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Clean Power Plan Implementation What States Need to Know

Tuesday, January 12, 2016
National Conference of State Legislatures
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STATES' REACTIONS TO EPA GREENHOUSE GAS EMISSIONS STANDARDS

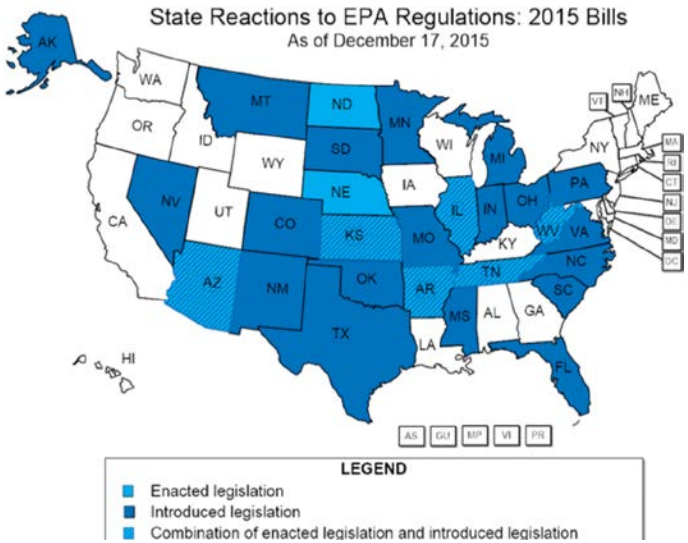
12/17/2015 Melanie Condon and Jocelyn Durkay

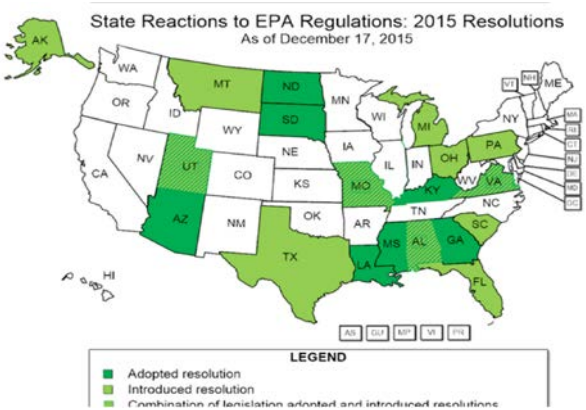
Final Rule for Future and Existing Power Plants

On Aug. 3, 2015, President Obama unveiled the final version of the Clean Power Plan, which aims to regulate the amount of carbon dioxide emissions from both future and existing power plants. The proposed rule was originally introduced in June 2014.

Under the final rule, the U.S. Environmental Protection Agency (EPA) assigned each state a unique emission reduction target that it must meet based on a specific formula, resulting in an overall goal of reducing carbon emissions by 32 percent nationwide by 2030. There is also a set of interim goals assigned to each state to allow for a gradual reduction in carbon dioxide emissions from 2022-30. A state can choose to reduce its emissions however it sees fit, and has the option to comply individually or as part of a multi-state plan.

TABLE OF CONTENTS





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National Conference of State Legislatures
Clean Power Plan Implementation Webinar
January 12, 2016

Summary

Climate change is a threat in the U.S. -- We are already feeling the dangerous and costly effects of a changing climate – affecting people's lives, family budgets, and businesses' bottom lines

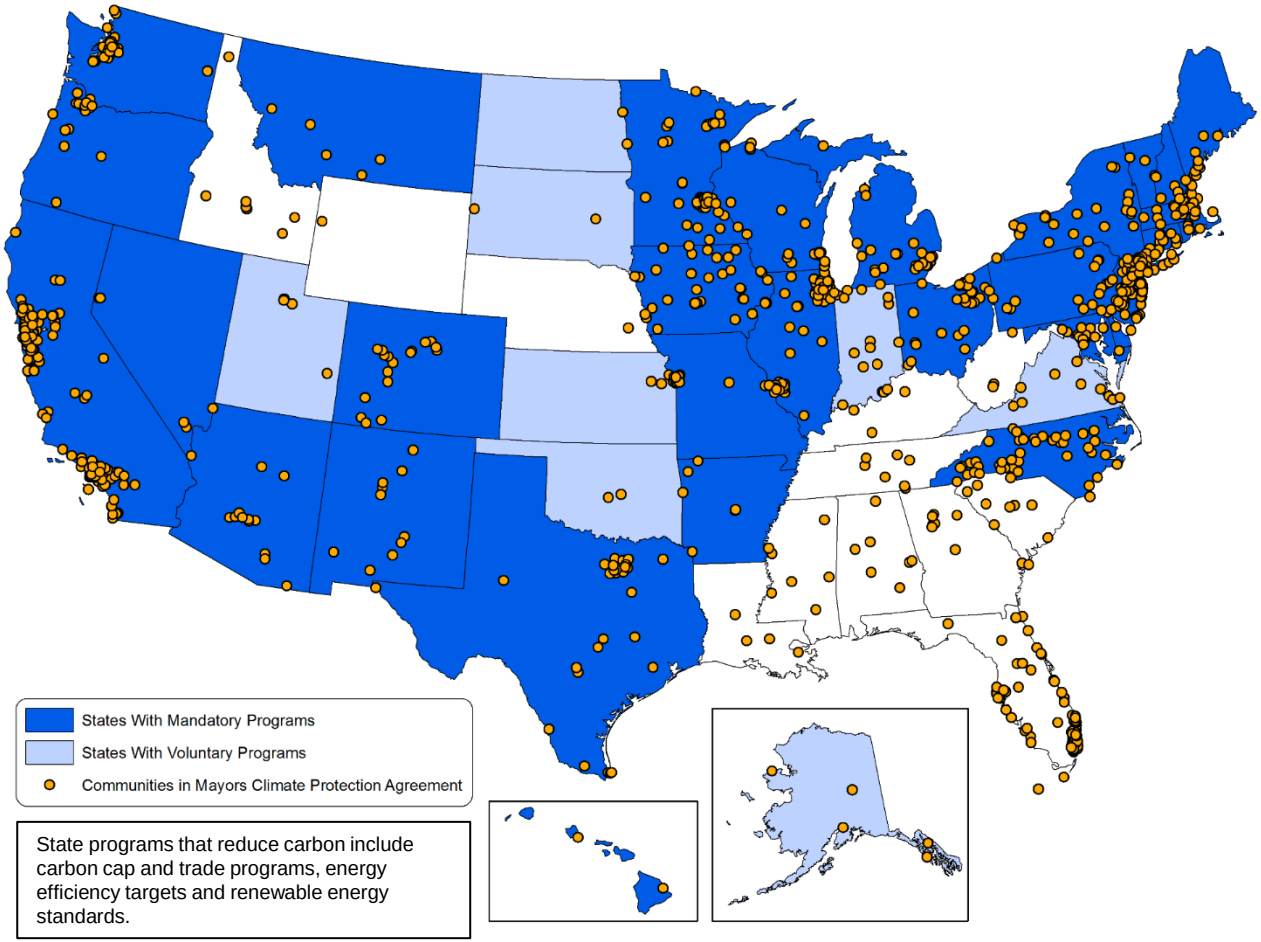
EPA is taking three actions that will significantly reduce carbon pollution from the power sector, the largest source of carbon pollution in the US

- Clean Power Plan (CPP) – existing sources
- Carbon Pollution Standards – new, modified and reconstructed sources
- Federal Plan proposal and model rule

EPA's actions

- Achieve significant pollution reductions
- Deliver an approach that gives states and utilities plenty of time to preserve ample, reliable and affordable power
- Spur increased investment in clean, renewable energy

States and Communities are Taking Action to Reduce Carbon Pollution



State programs that reduce carbon include carbon cap and trade programs, energy efficiency targets and renewable energy standards.

As of July 2015

Outreach Shaped the Clean Power Plan

- More than two years of unprecedented outreach and public engagement
- Responds to the critical changes that stakeholders and states asked the agency to make and incorporates many of their good ideas
  - More than 4 million public comments submitted to EPA
  - Hundreds of meetings with stakeholders
- Public engagement was essential throughout the development of the Clean Power Plan, and that outreach will continue during the implementation

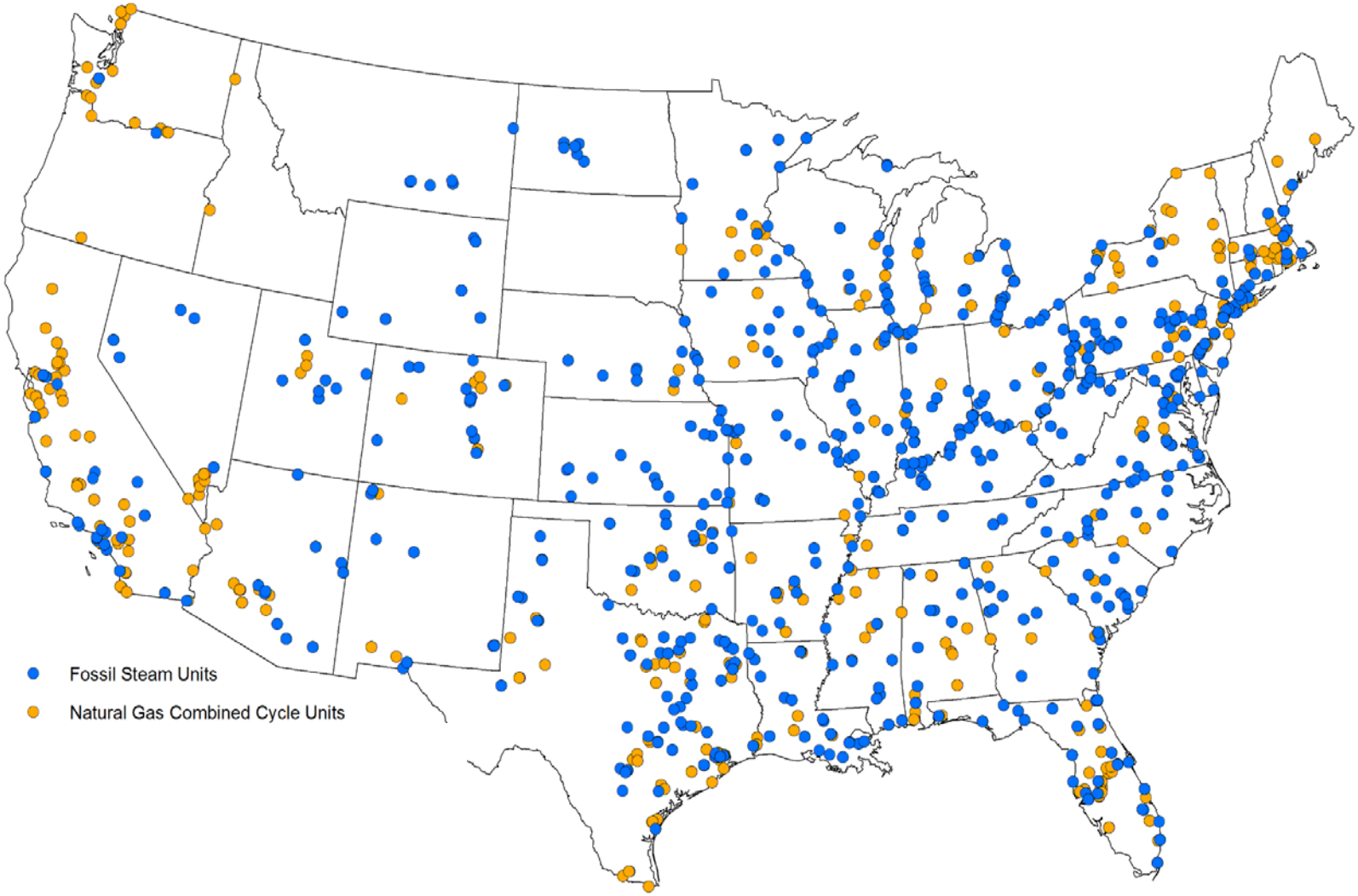
The Clean Power Plan

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

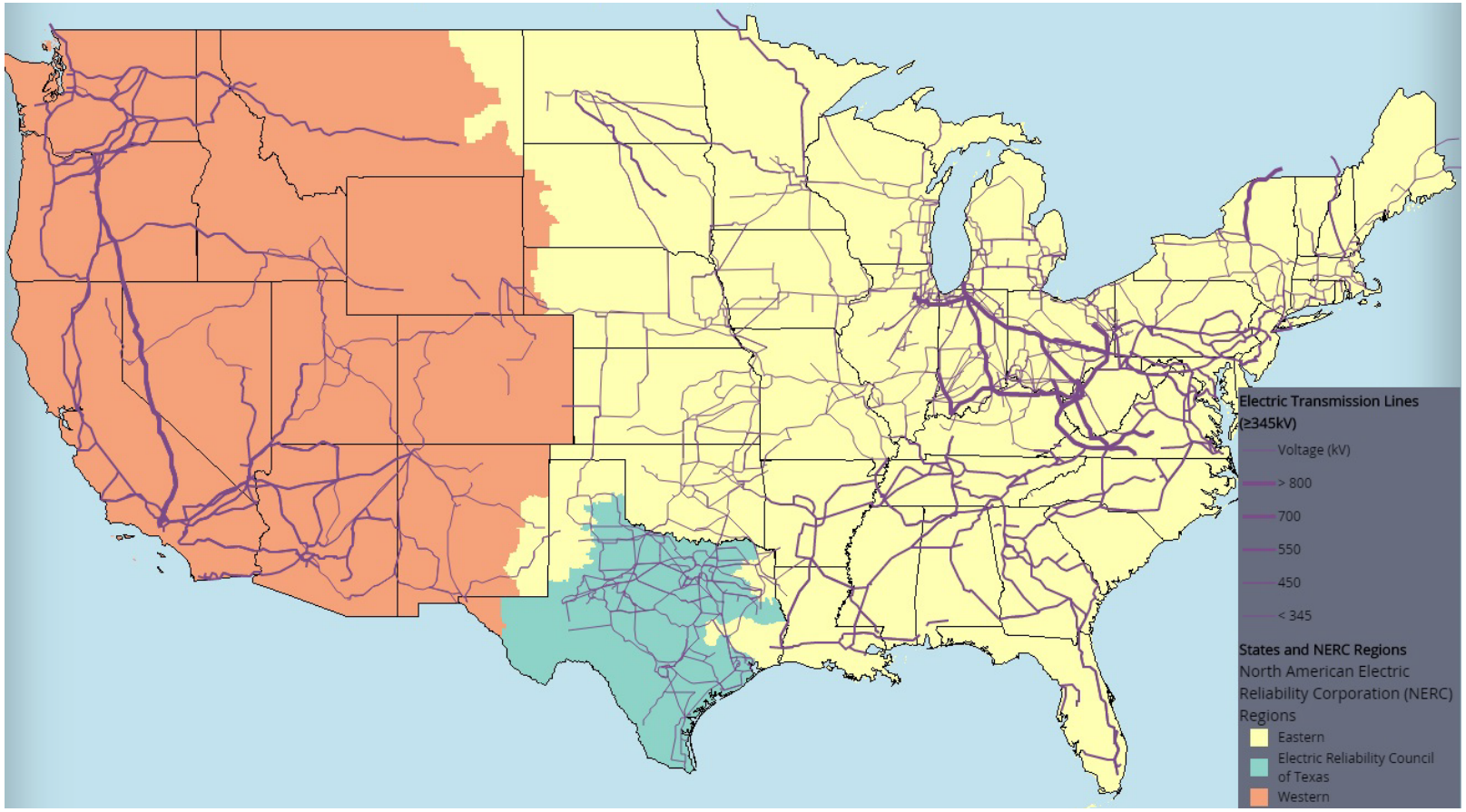
What sources are affected?



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

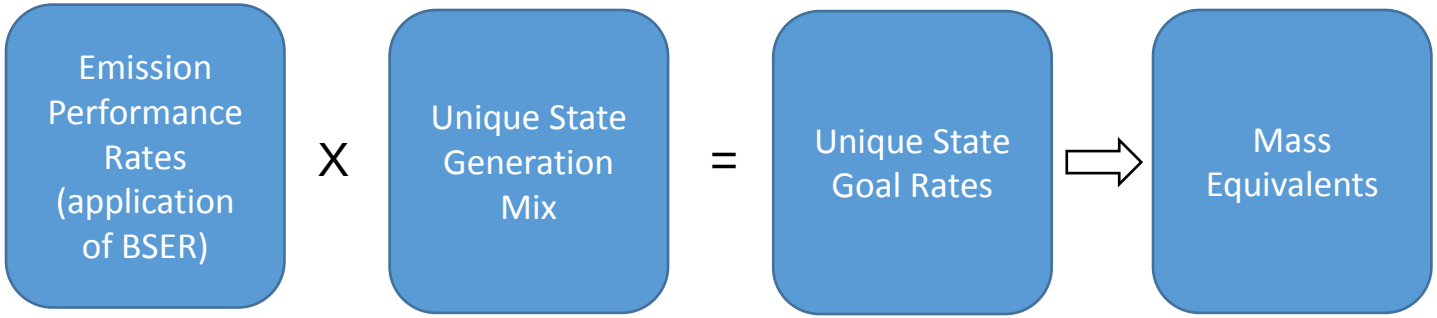
Grid Connects Sources to Deliver Energy



- This interconnection and diversity of generation offer cost-effective advantages and approaches that many states have already shown can provide power while emitting less CO_2
- 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:

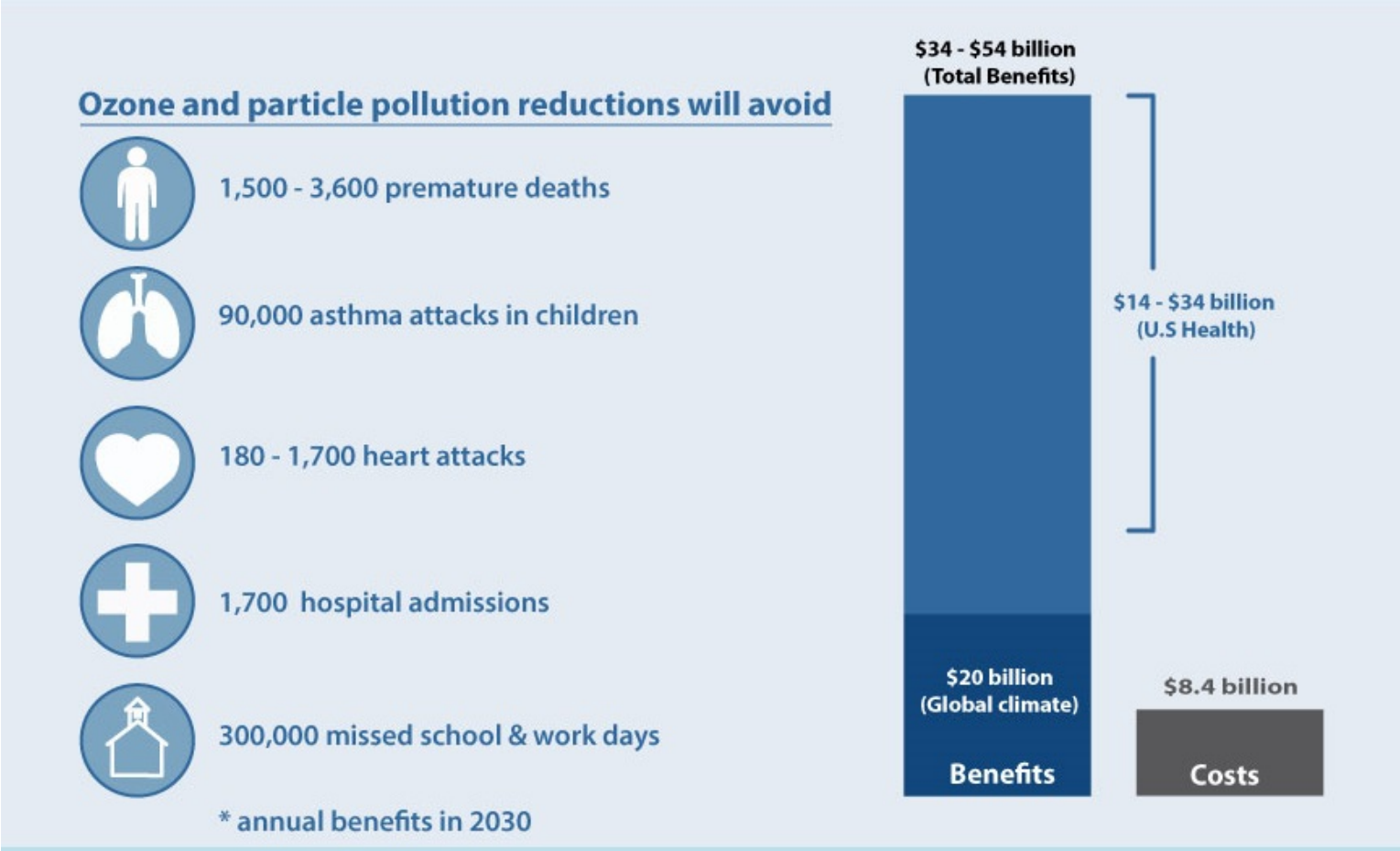
- rate-based goal measured in pounds per megawatt hour (lb/MWh);
- mass-based goal measured in short tons of CO_2
- mass-based goal with a new source complement (for states that choose to include new sources) measured in short tons of CO_2

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 CO_2 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

Benefits of the Clean Power Plan

The transition to clean energy is happening faster than anticipated. This means carbon and air pollution are already decreasing, improving public health each and every year.



While this chart reflects health benefits in 2030, EPA's Regulatory Impact Analysis for the CPP estimates health benefits due to reduced emissions beginning in 2020.

State Plans

Clean Power Plan Timeline

Summer 2015	• August 3, 2015 - Final Clean Power Plan
1 Year	• September 6, 2016 – States make initial submittal with extension request or submit Final Plan
3 Years	• September 6, 2018 - States with extensions submit Final Plan
7 Years	• January 1, 2022 - Compliance period begins
15 Years	• January 1, 2030 - CO_2 Emission Goals met

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 CO_2 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 CO_2 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

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
- A state interested in participating in the CEIP must make a (non-binding) expression of its intent to participate in the CEIP in its plan or initial submittal due on September 6, 2016
- 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 CO_2 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 conducted CEIP-specific outreach calls to discuss the CEIP and gather feedback on specific elements of the program in November & December, including with states

CEIP Update

- EPA intends to propose an action that outlines aspects of the CEIP that were not finalized in the Clean Power Plan, including addressing how the program would be implemented. In the coming months, EPA will be issuing this proposal for public review and comment.
- We are reviewing the input we received from the Nov/Dec stakeholder calls as we develop this proposed action. For those individuals and organizations who wish to share their views on the CEIP with EPA prior to the comment period for this upcoming proposal, you can continue to submit your comments to the non-regulatory docket for the CEIP (ID #EPA-HQ-OAR-2015-0734).
- Separately, you may submit comments on the CEIP-related issues discussed in the preamble of the proposed Federal Plan and Model Rules (ID # EPA-HQ-OAR-2015-0199). **This docket will remain open for comments through January 21, 2016.**

Proposed Federal Plan and Model Rules

Pathways for Implementation

Proposed Federal Plan

Overview

- On August 3, the EPA proposed a federal plan to implement emission guidelines for power plants under section 111(d) of the Clean Air Act in any state that does not submit an approvable plan. The proposed federal plan:
  - Ensures the CO_2 reductions required in the final CPP are achieved
  - Preserves reliability
  - Co-proposes two different approaches to a federal plan— a rate-based trading plan type and a mass-based trading plan type - Both of which would require affected EGUs to meet emission standards set in the CPP
  - Proposes to implement the CEIP under a rate or mass type of plan
  - Proposes to allow for ERCs from eligible RE under a rate-based approach
  - Takes comment on allowing for demand-side EE set asides (under mass) or ERCs from EE (under rate)

- 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 affected EGUs 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

Proposed Model Rules

Overview

- EPA also proposed rate-based and mass-based model trading rules that provide a cost-effective pathway for states to adopt a trading system supported by EPA and make it easy for states and power plants to use emissions trading.
- The Model Rule
  - Does the heavy lifting for states that choose to use a model rule as their state plan
  - Demonstrates a readily available path forward for Clean Power Plan implementation
  - Presents flexible, affordable implementation options for states
  - Includes presumptively approvable provisions for EE and RE ERC issuance under the rate-based model rule
  - Allows for participation in the CEIP under a rate or mass type of plan
  - Includes stand-alone portions, such as the evaluation, measurement and verification (EM&V) procedures for emission rate credits (ERCs), that would be approvable even if a state adopted an approach that differs in other respects from the model rule.
- States can follow these model rules when developing their own plans to capitalize on the flexibility built into the final Clean Power Plan
- A state trading program that adheres to the model trading rule provisions specified in this rulemaking, when final, would be presumptively approvable.
- EPA intends to finalize both the rate-based and mass-based model trading rules in summer 2016.

Outreach to States

- Since the CPP was issued, EPA has continued its outreach to the states to assist with implementation. Efforts include:
  - Hosting regional calls and webinars, providing one-on-one technical assistance, and supporting states as they begin to draft plans
  - Developing guidance documents (e.g., EM&V Guidance)
  - Conducting workshops, including trainings for tribal/environmental justice communities on the CPP, and an upcoming workshop on the treatment of biomass in the CPP (spring 2016)
  - Meeting with external groups including states, tribes, utilities and communities
- Resources include:
  - For general info & a copy of the rule: 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: http://www2.epa.gov/cleanpowerplan/clean-power-plan-community-page
  - For additional resources to help states develop plans, visit the CPP Toolbox for States: http://www2.epa.gov/cleanpowerplantoolbox
  - Initial Clean Power Plan Submittal Memo: guidance for states interested in seeking an extension (issued October 22, 2015): http://www3.epa.gov/airquality/cpptoolbox/cpp-initial-subm-memo.pdf
  - 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/

How to Comment

- The Federal Plan and Model Rules were published on October 23 in the Federal Register, and **EPA will accept comments until January 21, 2016**.
  - Note that you may also submit comments on the CEIP-related issues discussed in the preamble of the proposed Federal Plan and Model Rules
  - Details: http://www2.epa.gov/cleanpowerplan/how-comment-proposed-federal-plan-clean-power-plan

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Judicial Review of EPA's Clean Power Plan

The Key Legal Issues

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The "Core" Legal Issues

- Section 112 Exclusion
- Cooperative Federalism
- Best System of Emission Reduction
- Standards More Stringent Than NSPS
- Constitutional Issues

- Programmatic and "Secondary" Issues

Section 112 Exclusion

- Argument: Under House version of Section 111(d), no regulation of sources in category regulated under Section 112 (HAPs)
- Strengths:
  - Would bar *any* version of CPP as long as power plants are regulated under Section 112
  - Could bar other Section 111(d) regulations
- Weaknesses:
  - Could fail if MATS is vacated by D.C. Circuit
  - Proper scope of BSER likely wouldn't be resolved

Cooperative Federalism

- Argument: Section 111(d) authorizes *States* (not EPA) to establish and apply standards of performance. EPA's binding statewide goals violate the statute.
- Strengths:
  - *Chevron* Step 1 argument (statute clear)
  - Would result in substantial revision of CPP, with lower overall targets
- Weaknesses:
  - CPP could survive, though in a diminished form

Best System of Emission Reduction

- Arguments:
  - BSER is intended to be a standard of performance, not a standard of *nonperformance*
  - BSER may not look beyond the fenceline; cannot include source owner or operator
- Strengths:
  - Traditionally, BSER has looked at what can be accomplished at the individual unit through technological or operational measures
  - Most of EPA's BSER would fail under this argument
  - *UARG* decision: Supreme Court looks skeptically on agencies finding authority to regulate broad swaths of the economy in vague statutory language
- EPA's Likely Response:
  - "Best system of emission reduction" is undefined; *Chevron* deference

Standards More Stringent Than NSPS

- Argument: Logically, new sources should be able to achieve the greatest reductions. In CPP, EPA sets standards for existing plants that are far more stringent than those for new plants.
- Strengths:
  - Common sense argument
  - Appealing
- Weaknesses:
  - Might be cured by tightening the NSPS, as well as by relaxing the existing source standard

Constitutional Issues

- 10th Amendment
  - Argument: CPP impermissibly tramples on States' rights.
- 5th Amendment
  - Argument: CPP impermissibly confiscates property without due process or just compensation

Programmatic and Secondary Issues

- Calculation of the Rates: Did EPA err?
- Calculation of Individual State Goals
- Unit-specific issues
  - Achievability
  - Lack of availability of specific building block measures

Litigation Outlook

- Stay motions
  - Nine were filed
  - Briefing concluded December 23
  - Will likely be decided by end of January
- Petitions for administrative reconsideration filed
- Merits briefing – Spring 2016?
- Argument – as early as May 2016, likely no later than September/October 2016
- Decision – as early as July 2016, likely no later than January/February 2017
- Supreme Court – Review by end of 2017?

The Clean Power Plan: Implications and Key Issues of State Compliance Options

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Clean Power Plan Compliance Webinar
National Conference of State Legislatures
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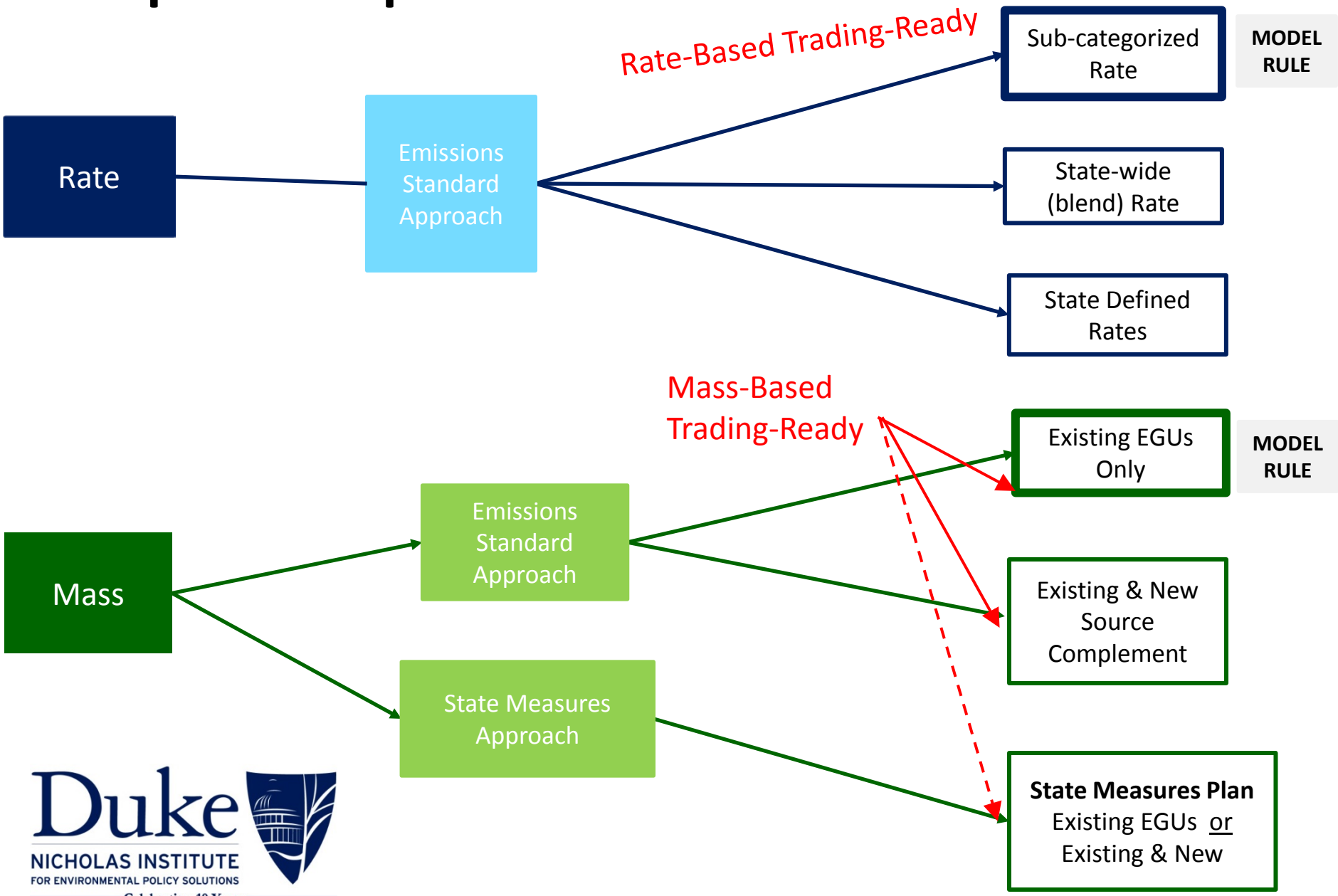
Compliance Options Overview



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Will focus on market based approaches

→*Can comply without markets but this creates major challenges*

- Effectively requires projecting future dispatch
  - This is really difficult given uncertainty about fuel prices, demand, technology etc.

Markets provide flexibility for small utilities, individual unit owners

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Rate-Based Plan Basics

How rate-based emissions regulation usually works

$$regulated\ rate \geq \frac{(unit\ annual\ emissions)}{(unit\ annual\ gen)}$$

EPA is regulating affected units *adjusted* emissions rate

$$regulated\ rate \geq \frac{(unit\ annual\ emissions)}{(unit\ annual\ gen + adjustment)}$$

The adjustment is generation from eligible non-emitting sources

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Rate-Based Plan Basics Cont.

- Compliance instrument: Emission Rate Credit (ERC)
- 1 ERC = 1 MWh of emissions-free generation added to the denominator

$$regulated\ rate \geq \frac{(unit\ annual\ emissions)}{(unit\ annual\ gen + ERCs\ as\ needed)}$$

- ERC-eligible resources:
  - qualifying renewables & energy efficiency
  - New and uprated nuclear
  - Affected units operating below their rate goal
  - Gas Shift-ERCs for NGCC generation (subcategorized rate-based compliance only)

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Market Signals Rate-Based Compliance

Units operating below regulated rate earns ERC

- Operating creates product plant owner can sell
- Creates subsidy for these sources, similar to PTC

Units operating above regulated rate must buy ERCs

- Additional operating cost

NGCC units may be below category specific rate and blended rate

- Earn GS-ERCs
- ~ 750 – 1000 lbs/MWh

All coal units* above regulated rates

- ~ 1,800 – 2,300 lbs/MWh

Category-specific Rates (lbs/MWh)				
	2022-2024	2025-2027	2028-2029	Final
Fossil Steam	1671	1500	1380	1305
NGCC	877	817	784	771

Rate-based subsidizes new EE, RE, nuclear

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Mass-Based Plan Basics

Submit an emissions allowance for every ton of CO2 from covered sources

EPA calculates mass-based goal for existing sources

- Emissions budget covered sources each state

EPA also calculates a new source complement

State decides how to distribute emissions allowances: *allowance allocation*

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Market Signals Mass-Based Compliance

Cost of allowance represents cost on emissions

- Cost signal to coal and NG proportional to their emissions

How allowances are distributed typically does not impact dispatch of units

- If auction or give away plants/markets will operate the same
- Unless allowances incentivize generation → updating output-based allocation
- How allowances are allocated *does* impact end-use prices

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Load Growth and New Units

Rule does not restrict load growth, it restricts emissions from covered sources

- Rate-based → can build new NGCC
- Mass-based covered existing → can build new NGCC but EPA is attempting to create economic incentives to operate existing NGCC (addressing leakage)
- Mass-based covering new + existing → caps affected emissions including new NGCC

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Allowance Allocation Mass-Based

Difficult decision

3 basic options

- Distribute based on historical gen/emissions
  - Rational? Windfall profits
- Auction
  - Generates revenue that can be used to compensate ratepayers
- Updating: earn by operating
  - Incentive to operate

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Benefits of trading-ready

Wider market will lower total cost

- more buyers and sellers
- Reliability safety valve
  - No transmission constraints in emissions markets

Gains for variation across wide geography

- Different resources (wind, solar, low cost NG)
- Demand growth rates
- Weather
- Unexpected opportunities

Low cost states also "win" → make money reducing emissions

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Thank you

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Additional resources:
https://nicholasinstitute.duke.edu/focal-areas/clean-air-act-clean-power-plan#.UiDC4NLktyx

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Slides and a recording of today's event will be made available within 5 business days at http://www.ncsl.org/default.aspx?tabid=29954.

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