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Re: *Clean Power Plan Final Rule – Initial Summary and Observations*

EPA has [released](#) the much anticipated final Clean Power Plan rule and proposed federal plan for the Clean Power Plan. While we are still reviewing and digesting the final rule spanning thousands of pages, the below briefly goes through the major changes from the proposed rule and provides some of our initial observations.

At the outset, it is worth noting that the final rule is significantly different than the proposed rule. Using a different method to derive carbon budgets, it achieves an even more significant reduction in 2030 CO₂ emissions, from 30% (proposed rule) to 32% (final rule). EPA accomplishes this almost exclusively through increased modeling of “potential” renewable energy additions. Significantly under EPA’s new method, the boon to natural gas-fired generation does not occur, demand-side resources are ignored for carbon budget purposes and renewable resources get added at historically unprecedented levels.

I. Key Changes and Observations

A. *The Best System of Emission Reduction*

- ***A revised BSER resulting in new goals for states.*** The revised BSER eliminates Building Block 4, excludes the previous nuclear components from Building Block 3, and requantifies the amount of renewable energy adoption baked into Building Block 3. EPA divides the country into three regions: the Eastern Interconnection, Western Interconnection, and Texas Interconnection. At the risk of oversimplification, EPA’s calculation for each of the three regions unfolds as follows:
 - (1) quantify generation and emissions from coal-fired EGUs and NGCC units in a given region using a 2012 baseline;
 - (2) apply Building Block 1 (heat rate improvement of 4.2% (Eastern), 2.1% (Western) or 2.3% (Texas) to the appropriate region to reduce total emissions;
 - (3) apply Building Block 3, which is a modeled level of potential renewables added to the system from 2022 to 2030, on a pro rata basis to sub out emissions from coal-fired EGUs and NGCC facilities to further reduce total emissions; and
 - (4) apply Building Block 2 by taking the summer capacity rating of existing and under construction NGCC facilities and assuming a 75% utilization rate, then subtracting the remaining NGCC figure to reach an assumed level of redispatched



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NGCC and subbing out additional coal-fired EGU emissions. After performing this exercise, EPA was left with the following for each of the three regions:

Region	Coal-Fired EGU Rate	NGCC Rate
Eastern	1305 lbs CO ₂ /MWh	771 lbs CO ₂ /MWh
Western	360 lbs CO ₂ /MWh	690 lbs CO ₂ /MWh
Texas	237 lbs CO ₂ /MWh	697 lbs CO ₂ /MWh

Because the methodology yielded extremely low emission rates in the West and Texas, EPA eliminated the extremely low emission rates for the Western Interconnection and Texas Interconnection and established uniform rates for two subcategories of sources (fossil-fuel fired electric steam generating units and stationary combustion turbines) using the Eastern Interconnection figures. Accordingly, the performance rate is 1305 lbs/CO₂ MWh for the latter and 771 lbs/CO₂ MWh for the former.

- ***Use of the Eastern Interconnection emission rates as uniform performance standards gives sources “headroom.”*** EPA asserts that “using the least stringent rate provides greater ‘headroom’ – that is, emission reduction opportunities beyond those reflected in the performance rates – to affected EGUs in the interconnections that do not set the nationwide level [*i.e.*, in the Western Interconnection and Texas Interconnection]. This greater ‘headroom’ provides greater nationwide compliance flexibility and assurance that the standards set by the states based on the emission guidelines will be achievable at reasonable cost and without adverse impacts on reliability.” Moreover, EPA promotes trading regimes as an avenue to obtain even greater “headroom” under the uniform performance rates: “Additional headroom within the BSER is available through the use of emissions trading approaches, because the final rule does not limit the use of these mechanisms to sources within the same interconnections.” Despite this “headroom” rhetoric, the revised calculation imposes significantly more stringent state CO₂ performance goals in coal-centric states.
- ***The BSER, by eliminating demand-side EE, is now tied to the “machine.”*** In crafting the new BSER without Building Block 4, EPA has hitched the legality of its BSER construction to the notion of the electric system as a “machine”:

In this rule, when evaluating the types and amounts of measures that the source category can take to reduce CO₂ emissions, we have appropriately taken into account the global nature of the pollutant and the high degree to which each individual affected EGU is integrated into a ‘complex machine’ that makes it possible for generation from one generating unit to be replaced with generation from another generating unit for the purpose of reducing generation from CO₂-emitting generating units. We have also taken into account the trends away from higher-carbon generation toward lower- and zero-carbon generation. These factors strongly support consideration of emission reduction approaches that focus



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on the machine as a whole – that is, the overall source category – by shifting generation from dirtier to cleaner sources in addition to emission reduction approaches that focus on improving the emission rates of individual sources.

- ***EPA candidly engages in a national resource planning exercise.*** EPA highlights its research into and review of “broad trends within the utility power sector,” which leads to the integrated, “machine as a whole” concept underlying the BSER and purporting to make it consistent with the statute. EPA states that “[a] survey of integrated resource plans (IRPs), included in the docket, shows that fossil fuel-fired EGUs are taking actions to reduce emissions of both non-GHG air pollutants and GHGs. Some fossil fuel-fired EGUs are investing in lower- or zero-emitting generation. In fact, our review indicates that the great majority of fossil fuel-fired generators surveyed are including new RE resources in their planning. In addition, some fossil fuel-fired EGUs are using those measures to replace their higher-emitting generation. Some fossil fuel-fired generators appear to be reducing their higher-emitting generation without fully replacing it themselves. These measures in aggregate result in the replacement of higher-emitting generation with lower- or zero-emitting generation, reflecting the integrated nature of the electricity system.” EPA highlights programs to address GHGs in California, New York, Oregon and Washington as supporting its BSER “complex machine” approach, as well as RPSs in “more than 25 states” and “utility planning approaches carried out by companies in Colorado and Minnesota” EPA’s IRP review and analyses supports both Building Block 2 and Building Block 3.
 - *Building Block 2.* “An EPA review of state Integrated Resource Plans (IRPs) shows a pattern of shifting away from coal steam capacity to NGCC capacity and, in some cases, conversion of coal steam capacity to natural gas steam capacity. For example, Ameren plans to add 600 MW of NGCC capacity and convert two coal units to natural gas steam units, and Duke plans to add 680 MW of NGCC capacity and convert one coal unit to a natural gas steam unit.”
 - *Building Block 3.* “Many affected EGUs are already planning on deploying significant amounts of RE according to their integrated resource plans (IRPs) A recent study of IRPs, included in the docket for this rulemaking, shows this trend. For instance, Dominion plans for over 800 megawatts of wind and solar in their 2015 to 2029 planning period. Duke Energy Carolinas’ IRP has no plans for new coal, but describes plans for roughly 1,250 megawatts of additional RE by 2021, and approximately 2,150 megawatts by 2029. A significant portion (1,670 megawatts) of the planned RE is solar. Ameren is planning to retire one-third of the coal generating capacity, as well as installing an additional 400 megawatts of wind, 445 megawatts of solar, and 28 megawatts of hydroelectric generating capacity.”



B. Timing

- ***A change to the submittal process.*** The proposed rule required state plans to be submitted in June 2016, with the opportunity for a one-year extension for single state plans and a two-year extension for multi-state plans. The new submittal process is as follows:

Submittals	Dates
State Plan OR initial submittal with extension request	September 6, 2016
Progress Update, for states with extensions	September 6, 2017
State Plan, for states with extensions	September 6, 2018
Milestone (Status) Report	July 1, 2021

The initial submittal must address three components: “an identification of final plan approach or approaches under consideration, including a description of progress made to date; an appropriate explanation for why the state needs additional time to submit a final plan beyond September 6, 2016; and a demonstration of how they have been engaging with the public, including vulnerable communities, and a description of how they intend to meaningfully engage with community stakeholders during the additional time (if an extension is granted) for development of the final plan” EPA will inform states if their initial submittal does not contain all required components within 90 days of filing; alternatively, if the state is not notified by EPA that there are any shortcomings than the extension of time is deemed granted.

- ***A change to EPA’s review period of final state plans.*** “Following submission of final plans, the EPA will review plan submittals for approvability. Given a similar timeline accorded under section 110 of the CAA, and the diverse approaches states may take to meet the CO2 emission performance rates or equivalent statewide goals in the emission guidelines, the EPA is extending the period for EPA review and approval or disapproval of plans from the four-month period provided in the EPA implementing regulations to a twelve-month period.”
- ***The interim goal is pushed back to 2022.*** EPA pushes back the interim goal start to 2022, although the final goal still must be achieved by 2030. The interim period consist of three steps for three time periods, and EPA provides a rate-based goal and a mass-based goal for each time period. In addition, EPA provides both a rate-based goal and a mass-based goal for each “step” in the process.



Interim and Final Goal Periods	Reporting
Interim goal performance period (2022-2029)	
- Interim Step 1 Period (2022-2024) ²	July 1, 2025
- Interim Step 2 Period (2025-2027) ³	July 1, 2028
- Interim Step 3 Period (2028-2029) ⁴	July 1, 2030
Interim Goal (2022-2029) ⁵	July 1, 2030
Final Goal (2030)	July 1, 2032 and every 2 years beyond

C. State Plans

- Two forms of state plans.** The final rule contemplates two types of state plan approaches: (1) an “emissions standard” approach and (2) a “state measures” approach. The emissions standard approach places all of the compliance requirements directly on affected EGUs. The state measures approach, on the other hand, is a variation of the state commitment approach that was referenced approvingly by several states in comments. This approach requires the use of the mass-based goal and “would result in the affected EGUs meeting the statewide mass-based goal by allowing a state to rely upon state-enforceable measures on entities other than affected EGUs, in conjunction with any federally enforceable emission standards the state chooses to impose on affected EGUs.” Accordingly, states could employ policies and programs (*i.e.*, energy efficiency programs or renewable portfolio standards), so long as they are enforceable under state law, without making them federally enforceable. However, any state measures approach must “include a contingent backstop of federally enforceable emission standards for affected EGUs that fully meet the emission guidelines and that would be triggered if the plan failed to achieve the required emission reductions on schedule.” EPA suggests the model federal plan, which is premised on emissions trading, as the appropriate backstop.
- Endorsement and encouragement of trading, including using “trading ready” plans.** “One of the key messages conveyed by state and utility commenters was that the final rule should make it easier for states to adopt mass-based programs and for utilities accustomed to operating across broad multistate grids to be able to avail themselves of more ‘ready-made’ emissions trading regimes. The inclusion of both of these new features – mass-based state goals in addition to rate-based goals, and source-level emission performance rates for the two subcategories of sources – is intended to make it easier for states and utilities to achieve these outcomes. In fact, these additions, together with the model rules and federal plan being proposed concurrently with this rule, should demonstrate the relative ease with which states can adopt mass-based trading programs, including interstate mass-based programs that lend themselves to the kind of interstate



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compliance strategies so well suited for integration with the current interstate operations of the overall utility grid.” Moreover, EPA notes that trading is expressly considered in its BSER analysis: “Accordingly, our assessment of the actions available to individual EGUs for achieving standards of performance reflecting the BSER includes the purchase of rate-based emission credits or mass-based emission allowances, because one of the things an affected EGU can do to achieve its emission limit is to buy a credit or an allowance from another affected EGU that has over-complied.” In addition, EPA notes that it is committed to “providing EPA resources and capacity to create a tracking system to support state emissions trading programs. “

- ***New reliability measures.*** States must show in a final state plan that reliability was considered, and the final rule includes a reliability safety valve, among other reliability measures. The reliability safety valve allows affected EGUs to operate under temporarily modified emission standards under certain circumstances. “Examples of such an event could include, a catastrophic event that damages critical or vulnerable equipment necessary for reliable grid operation; a major storm that floods and causes severe damage to a large NGCC plant so that it must shut down; or a nuclear unit that must cease generating unexpectedly and therefore other affected EGUs need to run so as to exceed their requirements under the approved state plan.”
- ***Adoption of an incentive program to encourage early action.*** The final rule establishes the Clean Energy Incentive Program for renewable energy and energy efficiency measures that “deliver results” in 2020 and 2021. EPA plans to address details in a subsequent action, but eligible projects can receive matching awards from EPA and generate emissions reduction credits (ERCs) that can be banked for use going forward. Any energy efficiency projects must be located in low-income communities to be eligible to generate ERCs.

II. Initial Takeaways

- ***EPA concedes the state institutional case.*** EPA implicitly concedes the state institutional case in its reasoning for the change in the submittal process and timing: “Some commenters argued that the 1-year period for initial submittals and, even assuming an extension, the additional 1- to 2-year period for final submittals were unreasonably short, particularly *in light of the possibility that some state legislatures might need to act to provide adequate legal authority for these particular plans.* We are not finalizing the 1-year extension for single state submittals, and we have addressed concerns about legal authority for the initial submittals by allowing states to identify remaining legislative action in those submittals.” [emphasis added.]
- ***The state measures approach does not obviate the state institutional issues.*** The state measures approach is facially attractive because it does away with the federal enforcement overlay that concerned many states and commenters in the proposed



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rule. However, EPA notes that “[s]tate measures’ refer to measures that the state adopts and implements as a matter of state law. Such measures are enforceable only per state law, and are not included in and codified as part of the federally enforceable state plan.” Accordingly, only states with codified renewable portfolio standards and energy efficiency programs – with substantive enforcement mechanisms – may rely on these measures as part of a state measures approach. Therefore, even with this new approach, the need for state legislation exists for many states to be able to rely on this approach. It is also unclear, early in this review, how EPA contemplates a state plan that may be enforceable on a piecemeal basis by different agencies (*e.g.*, PUCs/PSCs, air regulators, etc.) Finally, states with renewable energy or energy efficiency mandates may need to revisit aspects like rate caps existing in current laws, or allow state regulators to set ultimate goals to meet the state measures enforceability criteria.

- ***The result of the BSER formula application for the Western Interconnection and Texas Interconnection illustrates the flawed nature of the approach.*** Setting aside the legal issues with the BSER construction, coal-fired EGUs would be required to meet an emission rate limit of 237 lbs CO₂/MWh had EPA not imposed the Eastern Interconnection result on all states. EPA has characterized its approach as imposing the “least stringent” result on all affected entities, but this really was the only option EPA had after applying its formula in each of the three respective regions. The formula yields absurd and completely unachievable emission rates for coal-fired EGUs in the Western Interconnection (360 lbs CO₂/MWh) and the Texas Interconnection. These results illustrate the flawed assumptions employed for each Building Block, in particular Building Block 3 as discussed below.
- ***The Building Block 3 imputation is highly questionable and doubles the expected adoption of renewable energy as between the proposed rule and the final rule.*** In the final rule, as discussed above, EPA backs off the proposed rule’s reliance on Building Block 1 (heat rate improvement for coal-fired EGUs – from 6% to between 2% and 4%), Building Block 2 (the final rule forecasts flat or declining use of natural gas), and Building Block 4 (removed). Nevertheless, the 2030 CO₂ emission reduction under the final rule increases to 32% from 30% in the proposed rule.
 - *How?* By more than doubling the renewable energy deployment expectations under Building Block 3 from 335,370 Gigawatt hours (GWh) in the proposed rule to 706,030 GWh in the final rule.
 - *Background on the calculation.* Table 4-1 from an EPA TSD entitled *Greenhouse Gas Mitigation Measures* in support of the final rule provides the key data:



Table 4-1: Annual Capacity Change by RE Technology (MW)

RE Technology	2010	2011	2012	2013	2014	Average	Maximum
SolarPV ₄	267	784	1,803	2,847	3,934	1,927	3,934
CSP	78	0	0	410	767	251	767
Onshore Wind	5,112	6,816	13,131	1,087	4,854	6,200	13,131
Geothermal	15	138	147	407	4	142	407
Hydropower	294	-10	47	216	158	141	294

The interim goal and associated step-downs run from 2022 to 2030. To determine how much renewable energy capacity is expected nationwide by 2022, EPA adds existing renewable energy, projects that are not currently operating but are firmly anticipated to be operational in the future and have either initiated construction or secured financing, and capacity projected to be deployed as an economic resource to meet load. For 2022 and 2023, EPA then imputes the historical average change in capacity between 2010 and 2014 (numbers in blue above, second column from right) and adds it to this initial production level. For 2024 through 2030, however, EPA uses only the *maximum* change in capacity (column in green above, far right) by selecting the highest capacity addition for each generation type and adding it year over year. The numbers highlighted in yellow represent the maximum capacity addition for each generation type.

- *This approach for years 2024 through 2030 ignores huge swings in capacity additions for generation types.* This fails to recognize that cost and production performance are not the only factors driving these additions. For example, the maximum onshore wind imputation in 2012 is inordinately high because it was uncertain whether the PTC would expire at the end of 2012, or if it would be extended. Accordingly, utilities and IPPs rushed to install wind generation before the end of 2012 (Texas alone added 1.9 GW (first in the nation)). Nevertheless, EPA selects that highly anomalous year as representative of what should be *expected* for each and every year from 2024 through 2030.
- *The issues with the overly-optimistic Building Block 3 imputations flow through the rest of the analysis.* At this juncture, this calculation methodology appears to drive the inordinately low coal-fired EGU CO₂ emission rates set forth above in the Texas Interconnection and Western Interconnection.
- ***The new BSER severely affects states with coal-centric generation mixes.*** The chart included as Attachment A illustrates the impact of the new BSER construction on states



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with coal-centric generation mixes. These states clearly lose in the final rule, while states with more gas (*i.e.*, Arizona) and under construction nuclear (*i.e.*, Georgia, Tennessee, and South Carolina) are the winners based on the new formula. For example, South Carolina needed to achieve a 57% emission reduction from its historic 2012 baseline pursuant to the formula in the proposed rule. In the final rule, it is reduced to 35%. For many states, however, and specifically energy-producing states, the result is quite the opposite. Attachment B is a graph created by Sidley Austin LLP that provides a helpful visual illustrating the winners and losers under the BSER as set forth in the final rule compared to the original carbon budget allocations.

- ***EPA is making an all-out push for trading.*** The model federal plan is an emissions trading scheme, and EPA also notes that it provides a model trading rule for states that want to adopt a trading scheme. Said another way, if states simply import the federal template into a state plan then EPA will approve the plan. We are still working through all of the complications and issues associated with emissions trading on the scale that EPA wants, from the need for a significant oversight apparatus to substantial transfer payments among participants, but EPA's desire for this result is plain in the final rule.

Attachment A

States (2012 CO₂ Baseline lbs. per Megawatt hour)	Proposed Rule 2030 Carbon Goal (CO₂ lbs./MWh)	Percentage Reduction from 2012 Baseline	Final Rule 2030 Carbon Goal (CO₂ lbs./MWh)	Percentage Reduction from 2012 Baseline	Percentage Change in Carbon Limit Standard
Colorado (1973) – 64% Coal	1108	43.8%	1174	40.5%	-8%
Illinois (2208) – 43% Coal	1271	42.4%	1245	43.6%	3%
Indiana (2021) – 84% Coal	1531	24.3%	1242	38.5%	58%
Iowa (2195) – 59% Coal	1301	40.7%	1283	41.5%	2%
Kansas (2319) – 61% Coal	1499	64.6%	1293	44.2%	-46%
Kentucky (2166) – 93% Coal	1763	18.6%	1286	40.6%	118%
Maryland (2031) – 44% Coal	1187	41.6%	1287	36.6%	-14%
Michigan (1928)- 54% Coal	1161	39.8%	1169	39.4%	-1%
Minnesota (2033) – 46% Coal	873	57.1%	1213	40.3%	-42%
Missouri (2008) – 83% Coal	1544	23.1%	1272	36.7%	59%
Montana (2481) – 53% Coal	1771	28.6%	1305	47.4%	66%
Nebraska (2161) – 72% Coal	1479	31.6%	1296	40%	27%
North Dakota (2368) – 79% Coal	1783	24.7%	1305	44.9%	82%
Ohio (1900) – 69% Coal	1338	29.6%	1190	37.4%	26%
South Dakota (2229) – 29% Coal	741	66.8%	1167	47.6%	-14%
Tennessee (2015) – 41% Coal	1163	42.3%	1211	39.9%	-6%
Utah (1874) – 81% Coal	1322	29.5%	1179	37.1%	26%
West Virginia (2064) – 95% Coal	1620	21.5%	1305	36.8%	71%
Wisconsin (1996) – 62% Coal	1203	39.7%	1176	41.1%	4%
Wyoming (2331) – 89% Coal	1714	26.5%	1299	44.3%	67%

Difference Between Proposed and Final Rate-based Goal

