

Technical Bulletin

Summary of Clean Power Plan

On October 23, 2015, the U.S. Environmental Protection Agency (EPA) published final Greenhouse Gas (GHG) Emission Standards for new, modified, and reconstructed Electric Utility Generating Units (EGUs) under 40 Code of Federal Regulations (CFR) Part 60, Subpart TTTT. Also on October 23, EPA promulgated the final Emission Guideline (EG) rule for GHG Emissions from existing EGUs under 40 CFR Part 60, Subpart UUUU as well as a proposed Federal Plan and Model Rule to assist states in implementing the rules.

Collectively, the standards represent the Obama Administration's and EPA's Clean Power Plan, which are the first-ever national standards that address carbon pollution from power plants.

Final Standards for New EGUs

The standards under 40 CFR Part 60, Subpart TTTT represent a New Source Performance Standards (NSPS) for EGUs, which will apply to new sources built in the future or to existing units that meet specific conditions detailed in the Clean Air Act for "modification" or "reconstruction."

In this final action, EPA established separate standards for two types of fossil-fuel fired sources:

- Stationary combustion turbines, generally firing natural gas; and
- Electric utility steam generating units, generally firing coal

These final standards reflect the degree of emission limitation achievable through the application of the best system of emission reduction (BSER) that EPA has determined has been adequately demonstrated for each type of unit. EPA determined that the BSER for new and reconstructed stationary combustion turbines is natural gas combined cycle (NGCC) technology meeting an emission limit of 1,000 pounds of

carbon dioxide (CO₂) per megawatt-hour on a gross-output basis (lb CO₂/MWh-gross). This standard applies to all sizes of base load units. Non-base load units need to meet a clean fuels input-based standard. Whether a unit is base load or non-base load is determined by a "sliding scale" approach that considers both design efficiency and sales.

The final standards for steam units vary depending on whether the unit is new, modified or reconstructed. Each is based on the performance of available and demonstrated technology. The final emission limits for new sources are based on the performance of highly efficient new coal units implementing a basic version of carbon capture and storage (CCS), which would require partial capturing of the CO₂ produced in the facility. The final emission limits for modified and reconstructed sources do not require implementation of CCS.

EPA decided that the BSER for new steam units is a new highly efficient supercritical pulverized coal (SCPC) unit with partial CCS. The final standard is an emission limit of 1,400 lb CO₂/MWh-gross, which is the performance achievable by an SCPC unit capturing about 20 percent of its carbon pollution. EPA determined that the BSER for modified units is based on each affected unit's own best potential performance.

EPA is issuing final standards for those units that make larger modifications resulting in an increase of hourly CO₂ emission of more than 10 percent relative to the emissions of the most recent five years from that unit. A source implementing larger modifications will be required to meet a standard consistent with its best historical annual performance during the years from 2002 to the time of modification. The standard will be in the form of an emission limit in pounds of CO₂ per megawatt-hour on a gross-output basis. EPA determined that this standard can be met through a combination of best operating practices and

equipment upgrades. In addition, modified facilities will not have to meet an emission standard more stringent than the corresponding standard for reconstructed steam units.

EPA has indicated that BSER for reconstructed units is the performance of the most efficient generating technology for these types of units (i.e., reconstructing the boiler if necessary to use steam with higher temperature and pressure, even if the boiler was not originally designed to do so.) The final emission standards are:

- Sources with heat input greater than 2,000 MMBtu/h would be required to meet an emission limit of 1,800 lb CO₂/MWh-gross and
- Sources with a heat input of less than or equal to 2,000 MMBtu/h would be required to meet an emission limit of 2,000 lb CO₂/MWh-gross.

Final Standards for Existing EGUs

The final EG rule is a federal guideline to be used by state and local delegated agencies to develop equivalent rules for implementation of the EG. The proposed Federal Plan would implement these same regulations on federal lands and in state and local jurisdictions that do not develop their EG rules as required or elect to implement the Federal Plan.

Clean Power Plan

The Clean Power Plan is expected to cut significant amounts of power plant carbon pollution while advancing clean energy innovation, development and deployment, and laying the foundation for the long-term strategy needed to tackle the threat of climate change. By providing states and utilities flexibility and time needed to achieve these pollution cuts, the Clean Power Plan offers the power sector the ability to optimize pollution reductions while maintaining a reliable and affordable supply of electricity for ratepayers and businesses.

When the Clean Power Plan is fully implemented in 2030, carbon pollution from the power sector will be 32 percent below 2005 levels, securing continuous progress towards mitigating the effects of climate change. As a result of the Clean Power Plan, additional benefits expected by 2030 include the reduction of sulfur dioxide emissions from power plants by 90 percent compared to 2005 levels, and emissions of nitrogen oxides will be 72 percent lower.

In the final Clean Power Plan, EPA determined that BSER consists of three building blocks:

- **Building Block 1** - reducing the carbon intensity of electricity generation by improving the heat rate of existing coal-fired power plants.
- **Building Block 2** - substituting increased electricity generation from lower-emitting existing natural gas plants for reduced generation from higher-emitting coal-fired power plants.
- **Building Block 3** - substituting increased electricity generation from new zero-emitting renewable energy sources (like wind and solar) for reduced generation from existing coal-fired power plants.

In determining the BSER, EPA considered the ranges of reductions that can be achieved at coal, oil, and gas plants at a reasonable cost by the application of each building block, taking into account how quickly and to what extent the measures encompassed by the building blocks could be used to reduce emissions. EPA applied the building blocks to all of the coal plants and all of the natural gas power plants in each region to produce regional emission performance rates for each category.

The same CO₂ emission performance rates were then applied to all affected sources in each state to arrive at individual statewide rate-based and equivalent mass-based goals. Each state has a different goal based upon its own particular mix of affected sources. EPA is setting emission performance standards for tribes with affected EGUs—Navajo, Fort Mojave, and Ute (Uintah and Ouray). At this time, EPA is not setting

CO₂ emission performance goals for Alaska, Hawaii, Guam or Puerto Rico so that the agency can continue to collect data that can form the basis of standards for power plants there in the future.

The final Clean Power Plan provides guidelines for the development, submittal and implementation of state plans that establish standards of performance or other measures for affected EGUs in order to implement the interim and final CO₂ emission performance rates. States must develop and implement plans that ensure the power plants in their state – either individually, together, or in combination with other measures – achieve the equivalent, in terms of either rate or mass, of the interim CO₂ performance rates between 2022 and 2029, and the final CO₂ emission performance rates for their state by 2030. States may choose between two plan types to meet their goals:

- **Emission standards plan**– includes source-specific requirements ensuring all affected power plants within the state meet their required emissions performance rates or state-specific rate-based or mass-based goal.
- **State measures plan**– includes a mixture of measures implemented by the state, such as renewable energy standards and programs to improve residential energy efficiency that are not included as federally enforceable components of the plan. The plan may also include federally enforceable source-specific requirements.

States can tailor their plans to meet their respective energy, environmental and economic needs and goals, and those of their local communities by:

- Relying on a diverse set of energy resources;
- Protecting electric system reliability;
- Providing affordable electricity; and
- Recognizing investments that states and power companies are already making.

One cost-effective way that states can meet their goals is emissions trading, through which affected

power plants may meet their emission standards via emission rate credits (for a rate-based standard) or allowances (for a mass-based standard). Emission trading is a market-based policy tool that creates a financial incentive to reduce emissions.

The final rule has several features that reflect EPA's commitment to ensuring that compliance with the final rule does not interfere with the industry's ability to maintain the reliability of the nation's electricity supply. In addition to the measures outlined in the rule, EPA, the Department of Energy (DOE), and the Federal Energy Regulatory Commission (FERC) are coordinating efforts to monitor the implementation of the final rule to help preserve continued reliable electricity generation and transmission.

States will be required to submit a final plan, or an initial submittal with an extension request, by September 6, 2016. Final complete state plans must be submitted no later than September 6, 2018. The final rule provides 15 years for full implementation of all emission reduction measures, with incremental steps for planning and demonstration that will ensure progress is being made in achieving CO₂ emission reductions.

Note that the Clean Power Plan is a very controversial regulation so expect numerous lawsuits from stakeholders, states, and industry groups.

For copy of the rule and related documents:

<http://www2.epa.gov/cleanpowerplan>

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