

State of Florida



Public Service Commission

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DATE: October 8, 2015

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RE: Briefing on the U.S. Environmental Protection Agency's Final and Proposed Rules Addressing Carbon Emissions from Electric Utility Generating Units.

CRITICAL INFORMATION: Please place on the October 19, 2015 Internal Affairs.

Briefing Only

On August 3, 2015, the U.S. Environmental Protection Agency (EPA) issued two final rules for publication in the *Federal Register*: (1) Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Generating Units; and (2) Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Generating Units (Clean Power Plan). Along with these final rules, the EPA also issued for publication in the *Federal Register* draft Model Trading Rules and Framework Regulations associated with federal implementation of the Clean Power Plan. The attachment provides a summary of the final and proposed rules.

Attachment

cc: Charlie Beck, General Counsel
Lisa Harvey, Deputy Executive Director, Technical
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Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units

Background

On April 13, 2012, the EPA issued a proposed rule establishing Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units. The EPA received more than 2.5 million comments on the proposed rule. After consideration of the information provided in the comments, the EPA determined that revisions in its proposed approach were warranted. On January 8, 2014, the EPA withdrew the 2012 proposed rule and published in the *Federal Register* a new proposed rule establishing Standards of Performance for New Stationary Sources. The Commission submitted comments to the EPA on the proposed rule in February 2014. On June 18, 2014, the EPA published in the *Federal Register* a proposed rule establishing Carbon Pollution Standards for Modified and Reconstructed Stationary Sources. On August 3, 2015, the EPA issued for publication in the *Federal Register* the final Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources. As of October 6, 2015, the final rule has not been published in the Federal Register.

New, Modified, Reconstructed Sources

The EPA's final rule to limit carbon dioxide (CO₂) emissions from new, modified, and reconstructed power plants establishes separate standards for two types of fossil fuel-fired sources: stationary combustion turbines (generally natural gas) and steam generating units (generally coal). It applies to electric generating units that are larger than 25 MW and are capable of combusting more than 250 MMBtu/h heat input of fossil fuels.¹ A new source is a fossil fuel-fired power plant that commenced construction on or after January 8, 2014. A modification is any physical or operational change to an existing source, on or after June 18, 2014, that increases the source's maximum achievable hourly rate of air emissions. A reconstructed source is a generating unit that replaces components, on or after June 18, 2014, to such an extent that the capital cost of the new components exceeds 50 percent of the capital cost of an entirely new comparable facility.

Natural Gas

For new and reconstructed natural gas combustion turbine units, the final standards are based on a best system of emission reduction (BSER) of natural gas combined cycle technology. The final rule establishes separate standards for baseload, non-baseload, and "multi-fuel-fired" generating units.² The EPA has withdrawn the proposal to set a standard for modified natural gas units until additional information is gathered. The performance standards are shown in Table 1.

Coal

The BSER utilized in establishing standards for new coal generating units is supercritical pulverized coal technology with partial carbon capture and storage (CCS). The final performance standard for new coal power plants is less stringent than those proposed in 2014; however, the performance standard still requires the implementation of some level of CCS (estimated to be

¹ EPA is not issuing standards for biomass units or industrial combined heat and power.

² Units are designated baseload or non-baseload through a consideration of case-specific technology, nameplate capacity, and MWHs. The EPA defined "multi-fuel-fired" as a source that is physically connected to a natural gas pipeline but burns a fuel other than natural gas for more than 10 percent of its energy.

between 16% and 23% of CO₂ emissions). The EPA increased the emission limit in response to information and comments regarding the cost to implement CCS, but kept partial CCS to promote implementation and development of the technology.

For coal units with modifications that result in an increase in hourly CO₂ emissions greater than 10 percent, the EPA is setting the BSER based on each generating unit's best potential performance. A modified unit will be required to meet a standard consistent with its best historical annual performance during the years from 2002 to the time of the modification. The EPA determined that this standard can be met through a combination of best operating practices and equipment upgrades. The EPA is withdrawing its proposal to set performance standards for units that make smaller modifications resulting in less than 10 percent increase in hourly CO₂ emissions.

The BSER for reconstructed coal generating units is the performance of the most efficient generating technology for these types of units, supercritical technology for large units and subcritical for small. The performance standards for coal units are shown in Table 2.

Table 1
Final Standards for Affected Natural Gas-Fired Power Plants

Affected Source	2015 Final Standard
New or Reconstructed	Baseload: 1,000 lbs. CO ₂ /MWh-gross or 1,030 lb. CO ₂ /MWh-net Non-baseload: 120 lbs. CO ₂ /MMBtu ³ Multi-fuel-fired: 120 to 160 lbs. CO ₂ /MMBtu
Modified	Withdrawn at this time.

Table 2
Final Standards for Affected Coal-fired Power Plants

Affected Source	2015 Final Standard
New	1,400 lb. CO ₂ /MWh-gross
Reconstructed	Large (heat input >2,000 MMBtu/h): 1,800 lbs. CO ₂ /MWh Small: 2,000 lbs. CO ₂ /MWh
Modified	Unit specific best historical performance, not to exceed standard for reconstructed.

³ For non-baseload and multi-fuel-fired units, emission rate is set based on fuel burned rather than energy generated.

Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units

Background

On June 18, 2014, the EPA published a draft rule that would limit carbon dioxide (CO₂) emissions from existing electric utility generating facilities (Clean Power Plan).⁴ The EPA took comments on the draft Clean Power Plan through December 1, 2014. The Commission filed comments stressing concerns of potential adverse reliability impacts, reduced fuel diversity, and cost increases to Florida's electric consumers. On August 3, 2015, the EPA issued the final Clean Power Plan, along with draft rules addressing the associated Federal Implementation Plan and Model Trading Rules. As of October 6, 2015, the final rule has not been published in the *Federal Register*.

Clean Power Plan

The Clean Power Plan establishes the following:

- Separate CO₂ emission rate limits for existing fossil steam electric generating facilities (coal and oil-fired boiler technologies) and stationary combustion turbine electric generating facilities (includes natural gas-fired combined cycle technologies),
- State-specific CO₂ emission limits, and
- Guidelines for the development, submittal and implementation of required state plans.

The EPA cites to Section 111(d) of the Clean Air Act as its authority to establish the Clean Power Plan. Section 111(d) describes a process whereby the EPA develops guidelines and then states apply those guidelines to establish standards of performance in a State Implementation Plan. The EPA develops guidelines through its determination of the best system of emissions reduction (BSER).

For purposes of the Clean Power Plan, the EPA considered existing technologies and measures, as well as the remaining useful life of the affected facilities, and determined a BSER comprised of three building blocks:

- Building Block 1 – increasing the efficiency of existing coal-fired power plants
- Building Block 2 – shifting electric generation to lower emitting natural gas-fired power plants
- Building Block 3 – increased use of renewable energy resources such as wind and solar.

The EPA applied the BSER gradually from 2022 through 2030 (glide path). In doing so, it assessed the impacts to electric generating systems in three distinct geographic regions, Eastern, Western and Texas. For each region, the EPA estimated the annual CO₂ emissions and electric generation from fossil steam and stationary combustion turbine power plants.⁵ In each year, the EPA selected the least stringent CO₂ emission rate (lbs. CO₂ /MWh) from the regional data sets for fossil steam to be the national standard for all existing fossil steam generating facilities. In a

⁴ <http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf>

⁵ Fossil steam refers to coal and oil-fired boiler technology. Stationary combustion turbine refers to natural gas-fired simple cycle and combined cycle power plants.

similar manner, the EPA set the national CO₂ emission rate standard for all existing stationary combustion turbine generating facilities. Thus, the Clean Power Plan sets unique CO₂ emission limits for these two electric generation technologies. The rule establishes standards applicable to an interim period (2022 - 2029) and a final standard effective thereafter. These standards are shown in Table 3.

State-specific emission rate performance is determined using the state’s 2012 electric generation from the two technologies and the respective national standards. This results in an average or blended emission limitation for each year after 2021. The resultant annual state-specific emission rates are then averaged to create three interim periods (2022-2024, 2025-2027, and 2028-2029). This results in stepped emission reduction requirements through the interim period. Each state’s CO₂ emission performance requirements are expressed in terms of a rate limit (lbs. CO₂ / MWh) and the equivalent mass limit (short tons of CO₂). Unlike a rate approach, the equivalent mass limit is cumulative over a given period. Additionally, the final mass limitation is a two-year total beginning with 2030-2031 and applied to running two-year periods thereafter. Florida’s CO₂ emission rate and mass limits are shown in Tables 4 and 5, respectively.

Table 3
Annual National Standards (lbs. CO₂ /MWh)

	Interim Period Average 2022-2029	Final
Fossil Steam	1,534	1,305
Stationary Combustion Turbine	832	771

Table 4
Florida’s CO₂ Emission Rate Limits for Existing Facilities (lbs. / MWh)

	2022 - 2024	2025 - 2027	2028 - 2029	Final 2030
Annual Averages	1,097	1,006	949	919
Interim Average	1,026			

Table 5
Florida’s CO₂ Emission Mass Limits for Existing Facilities (Million Tons)

	2022 - 2024	2025 - 2027	2028 - 2029	Final 2030-2031
Interim Periods	358	332	213	210
Interim Total	904			

State Implementation Plan

The Clean Power Plan provides guidelines that allow each state to develop its individual compliance plan (State Implementation Plan). A State Implementation Plan can:

- Prescribe either a rate standard or a mass standard⁶
- Place all requirements directly on just the fossil steam and stationary combustion turbine power plants (i.e., emission standards that are federally enforceable)
- Establish a combination of federal and state standards
- Include application of state policy in designing CO₂ emission allocations and trading
- Be multi-state
- Establish a 90-day waiver for operational reliability emergencies (reliability safety valve)
- Qualify for early emission rate credits or allowances⁷ through wind and solar generation and demand-side energy efficiency programs in low-income communities that result in sustained emission reductions in 2020 and 2021 (Clean Energy Incentive Program).

States can also develop a comprehensive plan that addresses CO₂ emission limitations placed on both existing facilities and new or modified facilities. For states considering a comprehensive plan, the EPA slightly increased the mass limits but not the rate limits previously discussed. Regardless of how a state designs its plan, it must include a federally enforceable backstop. A state may even elect to default to a Federal Implementation Plan. In Florida, the agency responsible for development and enforcement of a State Implementation Plan is the Florida Department of Environmental Protection.

Compliance Timeline

All states are required to file a State Implementation Plan or request a two-year filing extension by September 6, 2016. An extension request must identify the tentative plan approach, explain why an extension is needed, and describe opportunities for public and stakeholder participation. An extension request is considered granted unless the EPA notifies the state of deficiencies within 90 days. States with extensions must file a progress report by September 6, 2017. The report must document progress in developing the State Implementation Plan and declare the state's compliance approach including any applicable legislation or rulemaking efforts. All states are required to file a State Implementation Plan by September 6, 2018.

EPA and Court Proceedings Since Release of the Final Rule

On August 5, 2015, the Attorneys General for West Virginia, Alabama, Arizona, Arkansas, Indiana, Kansas, Kentucky, Louisiana, Nebraska, Ohio, Oklahoma, South Carolina, South Dakota, Utah, Wisconsin, and Wyoming filed an application with the EPA for an administrative stay of the Clean Power Plan on behalf of their respective states. On August 20, 2015, the State of Texas Environmental Protection Division through its Attorney General filed a request for stay. These requests for stay did not include requests for reconsideration of the final rule. On September 2, 2015, the State of New Jersey Department of Environmental Protection filed a request for stay and reconsideration of the Clean Power Plan with the EPA. These requests are pending with the EPA. If the EPA convenes a proceeding for reconsideration, it may solicit

⁶ State Implementation Plans that prescribe a mass standard must address the potential for generation shifting from existing generation plants to excluded/not-affected new facilities such that total emissions increase (leakage).

⁷ An emission rate credit is a pound of CO₂ per megawatt hour. An allowance is a short ton of CO₂.

additional public comment. During a reconsideration proceeding, the effectiveness of the rule may be stayed by EPA or the court for a period not to exceed three months.

On August 11, 2015, Attorneys General for Florida, West Virginia, Alabama, Arkansas, Indiana, Kansas, Kentucky, Louisiana, Michigan, Nebraska, Ohio, Oklahoma, South Dakota, Wisconsin, and Wyoming, on behalf of their respective states, filed an emergency petition for extraordinary writ, asking the United States Court of Appeals for the District of Columbia Circuit Court to stay the effect of the Clean Power Plan until all litigation on the rule has ended. The EPA's response in opposition was, essentially, that the request for stay was premature and did not meet the requirements for issuance of an extraordinary writ because there is a statutory procedure for challenging the Clean Power Plan that must be followed after the final rule's publication in the Federal Register. On September 9, 2015, the Court denied the States' petition because it did not satisfy the stringent standards that apply to petitions for extraordinary writs that seek to stay agency action.

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

Background

On August 3, 2015, the EPA issued two draft model rules for purposes of the EPA's implementation and oversight of the Clean Power Plan. One rule is a mass-based compliance approach to the Clean Power Plan while the other is a rate-based compliance approach. Each draft rule includes a description of a model Federal Implementation Plan, CO₂ emissions trading, and the pertinent procedural matters (framework regulations). As of October 6, 2015, the draft rules have not been published in the *Federal Register*. The EPA will take comments for 90 days after the date of publication in the *Federal Register*. The EPA plans to finalize both or only one of the proposed rules in the summer of 2016.

Within 60 days of receipt of a State Implementation Plan, the EPA must notify the state whether the filing is complete. If a state fails to file a plan by the applicable due date, then the EPA must promulgate a Federal Implementation Plan for that state within one year. If the EPA receives a deficient request for filing extension, that is not remedied, then the EPA must promulgate a Federal Implementation Plan within one year of the deficiency notification. The rule provides for partial plan approval as well as conditional approval. If the EPA partially disapproves a State Implementation Plan, the EPA is required to issue a Federal Implementation Plan addressing the partial disapproval. In all cases, states retain the ability to file a subsequent State Implementation Plan to replace the Federal Implementation Plan.

The Clean Energy Incentive Program

The draft trading rules both contain provisions for the Clean Energy Incentive Program (CEIP). Under this program, the EPA establishes a CEIP reserve of tradable instruments using two sources. One source of tradable instruments is a portion of the performance requirements under the Clean Power Plan during the 2022-2024 compliance period and the other source is a matching bonus allocation. The CEIP reserve consists of two set-asides, one for new wind and solar projects, and another for new end-use energy demand projects implemented in low-income communities. Owner/operators may qualify for awards from the CEIP reserve for projects begun after August 2018 that result in carbon-free generation or reduced end-use energy demand during 2020 and/or 2021.

Draft Federal Plan Rules

A Federal Implementation Plan implements a federally, not state, enforced CO₂ emissions limit and provides for emissions trading. The draft model rules provide a generic outline to be used by the EPA to establish a Federal Implementation Plan for a state. As such, the proposed rules serve as a model for states to design State Implementation Plans. However, State Implementation Plans may also include options that are not found in the draft rules.

Draft Model Trading Rules

The mass-based and rate-based model trading rules share a general set of common terms. These include definitions and procedural requirements for establishing Clean Power Plan emission

trading programs. Additionally, each trading rule addresses the unique characteristics for determining compliance with the Clean Power Plan when using the respective mass-based or rate-based trading program. The tradeable compliance instrument in a mass-based program is a CO₂ allowance. One CO₂ allowance is a limited authorization to emit one ton (2,000 pounds) of CO₂. Similarly, the tradeable compliance instrument in a rate-based program is an emission rate credit (ERC). An ERC is one-megawatt hour generated or saved with zero associated CO₂ emissions.

The mass-based trading rule is analogous to the existing acid rain SO₂ allowance-trading program (cap-and-trade). The EPA proposes that the total number of CO₂ allowances necessary to achieve compliance during a given period be allocated to the owners/operators of affected sources and zero-emitting resources. Owners/operators of emitting resources can emit up to their allotment or acquire additional allowances as may be needed for compliance. A State Implementation Plan may prioritize allowance allocations to specific resources as long as the state demonstrates compliance with the Clean Power Plan.

The rate-based trading rule is premised on owners/operators earning ERCs when emission rates are below the applicable standard, and conversely, purchasing ERCs when performing above the standard. Consequently, owners/operators of fossil steam technologies (coal) will either emit below the rate standard and generate ERC's or acquire sufficient ERCs to achieve compliance. Owners/operators of natural gas combined cycle technologies are similarly situated; however, Clean Power Plan requirements for re-dispatch result in an additional type of ERC (GS-ERC) that can only be used for trading. Owners/operators of qualifying zero-emitting resources that petition for ERC's will be awarded ERCs upon satisfying the EPA's procedural requirements.