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EPA's proposed power plant greenhouse gas emissions rule: Third time's a charm?

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On May 11, 2023, the Environmental Protection Agency announced a proposed rule to regulate greenhouse gas (GHG) emissions from new and existing fossil fuel-fired power plants. The rule would require plants to employ measures to lower GHG emissions, including technologies to capture and sequester their GHG emissions or co-fire with low-GHG hydrogen. However, once final, the rule is expected to face significant legal, political and technological challenges.

On May 11, 2023, the United States Environmental Protection Agency (EPA) proposed a rule (the Power Plant GHG Rule) regulating greenhouse gas (GHG) emissions from new and existing fossil fuel-fired power plants under Section 111 of the Clean Air Act (the CAA). The Power Plant GHG Rule would require fossil fuel-fired power plants to employ a range of measures to lower GHG emissions, including technologies to capture and sequester their GHG emissions or co-fire with low-GHG hydrogen beginning in 2030. EPA is expected to issue a final Power Plant GHG Rule in June 2024.

Addressing GHG emissions from the power sector – the nation's single largest stationary source of GHG emissions – is critical to the Biden administration's overall climate goals, which include a target to have a carbon neutral power grid by 2035. The Inflation Reduction Act (IRA) is designed to further this goal by investing billions of dollars to promote the development and commercialization of climate control technologies such as carbon capture and sequestration/storage (CCS) and clean hydrogen. The Power Plant GHG Rule seeks to impose the adoption of these technologies by certain facilities that are expected to have the largest long-term impact on GHG emissions.

However, as with EPA's prior efforts at regulation of GHGs from power plants, political and legal factors present significant obstacles to the Power Plant GHG Rule becoming effective: a change in presidential administration would mean a likely repeal of the rule, and court challenges – including under the backdrop of the recent U.S. Supreme Court decision *West Virginia v. EPA*, which narrowed EPA's authority to regulate power plant GHG emissions under the CAA – could be successful. Finally, if the rule survives, a key open question is whether the infrastructure and technologies necessary to support CCS and clean hydrogen will become sufficiently mature by the relevant compliance dates so that they are economically viable.

Background

The Power Plant GHG Rule is the latest in a series of regulatory efforts by EPA – each under a different presidential administration – to address GHG emissions from the power sector under Section 111 of the CAA. Section 111 calls on EPA to issue (1) performance standards for new sources of emissions in categories found to endanger public health or welfare based on what EPA determines to be the "best system of emission reduction" (BSER) that is adequately demonstrated for a specific pollutant and source under Section 111(b), and (2) emissions guidelines based on BSER for existing sources in those categories that states will in turn use as a basis to develop performance standards for those sources in a plan subject to EPA approval under Section 111(d).

Clean Power Plan. The first of these efforts, the Clean Power Plan (CPP), was issued by the Obama EPA in 2015 for existing fossil fuel-fired power plants. It aimed to reduce GHG emissions from the power sector by thirty-two percent by 2030 relative to 2005 emissions. The CPP set a BSER for existing sources under Section 111(d) of the CAA that was predicated on both improving power plant efficiency and shifting generation from higher-emitting sources (such as coal)

to lower- or zero-emitting sources (such as natural gas or renewables). The "generation-shifting" component of this BSER was a novel approach referred to as a "beyond the fence line" measure of reducing GHG emissions across the power sector as a whole, rather than at individual plants. The CPP never took effect as it was immediately stayed by the U.S. Supreme Court after being issued and was ultimately repealed by the Trump EPA in 2018. In addition, in June 2022, the U.S. Supreme Court in *West Virginia v. EPA* ruled that the CPP was invalid on the basis that EPA did not have the authority to mandate generation shifting by the power sector without explicit Congressional authority.

Concurrent with the issuance of the CPP, EPA issued standards of performance for new, modified and reconstructed fossil fuel power plants under Section 111(b) (the 2015 NSPS). These standards – which were not overturned by the Trump EPA or legal challenges – require that new, modified or reconstructed coal-fired power plants include high efficiency technologies and partial CCS and/or natural gas co-firing. They also require new and reconstructed base load natural gas-fired combustion turbines to include natural gas combined cycle technology, and new and reconstructed non-base load natural gas units (as well as base load and non-base load multi-fuel units) to burn lower-GHG emitting fuels.

The Affordable Clean Energy rule. In 2018, the Trump EPA replaced the CPP with the Affordable Clean Energy (ACE) rule, which rejected the CPP's beyond the fence line, generation-shifting approach under the theory that Section 111(d) only allowed "within the fence line" approaches. As such, the ACE rule set a BSER for existing power plants that used source-specific efficiency improvements, but not the CPP's generation-shifting approach. Litigation challenging the ACE rule ensued, and in 2021, the U.S. Court of Appeals for the District of Columbia vacated the rule in *American Lung Association v. EPA*, finding that the ACE rule's rejection of a beyond the fence line BSER erroneously interpreted Section 111(d).[1]

Key provisions

The Power Plant GHG Rule proposes to repeal the ACE Rule and regulate new and existing fossil fuel-fired power plants by varying the BSER based on the subcategory of each emissions source. In broad strokes, the stringency of the BSER selected by EPA is tied to the impact facilities in a particular subcategory will have on GHG emissions. The strictest and most costly BSERs – CCS and co-firing with low-GHG hydrogen (i.e., hydrogen derived through the use of low-GHG emitting fuels) – is limited to the largest sources expected to have the longest service life, including new and reconstructed intermediate or baseload combustion turbines, large, frequently operated existing combustion turbines and long-term existing coal-fired steam generating units.

The key elements of the Power Plant GHG Rule are summarized below. A chart outlining the BSER and actual or presumptive performance standard for each subcategory is set forth below and linked here.

New or reconstructed fossil fuel-fired stationary combustion turbines. This source category applies to combustion turbine facilities that commence construction or reconstruction after the date of publication of the Power Plan GHG Rule in the *Federal Register*. EPA is proposing to create three subcategories based on the function the combustion turbine serves: low, intermediate and base load. The BSER for each is as follows:

- **Low load turbines:** BSER is the use of lower emitting fuels (i.e., fuels with an emissions rate ranging from 120 lb CO_2/MMBtu to 160 lb CO_2/MMBtu, such as natural gas and distillate oil).
- **Intermediate load turbines:** BSER is made up of two components that apply in phases:
  - The use of highly efficient generating technology (i.e., the most efficient available turbines) by the date the Power Plant GHG Rule is promulgated in final form. This component continues in place throughout the life of the unit.
  - Co-firing of 30% (by volume) of low-GHG hydrogen by 2032.
- **Base load turbines:** BSER is made up of two components that apply in phases:
  - The use of highly efficient generating technology by the date the Power Plant GHG Rule is promulgated in final form. This component continues in place throughout the life of the unit.
  - Either of the following pathways:
    - The use of CCS to achieve a 90% capture of GHG emissions from those sources by 2035, or
    - Co-firing of 30% (by volume) of low-GHG hydrogen by 2032, ramping up to 96% by 2038.

New or reconstructed steam generating units. The Power Plant GHG Rule does not propose new standards for new or reconstructed steam generating units, because these are mainly coal-fired and EPA does not expect any new coal-fired power plants to be built. However, the 2015 NSPS for these sources, which identified efficiency measures and partial CCS and/or natural gas co-firing as BSER, will remain in place.

Large modifications of existing steam generating units. For existing coal-fired steam generators that undertake a large modification (i.e., a change that increases hourly CO_2 emissions by more than 10% compared with previous 5 years), the Power Plant GHG Rule mirrors the guidelines for existing long-term coal-fired steam generators (see below).

Existing fossil fuel-fired stationary combustion turbines. The Power Plant GHG Rule would establish two BSER pathways for large natural gas fired combustion turbines (i.e., larger than 300 MW) that are frequently operated (i.e., with an annual capacity factor of greater than 50%). These pathways track the second phase of the BSER for new or reconstructed baseload combustion turbines discussed above:

- The use of CCS to achieve a 90% capture of GHG emissions from those sources by 2035.
- Co-firing of 30% (by volume) of low-GHG hydrogen by 2032, ramping up to 96% by 2038.

EPA is soliciting comment on how to regulate smaller and/or less frequently used combustion turbines and plans to undertake a separate rulemaking to address these units.

Existing fossil fuel-fired steam generating units. For existing fossil fuel-fired steam generating units, the Power Plant GHG Rule identifies the BSER and degree of emission limitation requirements for subcategories of coal-fired units and natural gas- or oil-fired units.

- **Coal-fired units.** Consistent with stakeholder input, the Power Plant GHG Rule divides coal-fired units into subcategories based on operating horizon (i.e., the dates these units will permanently cease operations). BSER for each of the four subcategories of coal-fired steam generating units are as follows:
  - **Long-term units** (i.e., planned to remain in use past December 31, 2039): BSER is CCS with 90% capture of CO_2 with associated degree of 88.4% reduction in emission rate by 2030.
  - **Medium-term units** (i.e., committed to cease operations between December 31, 2031 and January 1, 2040 and are not in other subcategories): BSER is co-firing 40% (by volume) natural gas with associated degree of 16% reduction in emission rate by 2030.
  - **Near-term units** (i.e., committed to cease operations between December 31, 2031 and January 1, 2035 and that adopt an annual capacity factor limit of 20%): BSER is continued routine operation and maintenance.
  - **Imminent-term units** (i.e., committed to cease operations before January 1, 2032): BSER is continued routine operation and maintenance.
- **Natural gas- or oil-fired units.** For existing natural gas- and oil-fired steam generating units, the Power Plant GHG Rule divides subcategories based on capacity. Recognizing that virtually all of these units have limited operation, the Power Plant GHG Rule proposes to set the BSER for baseload and intermediate load units as routine methods of operation and maintenance with an associated degree of emission limitation of no increase in emission rate. Because natural gas- and oil-fired steam generating units with low load have large variations in emission rates, the Power Plant GHG Rule does not propose a BSER or degree of emission limitation for those units in this Power Plant GHG Rule.

State plans for existing sources. Consistent with Section 111(d) of the CAA, under the Power Point GHG Rule, states are required to submit plans to EPA that establish and enforce performance standards for existing sources consistent with the BSER and associated emissions guidelines established by EPA. The proposed deadline for submitting state plans is within 24 months of the effective date of the Power Plant GHG Rule, or June 2026 if the rule is finalized in accordance with EPA's stated timetable for a final rule. These state plans must generally meet or exceed the emission guidelines set by EPA. State plans must also address any adoption of less stringent standards based on factors like remaining useful life, requiring states to demonstrate that BSER cannot reasonably be achieved. In addition, states would be required to undertake meaningful engagement with communities that are most affected by GHG emissions and other stakeholders. Finally, the Power Plant GHG Rule permits states to propose the use of measures such as trading and averaging in their plans.

Key considerations and challenges

***West Virginia v. EPA* and the "major questions" doctrine.** As the preamble to the Power Plant GHG Rule makes clear, EPA designed the rule to comply with the principles laid down by the U.S. Supreme Court in *West Virginia v. EPA*. And, at first glance, the rule seems to address the flaws that doomed the CPP – in the new rule, EPA avoided employing "generation shifting" or other "beyond the fence line" measures that led the U.S. Supreme Court to conclude that the authority asserted by EPA in promulgating the CPP was so broad that it implicated the "major questions" doctrine. Instead, EPA selected emissions reductions systems that can be installed at the source of the emissions. As EPA notes in the Power Plant GHG Rule preamble, the U.S. Supreme Court itself referred to "efficiency improvements, fuel-switching, and add-on controls" in *West Virginia v. EPA*[2] as the sorts of traditional emissions control measures that are consistent with well-established EPA rulemaking under Section 111.

Nonetheless, opponents of the Power Plant GHG Rule are likely to assert that the rule runs afoul of *West Virginia v. EPA* . First, opponents might argue that the BSER selected by EPA effectively extends "beyond the fence line" in a number of ways. For example, while the "carbon capture" part of CCS occurs at the source, the "sequestration/storage" part calls for the build out of massive pipeline and storage capacity far beyond the emitting facility. In the case of "low-GHG" hydrogen, the GHG emissions reductions are effectively occurring in connection with the production of the hydrogen rather than at the regulated power plant where it will be used as a fuel. Second, to the extent utilities are forced to shut down or idle fossil fuel-fired power plants due to the commercial non-viability of these measures (see below) and replace them with renewables, it could be argued that the rule effectively calls for the same sort of "generation shifting" that was rejected in *West Virginia v. EPA* even if it does not do so explicitly.

Whether CCS and low-GHG hydrogen are "adequately demonstrated." Another key legal question the Power Plant GHG Rule can be expected to face is whether CCS and low-GHG hydrogen co-firing are adequately demonstrated emissions reductions systems in accordance with Section 111 of the CAA, particularly after "taking into account the cost." While both are well-established technologies, neither have been commercially deployed on a widespread scale. In fact, the preamble points to a single operating coal power plant in Canada employing CCS and a handful of hydrogen-fired combustion turbine projects in the planning stages, and acknowledges that the infrastructure necessary for either technology is not currently in place. According to EPA, however, Section 111 authorizes it to "reasonably project," based on current technologies what may be available to the industry in the future. Given the current state of technology, the incentives available under the IRA, and the lead time until the first compliance dates, EPA's position is that these technologies meet the requirements of Section 111.

Technological progress is hard to predict. If the Power Plant GHG Rule is finalized, whether in fact the technologies it considers BSER will be commercially deployable by 2030 is an open question. Past EPA rulemakings in the area demonstrate that future market and technological trends are difficult to foresee – for example, the CPP's targets for GHG emissions from the power sector by 2030 were met about a decade earlier without the CPP ever going into effect. Predicting what the state of CCS and clean hydrogen technology, as well as the substantial infrastructure necessary to support them nearly a decade in advance, is subject to considerable uncertainty.

Impact of the 2024 presidential election. Assuming the Power Plant GHG Rule is finalized and survives legal challenges, we would expect that a change in the political party in control of the White House in 2024 will cause the Power Plant GHG Rule to be repealed and replaced – the same fate as the ACE Rule and the CPP. Another possibility is a Congressional Review Act (CRA) resolution to void the Power Plant GHG Rule, which will allow a future administration to avoid the long and complex rulemaking process necessary for a repeal by rule. EPA indicated that it expects to finalize the Power Plant GHG Rule in June 2024. Under the CRA, however, regulations promulgated in the final few months of a Congressional term in a presidential election year are vulnerable to a CRA resolution at the beginning of the new presidential term. While the deadline for issuing rules so that they are not subject to CRA resolutions in the following presidential term is determined by the congressional calendar of the particular session, this deadline typically occurs in May or June.

If you have any questions regarding the matters covered in this publication, please reach out to any of the lawyers listed below or your usual Davis Polk contact.

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1 Because this decision was effectively reversed by *West Virginia v. EPA*, as a technical legal matter the ACE Rule went back into effect in October 2022. However, EPA never took any steps to administer it or enforce its terms.

2 142 S. Ct. at 2611 (quoting the Clean Power Plan).

Appendix

Proposed BSER for new or reconstructed stationary combustion turbines under Section 111(b)

Phase I (By date of promulgation or upon initial startup)	**Phase II** Beginning in 2032 or 2035	**Phase III** Beginning in 2038
Low load subcategory (capacity factor <20%)		

<table>
<tr><td>BSER: Use of low emitting fuels (e.g., natural gas and distillate oil)

Standard of performance: 120 lb CO_2/MMBtu-160 lb CO_2/MMBtu, depending on fuel type</td><td>No proposed Phase II BSER component or standard of performance</td><td>No proposed Phase III BSER component or standard of performance</td></tr>
<tr><td colspan="3">Intermediate load subcategory (capacity factor 20% to ~50%[3])</td></tr>
<tr><td>BSER: Highly efficient simple cycle generation

Standard of performance: 1,150 lb CO_2/MWh-gross</td><td>BSER: Continued highly efficient simple cycle generation with 30% (by volume) low-GHG hydrogen co-firing by 2032

Standard of performance: 1,000 lb CO_2 /MWh-gross</td><td>No proposed Phase III BSER component or standard of performance</td></tr>
<tr><td colspan="3">Base load subcategory (capacity factor >~50%) Limit</td></tr>
<tr><td rowspan="4">BSER: Highly efficient combined cycle generation

Standard of performance:

– 770 lb CO_2/MWh-gross for EGUs with a base load rating of 2,000 MMBtu/h or more
– 770 lb – 900 lb CO_2/MWh-gross for EGUs with a base load rating of less than 2,000 MMBtu/h</td><td colspan="2">Low-GHG Hydrogen Pathway BSER</td></tr>
<tr><td>BSER: Continued highly efficient combined cycle generation with 30% (by volume) low-GHG hydrogen co-firing by 2032

Standard of performance: 680 lb CO_2 /MWh-gross</td><td>BSER: 96% (by volume) low-GHG hydrogen co-firing beginning in 2038

Standard of performance: 90 lb CO_2/MWh-gross</td></tr>
<tr><td colspan="2">CCS Pathway BSER</td></tr>
<tr><td>BSER: Continued highly efficient combined cycle generation with 90% CCS by 2035

Standard of performance: 90 lb CO_2 /MWh-gross</td><td>No Phase III BSER component or standard of performance</td></tr>
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Proposed BSER for existing sources under Section 111(d)

BSER	Emissions guideline/ Presumptive Performance Standard
Large, frequently operated existing fossil fuel-fired stationary combustion turbines (larger than 300 MW with an annual capacity factor of greater than 50 percent)	
CCS Pathway BSER: Highly efficient generation with 90% CCS by 2035	90 lb CO_2/MWh-gross
Low-GHG Hydrogen Pathway BSER: – Highly efficient generation with 30% (by volume) low-GHG hydrogen co-firing by 2032 – Highly efficient generation with 96% (by volume) low-GHG hydrogen co-firing by 2038	680 lb CO_2/MWh-gross 90 lb CO_2/MWh-gross
Long-term coal-fired units (Coal-fired steam generating units that have not committed to cease operations by January 1, 2040)	
90% CCS by 2030[4]	88.4% reduction in annual emission rate (lb CO_2/MWh-gross) from the unit-specific baseline
Medium-term coal-fired units (Committed to ceasing operations between December 31, 2031 January 1, 2040 and that are not in other categories)	
Natural gas co-firing at 40% (by volume) of the heat input to the unit by 2030	16% reduction in annual emission rate (lb CO_2/MWh-gross) from the unit-specific baseline
Near-term coal-fired units (Coal-fired steam generating units committed to ceasing operations between December 31, 2031 and January 1, 2035, and adopting an annual capacity factor limit of 20%) Imminent-term coal-fired units (Coal-fired generating units committed to ceasing operations before January 1, 2032)	

Routine methods of operation and maintenance	**Emission guideline:** No increase in emission rate (lb CO_2/MWh-gross) **Presumptive Performance Standard:** An emission rate limit (lb CO_2/MWh-gross) defined by the unit-specific baseline
Base load natural gas- or continental and non-continental oil-fired steam generating units (annual capacity factor greater than or equal to 45% for gas-fired and continental oil-fired) (annual capacity factor greater than or equal to 8% for non-continental oil-fired)	
Routine methods of operation and maintenance	**Emission guideline:** No increase in emission rate (lb CO_2/MWh-gross) **Presumptive Performance Standard:** An annual emission rate limit of 1,300 lb CO_2/MWh-gross (except for non-continental oil-fired units, which is an emission rate limit (lb CO_2 /MWh-gross) defined by the unit-specific baseline)
Intermediate load natural gas- or continental and non-continental oil-fired steam generating units (annual capacity factor greater than or equal to 8% and less than 45% for gas-fired and continental oil-fired) (annual capacity factor greater than or equal to 8% for non-continental oil-fired)	
Routine methods of operation and maintenance	**Emission guideline:** No increase in emission rate (lb CO_2/MWh-gross) **Presumptive Performance Standard:** An annual emission rate limit of 1,500 lb CO_2/MWh-gross (except for non-continental oil-fired units, which is an emission rate limit (lb CO_2 /MWh-gross) defined by the unit-specific baseline)

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3 The upper bound is source-specific that is based on the design efficiency of the combustion turbine.

4 Same BSER applies to existing coal-fired steam generating units that underwent a large modification (i.e., a change that increases hourly CO_2 emissions by more than 10% compared with previous 5 years).