



# **Final Standards to Reduce Greenhouse Gas Emissions from Power Plants**

September 23, 2024



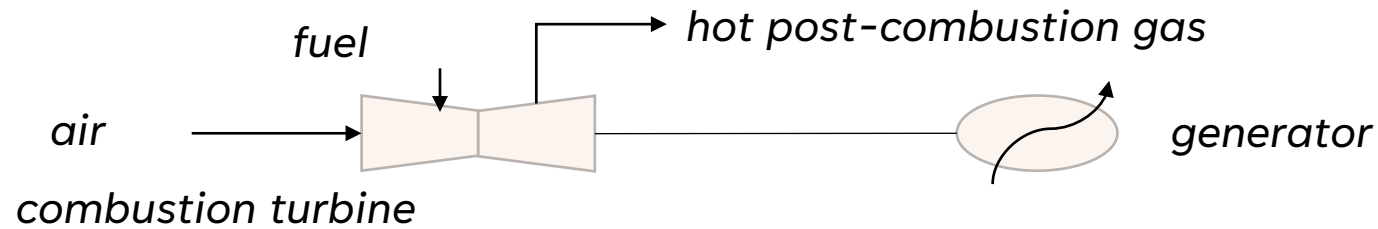
# Outline

- Background:
  - Types of Fossil Fuel Electric Generating Units
  - Overview of Clean Air Act Provisions that EPA is using to Regulate Stationary Source GHG emissions
- The Greenhouse Gas Rules
  - Rule Provisions
  - Impacts on Michigan Coal-Fired Power Plants

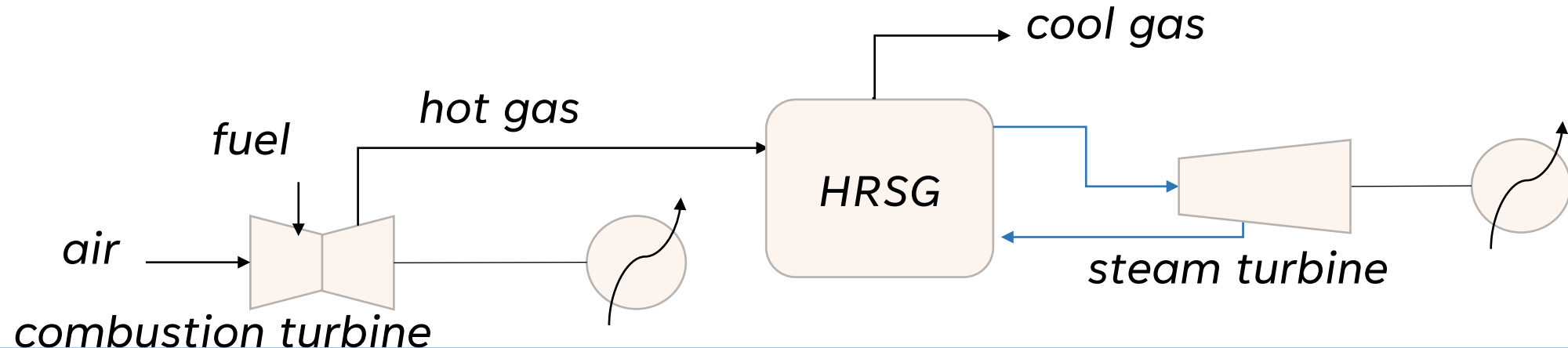


# Background – Stationary Combustion Turbine EGU's

Simple cycle – Emission rate: ~1,100 to >2,000 lb CO<sub>2</sub>/MWh



Combined cycle – Emission rate: ~850 to 1,000 lb CO<sub>2</sub>/MWh

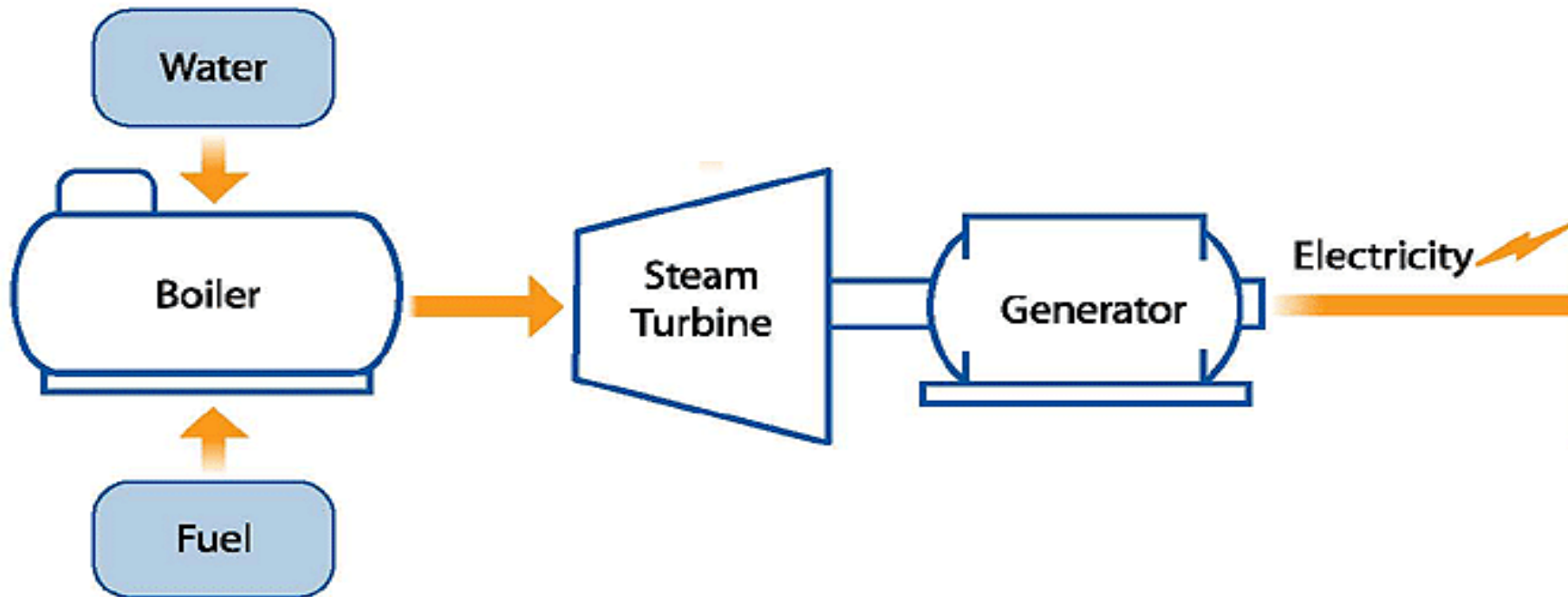


HRSG - Heat Recovery Steam Generator



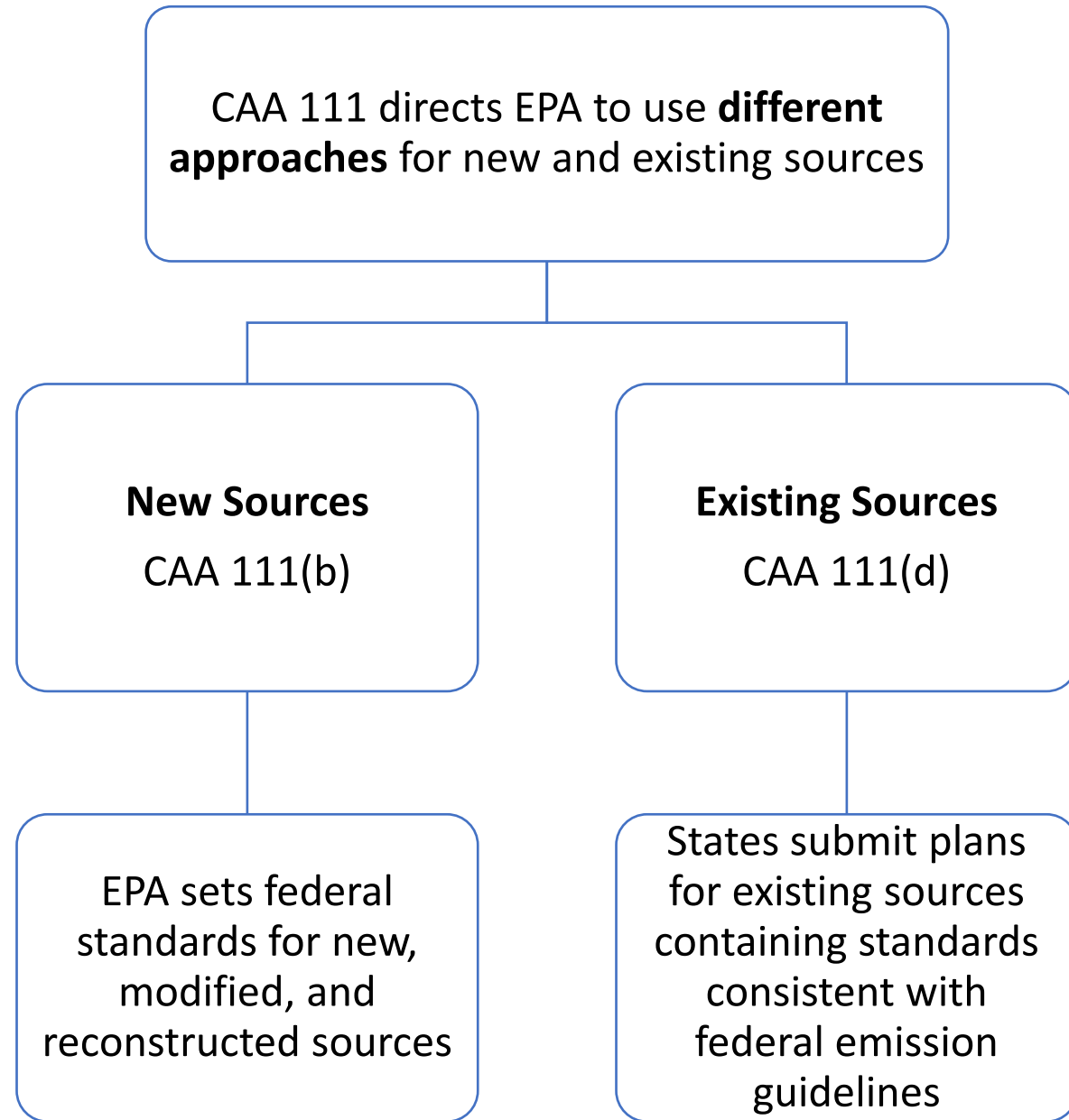
# Background – Steam Electricity Generating Unit

Coal Steam EGU emissions rate: 2,180 pounds CO<sub>2</sub>/MwH





# Clean Air Act Section 111





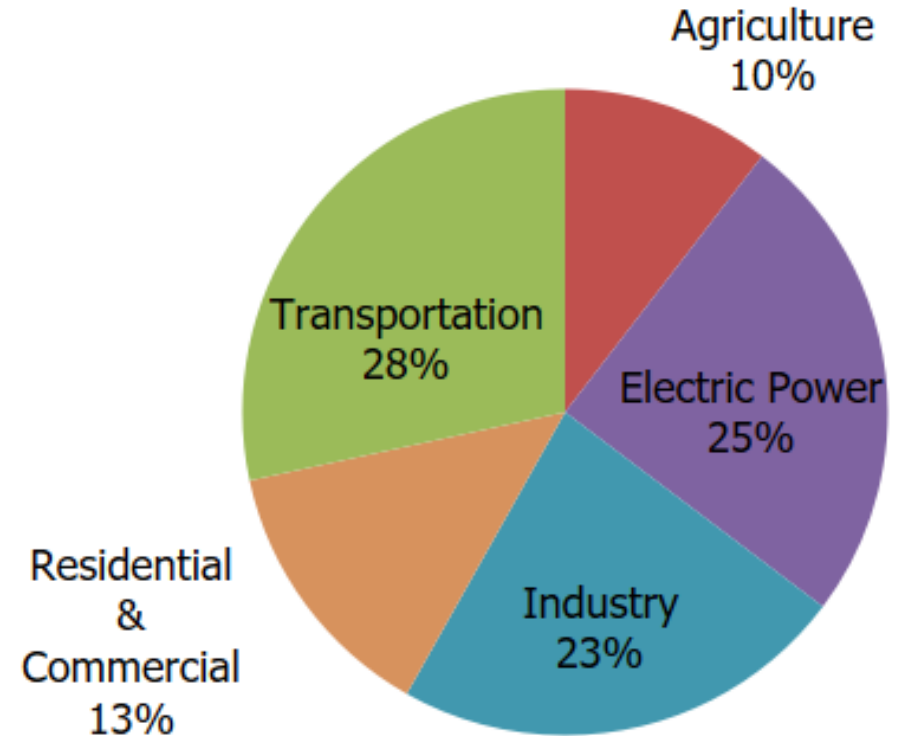
# New GHG Emissions Rules for Power Plants

Final rule published April 25, 2024.

**Works with the Inflation Reduction Act (IRA) to reduce climate and other health-harming pollution**

- Projected to reduce power sector CO2 emissions 74% by 2040
- Avoids up to 1.38 billion metric tons of CO2 systemwide through 2047
- Net climate and health benefits \$20 billion annually.

**Total U.S. Greenhouse Gas Emissions by Economic Sector in 2022**

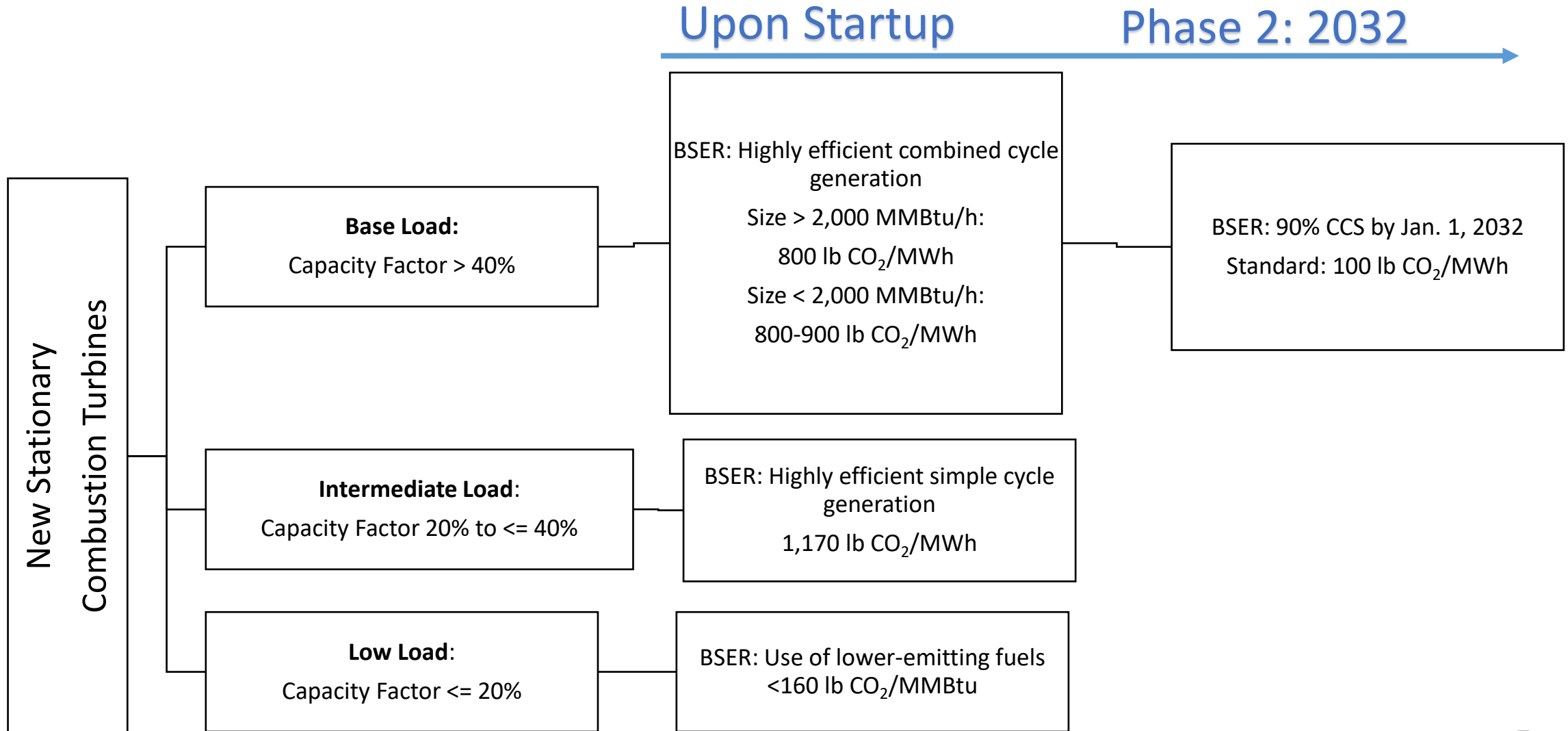


EPA (2024). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022 U.S. Environmental Protection Agency, EPA 430R-24004. <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022>.



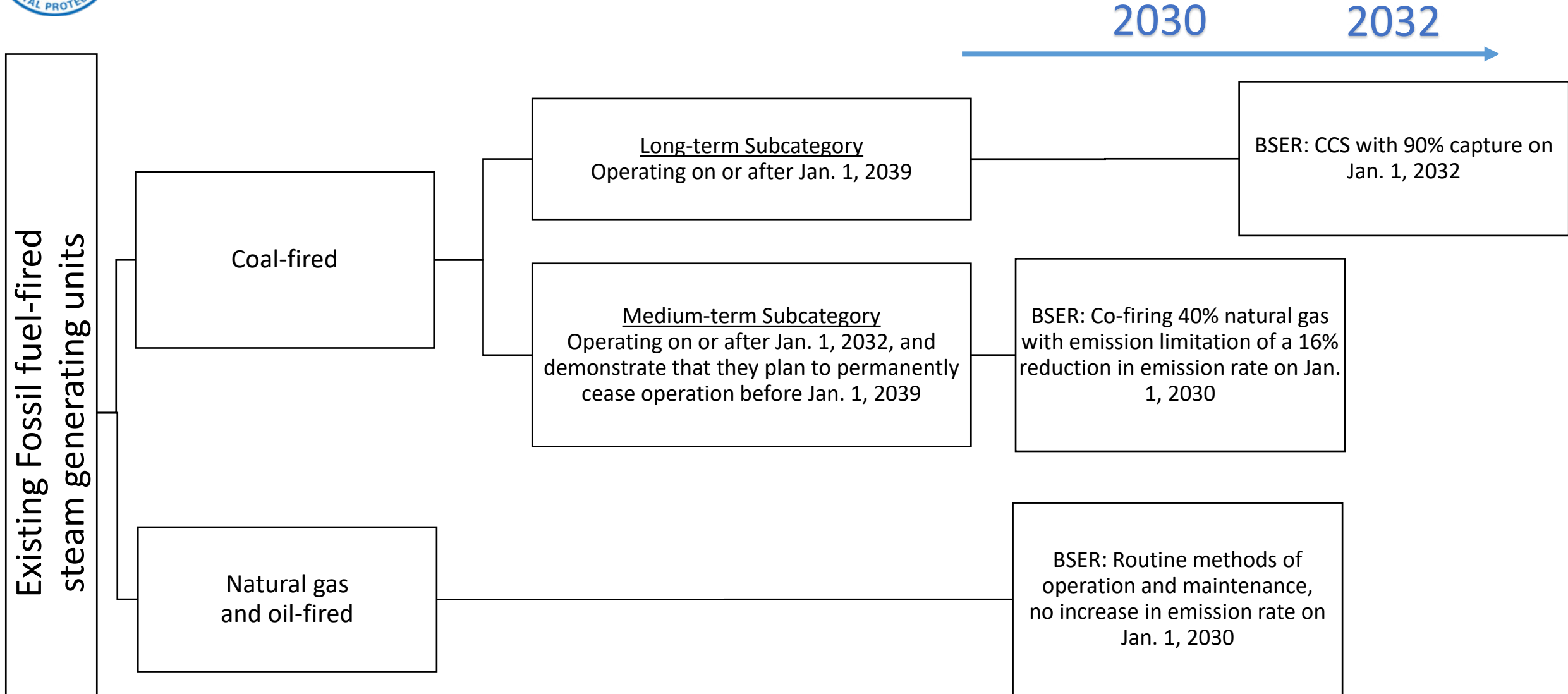
# Final Standards for New Stationary Combustion Turbines

- Standards effective from date of proposal publication (May 23, 2023)





# Final Emission Guidelines for Existing Steam Generating Units





# Support for Reliability

- **Rule Structure.**

- Long compliance timeframe
- Not regulating existing natural gas fired turbines in this action, creating time for a comprehensive approach that protects reliability

- **RULOF Provisions.** Remaining Useful Life and Other Factors

- **Compliance Flexibilities.**

- flexible annual average compliance period
- emissions trading/averaging
- mass-based compliance
- 1-year compliance extension for implementation delays outside of the control the owner/operator.

- **Reliability Mechanisms.**

- A short-term mechanism for units responding to grid emergencies
- A mechanism to extend retirement dates when there is a documented and verified reliability need.



# State Plans for FINAL Emission Guidelines

## State Plan Submission Deadline

- Submission by May 11, 2026

## Transparency

- State plans must require EGU owners/operators to maintain website with documentation and information related to compliance with the state plan

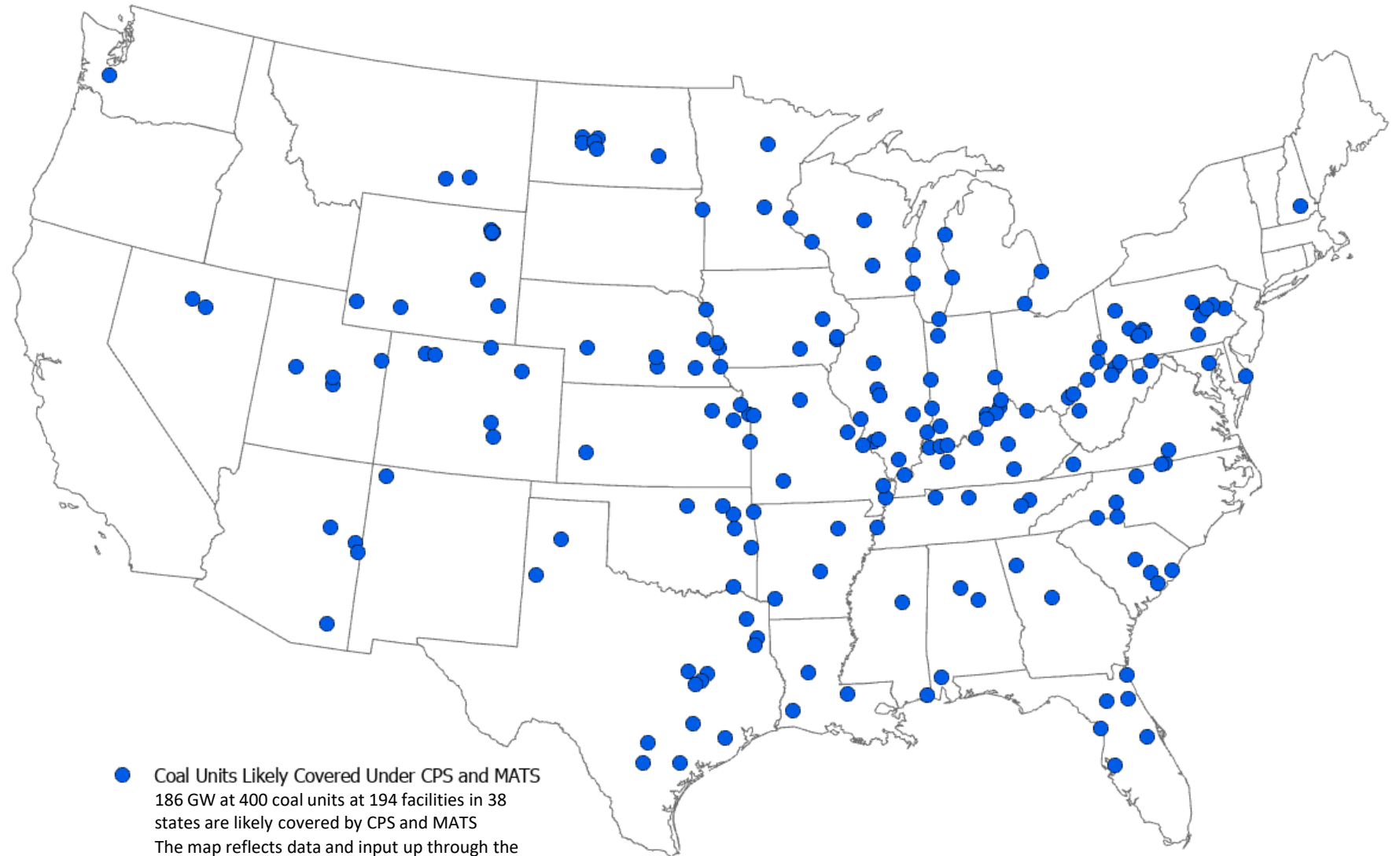
## Meaningful Engagement

- State plans must include evidence of engagement with stakeholders, including communities most effected by emissions



# Potentially-Covered Coal-Fired Units: 2023

- Today, about 186 GW of coal-fired power plants are operating nationwide, this is 38% less than 10 years ago.
- Many of these have announced plans to retire or convert to natural gas (see following maps)

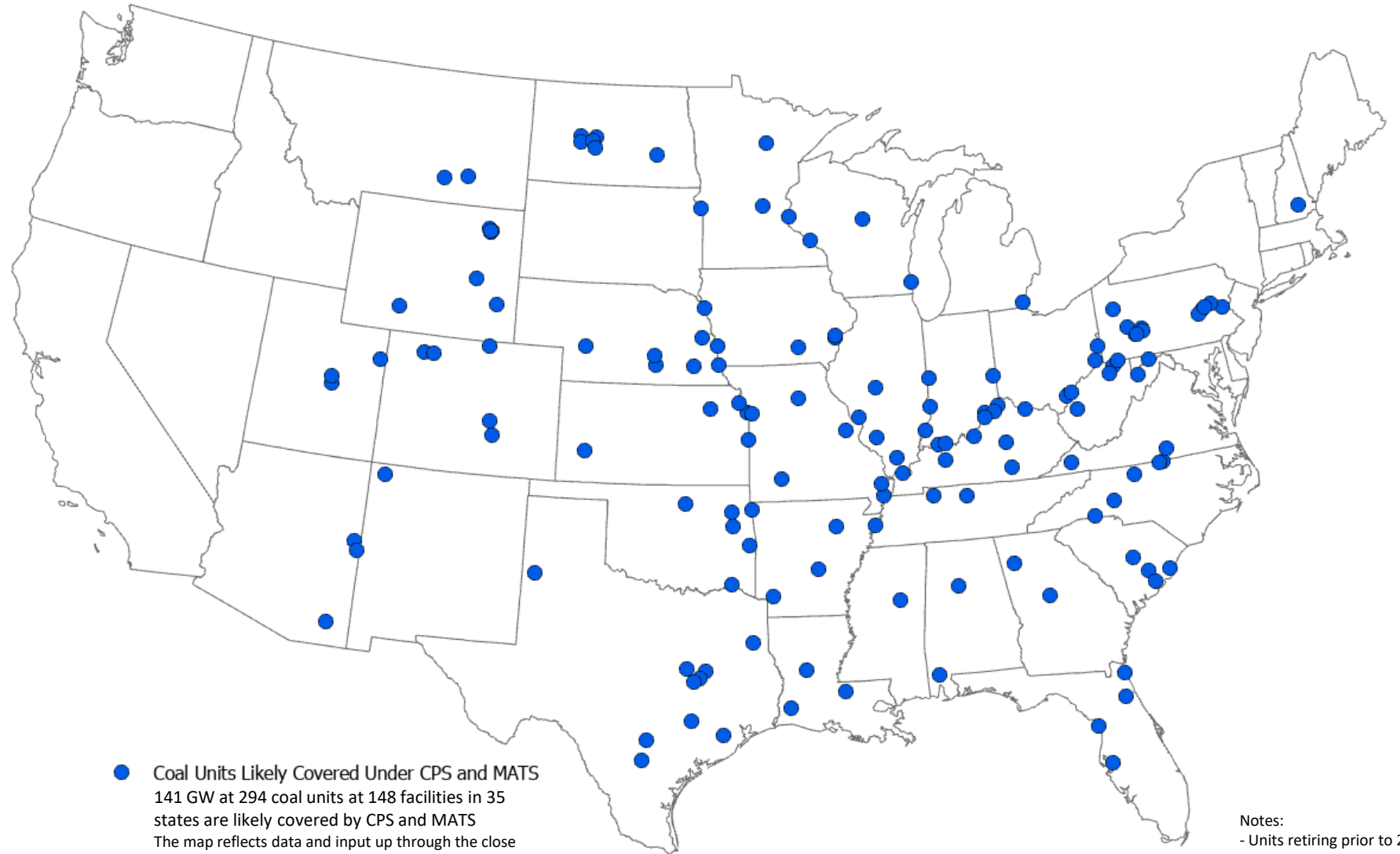


● Coal Units Likely Covered Under CPS and MATS  
186 GW at 400 coal units at 194 facilities in 38 states are likely covered by CPS and MATS  
The map reflects data and input up through the end of 2023.



# Potentially Covered Coal-Fired Units: 2029

- This map shows units for which EPA is not aware of plans to retire or switch to natural gas by 2029.
- Over the next 5 years, EPA is aware of 45 GW that have announced plans to retire or convert to natural gas, leaving a coal-fired fleet of 141 GW.
- These plans to retire or change fuel are among the many factors states and power plant owners can consider as they make decisions about CPS subcategories and/or controls for these units.
- The units on this map may be likely to be in the medium-term or long-term CPS subcategories.



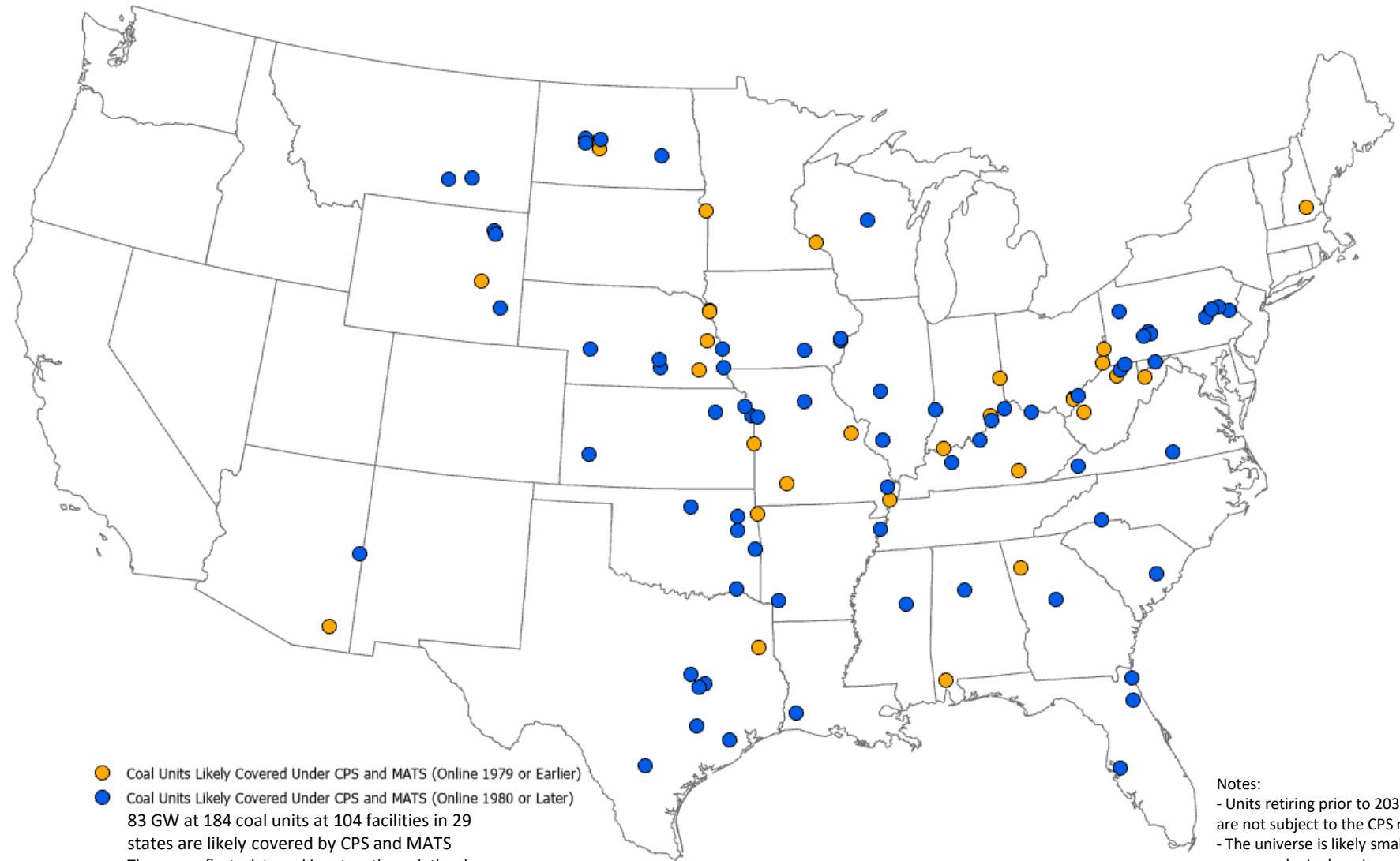
● Coal Units Likely Covered Under CPS and MATS  
141 GW at 294 coal units at 148 facilities in 35 states are likely covered by CPS and MATS  
The map reflects data and input up through the close of comment period (August 8, 2023), but may not reflect more recent announcements.

Notes:  
- Units retiring prior to 2032 are not subject to the CPS rule  
- The universe is likely smaller, as many plants do not announce retirement plans this far in advance



# Potentially Covered Coal-Fired Units: 2039

- This map shows units for which EPA is not aware of plans to retire or switch to natural gas by 2039.
- Over the next 15 years, EPA is aware of 103 GW that have announced plans to retire or convert to natural gas, leaving a coal-fired fleet of 83 GW.
- Of the remaining coal-fired fleet, 36 GW will be over 60 years old by 2039.
- The units on this map may be even more likely to be in the medium-term or long-term CPS subcategories.



● Coal Units Likely Covered Under CPS and MATS (Online 1979 or Earlier)  
● Coal Units Likely Covered Under CPS and MATS (Online 1980 or Later)  
83 GW at 184 coal units at 104 facilities in 29 states are likely covered by CPS and MATS  
The map reflects data and input up through the close of comment period (August 8, 2023) but may not reflect more recent announcements.

Notes:  
- Units retiring prior to 2032 are not subject to the CPS rule  
- The universe is likely smaller, as many plants do not announce retirement plans this far in advance

More  
information is  
available on  
EPA's website



Final power plant rules:

<https://www.epa.gov/stationary-sources-air-pollution/greenhouse-gas-standards-and-guidelines-fossil-fuel-fired-power>

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