



THE CLEAN POWER PLAN

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2015



The Clean Power Plan

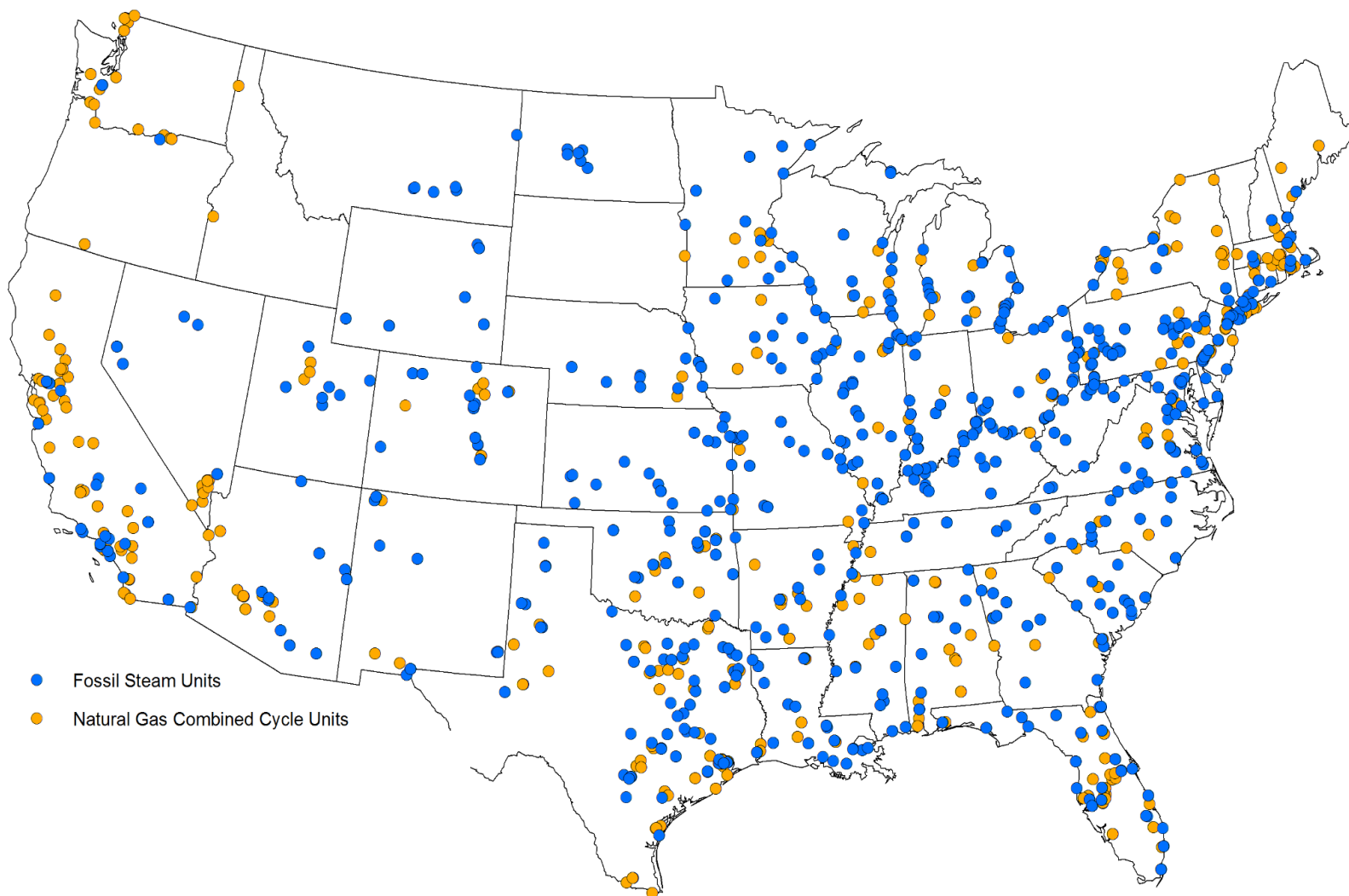
Overview

- 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 CPP sets carbon dioxide emissions performance rates for affected power plants that reflect the “best system of emission reduction” (BSER)
- EPA identified 3 “Building Blocks” as BSER and calculated performance rates for fossil-fueled EGUs and another for natural gas combined cycle units
- Then, EPA translated that information into a state goal – measured in mass and rate – based on each state's unique mix of power plants in 2012
- The states have the ability to develop their own plans for EGUs to achieve either the performance rates directly or the state goals, with guidelines for the development, submittal and implementation of those plans



The Clean Power Plan

What sources?



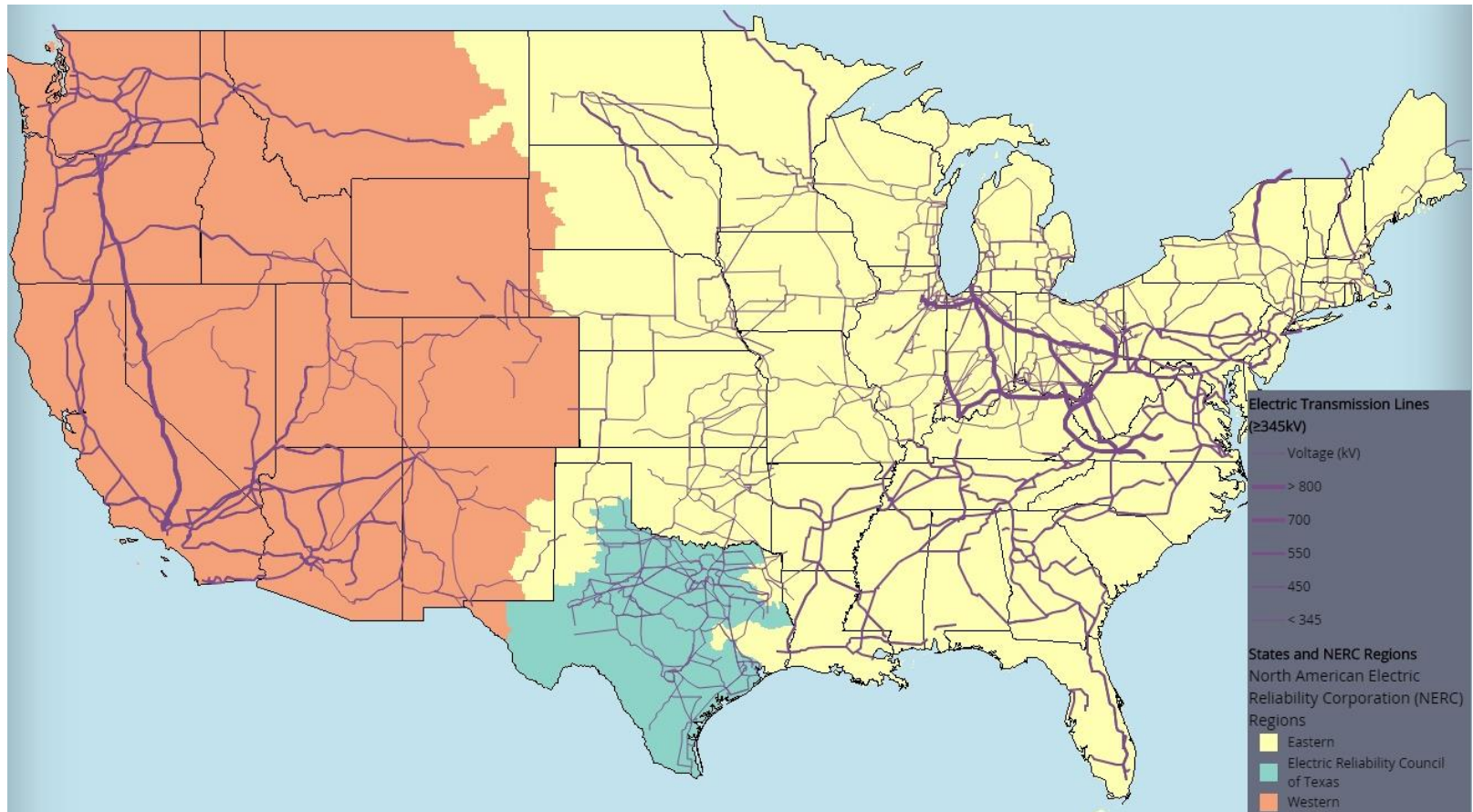


Best System of Emission Reduction: Three Building Blocks

Building Block	Strategy EPA Used to Calculate the State Goal	Maximum Flexibility: Examples of State Compliance Measures
1. Improved efficiency at power plants	Increasing the operational efficiency of existing coal-fired steam EGUs on average by a specified percentage, depending upon the region	-Boiler chemical cleaning -Cleaning air preheater coils -Equipment and software upgrades
2. Shifting generation from higher-emitting steam EGUS to lower-emitting natural gas power plants	Substituting increased generation from existing natural gas units for reduced generation at existing steam EGUs in specified amounts	Increase generation at existing NGCC units
3. Shifting generation to clean energy renewables	Substituting increased generation from new zero-emitting generating technologies for reduced generation at existing fossil fuel-fired EGUs in specified amounts	Increased generation from new renewable generating capacity, e.g., solar, wind, nuclear, and combined heat & power



Grid Connects Sources to Deliver Energy

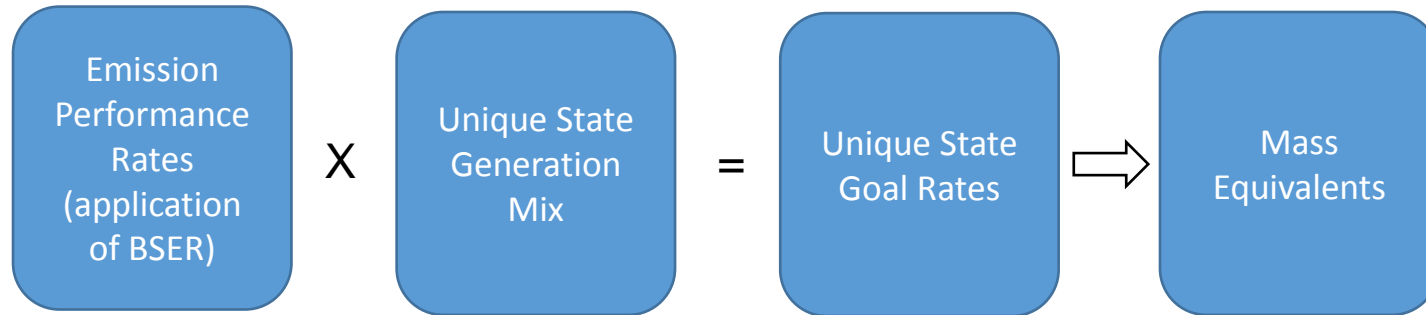


- This interconnection and diversity of generation offer cost-effective advantages and approaches that many states have already shown can provide power while emitting less CO₂
- In assessing the BSER, EPA recognized that power plants operate through broad interconnected grids that determine the generation and distribution of power. EPA's analysis is based on the three established regional electricity interconnects: Western, Eastern and the Electricity Reliability Council of Texas



Category-Specific Performance Rates

Power plants are subject to the same standards no matter where they are located.



EPA is establishing carbon dioxide **emission performance rates** for two subcategories of existing fossil fuel-fired electric generating units (EGUs):

1. Fossil fuel-fired electric generating units (generally, coal-fired power plants)
2. Natural gas combined cycle units

Emission performance rates have been translated into equivalent state goals. In order to maximize the range of choices available to states, EPA is providing state goals in three forms:

- rate-based goal measured in pounds per megawatt hour (lb/MWh);
- mass-based goal measured in short tons of CO₂
- mass-based goal with a new source complement (for states that choose to include new sources) measured in short tons of CO₂



Performance Rates -- Reasonable and Achievable

- **Legally solid**
 - Aligned with the approaches Congress and EPA have always take to regulate emissions from this and other industries
- **No plant has to meet the rate alone or all at once**
 - Part of the grid and over time, or as part of their statewide goal
- **Calculation mirrors the way electricity is generated and moves around the country**
 - 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 and puts all utilities on a path to cleaner energy as a whole
- **EPA is providing tools**
 - Model rule that relies on trading, and incentives for early investment make standards more affordable and achievable than the ones the agency proposed last year
 - States and utilities asked for these tools, and the source category-specific rate makes it possible for them to be available
 - “Trading ready” options for states and utilities – straightforward pathways that mean a state doesn’t have to partner with any other state to take full advantage of the opportunities for renewable energy, energy efficiency, etc. on the interconnected grid
 - EPA will support trading implementation (e.g., through EPA-approved or administered tracking systems)
 - An emissions trading market, like the standards themselves, allows states and utilities to maintain fuel diversity, in which coal can continue to play a substantial role



Choosing the Glide Path to 2030

- **Phased-in glide path**

- The interim period runs from 2022-2029 and includes three interim performance periods creating a reasonable trajectory (smooth glide path)
- Interim steps:
 - Step 1 – 2022-2024
 - Step 2 – 2025-2027
 - Step 3 – 2028-2029
- Provided that the interim and final CO₂ emission performance rates or goals are met, for each interim period a state can choose to follow EPA's interim steps or customize their own

- **Renewables and energy efficiency can help states meet their goals**

- Investments in renewables can help states under all plan approaches to achieve the Clean Power Plan emission goals while creating economic growth and jobs for renewable manufacturers and installers, lowering other pollutants and diversifying the energy supply
- Energy efficiency improvements are expected to be an important part of state compliance across the country and under all state plan types, providing energy savings that reduce emissions, lower electric bills, and lead to positive investments and job creation

State Plans

Clean Power Plan Timeline





Two State Plans Designs:

- States are able to choose one of two state plan types:

Emission Standards Plan – state places federally enforceable emission standards on affected electric generating units (EGUs) that fully meet the emission guidelines

- can be designed to meet the CO₂ emission performance rates or state goal (rate-based or mass-based goal)

State Measures Plan - state includes, at least in part, measures implemented by the state that are not included as federally enforceable emission standards

- designed to achieve the state CO₂ mass-based goal
- includes federally enforceable measures as a backstop



State Plan Development

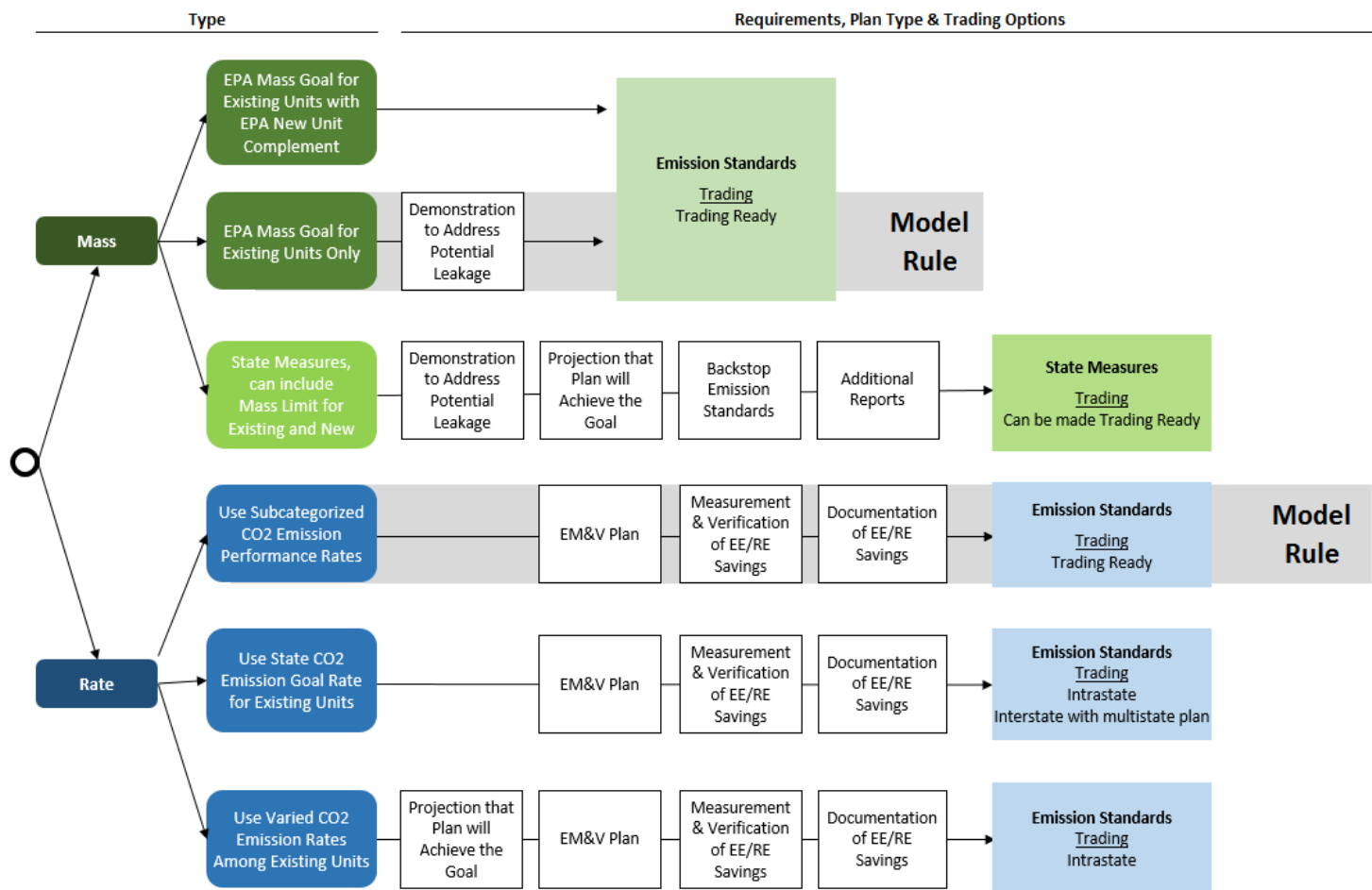
- Many states are discussing plans that would enable them to collaborate with other states, including multi-state plans or linking plans through common administrative provisions (i.e. “trading ready”)
 - Trading-ready mechanisms allow states or power plants to use creditable, out-of-state reductions to meet their goal without the need for up-front interstate agreements
 - If states elect to collaborate, EPA can support the option for trading as a suitable choice for both EPA and states to implement the CPP
 - Examples of trading in NOx SIP and CSAPR, Acid Rain program
 - Appropriate for carbon emissions
 - Eases administrative burdens
 - Reduces costs to electricity consumers and utilities
- In the CPP, EPA is finalizing state plan designs that suit state needs
 - Pathways for existing programs to reduce carbon emissions, individual state plans and multi-state trading approaches
- Federal plan proposes option for model trading program a state may then implement
 - Invites comment on mass and rate based model trading programs for EGUs
 - Invites comment on idea that all types of state plans can participate in trading



More State Options, Lower Costs

- This chart shows some of the compliance pathways available to states under the final Clean Power Plan. Ultimately, it is up to the states to choose how they will meet the requirements of the rule
- EPA's illustrative analysis shows that nationwide, in 2030, a **mass-based approach is less-expensive** than a rate-based approach (\$5.1 billion versus \$8.4 billion)

- Under a mass-based plan, states that anticipate continuing or expanding investments in energy efficiency have unlimited flexibility to leverage those investments to meet their CPP targets. EE programs and projects do not need to be approved as part of a mass-based state plan, and EM&V will not be required
- For states currently implementing mass-based trading programs, the “state measures” approach offers a ready path forward
- Demand-side energy efficiency is an important, proven strategy that states are already widely using and that can substantially and cost-effectively lower CO2 emissions from the power sector





Many CO₂ Reduction Opportunities

- Heat rate improvements
- Fuel switching to a lower carbon content fuel
- Integration of renewable energy into EGU operations
- Combined heat and power
- Qualified biomass co-firing and repowering
- Renewable energy (new & capacity uprates)
 - Wind, solar, hydro
- Nuclear generation (new & capacity uprates)
- Demand-side energy efficiency programs and policies
- Demand-side management measures
- Electricity transmission and distribution improvements
- Carbon capture and utilization for existing sources
- Carbon capture and sequestration for existing sources



Incentives for Early Investments

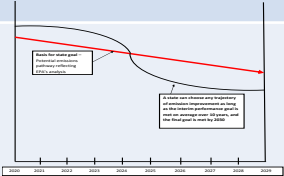
- EPA is providing the Clean Energy Incentive Program (CEIP) to incentivize early investments that generate wind and solar power or reduce end-use energy demand during 2020 and 2021
- The CEIP is an optional, “matching fund” program states may choose to use to incentivize early investments in wind or solar power, as well as demand-side energy efficiency measures that are implemented in low-income communities
- EPA will provide matching allowances or Emission Rate Credits (ERCs) to states that participate in the CEIP, up to an amount equal to the equivalent of 300 million short tons of CO₂ emissions. The match is larger for low-income EE projects, targeted at removing historic barriers to deployment of these measures. Also, states with more challenging emissions reduction targets will have access to a proportionately larger share of the match
- The CEIP will help ensure that momentum to no-carbon energy continues and give states a jumpstart on their compliance programs
- EPA will engage with stakeholders in the coming months to discuss the CEIP and gather feedback on specific elements of the program



Design Preserves Reliability

- The Clean Power Plan includes 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:
 - long compliance period starting in 2022 with sufficient time to maintain system reliability
 - design that allows states and affected EGUs flexibility to include a large variety of approaches and measures to achieve the environmental goals in a way that is tailored to each state's and utility's energy resources and policies, including trading within and between states, and other multi-state approaches
 - requirement that each state demonstrate in its final plan that it has considered reliability issues in developing its plan, including consultation with an appropriate reliability or planning agency
 - mechanism for a state to seek a revision to its plan in case unanticipated and significant reliability challenges arise
 - reliability safety valve to address situations where, due to an unanticipated event or other extraordinary circumstances, there is a conflict between the requirements imposed on an affected power plant and maintaining reliability
- EPA, 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

Changes from Proposal to Final Respond Directly to Comments

ITEM	PROPOSAL	FINAL
Compliance timeframe	2020	2022
Building Blocks	Four Building Blocks	Three Building Blocks (see next row) and refinements to Building Blocks
Demand-Side Energy Efficiency	Included as a Building Block	No longer a Building Block – though EPA anticipates that, due to its low costs and large potential in every state, demand-side energy efficiency will be a significant component of state compliance plans under the CPP
Timing of reductions	S-curve. Commenters disliked the “cliff” 	Steps down glide path more gradually: 2022-2024 2025-2027 2028-2029
Goal Setting	Formula included energy efficiency (EE), new nuclear, and existing renewable energy (RE) sources in the Best System of Emission Reduction (BSER)	BSER: Apply three building blocks to set two uniform CO ₂ emissions rates: generally, 1. Fossil and 2. natural gas. EE, nuclear and existing RE not included in goal setting
Geographic focus	State/tribe/territory	Contiguous U.S.
Deadline for final state plan	June 2016 with opportunity for one or two year extension	September 2018: after initial submittal by September 2016
State plans options	Two Types: Direct emission limits and portfolio approach	Two types: emissions standards and state measures
Interstate trading mechanisms	Up-front agreements	Up-front agreements not required Trading-ready option



CPP: Plan Implementation Timeline

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) ²	
- Interim Step 1 Period (2022-2024) ³	July 1, 2025
- Interim Step 2 Period (2025-2027) ⁴	July 1, 2028
- Interim Step 3 Period (2028-2029) ⁵	July 1, 2030
Interim Goal (2022-2029) ⁶	July 1, 2030
Final Goal (2030)	July 1, 2032 and every 2 years beyond

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 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.

^{3,4,5} 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.

⁶ 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.

Proposed Federal Plan and Model Rules

Pathways for Implementation



Proposed Federal Plan

Overview

- The federal plan and model trading rules provide a readily available path forward for Clean Power Plan implementation and present flexible, affordable implementation options for states
- The model rules provide a cost-effective pathway to adopt a trading system supported by EPA and make it easy for states and power plants to use emissions trading
- Both the proposed federal plan and model rules:
 - Contain the same elements that state plans are required to contain, including:
 - Performance standards
 - Monitoring and reporting requirements
 - Compliance schedules that include milestones for progress
 - Ensure the CO₂ reductions required in the final CPP are achieved
 - Preserve reliability
- Co-proposing two different approaches to a federal plan— a rate-based trading plan type and a mass-based trading plan type
 - Both proposed plan types would require affected EGUs to meet emission standards set in the Clean Power Plan



Proposed Federal Plan

How does it work?

- Will be finalized only for those affected states with affected EGUs that EPA determines have failed to submit an approvable Clean Air Act 111(d) state plan by the relevant deadlines set in the emission guidelines
 - Even where a federal plan is put in place, a state will still be able to submit a plan, which if approved, will allow the state and its sources to exit the federal plan
- EPA currently intends to finalize a single approach (i.e., either the mass-based or rate-based approach) for every state in which it finalizes a federal plan
- Affected states may administer administrative aspects of the federal plan and become the primary implementers
 - May also submit partial state plans and implement a portion of a federal plan
- Affected states operating under a federal plan may also adopt complementary measures outside of that plan to facilitate compliance and lower costs to the benefit of power generators and consumers
- Proposes a finding that it is necessary or appropriate to implement a section 111(d) federal plan for the affected EGUs located in Indian country. CO₂ emission performance rates for these facilities were finalized in the Clean Power Plan

Roll Out and Implementation Update



Roll Out

Overview

- Following signature, the EPA held “hub calls” with regions and states to provide states an opportunity to ask questions on the contents of the final rule.
- These “hub calls” were completed the week of 8/17.
- Individual state follow up calls have followed the “hub calls”
- Working with NACAA, APCAA, and ECOS, a series of “info-sessions” have been scheduled to focus on specific technical areas of the final rule.
- Calls are also being scheduled with the National Association of State Energy Offices (NASEO) and the National Association of Regulatory Utility Commissioners.
- Several training webinars and conference calls have been scheduled with communities and tribes.



Implementation

Overview

- EPA has established a national CPP implementation team
 - The team includes representatives from EPA Headquarters Offices and all 10 EPA Regions
 - The Office of Air Quality Planning and Standards (OAQPS) is the lead for managing CPP implementation
 - The Regions are the first point of contact (POC) for states and will coordinate with HQs to provide assistance to states in an efficient and effective way
- Currently assessing these themes and identifying potential guidance that could be developed to assist with implementation. The list of potential work products includes:
 - EM&V Guidance
 - Applicability Diagrams
 - Plan Checklists



State Plan electronic Collection System (SPeCS)

Overview

- The final CPP rule requires states to submit state plans through the use of the electronic plan submittal interface to the EPA. One tool that EPA is making available to the states to submit their state plans is the State Plan Electronic Collection System (SPeCS).
- Electronic plan submittal will help the Agency achieve several goals that were expressed during engagement with the states and stakeholders, such as:
 - The electronic submittal system will help EPA coordinate review of state plan issues across EPA regions.
 - The electronic system will provide states and EPA a dashboard feature to track progress with carbon reduction goals
- States have a great deal of flexibility in determining how they will comply with the CPP and we are building that flexibility into the submittal interface to assist states in compiling and submitting their state plans to EPA.



State Plan electronic Collection System (SPeCS) – cont.

Overview

- EPA anticipates the submittal interface will be ready for BETA testing in late September - early October of 2015.
 - EPA is in the process of establishing an integrated planning team (IPT) with key state members who will be participating in the testing of the submittal interface and other parts of SPeCS during the development process.
- The submittal interface will be available in January 2016 for states to submit draft materials for early EPA review.
 - States could also submit final plans at this time.
 - States will be provided training and guidance on the use of SPeCS prior to January 2016.
- SPeCS will also provide an area for EPA management of plan review and collaboration between HQ and the Regional Offices and a public dashboard that will provide high level information on the status of final state plans submitted to EPA.
- SPeCS will be in full production in June 2016 with additional training and guidance provided to states in use of the system.



Training Materials and Other Implementation Resources

Overview

- A variety of training webinars have been completed and made available at the APTI Learn website.
- Planning to develop short video modules covering key aspects of the final emissions guidelines.
- EM&V Draft Guidance available on the CPP Toolbox website and open for comment



Information and Resources

How can I learn more?

After two years of unprecedented outreach, the EPA remains committed to engaging with all stakeholders as states implement the final Clean Power Plan.

- 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 community-specific information and engagement opportunities, see the **Community Portal**:
- For additional resources to help states develop plans, visit the **CPP Toolbox for States**: <http://www2.epa.gov/cleanpowerplantoolbox>
- For a graphical and detailed walk through of the EGU category-specific CO₂ emission performance rate and state goals, see **State Goal Visualizer**: <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/>