

Delaware's Clean Power Plan Listening Session November 10, 2015



Department of Natural Resources & Environmental Control
Richardson & Robinson Auditorium
Dover, DE

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Climate Change is a Threat

- Public health risks include:
 - Increase in heat stroke and heat-related deaths
 - Extreme heat events are the leading weather-related cause of death in the U.S.
 - Worsening smog (also called ground-level ozone pollution) and, in some cases, particle pollution
 - Increasing intensity of extreme events, like hurricanes, extreme precipitation and flooding
 - Increasing the range of insects that spread diseases such as Lyme disease and West Nile virus



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Summary of Impacts: Delaware is facing...

Short-term Impacts and Extreme Events

- Heat waves
- Very hot days and nights
- Intense rain events
- Severe flooding
- Coastal storms impacts

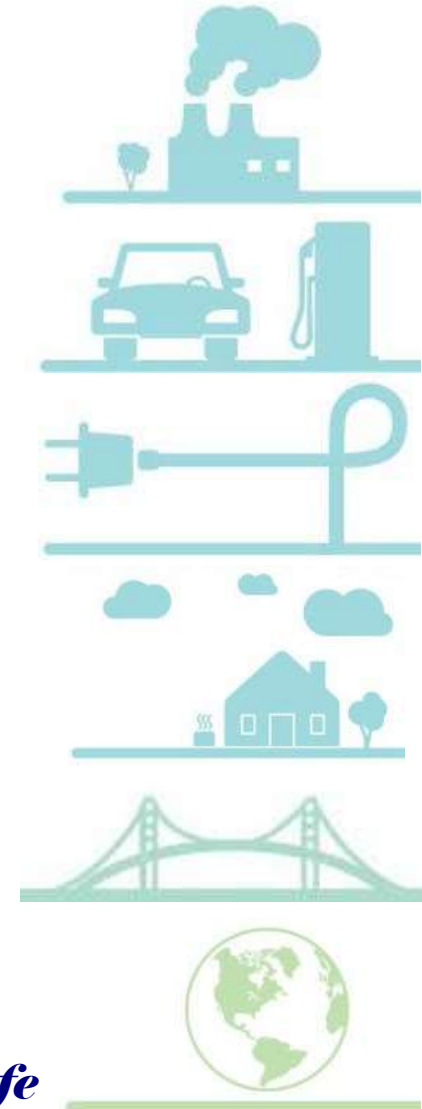
Incremental and Long-term Impacts

- Warmer temperatures
- Longer growing seasons
- More very wet and dry days
- Sea level rise and coastal inundation
- Higher storm surge



The Federal Climate Action Plan

- Building a 21st century transportation sector
- Cutting energy waste in homes, businesses, and factories
- Reducing methane and HFCs
- Preparing the U.S. for the impacts of climate change
- Leading international efforts to address global climate change
- **Reducing carbon pollution from power plants**



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What is the Clean Power Plan...?

- **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

- These are the first-ever national standards that address carbon pollution from power plants.

- **EPA's actions**
 - Achieve significant pollution reductions in 2030
 - 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



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How the Clean Power Plan Works

- 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 is establishing interim and final carbon dioxide (CO₂) emission performance rates for:
 - Fossil fuel-fired electric steam generating units (generally, coal- and oil-fired power plants)
 - Natural gas-fired combined cycle generating units



Best System of Emission Reduction: Three Building Blocks

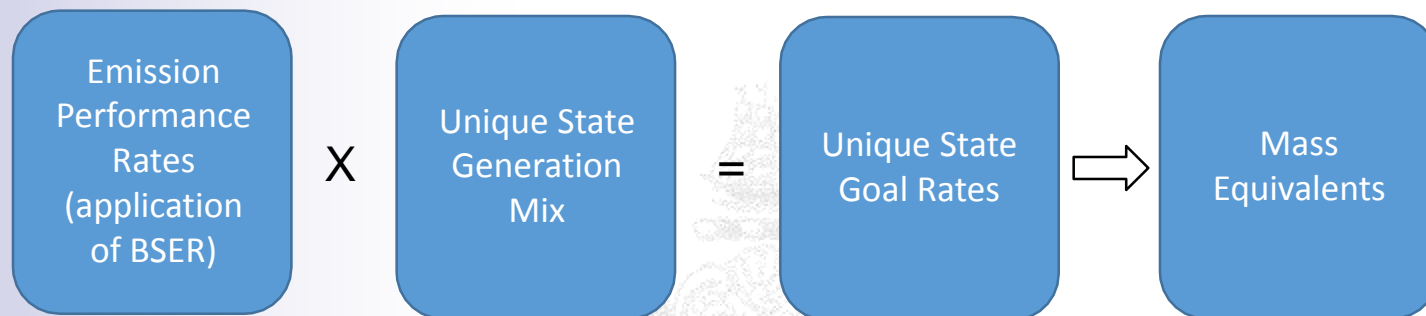
Building Block	Strategy EPA Used to Calculate the State Goal	Maximum Flexibility: Examples of State Compliance Measures
1. Improved efficiency at power plants	Increasing the operational efficiency of existing coal-fired steam EGUs on average by a specified percentage, depending upon the region	<ul style="list-style-type: none"> -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



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Category-Specific Performance Rates

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



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

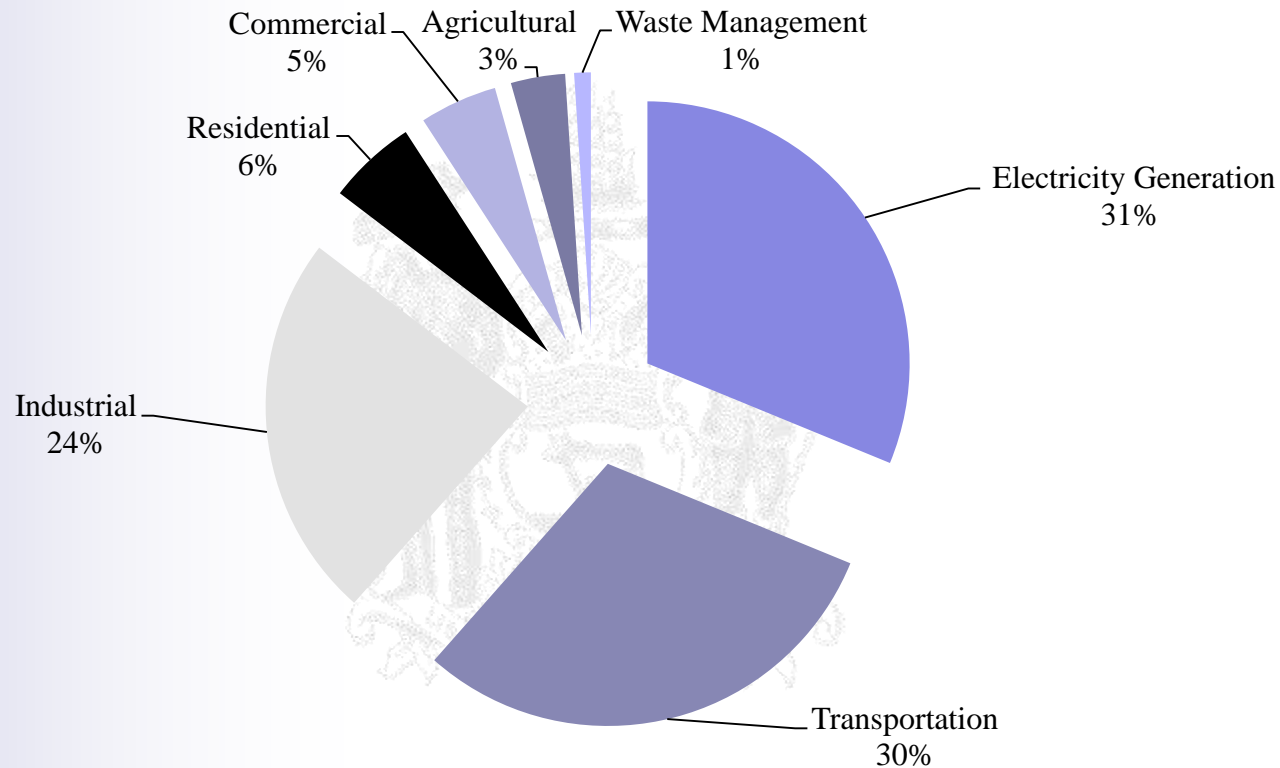
1. Fossil fuel-fired electric generating units (generally, coal-fired power plants)
2. Natural gas combined cycle units

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



Power Plants are the single largest source of carbon pollution

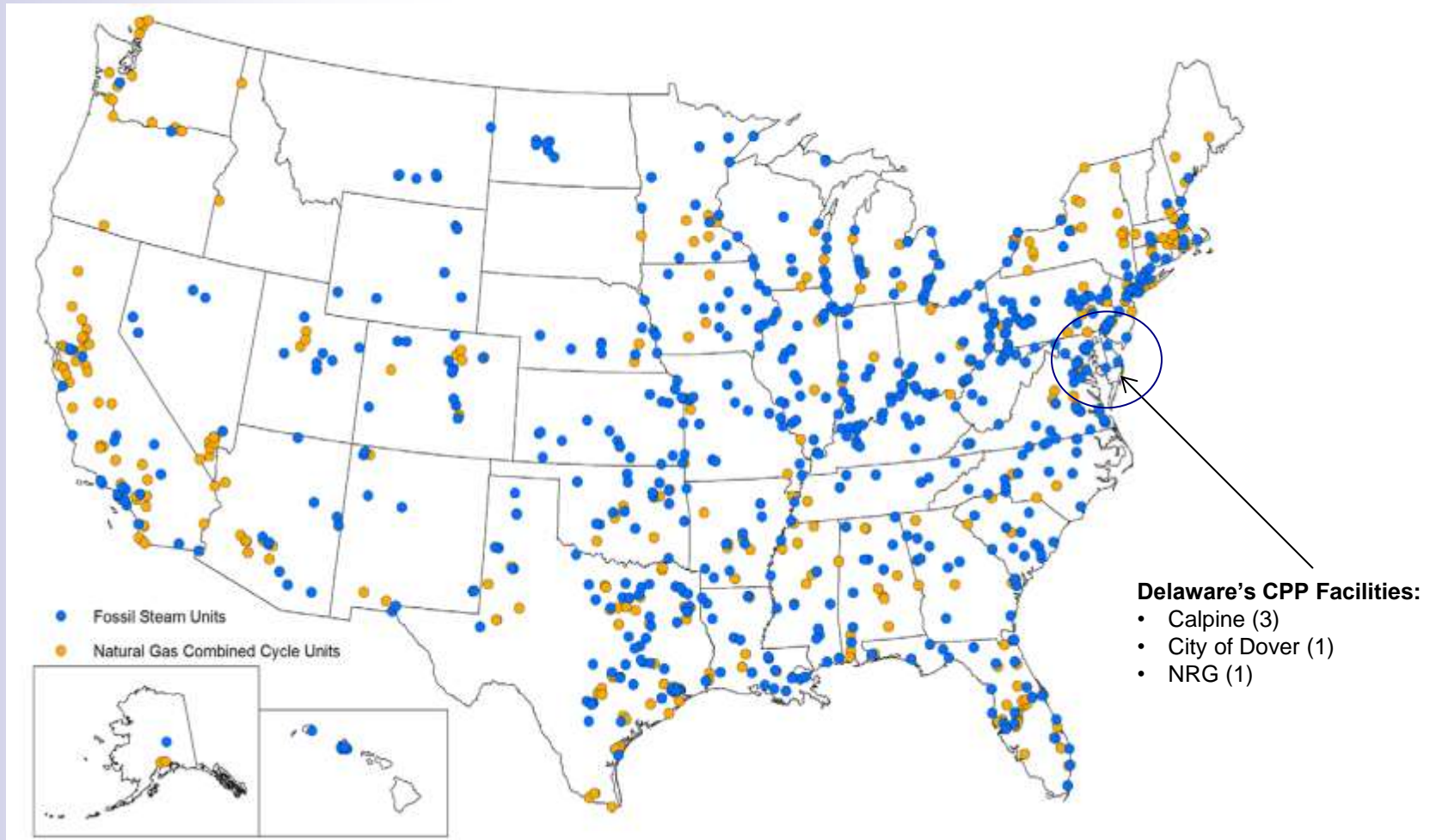


Source: Delaware 2012 GHG Inventory



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What are Delaware's CPP facilities...?



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Rate Based Goals

- Baseline:
 - Fossil Steam Generation 2,491,497 MWh (27% of total generation)
 - Natural Gas Combined Cycle Generation 6,672,111 MWh (73%)
- A rate-based state goal measured in pounds per megawatt hour (lb/MWh);

State	State Goal (lbs/MWh)													
	2022	2023	2024	2025	2026	2027	2028	2029	2030	Interim Goal - Step 1 (2022-2024)	Interim Goal - Step 2 (2025-2027)	Interim Goal - Step 3 (2028-2029)	Interim (2022-2029)	Final (2030)
Delaware	1,127	1,096	1,055	1,029	1,003	976	956	936	916	1,093	1,003	946	1,023	916



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Mass-based State Goals

Affected Source Mass Goal (Short Tons)									
State	2022	2023	2024	2025	2026	2027	2028	2029	2030
Delaware	5,524,126	5,354,755	5,166,206	5,072,237	4,971,069	4,845,998	4,806,172	4,762,388	4,711,824
Average Annual Affected Source Mass Goals (Short Tons)									
State	2022-2024	2025-2027	2028-2029	Interim	Final				
Delaware	5,348,363	4,963,102	4,784,280	5,062,869	4,711,825				
Cumulative Annual Affected Source Mass Goals (Short Tons)									
State	2022-2024	2025-2027	2028-2029	Interim (2022-2029)	Final (2030-2031)				
Delaware	16,045,089	14,889,306	9,568,560	40,502,952	9,423,650				



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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

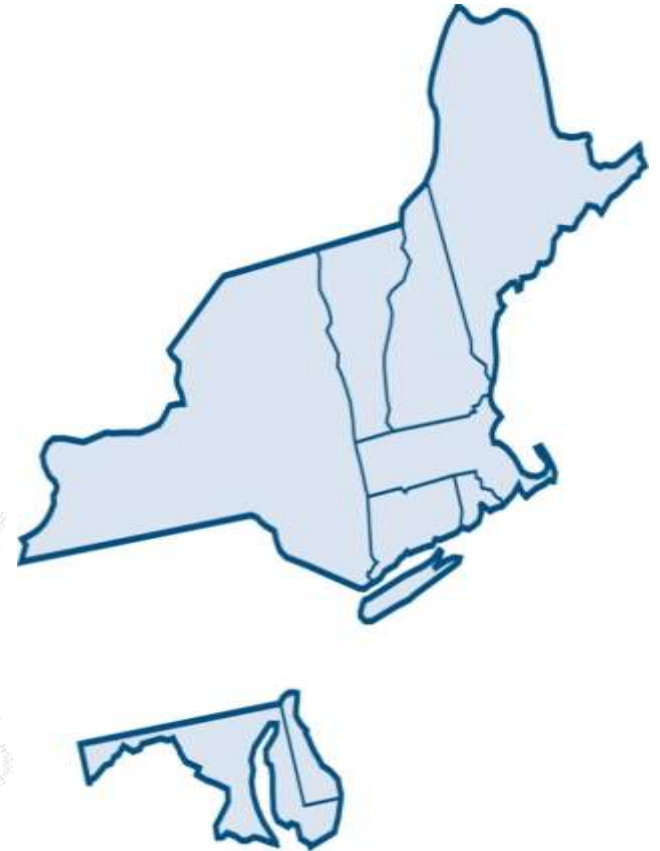


Clean Power Plan Timeline



RGGI in Brief

- Since 2009, the Northeast and Mid-Atlantic states cap and reduce carbon dioxide emissions from the power sector
 - Power plants 25 MW or greater to hold one CO₂ allowance for each ton of CO₂
 - Three-year control periods starting with 2009-2011, currently in third control period (2015-2017)
 - 2015 first year of interim compliance
- CO₂ Cap: 91 million short tons in 2014, and declines 2.5 percent each year until 2020 to 78.2 million short tons



RGGI in Brief

- Quarterly regional CO₂ allowance auctions
 - CO₂ allowances are issued by each state
 - One tradable CO₂ allowance market –
 - CO₂ allowances are fungible across the multi-state region
 - Market monitoring of CO₂ allowance market
 - Auction proceeds strategically invested by the states
- Compliance occurs at the state level
 - CO₂ allowances issued by any participating state can be used for compliance in any of the participating states
- Centralized allowance tracking and emissions tracking platform (RGGI COATS)
- Limited use (3.3%) of offsets



How is the Clean Power Plan different from what we are doing...?

■ CPP

- Applicability
 - Does not include new units
 - Does not include simple cycle units
- Compliance Periods
 - Three year
 - Two year
- Clean Energy Incentive Program

■ RGGI

- Applicability
 - Includes new units
 - Includes simple cycle
- Compliance Periods
 - Three year
- Flexibility Mechanisms
 - Cost Containment Reserve
 - Offsets
- Reinvest auction proceeds – EE/RE programs



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Delaware's 111(d) Affected and RGGI Covered Facilities

- 111 (d) Facilities - 5
- RGGI Facilities - 10

Facility
Calpine Edge Moor
Calpine Hay Road
Calpine Garrison Energy
NRG Indian River
City of Dover - McKee Run
Calpine Christiana Substation
Delaware City Refinery
NRG Energy Center Dover
City of Dover - Van Sant
DEMEC - Warren F. Sam Beasley Power Station

**Not included in EPA's analysis - NEEDS database v513

SOURCE: Technical Support Documents - Spreadsheets, Appendix 7: <http://www2.epa.gov/sites/production/files/2014-06/20140602tsd-plant-level-data-unit-level-inventory.xlsx>



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Our Initial Thoughts

- Use mass-based multi-state approach - RGGI
- RGGI 2016 Program Review
 - Amend RGGI Model Rule
 - States adopt amendments
- Submit DE's CPP plan by September 2016
 - Identify plan approach and describe progress
 - Describe public engagement process
 - Request an extension if necessary
 - Must submit final CPP plan by September 2018



Comments & Feedback

Feedback may be provided to DNREC by emailing to [Valerie Gray](mailto:Valerie.Gray@state.de.us) of DNREC's Division of Air Quality @ valerie.gray@state.de.us,

OR by US Mail to: Valerie Gray

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