increased zero-carbon generation. The proposed rule assumed that (1) each of the three nuclear facilities under construction in May 2014 could be completed, (2) the 5.8% of nuclear capacity deemed "at-risk" could be maintained, and (3) non-hydroelectric renewable facilities could generate electricity in each state consistent with state renewable portfolio standard (RPS) policies in place in the state's region. The final rule does not include either nuclear component in building block 3, does not count existing renewable generation or achievable new distributed solar generation (*e.g.*, solar rooftop) or generation from biomass, and replaces the RPS metric with a metric based on regional technical potential for incremental renewable generation. The result is that the final rule significantly expands assumed renewable generation and the stringency of block 3.

Unlike in the proposed Clean Power Plan, EPA has not assumed that end-use energy efficiency that reduces demand from EGUs is part of BSER (previously Building Block 4). However, EPA continues to emphasize that energy efficiency is a compliance option that may be incorporated into state plans, and the agency predicts substantial use of energy efficiency measures.

EPA applies the building blocks to the EGUs in each interconnected electric grid region and, by phasing-them in over time, arrives at separate Interim and Final emission rates for fossil steam EGUs and base load stationary combustion EGUs in each region. EPA then sets the national emission rate limit for each EGU type by taking the least stringent of the regional limits. Finally, to arrive at state-by-state emission

rate goals, EPA applies these national emission rates to the fleet of affected EGUs in each state as of 2012, with some adjustments. As such, differences among the various state goals in the final rule are far less pronounced than the goals under the proposed rule – with the differences in the final rule driven entirely by the distribution of existing fossil steam versus existing base load stationary combustion units in a state in 2012. EPA also converted each state's emission rate goals into two mass-based goals: one taking into account only existing units, and one taking into account existing and new units.

EPA also set emission performance standards for areas of Indian Country with affected EGUs. However, the agency declared that it still needs additional information for the states of Alaska and Hawaii and the territories of Guam and Puerto Rico, implying that those jurisdictions will have a different compliance schedule if and when EPA finalizes guidelines for them.

State Compliance Plans

As with many other CAA regulatory programs, section 111(d) gives states the primary responsibility to implement the reduction obligations through the adoption of state plans that limit emissions at regulated facilities. The Clean Power Plan requires states to make initial plan submissions by September 6, 2016; however, unlike in the proposed rule, EPA will grant a state an extension for as many as two years provided that its initial submission meets certain specified criteria for progress and consultation. Accordingly, final plan submissions must be made by September 2018, an extension of two years from the proposed rule.

EPA continues to emphasize the flexibility it has provided states for developing plans to meet the Interim and Final Goals. The Clean Power Plan offers states at least three forms of flexibility: flexibility in the means of compliance, flexibility in timing, and flexibility in the form of the compliance obligation. In addition, EPA has outlined a Clean Energy Incentive Program to encourage early emission reductions in 2020 and 2021 prior to the start of the program in 2022. In addition, in the proposed Federal Plan rule, EPA has proposed different kinds of model trading rules for flexible implementation that states may adopt in part or in whole for their own plans.

Means of compliance. The final Clean Power Plan identifies two types of state plans. States may adopt an "emission standards plan," which includes source-specific emission limits (rate or mass) for all existing affected EGUs within the state that, collectively, ensure that the state's affected EGUs will reach the state's Interim and Final Goals. These rates are based on the national emission rates for fossil steam and base load stationary combustion EGUs that were used to set state goals. State plans adopting an emission-standards plan may include a cap-and-trade program or a rate-based trading program that takes into account low- and zero-carbon generation and energy savings from end-use efficiency actions. EPA has established guidance to encourage such plans to be "trading ready" so that they can take advantage of emission reduction opportunities in other states.

Alternatively, states may adopt a "State measures plan," which may include a mix of federally-enforceable EGU emission limits and non-federally enforceable additional measures – such as state renewable energy or energy efficiency standards – that reduce emissions from EGUs. State measures plans may only be used with mass-based goals and must include "backstop" federally enforceable standards for EGUs that will kick in if the state measures fail to achieve the expected level of emission reductions. This is similar, though not identical, to the "portfolio approach" option included in the proposed Clean Power Plan.

In either case, states are not limited to the emission reduction measures covered in the three "building blocks." States may design plans that take advantage of end-use energy efficiency, new and uprated nuclear generation, biomass generation, and a host of other measures not incorporated into the state goal-setting methodology, provided those measures reduce emissions at the affected EGUs.

Compliance timing. Regardless of what measures they use for compliance, state plans must ensure that the state's power sector meets the Interim Goals, on average, over the 2022-2029 period (which is, itself, divided into 3 interim step periods), and a more stringent Final Goal by 2030 and thereafter. However,

EPA proposes to allow states to determine when and how quickly individual EGUs in the state must reduce their emissions. EPA requires states to demonstrate that they are making progress towards meeting the Interim Goal by 2029. A state's plans must set milestones that show it will meet the Interim and Final goals over time. EPA allows states to demonstrate progress either through multi-year "step down" goals or through a state-determined "glide-path" approach.

Form of the compliance obligation. The Final Clean Power Plan gives states the option to choose among rate-based targets and mass-based targets, and (for states that choose a mass-based target) whether to include new fossil fuel-fired units under the target. In addition, the final rule allows multiple states to work together to achieve reductions (as is occurring in the Northeast with the Regional Greenhouse Gas Initiative).

Clean Energy Incentive Program. The final rule establishes a Clean Energy Incentive Program, under which states may issue tradeable rate credits (or, for a mass-based plan, emission allowances) to certain renewable energy and demand-side energy efficiency activities that are commenced after submission of state plans and before 2022. EPA will then issue matching credits or allowances for those activities. For renewable energy, only wind and solar projects are eligible. For energy efficiency, only activities implemented in low-income communities are eligible. Activities can earn federal matching credits from EPA for MWh generated (in the case of renewable energy projects) or saved (in the case of energy efficiency activities) in 2020 or 2021. The final rule states that EPA will address further implementation details for the program in a subsequent action. This Program is intended to incentivize early renewable energy and energy efficiency development, and therefore emission reductions, without undermining emission reductions obligations during the 2022-2029 compliance period.

Reliability Assurance. Reacting to significant public comment, EPA has adopted a number of changes aimed at addressing reliability concerns. This includes (1) moving the compliance start date from 2020 to 2022; (2) a new requirement that each state plan demonstrate that it has considered reliability, including consultation with the appropriate reliability entity; (3) a way for a state to revise its plan in the face of unanticipated reliability challenges; (4) a temporary "safety-valve" for individual EGUs when Clean Power Plan requirements conflict with reliability obligations; and (5) an agreement between EPA, the Department of Energy, and the Federal Energy Regulatory Commission to coordinate and monitor implementation of the rule in order to ensure reliability.

Proposed Federal Plan

EPA also issued a proposed "Federal Plan" rule. Under section 111(d) of the CAA, EPA is authorized to impose a federal plan for a state that fails to submit an approvable state plan. In its proposed rule, EPA explains that it is setting forth the Federal Plan in advance of the deadline for submission of state plans not only to provide regulatory certainty about the rules that will apply in states that fail to submit approvable plans, but also to provide models for states to use in developing their own plans. Indeed, EPA makes clear that a state may voluntarily adopt the Federal Plan in whole or in part as its state plan.

The proposed Federal Plan would apply emission reduction obligations directly on affected EGUs. The agency has proposed two different approaches for consideration for the Federal Plan: a rate-based program and a mass-based program. EPA explains that it intends to finalize only one of those approaches for the Federal Plan. However, the proposed rule also offers both pathways (with some variations) as available models for states to use – and to presume approvable – in their own plans. In total, therefore, the proposed rule outlines four actions: (1) a rate-based Federal Plan; (2) a mass-based Federal Plan; (3) a rate-based model trading rule for potential use by any state; and (4) a mass-based model trading rule for potential use by any state.

Final Emission Standards for New, Modified, and Reconstructed EGUs

In addition to the final Clean Power Plan, EPA released a final rule setting carbon dioxide emission standards for new, modified, and reconstructed fossil fuel-fired EGUs (which it terms the "Carbon Pollution Standards" rule).

Background

Section 111(b) of the CAA requires EPA to establish new source performance standards (NSPS) for any category of stationary sources that "contributes significantly" to air pollution that endangers public health or welfare. NSPS established under this section apply only to sources that are new, modified or reconstructed.

New Source Proposal. In September 2013, EPA issued a proposal to set CO_2 emission standards for new fossil steam EGUs and certain stationary combustion turbines (New Source Proposal). In the New Source Proposal, EPA proposed to require that new fossil steam EGUs meet an emission limit of 1,100 lb CO_2/MWh – a level that effectively would require the units to install carbon capture and storage (CCS) technology to capture at least 40% of CO_2 emissions (termed "partial CCS"). EPA also proposed to require that base load natural gas-fired stationary combustion units meet an emission limit of either 1,000 lb or 1,100 lb CO_2/MWh (depending on the size of the unit) based on modern, efficient NGCC technology as BSER.

Modified Source Proposal. In June 2014, EPA issued a related proposal to set CO_2 emission standards for modified and reconstructed fossil fuel-fired EGUs (Modified Source Proposal). In the Modified Source Proposal, EPA proposed to subject modified fossil steam EGUs to a unit-specific emission standard equivalent to the EGU's best demonstrated historical performance since 2002 with an additional 2 percent emission reduction, and additionally proposed to subject fossil steam EGUs modified after becoming subject to a 111(d) plan to a unit-specific emission limit set by the state or other relevant 111(d) implementing authority. For reconstructed fossil steam EGUs, EPA proposed an emission standard based on the most efficient generation technology available at the EGU, which EPA determined corresponded to an average emission limit of either 1,900 or 2,100 lbs CO_2/MWh (net), depending on the size of the unit. For natural gas turbines, EPA proposed to require both modified and reconstructed base load turbines to meet the same emission limits EPA proposed for new natural gas turbines: either 1,000 or 1,100 lbs CO_2/MWh, depending on the size of the unit.

Final Standards for New, Modified, and Reconstructed EGUs

In the final Carbon Pollution Standards rule, EPA combined its New and Modified Proposals into one rulemaking and made several changes to key elements of these proposals. EPA set emission standards for new fossil steam EGUs at 1,400 lb/CO_2/MWh – a level less stringent than in the New Source Proposal – based on the use of supercritical pulverized coal technology and partial CCS. According to EPA, the new standard can be met by a supercritical utility boiler burning bituminous coal and capturing 16% of CO_2 (or 23% if burning subbituminous or dried lignite). EPA also outlines an "alternative compliance option" under which new EGUs can meet the standard without CCS by co-firing approximately 40% natural gas.

For reconstructed fossil steam EGUs, EPA adopted a final emission standard of either 1,800 or 2,000 lbs CO_2/MWh, depending on the size of the unit, which EPA based on the most efficient generation technology at the EGU. For modified fossil steam EGUs, EPA adopted a unit-specific emission standard based on the EGU's best demonstrated historical performance, capped at the level of the standard for reconstructed fossil steam EGUs. EPA did not adopt an additional 2 percent emission reduction from the EGU's best demonstrated historical performance, as it had originally proposed, or provide for an additional emission limit for fossil steam EGUs that are modified after becoming subject to 111(d).

For new stationary natural gas-fired combustion turbines, EPA adopted a uniform standard of 1,000 lb CO_2/MWh for base load units based on the use of "efficient" NGCC, and added an emission standard for non-base load units at a level of 120 lb CO_2/MMBtu based on the use of clean fuels (natural gas with a small allowance for distillate oil). The final rule includes criteria for what constitutes a base load unit.

Additionally, EPA adopted an emission standard for new multi-fuel fired combustion turbines (both base load and non-base load) of 120 to 160 lb CO_2/MMBtu, depending on fuel characteristics. EPA adopted the same standards for reconstructed combustion turbines as it did for new combustion turbines, and opted not to finalize any standards for modified combustion turbines, as it had proposed to do.

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Next Steps

Effective Dates and Regulatory Obligations. The final Clean Power Plan rule becomes effective 60 days after it is published in the Federal Register; however states need not submit plans before September 4, 2016 and plans do not go into effect until 2022. The final "Carbon Pollution Standards" rule applies to any facility that commenced construction after January 8, 2014, or modification or reconstruction after June 18, 2014, with requirements becoming effective 60 days after the rule is published in the Federal Register.

Litigation. Under the Clean Air Act, petitions for review of both the Clean Power Plan and the Carbon Pollution Standards rules must be filed at the United States Court of Appeals for the District of Columbia Circuit within 60 days after the rules are published in the Federal Register. The filing of a petition for reconsideration with EPA will most likely not impact the availability or timeline for litigation. Litigation is expected to commence shortly after such publication, and, with regard to the Clean Power Plan, petitioners are expected to request that the D.C. Circuit stay the rule until litigation is resolved. Similarly, many interested parties are expected to file petitions with EPA for administrative reconsideration given the many major changes to the proposed rule that EPA has made to the final rule.

Public Comments. EPA is requesting comment on its proposed Federal Plan, (2) the proposed state plan model rules, and (3) a guidance document related to the evaluation, measurement & verification (EM&V) that must be conducted in order to utilize end-use energy efficiency in rate-based state compliance plans. Public Comment must be received within 90 days of the publication of the proposed model rule in the Federal Register.

For more information

Van Ness Feldman will be preparing a comprehensive analysis of these rules that will be available on a cost-share basis. Our professionals are also available to provide counsel to companies and others as they assess the implications of the rule and prepare to submit comments to EPA. Please contact Kyle Danish, Stephen Fotis, or any other professionals in Van Ness Feldman's Environmental Practice for additional information on the analysis or on other matters related to these rules.

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