Clean Power Plan – Technical Summary for States

In the final Clean Power Plan (CPP), EPA is establishing interim and final carbon dioxide emission performance rates for two subcategories of fossil fuel-fired electric utility generating units (EGUs) that states can – but are not required to – apply directly to their units:

- 1,305 lbs/MWh for existing fossil fuel-fired electric steam generating units (generally, coal fired power plants)
- 771 lbs/MWh for existing natural gas combined cycle units

Because of the way the interconnected system of electricity generation works in this country and the wide range of strategies available to generators, these rates are reasonable and achievable over time and states have until 2030 to meet them.

In order to maximize the range of choices available to states, EPA is also establishing statewide goals in two forms that are equivalent to the category-specific CO_2 emission performance rates:

- A statewide rate-based goal measured in pounds of CO_2 per megawatt hour (lbs/MWh)
- A statewide mass-based goal measured in total short tons of CO_2 emissions

Clean Air Act Section 111(d) and the BSER (see final rule preamble sections V and VI)

The Clean Air Act – under section 111(d) – creates a partnership between EPA and states – with EPA setting a goal and states choosing how they will meet it. EPA determines an appropriate level of emissions for existing sources of pollution, and the states are given flexibility to meet these levels.

The level of emissions is defined in the law as the best system of emission reduction (BSER).

Consistent with previous BSER determinations in 111(d) rulemakings, the agency considered the types of strategies that states and owners and operators of power plants are already using to reduce CO_2 from fossil fuel-fired power plants.

In determining emission performance rates, EPA took into account the unprecedented input we received through extensive outreach efforts. In the final CPP, EPA determined that BSER is comprised of three building blocks that individually and together reduce the carbon intensity of electricity generation:

- Building Block 1 – increasing the operational efficiency of existing coal-fired power plants.
- Building Block 2 – shifting electricity generation from higher emitting fossil fuel-fired steam power plants (generally coal-fired) to lower emitting natural gas-fired power plants.
- Building Block 3 – increasing electricity generation from renewable sources of energy like wind and solar.

In determining the BSER, EPA considered the ranges of reductions that can be achieved at coal, oil, and gas plants at reasonable cost by application of each building block, considering both stringency and time. These three building blocks are approaches that are available to all affected EGUs.

In assessing the BSER, EPA recognized the interconnected generation and distribution of power within the electricity grid and based our analysis on the three established regional electricity interconnects: the Western interconnection, the Eastern interconnection and the Electricity Reliability Council of Texas interconnection.

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.

From the three resulting regional coal plant rates, and the three regional natural gas power plant rates, EPA chose the most achievable rate for each category to arrive at equitable CO_2 emission performance rates for the country that constitute the BSER.

The same CO_2 emission performance rates for fossil steam and for NGCC were then applied to all affected sources in each state to arrive at individual statewide rate-based and mass-based goals. Each state has a different goal based upon its own particular mix of affected sources.

EPA is not setting CO_2 emission performance goals for Alaska, Hawaii, Guam or Puerto Rico in this final rule at this time. The agency is setting emission standards for affected EGUs on three Indian reservations — Navajo, Fort Mojave, and Ute (Uintah and Ouray).

For more information see www.epa.gov/cleanpowerplan.

The CPP is Responsive to Comments during Proposal (see final rule preamble section V.A.3)

The CPP takes into account the unprecedented input we received through numerous outreach efforts, including the 4.3 million comments that were submitted to the agency. Specifically, we have addressed the following issues, all of which were raised by stakeholders:

- EQUITY - Emission guidelines provide two source category-specific CO_2 emission performance rates (one for coal/oil and one for natural gas units) and equivalent rate-based and mass-based state goals. The state goals still reflect the unique energy mix in each state while treating power plants equally across the country.
- INTERCONNECTED GRIDS, NOT STATE BORDERS - Three building blocks that comprise the BSER are quantified at three regional "interconnect" levels – East, West, and Texas – based on the North American Electric Reliability Corporation interconnections.
- ADJUSTMENTS TO BUILDING BLOCKS - BSER is based on 3 building blocks that focus on CO_2 reduction opportunities in power generation. While demand-side EE is not a BSER building block in the final rule, the CPP's flexible compliance options provide a wide berth for states to fully deploy energy efficiency (EE) to meet their state goals.
    - Building Block 1: Region-specific heat rate improvement applied to the coal steam fleet to make these units more efficient (a range from 2.1 to 4.3%, not 6% nationwide as proposed)
    - Building Block 2: Phased-in increase of existing natural gas combined cycle (NGCC) to 75% net summer capacity (rather than 70% nameplate capacity as proposed)
    - Building Block 3: Greater use of new renewable energy (RE) based on historical RE capacity deployment (2010-2014); existing RE and nuclear are not included in the goal setting calculation (under-construction nuclear and all uprates of nuclear and renewables may still be included as compliance measures to reduce carbon pollution from power plants).
- ENERGY EFFICIENCY – Demand-side EE is an important, proven strategy that states are already widely using and that can substantially and cost-effectively lower CO_2 emissions from the power sector. EPA anticipates that, due to its low costs and high potential in every state, demand-side EE will be a significant component of state compliance measures under the CPP.
- RANGE OF STATE PLAN OPTIONS - In general, states can choose between two types of plans expressed as rate or mass: an "emission standards" state plan type (all requirements on the affected EGUs), or a "state measures" state plan type (a mix of measures that may apply to affected EGUs and other entities, with a backstop of federally-enforceable standards on affected EGUs).

- MORE TIME AND A GLIDE PATH – Investment opportunities and emission reduction opportunities begin as soon as this rule is signed, so planning, reductions, and investments start now. Through the Clean Energy Incentive Program (CEIP), states can count reductions achieved as a result of these investments as early as 2020. Accounting for CO_2 emission reductions under the CPP starts in 2022 (not 2020 as proposed) and the interim period is 8 years (not 10 years), from 2022 to 2029, with three interim step periods (2022-2024; 2025-2027; 2028-2029) that states can customize**.**
- TRADING – Trading-ready mechanisms allow states or power plants to use creditable, out-of-state reductions to meet their goal without the need for up-front interstate agreements.
- RELIABILITY - System reliability is directly addressed in the design of the final rule by requiring states to explicitly consider reliability issues in developing plans, providing more time and flexibility to comply, and establishing a reliability safety valve for unexpected circumstances where reliability is threatened.
- LOW-INCOME RATEPAYERS – Emission guidelines include requirements for meaningful engagement with communities, including low-income, minority, and tribal communities, in state plans. EPA is creating the Clean Energy Incentive Program (CEIP) to reward early investments in certain renewable energy and energy efficiency projects during 2020 and 2021, recognizing that low-income communities are often under-represented in renewable energy and energy efficiency investment. In particular, EPA is providing additional incentives through the CEIP to encourage energy efficiency investments in low-income communities. Further, EPA's analysis of impacts on electricity bills shows that Americans are expected to save over $80 dollars on their annual utility bills by 2030.

State Plan Types (see final rule preamble section VIII.C)

States may choose between two plan types, expressed as rate or mass, in order to comply with the program: an EGU-based "emission standards" plan type, and a "state measures" plan type that requires the inclusion of backstop EGU-based emission standards. The "state measures" plan type replaces the proposed "portfolio" option and is responsive to concerns raised about specific aspects of the proposal. In both cases, states will have to demonstrate that affected EGUs will meet interim step CO_2 emission performance rates or statewide goals, and final CO_2 emission performance rates or state CO_2 emission goals.

> **Emission Standards Plan Type**: State places all requirements directly on its affected EGUs. All requirements are federally enforceable, OR
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> **State Measures Plan Type**: State can include a mix of measures that may apply to affected EGUs and/or other entities (that lead to reductions in carbon pollution from affected EGUs). Requirements placed directly on the state's affected EGUs are federally enforceable; other measures may be enforceable at the state level. The state measures plan type must also include a backstop of federally enforceable standards on affected EGUs that would be triggered if the plan fails to achieve the required emission reductions on schedule.

Other Compliance Options: States may choose to include numerous other measures to assist them with meeting the state goals, such as demand-side EE, transmission upgrades, and nuclear and hydropower uprates in their state plans.

Timing (see final rule preamble sections VIII.B and E)

Timing adjustments and the approach for interim goals provide more time for planning, consultation, decision making, and choice of compliance strategies.

The performance rates are phased in over the 2022-2029 interim period, which leads to a glide path of reductions that "steps down" over time. States may elect to set their own milestones for Interim Step periods 1, 2, and 3 as long as they meet the interim and final goals articulated in the emission guidelines.

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

Interim and Final Goal Periods[1]	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

Demonstrating Compliance (see final rule preamble sections VIII.J and K)

The final rule clarifies the accounting policies for state plan compliance and interstate trading (i.e., who gets to count what).

Mass-based plans rely exclusively on reported stack emissions for determining whether a CO_2 emission goal is achieved. This means that under a mass-based plan, actions to reduce emissions are accounted for directly by reduced stack CO_2 emissions from affected EGUs, so accounting is relatively simple. States that anticipate continuing or expanding investments in EE have unlimited flexibility (no state approval is necessary) to leverage those investments to meet their CPP targets under a mass-based plan. Considerations, requirements, and accounting for CO_2 emission reduction measures in mass-based state plans are located in the CPP final rule preamble section VIII.J.

[1] State may choose to award early action credits (ERCs) or allowances in 2020-2021, and the EPA may provide matching ERCs or allowances, through the Clean Energy Incentive Program. See section VIII.B of the final rule preamble for more information.
[2,3,4] State required to compare EGU emission levels with the interim steps set forth in the state's plan. For 2022-2024, state must demonstrate it has met its interim step 1 period milestone, on average, over the three years of the period. For 2025-2027, state must demonstrate it has met its interim step 2 period milestone, on average, over the three years of the period. For 2028-2029, state must demonstrate it has met its interim step 3 period milestone, on average, over the two years of the period. See section VIII.B of the final rule preamble for more information.
[5] State required to compare EGU emission levels with the interim goal set forth in the state's plan. For 2022-2029, state must demonstrate it has met its interim goal, on average, over the eight years of the period.

Rate-based plans need an explicit adjustment of reported CO_2 emission rates from affected EGUs to reflect the low- or zero-emitting generation (RE) or energy savings (from EE) that helps demonstrate compliance with the goal. In addition, states that choose rate-based plans and engage in interstate trading must verify the authenticity of the megawatt hour (MWh) credits – also known as emission rate credits (ERCs) – from RE and demand-side EE that EGUs use to adjust their CO_2 emission rate.

Renewable energy measures located in a mass-based state are only eligible for ERC issuance if the energy generated is delivered to meet load in a state with a rate-based plan. Other forms of zero- or low-emitting generation from non-affected EGUs located in mass-based states are not eligible for ERC issuance in a rate-based state. Additional considerations and requirements for rate-based state plans are found in section VIII.K.

Trading-ready: Affected EGUs in one state can trade with other affected EGUs in any other state implementing similar approaches (e.g., rate state with other rate states or mass state with other mass states) as long as those states meet certain "trading ready" minimum requirements, such as an EPA-approved or administered tracking system, and the state performance standard reflects the emission performance rates in the guidelines.

The federal plan proposal also includes model rules for rate-based and mass-based trading programs for potential use by any state in developing its state plan.

Resources and Additional Information

- For more information and to access a copy of the rule, visit the **Clean Power Plan website**: http://www2.epa.gov/carbon-pollution-standards
- Through graphics and interactive maps, the **Story Map** presents key information about the final Clean Power Plan. See: http://www2.epa.gov/cleanpowerplan
- For a graphical and detailed walk through of the EGU category-specific CO_2 emission performance rate and state goals, see **State Goal Visualizer**: http://www2.epa.gov/cleanpowerplan
- For additional resources to help states develop plans, visit the **CPP Toolbox for States**: http://www2.epa.gov/cleanpowerplantoolbox
- EPA provides **webinars** and **training** on CPP related topics at the air pollution control learning website. See: http://www.apti-learn.net/lms/cpp/plan/

EPA remains committed to continued engagement with states and encourages you to work closely with your Regional contact.