US EPA ARCHIVE DOCUMENT

KEY CHANGES AND IMPROVEMENTS

FROM PROPOSAL TO FINAL

On August 3, President Obama and EPA announced the Clean Power Plan – a historic and important step in reducing carbon pollution from power plants that takes real action on climate change. Shaped by years of unprecedented outreach and public engagement, the final Clean Power Plan is fair, flexible and designed to strengthen the fast-growing trend toward cleaner and lower-polluting American energy. With strong but achievable standards for power plants, and customized goals for states to cut the carbon pollution that is driving climate change, the Clean Power Plan provides national consistency, accountability and a level playing field while reflecting each state's energy mix. It also shows the world that the United States is committed to leading global efforts to address climate change.

HIGHLIGHTS

- The final Clean Power Plan relies on a federal-state partnership to reduce carbon pollution from the biggest sources – power plants.
- Carrying out EPA's obligations under section 111(d) of the Clean Air Act, the Clean Power Plan sets carbon dioxide (CO_2) emissions performance rates for affected power plants that reflect the "best system of emission reduction" (BSER), and leaves it up to the states to develop their own plans that will achieve those rates, with guidelines for the development, submittal and implementation of those plans.
- In determining the BSER, EPA looked to the actions, technologies and strategies already in widespread use by states and utilities that result in reductions of carbon pollution. A sophisticated grid connects these power sources together to deliver energy across the country. This interconnection and diversity of generation offer cost-effective advantages and approaches that many states have already shown can provide all the power we need while emitting less CO_2.
- The EPA gained crucial insights from a range of perspectives including state environmental and energy officials, tribal officials, public utility commissioners, system operators, owners and operators of every type of power generating facility, other industry representatives,

US EPA ARCHIVE DOCUMENT

labor leaders, public health leaders, public interest advocates, community and faith leaders, and members of the public.

- The final Clean Power Plan directly responds to comments from this widely diverse range of stakeholders and to information gained from consultation with other federal agencies, notably the Federal Energy Regulatory Commission (FERC) and the U.S. Department of Energy (DOE).

- As a result of the changes adopted in the final rule, states and utilities will have the kind of flexibility essential to optimizing carbon pollution reductions, ratepayer affordability, electricity system reliability and investment in clean, innovative technologies.

KEY CHANGES TO CARBON REDUCTION GOALS SINCE PROPOSAL

- **Source-specific CO_2 emission performance rates:** As with past rules under section 111 of the Clean Air Act, this rule relies on proven technologies and measures to set achievable emission performance rates – the same across each of two categories of affected sources – that will lead to affordable and significant emission reductions.
    - The Clean Power Plan expresses the BSER in the form of two source-specific CO_2 emission rates for power plants – one performance rate for coal steam and oil steam plants and one performance rate for natural gas plants.
    - As a result, power plants are subject to the same standards no matter where they are located.
    - The standards are both fair and economically efficient because they call on higher-emitting sources to make the greater amount of emissions reductions – typically at lower cost, while lower-emitting sources are called on to make fewer reductions since those reductions tend to be less cost-effective.
    - The flexibility inherent in the Clean Power Plan means that power plants do not have to rely on achieving the full measure of reductions under these standards individually, but, mirroring the interconnected operations of the electric grid in which all power plants currently operate, can work in concert, using mechanisms like emissions trading, to lower the overall carbon intensity of electricity generation.

- **State-by-state rate- and mass-based goals that rely on CO_2 performance rates:** To maintain flexibility for states in the planning process and respect each state's own mix of energy sources, we use the two category specific emission performance rates to calculate state rate-based goals and state mass-based goals that reflect a state's mix of affected power plants. This gives states a range of choices in developing their plans, particularly for those seeking to adopt mass-based trading programs or other statewide policy measures.

US EPA ARCHIVE DOCUMENT

- **Three building blocks, not four:** The final BSER focuses on supply-side measures that reduce emissions from power plants, and does not rely on demand-side energy efficiency (EE) as a building block. EPA nonetheless anticipates that, due to its low costs and potential in every state, demand-side EE will be a significant component of state plans under the Clean Power Plan. The wide range of comments on EE and demand-side strategies confirms that 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, as well as reduce electric bills. The Clean Power Plan's flexible compliance options provide ample opportunity for states to fully deploy EE to meet their state goals to reduce carbon pollution from power plants.

- **Refinements to the three building blocks:** Building blocks 1, 2 and 3 are preserved, but all are refined to reflect better data and public comments.

    - **Building block 1: Improved efficiency at power plants.** Power plants can make heat rate improvements to reduce the amount of CO_2 they emit per megawatt-hour of electricity generated. Based on additional data and information in the comments, which reflect different opportunities in different regions of the country, this building block delivers 2.1 percent to 4.3 percent improvement, depending upon the region. At proposal, the assumption was 6 percent improved efficiency at all coal and oil units.

    - **Building block 2: Shifting generation from higher emitting coal to lower emitting natural gas power plants**. At proposal, the BSER analysis assumed natural gas units could run at 70 percent of their "nameplate capacity," essentially the designed capacity of power that a unit can generate and is stamped on the unit when it is manufactured. Many commenters said that nameplate capacity was the wrong metric because it didn't reflect real operating conditions. They suggested we use a "net summer capacity factor" instead, which is based on observed data about how a unit has actually performed. At final, building block 2 assumes natural gas can be used at 75 percent of "net summer capacity."

    - **Building block 3: Shifting generation to zero-emitting renewables:** The final BSER analysis does not include existing or under-construction nuclear power or existing utility-scale renewable energy generation as part of building block 3. The analysis does include more use of new renewable energy than at proposal based on up-to-date information clearly demonstrating the lower cost and greater availability of clean generation than was evident at proposal. It takes into account recent reductions in the cost of clean energy technology, as well as projections of continuing cost reductions. Generation from under-construction nuclear facilities

US EPA ARCHIVE DOCUMENT

and nuclear plant uprates can still be incorporated into state plans and count towards compliance. In fact, nuclear power competes well under a mass-based plan, as increased nuclear generation can mean that fossil fuel units are operating less and emitting fewer tons of CO_2.

- **Regional – and phased-in – BSER analysis to set source-specific emission performance rates:** Commenters pointed out that the utility power sector operates over regional interconnections that are not constrained by state borders; thus the final BSER determination and the resulting category specific emission performance rates more fully reflect the regional scope of the energy supplied to the grid.
    - The performance rates were formulated by first looking at the three established regional electricity interconnects: Western, Eastern and the Electric Reliability Council of Texas (ERCOT), which serves 90 percent of the state.
    - The three refined building blocks were then applied to the three regional interconnects.
    - From the three resulting regional coal plant rates, and the three regional natural gas plant rates, the most achievable rates become the CO_2 emission performance rates for the country.
    - The BSER was applied on a phased-in basis gradually over three time steps between 2022 and 2029 reflecting the time-dimension over which the BSER measures can be achieved and resulting in performance rates set at interim levels over that period.
- **Glide Paths instead of Cliffs:**
    - The agency took steps to ensure that pollution reductions and increased investment in clean energy would happen before mandatory reductions begin in 2022.
    - Mandatory reductions beginning in 2022 and the phasing in of the BSER measures between 2022 and 2029 eliminate the "cliff" and enable states to chart their own individual emissions reduction trajectories or "glide paths."
    - The glide path gradually "steps-down" the amount of carbon pollution per megawatt-hour generated. The performance rates are phased in over the 2022-2029 interim period, as many commenters requested, which leads to a glide path of reductions that is separated into three steps, 2022-2024, 2025-2027, and 2028-2029, and also achievable "on average" over the 8-year interim period.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

        - States may elect to set their own milestones for Interim Step Periods as long as they meet the interim and final goals articulated in the emission guidelines.
        - In its state plan, the state must define its interim step milestones and demonstrate how it will achieve these milestones, as well as the interim goal and final goal
    - This change reflects stakeholder comments and information about the appropriate period of time over which the building blocks can be deployed consistent with the BSER factors of cost and feasibility. In addition to preserving reliability, these changes provide states and utilities with the latitude to consider a broader range of options to achieve the required reductions while addressing concerns about ratepayer impacts and stranded assets.
    - Ratepayer Affordability, System Reliability and Clean Energy Investment: The 2022 mandate and the phasing-in of the emissions reduction requirements allow states and utilities to design their own emissions reductions trajectory – which is instrumental to minimizing costs, undertaking the planning and implementation needed to maintain reliability and fostering investment in new, cleaner technologies to achieve compliance.

- **Additional provisions to address electricity system reliability concerns:** The final Clean Power Plan adds measures that commenters, reliability entities and expert agencies told the EPA were essential to maintaining electric system reliability: time and flexibility sufficient to allow for planning, implementation and the integration of actions needed to address reliability while achieving the required emissions reductions. States must show they have considered reliability in developing their state plans, such as consultation with appropriate state reliability or planning agencies. States can amend their approved plans in the event that reliability challenges arise. Finally, the rule includes a reliability safety valve to address unforeseen emergencies.
- **Trading-ready mechanisms:** Commenters said requiring formal, up-front agreements between states on trading programs would deter use of trading as a compliance mechanism. The final rule gives states the opportunity to design rate-based or mass-based state plans that will make their units "trading ready," allowing individual power plants to use creditable out-of-state reductions to achieve required CO_2 reductions, without the need for up-front interstate agreements. The EPA is committed to working with states to provide support for tracking of emissions and allowances or credits, to help implement multi-state trading.

- **Clearer Path to Mass-Based Trading.** The final rule establishes mass-based targets in response to requests that the EPA do so as way to make it easier for states to use mass-based trading in their plans.
    - Concurrent with the issuance of the Clean Power Plan, the EPA is proposing a model rule for states to use and that includes mass-based trading.
- **Encouraging actions to achieve early reductions:** EPA is providing a Clean Energy Incentive Program to reward early investments in certain renewable energy and demand-side energy efficiency projects that generate carbon-free electricity or reduce end-use energy demand during 2020 and 2021. State participation in the program is optional. Through this program, the EPA intends to make emission rate credits (ERCs) or allowances available to states to encourage early reductions from renewable energy and energy efficiency projects implemented in low-income communities.
- **EPA is not promulgating final guidelines for Alaska, Hawaii, Puerto Rico or Guam at this time.** EPA lacks adequate data to establish appropriate guidelines at this time. These areas are moving towards cleaner power generation and EPA will set goals for them in the future. In the meantime, EPA will work with these jurisdictions and other stakeholders to gather additional data and information about the emissions reduction measures, particularly with respect to renewable generation, available in those jurisdictions.

KEY CHANGES TO STATE PLANS

- **Two-year extension to submit plan available to all states:** By September 2016, states will need to submit either a final plan or an initial submittal with a request for an extension. States requesting an extension will have until September 2018 to submit final plans either alone or in cooperation with other states.
- **Two types of CPP state plans – emissions standards or "state measures":** States may choose between two plan types in order to comply with the program: a source-based "emission standards" plan type, and a "state measures" plan type that requires the inclusion of backstop emission standards. In both cases, states will have to demonstrate that their plan will meet the CO_2 emission performance rates, the state rate-based goal, or the state mass-based goal by 2030.
- **Role for community engagement in state plans:** Public engagement has been and will remain an important part of this process. To ensure that states are actively engaging with low-income communities, communities of color, and tribal communities, EPA is requiring states to demonstrate how they are actively engaging with communities in their initial and final plans. The requirement for meaningful engagement within state plans will provide an avenue for all communities to both hear from the state about strategies that might work

US EPA ARCHIVE DOCUMENT

best to tackle climate pollution, and to provide input on where possible impacts to vulnerable communities could occur along with strategies to mitigate those impacts. EPA expects states to have a full understanding of how their plans may impact low-income communities.

US EPA ARCHIVE DOCUMENT