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Preparing for CO_2 Regulations for Existing Power Plants:Key Points to Look for in the Final Clean Power Plan Rule

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The U.S. Environmental Protection Agency (EPA) is expected to release the final version of the Clean Power Plan rule in August 2015. This rule, developed pursuant to section 111(d) of the Clean Air Act, seeks to reduce carbon dioxide (CO_2) emissions from the nation's fleet of existing electric generating units (EGUs). This policy brief identifies key points to look for in the EPA's forthcoming final rule, including potential differences between the proposed and final versions.

Overview of the Proposed Rule from June 2014

The EPA's proposed Clean Power Plan rule, released in June 2014, aimed to reduce total electricity-sector CO_2 emissions 30% from 2005 levels by 2030.[1] In the proposed rule, the EPA assigned each state an interim emissions target and a final emissions target for its existing power plants on the basis of the agency's application of the best system of emission reduction (BSER).[2] To develop each state's final emissions goal for the proposal, the EPA applied four building blocks to each state's electricity sector fossil emissions and generation in 2012.[3] These building blocks are (1) improving efficiency at individual coal-fired units; (2) increasing use of existing, high-efficiency, natural gas combined cycle (NGCC) units; (3) generating electricity with low- and zero-carbon sources, such as renewable or nuclear energy facilities; and (4) implementing demand-side energy efficiency programs.[4] The EPA computed each state's goals using the following formula:[5]

$$\frac{\text{Total adjusted } CO_2 \text{ emissions for affected units (after applying blocks 1 and 2)}}{\text{Total adjusted net generation for affected units (after block 2) + annual net generation for renewable and nuclear (block 3) + estimated cumulative MWh saved through energy efficiency (block 4).}}$$

Using this equation, the EPA calculated the interim emissions target by performing computations separately for each year from 2020 to 2029 as building blocks 3 and 4 phase in. It then determined the average emissions rate over the 10-year time frame. By 2030, states must show that their average emissions rate over the 10 years was within the interim target.

[1] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 *Fed. Reg.* 34829, 34832 (June 18, 2014) [hereinafter Proposed Clean Power Plan], *available at* https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating.
[2] *See id.* at 34834.
[3] *Id.* at 34836.
[4] *See id.* Building block 2 shifts dispatch from existing coal and oil and gas steam units to existing natural gas combined cycle (NGCC) units. NGCC in this category includes plants that commenced construction prior to January 8, 2014.
[5] *See id.* at 34895.

Compliance with the interim and final goals is not bound by the building blocks.[6] The EPA's proposed rule offers a number of possible compliance options and gives states significant flexibility in how they achieve their assigned emissions goals.[7] Furthermore, the proposed rule discusses multi-state cooperation in achieving emissions goals, state plan requirements, and an implementation timeline for single-state and multi-state plans.[8]

Key Points to Look for in the Final Rule

The EPA received more than 4 million public comments on the proposed rule and solicited further comments on several key issues.[9] The final version of the Clean Power Plan may include significant changes to address this feedback. The following discussion identifies key issues in the final rule that could affect state implementation choices.

1. Changes in Final State Emissions Targets

Many comments focused on the design of the building blocks and on the impacts on state emissions targets. Changes to the building block formula, such as removing a building block, altering assumptions underlying a building block, or adding additional emissions reduction options in the formula could significantly raise or lower an individual state's emissions target.

Many states and stakeholders also expressed concerns about the EPA's use of 2012 as the single baseline data year for calculating final emissions goals; several states commented about anomalies in their power generation during that year.[10] The EPA requested comments in its fall 2014 notice of data availability (NODA) on whether to use a different single data year or the average of a combination of years (such as 2010, 2011, and 2012) to calculate states' fossil fuel emissions goals.[11]

2. Changes in Interim State Emissions Targets Glide Path

Many states and stakeholders expressed concerns about the "glide path" of the interim goal and their ability to permit and construct new infrastructure that may be necessary to meet the goal.[12] In calculating the interim goal, building block 2—re-dispatching generation from coal and oil and gas steam units to existing NGCC units—goes into full effect in 2020 at the beginning of the interim compliance period. In contrast, building blocks 3 and 4 ramp up over time. Several states and stakeholders believe it will not be feasible to ensure increased use of existing NGCC units by 2020 given the time required to improve natural gas pipeline infrastructure as well as other factors and that the short timeline to implement emissions reductions under building block 2 makes other compliance options impractical for interim compliance by states in which building block 2 requires large emissions reductions.[13] The EPA requested comment in the fall NODA on whether to gradually phase in building block 2 in setting interim goals.[14] Additionally, it requested comment on allowing states and affected sources to take credit for select emissions reductions that occur before 2020 to ease compliance with the interim emissions targets.[15] The agency also asked for comment on the date after which these early reductions could be credited.[16]

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[6] *Id.* at 34897. States and regulated entities can use the building blocks at levels other than EPA uses them in determining the interim and final goals—for example, they can use more renewable energy than EPA includes in building block 3. They can also use mechanisms outside the building blocks, such as generation from new NGCC units, as they deem fit to meet the goals–as long as the resulting state plan is projected to meet those goals.

[7] *See id.* Other notable sources of flexibility include the ability to use emissions markets to achieve compliance and the option to convert the rate goals to mass limits.

[8] *See id.*

[9] Janet McCabe, "EPA Consulted Many to Develop Its Clean Power Plan," *Wall Street Journal* (June 12, 2015), *available at* http://www.wsj.com/articles/epa-consulted-many-to-develop-its-clean-power-plan-1434053980. *See also* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 *Fed. Reg.* 64543, 64553 (October 30, 2014) [hereinafter Proposed Rule NODA], *available at* https://www.federalregister.gov/articles/2014/10/30/2014-25845/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating.

[10] Proposed Rule NODA at 64548.

[11] *See id.*

[12] *See id.* at 64544. The glide path refers to the declining annual emissions rate calculations in the interim rate goal.

[13] *See id.* at 64544-64546.

[14] *See id.*at 64546.

[15] *See id.*at 64545.

[16] The proposed rule allows states to take credit for emissions reductions during the performance period for actions beginning after the date of the proposal (January 8, 2014). Credit for early emissions reductions could be from this date or other suggested dates in the proposal such as January 1, 2013. Proposed Clean Power Plan at 34918-34919.

3. Treatment of New Natural Gas Units

States and stakeholders have focused on the treatment of new natural gas units in the proposal, which indicates that states will have the choice to include new NGCC units in Clean Power Plan compliance plans.[17] The EPA's NODA on converting from rate- to mass-based compliance includes a mass limit reflecting new NGCC units. New NGCC units achieve an approximate emissions rate of 750lbs/MWh, which is below the Clean Power Plan's proposed emissions rate goal for two-thirds of states.[18] Therefore, under a rate-based system, a state with a final emissions target above the emissions rate of a new NGCC unit could reduce its average rate by including new NGCC units in its plan.[19] For mass-based compliance, the implications of including new NGCC units under the mass limit depend on assumptions about load growth and future generation mix, the state's emissions goals, and whether the state's utilities or generators participate in a competitive electricity market.[20]

In addition to affecting Clean Power Plan compliance, the choice about whether to include new NGCC units under a state's compliance plan may also affect the state's energy mix. Not including new NGCC units under a mass-based emissions limit could lead to significant new NGCC capacity as a compliance measure, as generation shifts to the unrestricted sources. As noted above, states with an emissions rate goal exceeding the emissions rate of new NGCC have an incentive to include new NGCC under their compliance plan, encouraging new NGCC generation. Consequently, this choice can create market conditions that benefit or disadvantage owners of existing NGCC units relative to new NGCC owners.[21]

Several states, such as California and the Regional Greenhouse Gas Initiative states, already have established carbon limits that cover both new and existing sources. The final rule may contain guidance for including new NGCC units in the implementation plans as well as guidance for interactions between states that do not treat new NGCC units consistently under their implementation plans. The EPA could also incorporate new NGCC units into states' emissions rate goals, as it requested comment on that strategy in the NODA.[22]

4. Treatment of Under-Construction Nuclear Units

The proposed rule factors nuclear units under construction by 2012 into states' emissions targets.[23] For states with nuclear units under construction—Georgia, South Carolina, and Tennessee—this lowers the emissions target that the state must meet.[24] However, if any under-construction nuclear units were not completed as projected, that failure could have a significant impact on the state's ability to meet its emissions target.[25] If the final rule does not include under-construction nuclear units in these states' emissions targets, the zero-carbon generation from these units could count toward compliance as part of building block 3 once the units are online. The final rule will likely clarify the treatment of these units.

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[17] In addition to developing the 111(d) rule for existing sources, the EPA is also developing a rule under section 111(b) limiting emissions from new and modified EGUs. New NGCC units are the subject of regulations under 111(b) of the Clean Air Act, which will also be released in the summer of 2015. As proposed in 111(b), new NGCC emissions limits are 1,000 lb CO_2/MWh for larger units and 1,100 lb CO_2/MWh for smaller units.

[18] Martin T. Ross, Brian C. Murray, and David Hoppock, "The Clean Power Plan: Implications of Three Compliance Decisions for U.S. States," NI WP 15-02, 2 (May 2015) at 10; *see also* Jennifer Macedonia et al., Insights from Modeling the Proposed Clean Power Plan, Bipartisan Policy Center, PowerPoint slides 28–30 (April 2015), *available at* http://bipartisanpolicy.org/library/insights-from-modeling-the-proposed-clean-power-plan/.

[19] *See* Ross, *supra* note 18, at 3; *see also* Macedonia, *supra* note 18, at PowerPoint slides 28–30.

[20] In competitive wholesale electricity markets, new NGCC units compete directly with existing units under the proposed rule. Excluding new NGCC units from a state's CPP framework may create adverse market impacts that disproportionately affect owners of existing units, who would face an added regulatory burden.

[21] See Ross, *supra* note 18, at 15 and 27–28. In rate-based compliance, if the emissions rate goal is below the emissions rate of NGCC units, any NGCC unit outside the 111(d) emissions limit would have an economic advantage relative to existing NGCC units. If the goal emissions rate is above the rate of NGCC units, NGCC units covered by the 111(d) emissions limit would receive a generation subsidy. That subsidy would be larger for new units operating at emissions rates typically lower than existing gas units. In mass-based compliance, a new NGCC unit outside of the 111(d) emissions limit would have an economic advantage relative to existing NGCC units under the mass cap.

[22] Proposed Rule NODA, at 64549.

[23] *See* Proposed Clean Power Plan, at 34870.

[24] *See id.* VC Summer units 2 and 3 in South Carolina, Vogtle units 3 and 4 in Georgia and Watts Barr 2 in Tennessee.

[25] *See id.*

5. Specific Rules and Flexibility on Rate-to-Mass Conversion

Many commenters expressed concerns about rate-to-mass conversions. The proposed rule allows states to convert their rate-based emissions goals to an equivalent mass-based goal using historical data and estimates of the future impact of state programs under the rule or through the use of electricity planning models.[26] The EPA provides a technical support document describing the modeling-based conversion method and has taken comment on providing additional resources for states on the translation.[27] In response to significant comments and inquiry, the EPA released a technical support document in November 2014 providing two example methodologies for the rate-to-mass conversion for existing affected and new EGUs.[28]

The final rule may provide additional guidance on state-level modeling and other non-modeling approaches to the rate-to-mass conversion, including the range of assumptions used in a conversion (e.g., load growth assumptions) and information about EPA conversion calculations.

Additionally, the final rule could include mechanisms to adjust the rate-to-mass conversion if the demand growth assumptions underlying the conversion prove incorrect. The final rule may also discuss requirements for conversion input assumptions that differ from EPA guidance that may be acceptable in a state plan.

6. Submission Deadlines for State Plans

Under the proposed rule, states must submit compliance plans by June 30, 2016.[29] If a state needs additional time to submit a complete plan, it must submit an initial plan by June 30, 2016, documenting the reasons for the requested extension and including commitments to ensure that it will submit a complete plan by June 30, 2017 or 2018, as appropriate. States submitting a multi-state plan can ask the EPA for a two-year extension.

States have commented that nine months (assuming the final rule is released in late summer 2015) is not long enough to complete the modeling projections and to design a state plan, especially given that in some states the plan will require state legislative approval. The final rule will likely revise submission deadlines and may amend the requirements for requesting extensions.

7. Further Guidance Regarding Multi-State Trading Options

The EPA's proposed rule outlines both single-state and negotiated multi-state compliance options. Since the release of the rule, a number of organizations—including the Nicholas Institute For Environmental Policy Solutions—have explored options for multi-state trading of emissions credits without formal multistate agreements.[30] Under a "common elements" or "trading-ready" approach, states could use common definitions of tradable emissions credits and common or linked tracking systems to facilitate the trade of emissions credits across state boundaries, enabling expanded emissions markets to increase gains from trade. The final rule may provide guidance on incorporating common elements into state compliance plans, and it may also indicate that the EPA will develop a tracking system to facilitate intrastate and interstate Clean Power Plan credit markets.

There are significant questions regarding how rate-based common elements markets would function. For example, it is unclear what emissions rate(s) (e.g., the importing state's emissions rate goal, exporting state's goal, or a weighted average rate) would apply to rate-based emissions credit trading across state borders under a common elements approach. Without explicit guidance from the EPA on this issue, this trading may not be feasible.

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[26] *See id.* at 34837, 34922–34923.

[27] *Id.* at 34923. Technical Support Document: Projecting EGU CO_2 Emissions Performance in State Plans

[28] *Translation of the Clean Power Plan Emission Rate-Based CO_2 Goals to Mass-Based Equivalents*, U.S. Environmental Protection Agency (November 2014), *available at* http://www2.epa.gov/sites/production/files/2014-11/documents/20141106tsd-rate-to-mass.pdf.

[29] *Id.* at 34838.

[30] *See* Lissa Lynch et al., *Clean Power Plan Implementation: Single-State Compliance Approaches with Interstate Elements*, Georgetown Climate Center (May 2015), *available at* http://www.georgetownclimate.org/single-state-clean-power-plan-compliance-approaches-with-interstate-elements; *see also* Franz T. Litz and Jennifer Macedonia, *Implementation Elements for a Trading-Ready Mass-Based Plan*, Great Plains Institute (May 2015), *available at* http://www.betterenergy.org/sites/www.betterenergy.org/files/Mass%20Trading%20Ready.pdf; *see also* Franz T. Litz and Jennifer Macedonia, *Implementation Elements for a Trading-Ready Rate-Based Plan*, Great Plains Institute (May 2015), *available at* http://www.betterenergy.org/sites/www.betterenergy.org/files/Rate%20Trading%20Read y_ 0.pdf.

Additionally, the final rule will likely provide guidance on whether common elements plans will be granted the same deadline extensions offered to multi-state plans. According to the 2014 proposal, states submitting formal multi-state plans may request the EPA for a two-year extension.[31] States submitting single-state plans have the option to ask for a one-year extension.[32] The final rule will include timing for all of the implementation strategies.

8. EPA's Proposed Federal Plan

The EPA's proposed rule did not include a federal plan, the default option for any state that does not adopt and submit a state plan. Additionally, if the EPA finds that a state's plan is deficient—will fail to achieve the state goal during a performance period—it asks the state to provide a remedy in a new plan within a specific period of time.[33] If the state still lacks an approved plan by the end of that time period, the EPA would have the authority to apply a federal plan.[34] The EPA has indicated that it will release a proposed federal plan in conjunction with the final rule.[35] Key issues to look for in the federal plan are inclusion of any market-based mechanisms, if the agency allows for interstate interactions, and the basis of the mechanisms, either rate or mass. Depending on the provisions, some states might opt for the federal plan.

9. Qualifications for a Self-Correcting Plan and Consequences of Trading between a State with a Self-Correcting Plan and a State with a Non-Self-Correcting Plan

The EPA considers some types of plans "self-correcting" in that they ensure full achievement of the state's emissions goal through requirements that are enforceable against affected EGUs.[36] Self-correcting plans do not require states to include interim measures or corrective measures if the states deviate from their projected emissions pathways. The proposal gives an EGU-only proposal (entire compliance obligation on affected EGUs) with emissions rate averaging as an example of a self-correcting plan. It is not clear whether all EGU-only plans incorporating markets or averaging qualify as self-correcting plans or if EGU-only plans without markets or averaging would qualify.

Under the proposal, it is also unclear whether a state with a self-correcting plan can retain its status if it trades emissions credits with a state without a self-correcting plan.[37] The final rule should provide clarity on the definition of self-correcting plans and what interactions with other states would disqualify a state plan from self-correcting status.

10. Reliability-Related Mechanisms

The North American Electric Reliability Corporation (NERC), Federal Energy Regulatory Commission (FERC), and other groups have raised concerns about the Clean Power Plan's potential impacts on electricity system reliability, especially as it relates to the lead times required to permit and construct new infrastructure to meet the interim goal.[38] Although a revised interim goal glide path would provide additional time for states to build required infrastructure, NERC, the ISO/RTO Council, and Edison Electric Institute have requested and submitted outlines for additional reliability mechanisms under the Clean Power Plan.[39] The final rule may include specific mechanisms to deal with temporary reliability constraints or adjustments beyond a change in the glide path to address these concerns.

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[31] *See* Proposed Clean Power Plan, at 34915.

[32] *Id.*

[33] Proposed Clean Power Plan, at 34908.

[34] *Id.*

[35] U.S. Environmental Protection Agency, EPA Fact Sheet: Clean Power Plan and Carbon Pollution Standards, http://www2.epa.gov/carbon-pollution-standards/fact-sheet-clean-power-plan-carbon-pollution-standards-key-dates (listing Summer 2015 as the date the EPA "plans to propose a federal plan for meeting Clean Power Plan goals. . .").

[36] Proposed Clean Power Plan at 34906.

[37] *Id.* A non-self-correcting plan might be one that includes a state commitment to energy efficiency to meet the emissions target. If energy efficiency projects do not meet their projections, the state might be out of compliance.

[38] Potential Reliability Impacts of EPA's Proposed Clean Power Plan, NERC, April 2015, Federal Energy Regulatory Commission letter to Acting Assistant Administrator Janet McCabe, May 15, 2015, Supplemental Comments of the Edison Electric Institute to Federal Energy Regulatory Commission Technical Conference of Environmental Regulations and Electric Reliability, Wholesale Electricity Markets, and Energy Infrastructure, April 3, 2015, Docket No. AD15-4-000, Statement of the ISO/RTO Council to Federal Energy Regulatory Commission Technical Conference of Environmental Regulations and Electric Reliability, Wholesale Electricity Markets, and Energy Infrastructure, February 19, 2015, Docket No. AD15-4-000.

[39] NERC, EEI, ISO/RTO Council. FERC's letter to the EPA provides suggestions for how FERC could participate in reliability mechanisms if they are included in final rule.

11. Trading between Mass-based and Rate-based States

The EPA's 2014 proposed rule suggests trading of compliance instruments between states under multi-state plans.[40] Furthermore, a potential "common elements" approach suggests trading between states with single-state plans. The proposed rule allows states to decide between implementing a rate-based or a mass-based approach for compliance. The final rule might specify whether a rate-based state will be allowed to engage in compliance instrument trading with a mass-based state.

[40] Proposed Clean Power Plan, at 34837.

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