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The EPA's Clean Power Plan: Understanding and Evaluating the Proposed Federal Plan and Model Rules

Julie DeMeester, Nicholas Institute for Environmental Policy Solutions, Duke University
Sarah Adair, Nicholas Institute for Environmental Policy Solutions, Duke University

On August 3, 2015, the U.S. Environmental Protection Agency (EPA) finalized carbon dioxide (CO_2) emissions guidelines for two categories of existing power plants under section 111(d) of the Clean Air Act.[1] The final rule, referred to as the Clean Power Plan, requires each state to develop its own plan that applies equivalent standards of performance to affected units.[2] If a state fails to submit an adequate plan, the Clean Air Act authorizes the EPA to develop and implement a federal plan for the state.[3] In a separate action, the EPA proposed mass- and rate-based versions of a federal plan as well as mass- and rate-based model rules, which states could choose to adopt or to adapt by substituting their own provisions subject to EPA approval.[4] The proposed model rules are similar to but more flexible than the federal plan proposals. This policy brief summarizes the final Clean Power Plan rule, describes the mass- and rate-based proposed federal plans, identifies areas in which the model rules differ, highlights key issues for states and other stakeholders as they evaluate the tradeoffs between plan pathways, and discusses the EPA's timeline for finalizing the federal plan and model rules.

Overview of the Final Clean Power Plan Rule

The Clean Power Plan establishes rate-based emissions guidelines for two subcategories of existing electric generating units (EGUs)—steam electric generating units (mostly coal) and stationary combustion turbines (natural gas combined cycle) (Table 1).[5] The rule also establishes three interim "steps" or time periods (2022–2024, 2025–2027, 2028–2029), which form a "glide path" in which emissions performance increases as the final compliance period approaches.[6] Compliance with the final emissions guidelines occurs in two-year periods beginning with 2030-2031.[7] States, which must establish equivalent emissions standards for affected units, have flexibility with respect to program design and the trajectory of the glide path as long as they can demonstrate that their approach would result in equivalent (or better) emissions performance in the interim and final compliance periods.[8]

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[1] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (Unpublished Final Rule) (August 3, 2015) [hereinafter "Final CPP Rule"]. For an overview of Section 111(d), see Tarr, Jeremy, "The Clean Air Act and Power Sector Carbon Standards: Basics of Section 111(d)," Nicholas Institute Policy Brief 13-03 (2013), https://nicholasinstitute.duke.edu/climate/clean-air-act-and-power-sector-carbon-standards-basics-section-111d#.VemLF3i0KJU.
[2] Final CPP Rule, *supra* note 1.
[3] 42 U.S.C. § 7411(d)(2).
[4] 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 (unpublished proposal) (August 3, 2015) [hereinafter "Proposed Federal Plan and Model Rules"].
[5] Final CPP Rule, *supra* note 1, at 775.
[6] *Id.* at 41–42.
[7] *Id.*
[8] *Id.* at 42.

Table 1. Interim and final subcategorized emission rates in lbs/MWh

Technology	2022–2029	Final Rate
Steam	1534	1305
Stationary combustion turbine	832	771

To assist state plan development, the final rule translates the emissions guidelines into three additional forms: (1) a statewide "blended" rate that is based on each state's adjusted proportion of steam and combined cycle generation in the baseline year of 2012, (2) a statewide mass-based goal (total tons of CO_2 from affected units), and (3) a statewide mass-based goal with a "new source complement," which would apply to both affected (existing) and new EGUs that are subject to the new source performance standards under section 111(b).[9] In states that use a rate-based plan, affected EGUs would demonstrate compliance on the basis of pounds of CO_2 per MWh-adjusted, and in states that apply a mass-based goal, affected EGUs would demonstrate compliance on the basis of total tons of CO_2 emissions.

Additional features of the final rule that differ from the proposed Clean Power Plan released in June 2014 include a framework for state plans that are "ready for interstate trading," a requirement to address the risk of leakage to new units under a mass-based approach, and an early action program called the Clean Energy Incentive Program (CEIP). A brief overview of these new features follows.

- **Trading Ready:** The concept of a state plan that is "ready for interstate trading" or "trading ready" emerged from stakeholder discussions of the proposed rule. It would allow covered entities to engage in interstate trading without requiring states to enter into formal agreements with one another.[10] A trading-ready state plan would include a common definition of a tradable allowance or credit and a common or linked tracking platform, and it would allow affected EGUs to use allowances or credits from another state with a compatible, EPA-approved plan.[11]

- **Leakage Provisions:** "Leakage" occurs when an environmental policy causes an increase of pollution outside its scope, a phenomenon that effectively reduces its environmental benefits. Under the Clean Power Plan, the EPA is concerned about the possibility of leakage of carbon emissions from affected units to new sources that would not be covered.[12] The final rule addresses leakage to new sources under a rate-based approach by not allowing rate-based plans to include new sources.[13] States are required to address leakage under a mass-based approach, and the EPA gives them multiple options for doing so, including covering new sources or using an allowance allocation system that counteracts the incentive to shift generation to new sources. States may also propose their own approach or demonstrate that leakage is not an issue as a result of characteristics of the state's electricity sector or plan.[14]

- **Early Action:** The CEIP promotes early compliance action.[15] Certain renewable energy (RE) projects and energy efficiency (EE) projects in low-income communities that begin construction after a state plan has been submitted

[9] New units that are not subject to 111(b) (e.g. a single cycle combustion turbine) would not be subject to the new source complement. The new source complement increases the mass emission limits under 111(d) to account for the new unit emissions.
[10] For an overview of the trading-ready concept, see Monast, Jonas, et al., "Enhancing Compliance Flexibility Under the Clean Power Plan: A Common Elements Approach to Capturing Low-Cost Emissions Reductions," Nicholas Institute Policy Brief 15-01 (2015), https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_pb_15-01.pdf.
[11] *Id*.
[12] Modeling of the proposed Clean Power Plan suggested that building new natural gas would be an economic compliance option for states. *See* Ross, Martin, et al., "The Clean Power Plan: Implications of Three Compliances Decisions for U.S. States," Nicholas Institute Working Paper 15-02 (2015), https://nicholasinstitute.duke.edu/climate/publications/clean-power-plan-implications-three-compliance-decisions-us-states#.VfhHb3hG4Rk.
[13] Specifically, new sources covered by Section 111(b) cannot produce emissions rate credits that are used to adjust the emissions rate of an affected EGU. Final CPP Rule, *supra* note 1, at 1,253–54.
[14] *Id.* at 1,174–76.
[15] *Id.* at 865–79.

can receive early-action credit in 2020–2021.[16] The EPA has created a federal pool of matching allowances (mass) or credits (rate) equal to 300 million short tons and will apportion those credits to participating states. The EPA's CEIP matching allowances/credits would represent an additional supply of allowances/credits for participating states. Any state that participates must create a state pool. During the CEIP years, for every two MWh of qualifying RE generation, a qualifying project would earn one credit or equivalent allowances from the EPA and one credit or equivalent allowances from the state. For every two MWh of qualifying EE savings, a qualifying project would earn two credits or equivalent allowances from the EPA and another two credits or equivalent allowances from the state.[17] However, participating states are required to "pull forward" allowances or credits for the state pool such that aggregate emissions performance during the interim and final compliance periods is not affected. Any unused CEIP credits from the state set-aside could be returned to the state budget, whereas any unused credits in the EPA pool would be retired.[18]

Clean Power Plan Compliance Pathways

Multiple compliance pathways are available under the Clean Power Plan, and states have broad flexibility to develop their own plans. As noted above, the EPA proposed mass- and rate-based versions of a federal plan as well as mass- and rate-based model rules in a separate action on August 3, 2015. The model rules would provide streamlined but customizable state plan approaches. Additionally, states can choose not to develop a state plan and instead accept the federal plan. Also, if the EPA finds any state plan deficient, the state would receive the federal plan. As states and stakeholders evaluate compliance options, the components of the proposed federal plan and model rules will be an important consideration. As proposed, the federal plans are similar to the model rules but are more limited in their compliance strategies (see Table 2).

Although the federal plan proposals are less inclusive than the proposed model rules, the EPA does propose that states would be able to customize, to some degree, a federal plan implemented in their state. However, this flexibility does not appear to encompass the choice of whether the federal plan is mass-based or rate-based. The EPA does not plan to finalize a federal plan and to identify a single approach (mass or rate-based) in advance of applying the federal plan to a state, meaning that a state with a federal plan would forgo the choice of mass or rate.[19] A key benefit of the model rules is that they would be presumptively approvable as a state plan, and a state can choose mass or rate.[20]

The remainder of this policy brief proceeds as follows: Table 2 summarizes key differences in the flexibility available under a state plan approach, the proposed model rules, and the proposed federal plan. The next section describes the proposed mass-based federal plan in more detail, identifies areas in which the proposed mass-based model rule differs from that plan, and highlights key considerations for states. The subsequent section provides a parallel description of the proposed rate-based federal plan, identifies areas in which the proposed rate-based model rule differs from that plan, and highlights key considerations for states. The brief concludes with an overview of the timeline for state and federal plan development.

[16] Qualifying renewable energy projects under the CEIP are metered wind or solar projects that commence construction after a state plan is submitted or after September 6, 2018, for states with a federal plan. Energy efficiency projects in low-income communities that commence operation after the state plan is submitted on or after September 6, 2018, for states with a federal plan also qualify. The EPA has not yet defined *low-income community* but will do so in a subsequent action. *See id.* at 866.
[17] *Id.* at 868–69 and180.
[18] Proposed Federal Plan and Model Rules, *supra* note 4, at 301–02.
[19] *Id.* at 16–19.
[20] *Id.*

Table 2. Key design differences

	Plan Parameter	State Plan	Proposed Model Rule	Proposed Federal Plan
Mass & Rate	Glide path?	Adjustable if interim rate is met on average between 2022–2029	Uses EPA-defined glide path from final CPP rule	Uses EPA-defined glide path from final CPP rule
	Trading?	Broad flexibility to determine parameters for trading	Trading ready—i.e., can trade with any other state with a similar plan approach and linked tracking system[a]	Trading ready—i.e., can trade with any other state with a similar plan approach and linked tracking system[b]
Mass	How to allocate allowances?	No restrictions	Allocations to affected EGUs based on historic generation (2010–2012); includes set-asides for CEIP, certain renewable energy, and output-based allocation to NGCC[c]	Allocations to affected EGUs based on historic generation (2010–2012); includes set-asides for CEIP, certain renewable energy, and output-based allocation to NGCC[c]
	How to meet the requirement on the risk of leakage?	Adopt new source complement, use allowance allocation to balance incentives, other state approaches	Uses allowance allocation to balance incentives	Uses allowance allocation to balance incentives
	CEIP?	Opt-in, determine size of state pool of matching allowances	Includes the CEIP with full pool of matching allowances; states can opt out	CEIP participation required; state can reallocate a smaller number of matching allowances
Rate	What resources other than affected EGUs can generate emission rate credits?	State flexibility to propose additional eligible resources w/ exclusion of any source covered by CO_2 new source performance standards, energy storage, and carbon offset**s**	All wind, all solar, geothermal, hydropower, wave, tidal, qualified biomass, waste-to-energy, new/uprate nuclear, non-affected combined heat and power, energy efficiency/ demand-side management	On-shore utility-scale wind, utility-scale solar PV, concentrated solar power, geothermal power, new/ uprate nuclear, utility-scale hydropower
	ERC Accounting	Broad flexibility to specify ERC and Gas Shift-ERC accounting methods in plan	ERC & GS-ERC accounting methods defined[d]	ERC & GS-ERC accounting methods defined
	CEIP?	Opt in; state must determine how to maintain emissions performance during compliance	Included; mechanism for maintaining emissions integrity to be determined; states can opt out	Included; mechanism for maintaining emissions integrity to be determined

[a] If a state uses the model rule, it might add specifics about trading partners or geographic scope.

[b] In a federal plan, states lose the ability to dictate trading partners and geographic scope.

[c] The EPA takes comment on the allowance method. It encourages states to determine their own allocation method in both the proposed federal plan and model rule.

[d] States can propose new accounting methods with EPA approval.

Overview of the Proposed Mass-Based Federal Plan, Differences between That Plan and the Model Rule, and Key Considerations

The proposed mass-based federal plan applies the state-by-state mass goals set forth in the final Clean Power Plan rule in an allowance trading system,[21] using the emissions glide path defined in the final Clean Power Plan.[22] The federal plan creates a number of "allowances" equal to a state's mass goal for each compliance period, [23] and it requires affected EGUs to hold one allowance for every short ton of CO_2 emitted during the period.[24] An allowance true-up would take place on May 1 of the year following each compliance period, at which point affected EGUs would be required to surrender one allowance for every ton of emissions.[25] The penalty for failure to submit the appropriate number of allowances would be a requirement to surrender two allowances for every one allowance in the shortfall.[26] The EPA proposes to track allowances for states with a federal plan through its existing Allowance Tracking and Compliance System (ATCS).[27] The federal plan would permit trading of allowances among affected EGUs (and other market participants) with similar federal or EPA-approved state plans (i.e., the proposed federal plan would be trading ready).[28] EGUs are permitted to "bank" or save allowances for use in any future compliance period, but the EPA proposes to disallow "borrowing" of allowances from future compliance periods.[29]

Allowance Allocation

Allowance allocation is a key design consideration for any allowance trading system because allowances represent an asset with monetary value (equal to the market price of an allowance).[30] For this reason, even under the proposed federal plan, the EPA encourages states to determine how they want to distribute allowances within their state through a partial plan submittal.[31] However, in the event that the EPA is required to determine the allowance distributions for a state with a federal plan, it proposes to distribute allowances to affected EGUs on the basis of historic generation data from 2010 to 2012.[32] The EPA recognizes that there are many other ways to distribute allowances, such as allocations to affected EGUs based on heat rates, emissions rates, and future generation; allocations to load-serving entities; or auctions.[33]

The EPA proposes three set-aside provisions in the federal proposal.[34] A "set-aside" is a pool of allowances not distributed through the primary allocation approach but instead allocated to incentivize a defined activity or set of activities. As noted above, the final Clean Power Plan rule requires mass-based plans either to include new sources, which the proposed federal plan does not, or to address the risk of leakage through other means.[35] Two of the set-asides, the output-based allocation

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[21] For an overview of allowance trading systems, see Monast, Jonas, et al., "Enhancing Compliance Flexibility Under the Clean Power Plan: A Common Elements Approach to Capturing Low-Cost Emissions Reductions," Nicholas Institute Policy Brief 15-01 (2015), https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_pb_15-01.pdf.

[22] Proposed Federal Plan and Model Rules *supra* note 4, at 237. Also, the EPA is seeking comment on whether there should be intervening compliance requirements to demonstrate progress toward the compliance targets. *Id.* at 239–40.

[23] Mass amounts for each state are listed in the Proposed Federal Plan and Model Rules. *Id.* at 237.

[24] *Id.* at 234.

[25] The EPA seeks comment on the true-up deadline. Also, the EPA is proposing that the allowances be surrendered at a facility level rather than at each individual EGU, thereby lowering the administrative burden. *Id.* at 244.

[26] *Id.* at 329.

[27] *Id.* at 320.

[28] States that adopt the model rule or that are subject to a mass-based federal plan would be trading ready and would require no formal agreement trade with other states having similar plans, meaning those states use identical compliance instruments, have been approved as trading ready, and use an EPA-approved tracking system. Under a federal plan, the EPA would allow trading with other states having a similar federal plan or a state plan with a linked tracking system. *Id.* at 232.

[29] The EPA seeks comment on borrowing. *Id.* at 242.

[30] For an overview of allowance allocations, see Williams, Eric, "Greenhouse Gas Allowance Allocation: Cost Pass-Through, Sector Differentiation, and Economic Implications," Nicholas Institute Working Paper 08-01 (2008), https://nicholasinstitute.duke.edu/sites/default/files/publications/greenhouse-gas-allowance-allocation-cost-pass-through-sector-differentiation-and-economic-implications-paper.pdf.

[31] Proposed Federal Plan and Model Rules *supra* note 4, at 245.

[32] The EPA is seeking comment on the distributions. *Id.* at 254. The EPA also seeks comment on whether it should differentiate allowances first by category, steam and NGCC, and then distribute allowances. *Id.* at 248, 257.

[33] *Id.* at 259–65.

[34] *Id.* at 250–51.

[35] Leakage is defined as shifting emissions from existing sources to new sources that would not be subject to the 111(d) emissions limits. Final CPP Rule, *supra* note 1, at 1174–76.

and RE set-aside, are intended to address the risk of leakage to new units.[36] The third set-aside is for the early action program, or CEIP, described above.

Set-Aside 1: Output-Based Allocation for Existing Natural Gas

The output-based allocation set-aside is intended to incentivize increased generation from existing NGCC units to counteract the incentive to build new gas units that operate outside of the allowance trading program (see Box 1).[37] The EPA has determined the size of the set-aside for each state, listed in the federal proposal preamble.[38] The EPA proposes a lagged accounting method for this set-aside such that an existing NGCC unit would begin earning these allowances in one compliance period (e.g., the first compliance period), but the unit would not be awarded the allowances until the next compliance period (e.g., the second compliance period), when it can confirm its total generation.[39] If the total number of eligible allowances exceeds the state's set-aside, the allowances would be distributed on a pro-rata basis.[40] Any unused allowances in the set-aside would be pro-rated back to the affected EGUs.[41]

Set-Aside 2: Renewable Energy

The proposed RE set-aside is also intended to address the risk of leakage to new units by creating an incentive for construction and operation of certain types of renewable energy. The size of the set-aside would initially be 5% of a state's allowance budget in every compliance period.[42] As affected EGUs retire, any allowances they would have been allocated would be added to the RE set-aside such that this set-aside would grow over time.[43] Under the proposed federal plan, the types of renewable energy that are eligible to earn these allowances include on-shore utility-scale wind, solar, geothermal, and utility-scale hydro constructed after January 1, 2013.[44] The EPA is seeking comment on whether the federal plan should include combined heat power, waste heat power, biomass, and incremental nuclear.[45] Unlike allowances under the output-based set-aside, for which there is lagged accounting, allowances under the RE set-aside would be distributed to RE generators at the beginning of every compliance period. A RE generator would need to make a projection of its generation and to true up any difference between that projection and actual generation. The process is as follows:[46]

1. The EPA approves both the eligibility of the project and the projected MWh. A project must include a plan for evaluation, measurement, and verification (EM&V).[47]

2. Approved projects are entered into a pool to receive allowances. The agency distributes allowances to approved projects on a pro-rata basis.

3. At the end of the compliance period, the RE projects true-up their generation compared to their projections, following their approved EM&V plan.

Notably, all allowances in this set-aside would be allocated to RE project developers regardless of the total number of qualifying MWhs because allowances in the RE set-aide would be distributed on a pro-rata basis.[48]

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[36] The EPA is requesting comments on both of these set-asides. Proposed Federal Plan and Model Rules, *supra* note 4, at 272. It is also seeking comment on whether it should create a fourth set-aside for energy efficiency. *Id.*

[37] The EPA chose the rate of 1,030 lbs/MWh-net within the allowance formula because that rate is the 111(b) rate for new sources. *Id.* at 278.

[38] The EPA calculates the size of the set aside for each state based on the following equation: 10 percent of the NGCC capacity in the state multiplied by the number of hours in a year multiplied by the 111(b) net standard for NGCC (1030 lbs/MWh-net) *Id.* at 281.

[39] *Id.* at 276.

[40] *Id.* at 282.

[41] *Id.* at 283.

[42] *Id.* at 251.

[43] The EPA is requesting comment on whether retired EGU allowances should go to the RE set-aside. *Id.* at 305.

[44] *Id.* at 286–87.

[45] *Id.* at 287.

[46] *Id.* at 288–95.

[47] For an overview of EM&V, see EPA, Evaluation Measurement and Verification (EM&V) Guidance for Demand-Side Energy Efficiency (2015), http://www2.epa.gov/sites/production/files/2015-08/documents/cpp_emv_guidance_for_demand-side_ee_-_080315.pdf.

[48] Proposed Federal Plan and Model Rules *supra* note 4, at 293-95. The EPA seeks comment on whether to restrict RE projects to a maximum number of allowances they can receive per MWh of generation, such as 1 allowance per MWh.

Box 1: Output-based Allocation Allowances to Existing NGCC Units

The number of state allowances for the output-based allocation is pre-determined by the EPA. An existing NGCC unit would earn these allowance credits according to the following formula:

Allowance to existing EGU = Net generation over 50% capacity factor * 1030 lbs/MWh-neta[a]

[a]1030 lbs/MWh-net is the 111(b) standard for new natural gas combined cycle units

Set-Aside 3: Clean Energy Incentive Program

As described above, the proposed mass-based federal plan incentivizes participation in the EPA's early-action program for certain types of RE and EE projects in low-income communities. The EPA has created a federal pool of matching allowances for each state. States that participate, including states under the proposed federal plan, are required to have a state matching pool of allowances.[49] Within the CEIP years, qualifying RE and EE projects would be awarded allowances from the EPA and state pools based on their generation or energy savings.[50] To maintain the integrity of a state's emissions goal, the state must pull forward allowances for the CEIP set-aside from Phase 1 of its allowance budget.[51] Any state that takes over the allowance distributions of a federal plan would still be required to include a CEIP set-aside, but it could change the amount of state matching allowances dedicated to the program.[52] Any unused CEIP allowances in the state set-aside would be returned to affected EGUs in a pro-rata amount.[53] Table 3 presents an example of the set-aside allowances in each compliance period for the state of South Carolina.

Table 3. Example of allowance set-asides for South Carolina

	Mass Goal	CEIP Set-aside	Output-based Allocation	RE Set-aside[a]	Set-asides as % of Mass Budget
Interim Phase 1	31,025,518	1,652,802	0	1,551,276	10.33%
Interim Phase 2	28,336,836	0	1,029,366	1,416,842	8.63%
Interim Phase 4	26,834,962	0	1,029,366	1,341,748	8.84%
Final	**25,998,968**	**0**	**1,029,366**	**1,299,948**	**8.96%**

[a] This set-aside is proposed to grow as affected EGUs retire.

Key Differences between the Mass-based Federal Plan and Mass-based Model Rule

The proposed mass-based model rule is almost identical to the proposed mass-based federal plan. However, states can customize the model rule subject to EPA approval. The mass-based model rule, as written, has the same timing and distribution of allowances as the proposed federal plan.[54] Both are ready for trading, especially if states use the EPA's proposed allowance tracking system.[55] The model rule also has three allowance set-asides. Like the federal plan, the output-based allocation and RE set-asides are intended to address leakage. The output-based allocation set-aside is identical to the federal plan.[56] Currently, the list of renewables eligible for the RE set-aside is the same for the federal plan and model rule.[57] Similar to the federal plan, the EPA is seeking comment about whether it should increase the number of categories of resources eligible to receive allowances from the RE set-aside in the model rule—resources such as combined heat power,

[49] Proposed Federal Plan and Model Rules, *supra* note 4, at 303.
[50] *Id.* at 301.
[51] *Id.* at 251.
[52] In this example, a state is within a federal plan, but it is taking responsibility for allowance distributions. *Id.* at 302.
[53] *Id.* at 301–02.
[54] *Id.* at 477–82.
[55] States can propose their own tracking system. *Id.* at 58–59.
[56] *Id.* at 500.
[57] *Id.* at 493.

waste heat power, biomass, and incremental nuclear.[58] The EPA also includes the CEIP set-aside in the model rule. Like the federal plan, states can change the amount of allowances in this set-aside.[59] In contrast to the federal plan, however, states that adopt the model rule can opt out of the CEIP program entirely.[60] If states adopt the model mass-based rule as it is finalized, that rule is presumptively approvable.[61] Any changes to the model rule would be subject to EPA approval.

Summary of Key Considerations for the Proposed Mass-Based Federal Plan and Model Rule

The proposed mass-based federal plan and the model rule provide states with a streamlined but customizable, trading-ready compliance pathway. However, if the EPA does not finalize a federal plan approach prior to applying a federal plan to a state, any state that opts not to develop its own plan would not know whether the federal plan would implement a mass- or rate-based approach.[62] The proposed federal plan and model rule apply only to affected units and do not include the new source complement. Instead, both the federal plan and the model rule incorporate two allocation set-asides to address the risk of leakage to new units.[63] Under a state plan approach, a state could adopt similar set-asides, use the new source complement, or adopt another state-proposed mechanism to address leakage.[64] In the proposed federal plan and model rule, the EPA is encouraging states to determine their own allowance distribution plans, which might include modifying the set-aside provisions, but states would retain the requirement to address the risk of leakage. Additionally, the current iteration of the federal proposal and model rule do not allow for emissions reduction accounting at the stack if an EGU were to co-fire with biomass.[65] In a state plan approach, a state can propose a method to deduct emissions at the stack for the biogenic portion of co-firing.[66] More nuanced considerations include the timing of the allowance true-up period as well as the treatment of allowances for retired EGUs.

Overview of the Proposed Rate-Based Federal Plan, Differences between That Plan and the Model Rule, and Key Considerations

The EPA's proposed rate-based federal plan applies the subcategorized emissions guidelines to affected EGUs using the glide path specified in Table 4.[67] Affected EGUs would demonstrate compliance on the basis of *adjusted* pounds of CO_2 per megawatt hour-net on average over each interim and final compliance period.[68]

Table 4. Interim "step" and final subcategorized emissions rates in lbs/MWh

Technology	2022–2024	2025–2027	2028–2029	Final Rate
Steam	1,671	1,500	1,380	1,305
Stationary combustion turbine	877	817	784	771

Adjustments to an EGU's average emissions rate would be made through the acquisition of emission rate credits (ERCs), which represent one emissions-free MWh of electricity that is added to the denominator of the emissions rate equation.[69] For example, consider an affected natural gas combined cycle unit that emits 900,000 lbs of CO_2 and generates 1,000 MWh of electricity during a final compliance period. The unit's average emissions rate equals 900,000/1,000 or 900lbs/MWh-net. To demonstrate compliance, the unit must acquire sufficient ERCs such that the facility's *adjusted* rate equals no more

[58] *Id.* at 287.
[59] *Id.* at 302.
[60] Final CPP Rule, *supra* note 1, at 865.
[61] Proposed Federal Plan and Model Rules, *supra* note 4, at 19.
[62] *Id.* at 16–19.
[63] *Id.* at 272.
[64] Final CPP Rule, *supra* note 1, at 1174–76.
[65] The EPA is seeking comment on the co-firing of biogenic emissions for the federal plan and model rule. Currently, EGUs must surrender allowances for all emissions, including the biogenic portion. Proposed Federal Plan and Model Rules, *supra* note 4, at 235–236.
[66] Final CPP Rule, *supra* note 1, at 1169.
[67] Proposed Federal Plan and Model Rules, *supra* note 4, at 127.
[68] *Id.* at 619–20.
[69] CPP Final rule, *supra* note 1, at page 1,211–14.

than the relevant (final) standard of 771lbs/MWh [900,000lbs/(1,000 + 168MWh) = 770.5]. Following each interim and final compliance period, affected EGUs would have until November 1 of the following year to determine their unadjusted average emissions rate and to acquire any necessary ERCs.[70] The penalty for failure to submit the appropriate number of ERCs would be a requirement to surrender two ERCs for every one ERC in the shortfall.[71]

Emissions Rate Credit Supply

In general, three categories of electricity resources can generate ERCs: (1) affected EGUs that perform below their subcategorized rate; (2) zero-emitting electricity resources, including eligible renewable energy projects and new and uprated nuclear capacity; and (3) all affected NGCC units, which earn a special type of gas-shift ERC (GS-ERC) intended to incentivize increased dispatch of existing NGCC units. With the exception of GS-ERCs, which can only be used by affected steam units for compliance,[72] all ERCs would be fungible.

Affected EGU ERCs

Under the proposed rate-based federal plan, the number of ERCs an affected unit earns or owes would equal the difference between the unit's actual emissions rate and the relevant standard multiplied by its generation according to this formula:

$$\text{ERCs} = (\text{EGU standard} - \text{EGU operating rate})/\text{EGU standard} * \text{generation}$$

Box 2 explains how an affected unit could earn or owe credits on the basis of the formula.

Box 2. Affected EGU ERCs Accounting Example

The following examples demonstrate how to determine the number of ERCs earned or owed by an affected EGU under the proposed rate-based federal plan and model rule.

Example 1: An NGCC facility with an average emissions rate of 700 that generates 1,000 MWh in a final compliance period with the final NGCC compliance standard of 771:

ERCs = (771 -700)/771 * 1000
= (71/771) * 1000
= 92.1 or **92 ERCs earned**

Example 2: An NGCC facility with average emissions rate of 800 that generates 1,000 MWh in a final compliance period with the final NGCC compliance standard of 771:

ERCs = (771-800)/771 * 1000
= (-29/771) *1000
= -37.6 or **38 ERCs owed**

[70] Proposed Federal Plan and Model Rules, *supra* note 4, at 220–21.
[71] *Id.* at 105.
[72] CPP Final rule, *supra* note 1, at 1,492 (to be codified at 40 CFR § 60.5795 (2)(b)); Proposed Federal Plan and Model Rules, *supra* note 4, at 139.

Zero-Emitting Electricity ERCs

Under the proposed federal plan, eligible zero-emitting resources are limited to on-shore utility-scale wind, utility-scale solar PV, concentrating solar, utility-scale hydropower, and new and uprated nuclear.[73] The EPA is taking comment on additional resource categories for the federal plan and is considering a process by which categories could be added in the future.[74] To earn ERCs, eligible resources must also meet certain general criteria described in the Clean Power Plan final rule.[75] Furthermore, eligible projects must meet certain EM&V guidelines, which differ depending on project type.[76]

Gas Shift ERCs

Finally, the proposed rate-based federal plan defines the accounting methodology for GS-ERCs, which are intended to incentivize displacement of coal generation with additional generation from lower-emitting existing natural gas facilities. Under the EPA's proposed methodology, all affected NGCC units would earn partial GS-ERCs for each MWh of generation.[77] The crediting rate would be based on the amount of re-dispatch from steam to gas included in the EPA's Best System of Emission Reduction and the difference between the steam standard and the individual EGU's emissions rate (see Box 3). GS-ERCs would only be available to steam units for compliance such that one NGCC unit could both sell GS-ERCs and need to purchase ERCs to demonstrate its own compliance with the NGCC standard.

Box 3. Proposed GS-ERC Accounting Methodology

GS-ERCs = NGCC generation x Incremental generation factor x GS-ERC emissions factor

Where

NGCC generation = Total MWhs-net

Incremental generation factor[a] = (1-regional 2012 baseline/75% NGCC regional capacity)

GS-ERC emissions factor = (1 – NGCC emissions rate/steam standard)[b]

[a]On the basis of the above formula, the EPA has proposed a national incremental generation factor for each compliance period: 0.22, 0.32, 0.28, and 0.26 for the three interim compliance periods and the final period, respectively.

[b]The EPA is seeking comment on the use of the NGCC standard rather than the specific unit's emission rate in this equation.

ERC Issuance and Tracking

The EPA proposes to administer the ERC issuance and tracking process for states with a federal plan through a two-step process.[78] First, the project developer would submit an application with a proposed EM&V plan, which must include third-party verification, to the EPA. Second, after the project is approved, the developer would generate eligible megawatt hours,

[73] Proposed Federal Plan and Model Rules, *supra* note 4, at 144.
[74] The EPA is also taking comment on the inclusion of qualified biomass, CHP, demand-side energy efficiency, and waste heat power under the federal proposal. *Id.* at 146–47.
[75] Eligible projects must be incremental to the 2012 baseline, be connected the contiguous U.S. electricity grid, and be located in a state with a rate-based plan or, if located in a state with a mass-based plan, they must demonstrate the power was sold to a state with a rate-based plan (e.g., through a power purchase agreement). Final CPP Rule, *supra* note 1, at 1492–1497 (to be codified at 40 CFR § 60.5800).
[76] The EPA has released draft EM&V guidance for states, which would inform approvable methods in state plans as well as in the federal plan and model rule. *See* Proposed Federal Plan and Model Rules, *supra* note 4, at 211; Draft EM&V Guidance, *supra* note 47.
[77] The EPA is seeking comment on several methods of this proposed methodology, including whether the emissions factor should be calculated on a unit-by-unit basis, whether all or a portion of NGCC generation should be credited, and how to calculate the incremental growth factor. *See* Proposed Federal Plan and Model Rules, *supra* note 4, at 132–43.
[78] *Id.* at 168–75.

and the EM&V plan would be carried out. The developer would then submit a second application to the EPA with total generation as well as the EM&V report. At this stage, the EPA would award one ERC for each verified MWh.[79]

Awarded ERCs would be given a unique serial number and placed in the project developer's general account within the EPA's Allowance Tracking and Compliance System. The EPA proposes to develop a separate platform for step one of the ERC application process and to use its existing system (ATCS) to track the generation of ERCs at step two as well as at the transfer and retirement of ERCs throughout the program.[80] As in the mass proposals, ERCs, once approved, would not expire and could be "banked" for use in any compliance period.[81] The EPA proposes that "borrowing" of ERCs from future compliance periods would not be allowed because it would be difficult to guarantee that the ERCs are actually created.[82] However, the EPA is seeking comment on the possibility of including borrowing.

Clean Energy Incentive Program

Like the proposed mass-based federal plan, the proposed rate-based federal plan includes participation in the CEIP. A key question for CEIP implementation under a rate-based approach, and one which EPA's proposed rate-based federal plan leaves unanswered, is how to ensure that the state portion of early action credits do not effectively increase the aggregate emissions performance of affected units during compliance. The EPA identifies two possible mechanisms to achieve this goal: (1) retire an equivalent number of ERCs in the first interim compliance period or (2) adjust the target in the first interim compliance period.[83] However, the proposal leaves open the methodology for either of these approaches and seeks comment broadly on the design of such a mechanism.

Key Differences between the Rate-based Federal Plan and the Rate-based Model Rule

The proposed rate-based model rule is similar to the proposed rate-based federal plan, with one significant difference: the rate-based model rule includes a broader set of zero-emitting resources eligible to create ERCs. Eligible resources in the proposed model rule include all wind, all solar, wave, tidal, qualified biomass, qualified waste-to-energy, non-affected combined heat and power (CHP), demand-side energy efficiency, and demand-side management that reduces (rather than shifts) energy use.[84] The model rule uses the same accounting methodology for ERCs generated by affected-EGUs and GS-ERCs, but states could propose their own customized methodologies subject to EPA approval.[85] States using the model rule would administer their own ERC issuance and tracking process, which could include the use of or linkage to the EPA's proposed tracking systems. Like the mass-based model rule, the rate-based model rule includes CEIP participation, but states would have the flexibility to opt out.[86] If states do accept the model rule and participate in CEIP, they can customize the way they pull forward the early-action state credits from their total emissions budget.[87]

Summary of Key Considerations for the Rate-Based Federal Plan and Model Rule

Like the mass-based proposals, the proposed rate-based federal plan and model rule provide a streamlined trading-ready implementation pathway. Again, any state with a federal plan is unlikely to know whether the plan would be rate-based or mass-based, but there may be opportunities to customize a federal plan within the rate-based framework.[88] The proposed federal plan currently includes a smaller set of eligible resources than the proposed model rule, which in turn is less expansive than the universe of eligible resources a state plan might include. Significantly, the proposed federal plan includes neither energy efficiency nor several categories of renewables (see Table 2). Additionally, the accounting method

[79] The ERC issuance process would happen annually. *See Id.* at 167.
[80] *Id.* at 171.
[81] *Id.* at 224.
[82] *Id.* at 225.
[83] *Id.* at 177.
[84] *Id.* at 630–32.
[85] *Compare* Final CPP Rule, *supra* note 1, at 1,491–92 (to be codified at 40 CFR § 60.5795(a)(1)) *with* Proposed Federal Plan and Model Rules, *supra* note 4, at 628–30.
[86] Final CPP Rule, *supra* note 1, at 865.
[87] *Id.* at 871. As stated previously, the EPA is proposing methods to maintain emissions stringency, which would be presumptively approvable in a state plan.
[88] Proposed Federal Plan and Model Rules, *supra* note 4, at 16–20.

for GS-ERCs is defined in the proposed federal plan and model rule, whereas a state plan approach could incorporate another accounting method.[89]

Additional considerations include the form of the rate (e.g., subcategorized or blended), design of the CEIP program, and other factors. The proposed federal plan and model rule apply the subcategorized emissions guidelines directly to affected units. While state plans could use a single "blended" rate or differentiated rates for specific units, use of the subcategorized rates is required for a rate-based state to be trading ready.[90] The proposed federal plan and model rule have not identified how to pull forward ERCs that are created for the CEIP program. State plans could adopt the method included in the final model rule, or they could propose their own mechanism. Other considerations include the timing of true-up periods, EM&V requirements for ERC generation, and program administration.

Timeline for Plan Development

The final Clean Power Plan rule gives states 13 months, until September 6, 2016, to make an initial submittal requesting a two-year extension for state plan development or to submit a final plan.[91] To be granted an extension, an initial submittal must include (1) a description of the plan approach(es) and geographic scope(s) under consideration, (2) an explanation of the need for additional time, and (3) a description of public participation to date and a plan for continued engagement throughout plan development. States with extensions would submit an update to the EPA by September 6, 2017, and a final plan by September 6, 2018.[92]

The EPA aims to finalize one or both model rules in summer 2016, prior to the initial deadline for state plan submissions.[93] Stakeholders will have 90 days to comment on the proposed federal plans and model rules following their publication in the *Federal Register*.[94] The final model rules will be presumptively approvable in state plans and will provide a streamlined pathway for states to become trading ready.[95] It is likely, therefore, that the final model rules will be a key consideration in state plan development.

The final model rules will also provide insight into the likely features of a final federal plan, but as noted above, the EPA does not intend to finalize a federal plan until it applies the plan to a state.[96] In the preamble to the proposed federal plans and model rules, the EPA indicates it would prefer to choose one plan approach—mass or rate—for all states with a federal plan to simplify administration and facilitate trading.[97] The EPA also acknowledges certain benefits to a mass-based approach, but it leaves the decision to apply a mass-based or a rate-based approach in any state for the point at which a plan is needed.

The final Clean Power Plan rule identifies two discrete triggers for a federal plan: failure to submit an (adequate) initial plan by September 6, 2016, and failure to submit a (adequate) final plan by September 6, 2018.[98] The EPA gives itself 90 days following the initial submittal deadline and 12 months following the final plan deadline to notify a state of plan deficiency.[99] The agency gives itself another 12 months following notification to promulgate a plan for the state.[100] States receiving a federal plan have the on-going option to replace it with an EPA-approved state plan as well as the option to

[89] All state plans that use the subcategorized emissions rates are required to include GS-ERCs. However, states could propose an accounting method that is different from the method used by the EPA in the model rule or federal plan. Final CPP Rule, *supra* note 1, at 1,492 (to be codified at 40 CFR § 60.5795 (a)(2)).
[90] *Id.* at 917.
[91] *Id.* at 1,002.
[92] *Id.*
[93] Proposed Federal Plan and Model Rules, *supra* note 4, at 17–18.
[94] *Id.* at 3.
[95] *Id.* at 16–19.
[96] *Id.*
[97] *Id.* at 18.
[98] Final CPP Rule, *supra* note 1, at 1,028–30.
[99] *Id.*
[100] *Id.*

adopt parts of that plan, such as allowance allocation, as described above.[101] The EPA proposes that states avail themselves of these options at the start of future compliance periods to ensure a smooth transition.[102]

Conclusion

The EPA released the final Clean Power Plan rule on August 3, 2015, and, in a separate action, proposed both a mass-based and a rate-based federal plan and mass-based and rate-based model rules. The model rules, once finalized, will give states a streamlined but customizable template that is trading ready. The proposed federal plan is likely to be an important consideration as states and stakeholders evaluate compliance options. The proposed mass- and rate-based federal plans are similar to the proposed model rules, but they exclude certain compliance options, such as demand-side energy efficiency under the rate-based approach.

[101] Proposed Federal Plan and Model Rules, *supra* note 4, at 318.
[102] *Id.*

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Contact
Nicholas Institute, Duke University
P.O. Box 90335
Durham, North Carolina 27708

1201 New York Avenue NW
Suite 1110
Washington, D.C. 20005

Duke Marine Lab Road
Beaufort, North Carolina 28516

919.613.8709 phone
919.613.8712 fax
nicholasinstitute@duke.edu
www.nicholasinstitute.duke.edu