

Cross-State Air Pollution Rule (CSAPR)

How did we get here?
Where are we going?



**A&WMA Midwest Section
Annual Environmental Technical Conference**

Minda Nelson, P.E.
Emily Robbins, P.E.

May 2, 2023



Emily Robbins, PE
Senior Environmental Engineer
12 years of experience



Minda Nelson, PE
Associate Environmental Engineer
19 years of experience

What comes to mind when you hear the word CSAPR?



Presentation Overview

- ▶ How did we get here?
- ▶ History and background
- ▶ Who is affected
- ▶ Overall goals
- ▶ Where are we going?



How Did We Get Here? (aka the problem)

Clean Air Act

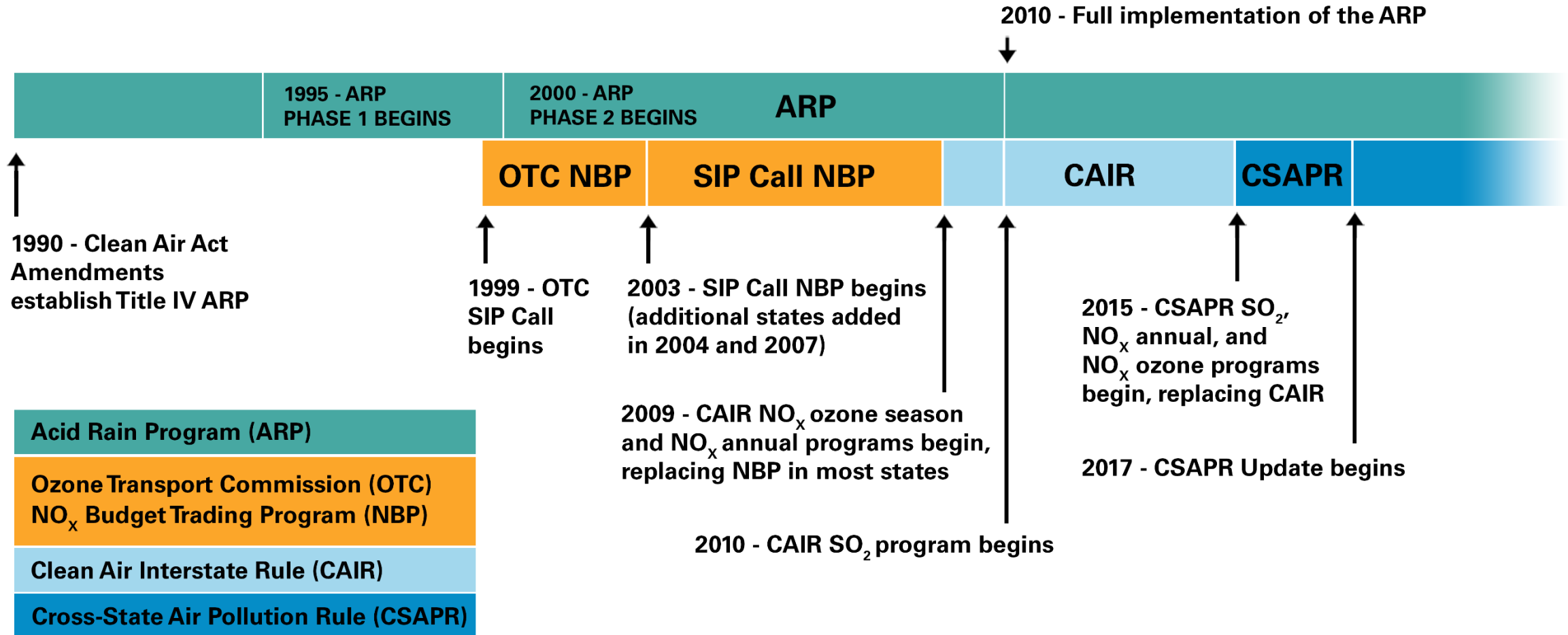


Grandfathering
of existing
power plants



Regulating air
pollution from
one state to
another

Timeline of EPA's efforts to regulate air pollution



Source: EPA, 2021

Acid Rain Program (1995 - Present)

1. Established under Title IV – Acid Deposition Control.
2. It requires major emission reductions of SO₂ and NO_x, the primary precursors of acid rain, from the power sector.
3. Although this program worked very well, it did not force a lot of controls as allowances were easier to get and inexpensive.

Ozone Transport Commission NO_x Budget Program (1999 - 2002)

1. An allowance trading program designed to reduce summertime NO_x emissions from electric utilities and large industrial boilers in the northeast United States.
2. Targeted reduction of summertime NO_x emissions regionwide to attain NAAQS for ground level ozone.

NO_x Budget Trading Program (2003 - 2008)

1. A cap and trade program created to reduce regional transport of NO_x emissions from power plants and other large combustion sources in the eastern United States.
2. It was a central component of the NO_x State Implementation Plan Call which was designed to reduce NO_x emissions during the warm summer months, referred to as the 'Ozone Season'.

Clean Smokestacks Act, 2003

1. It was introduced in the United States Congress to amend the Clean Air Act which requires the Administrator of EPA to promulgate regulations to achieve specified reductions in emissions of NO_x, CO₂, and mercury from power plants.

2. This Act was never passed by the US Congress.

Clean Air Interstate Rule (CAIR) (2005)

1. It was designed to address interstate air pollution transport of soot (fine particulate matter) and smog (ozone).

2. It used a cap and trade system to reduce the target pollutants: SO₂ and NO_x.

3. It required 28 eastern upwind states to make reductions in SO₂ and NO_x emissions.

Cross-State Air Pollution Rule (CSAPR) (2011)

1. It was issued as a replacement regulation to CAIR following a court decision in 2008. EPA finalized it under the 'Good Neighbor' provisions of CAA.

2. It required 28 eastern upwind states to reduce power plant emissions that contribute to pollution from ozone and fine particulate matter in other downwind states.

3. Its implementation began on January 1, 2015.

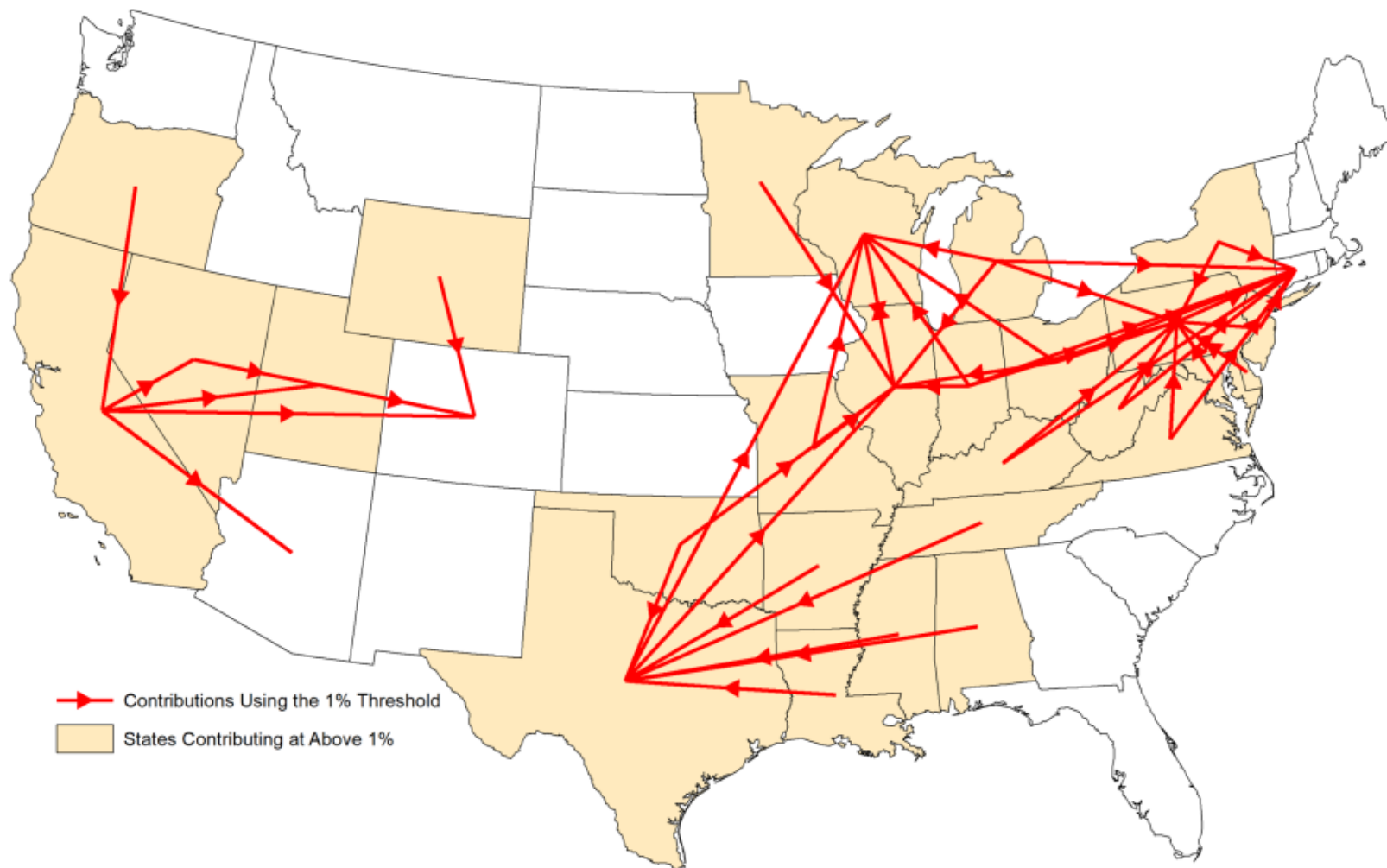
CSAPR Framework

CSAPR provides a 4-step process to address interstate transport of certain air pollutants:

1. Identifying downwind receptors that are expected to have problems attaining or maintaining clean air standards (NAAQS)
2. Determining which upwind states contribute to these identified problems in amounts sufficient to “link” them to the downwind air quality problems;
3. Identifying upwind emissions that significantly contribute to nonattainment or interfere with maintenance of a standard by quantifying appropriate upwind emission reductions and assigning upwind responsibility among linked states; and
4. Reduce the identified upwind emissions via permanent and enforceable requirements (e.g., regional allowance trading programs).

Source: <https://www.epa.gov/csapr/overview-cross-state-air-pollution-rule-csapr>

Upwind States Contributing Above 1% to Downwind States in 2023 for the 2015 Ozone NAAQS



Source: <https://www.epa.gov/csapri/good-neighbor-plan-2015-ozone-naaqs#maps>

Phases of CSAPR – Key Dates

- ▶ **CSAPR 1** finalized on July 6, 2011
 - Limited interstate transport of emissions of NO_x and SO₂
- ▶ **CSAPR 2** update finalized on September 7, 2016
 - Revised ozone season NO_x program
- ▶ **CSAPR 3** update finalized on March 15, 2021
 - Reduce NO_x emissions from power plants in 22 states in eastern U.S.
 - Help downwind areas meet and maintain 2008 ozone air quality standard
- ▶ **Good Neighbor Plan** for 2015 Ozone NAAQS finalized on March 15, 2023
 - Reductions in ozone-forming emissions of NO_x from power plants and industrial facilities.

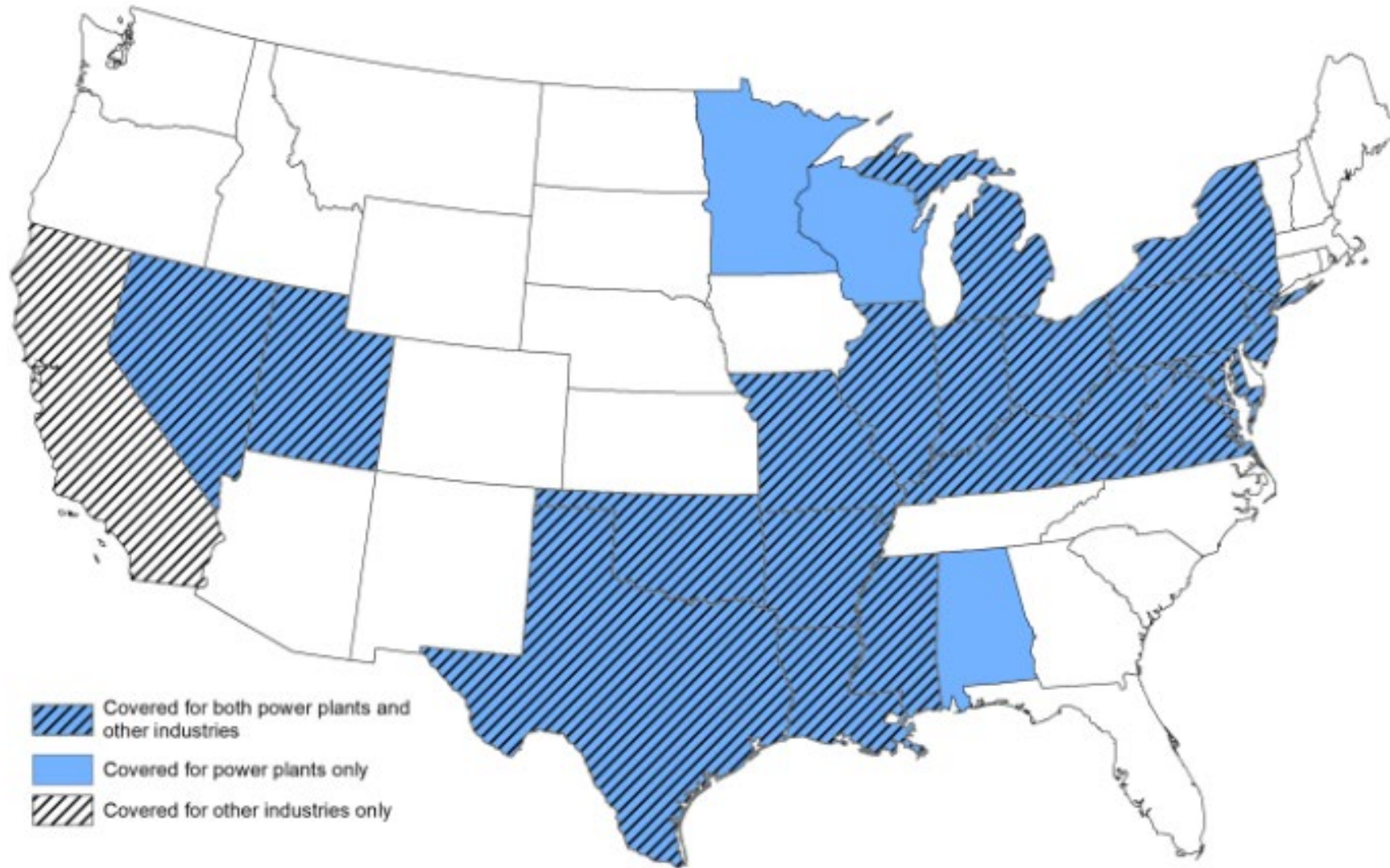
Good Neighbor Plan Comments

- ▶ Comment period ended June 21, 2022
- ▶ Over 112,000 comments received (700+ unique comments)
- ▶ Wide range of stakeholders: many for and against
- ▶ Those not in favor believe EPA failed to actively engage stakeholders and did not provide affected stakeholders sufficient time for comprehensive evaluation.
- ▶ Significant number of comments include utility and industrial sources that are new to this type of regulation.

Good Neighbor Plan (Final Rule)

- ▶ Final rule includes 23 states
- ▶ The plan implements the 2015 ozone NAAQS
- ▶ Revised and strengthened Group 3 CSAPR ozone season trading program for power plants
- ▶ Industrial sources are being pulled into the rule for the first time
- ▶ Enforceable NO_x emissions control requirements for existing and new sources for nine industries

Who Is Affected?



<https://www.epa.gov/csapr/good-neighbor-plan-2015-ozone-naaqs>

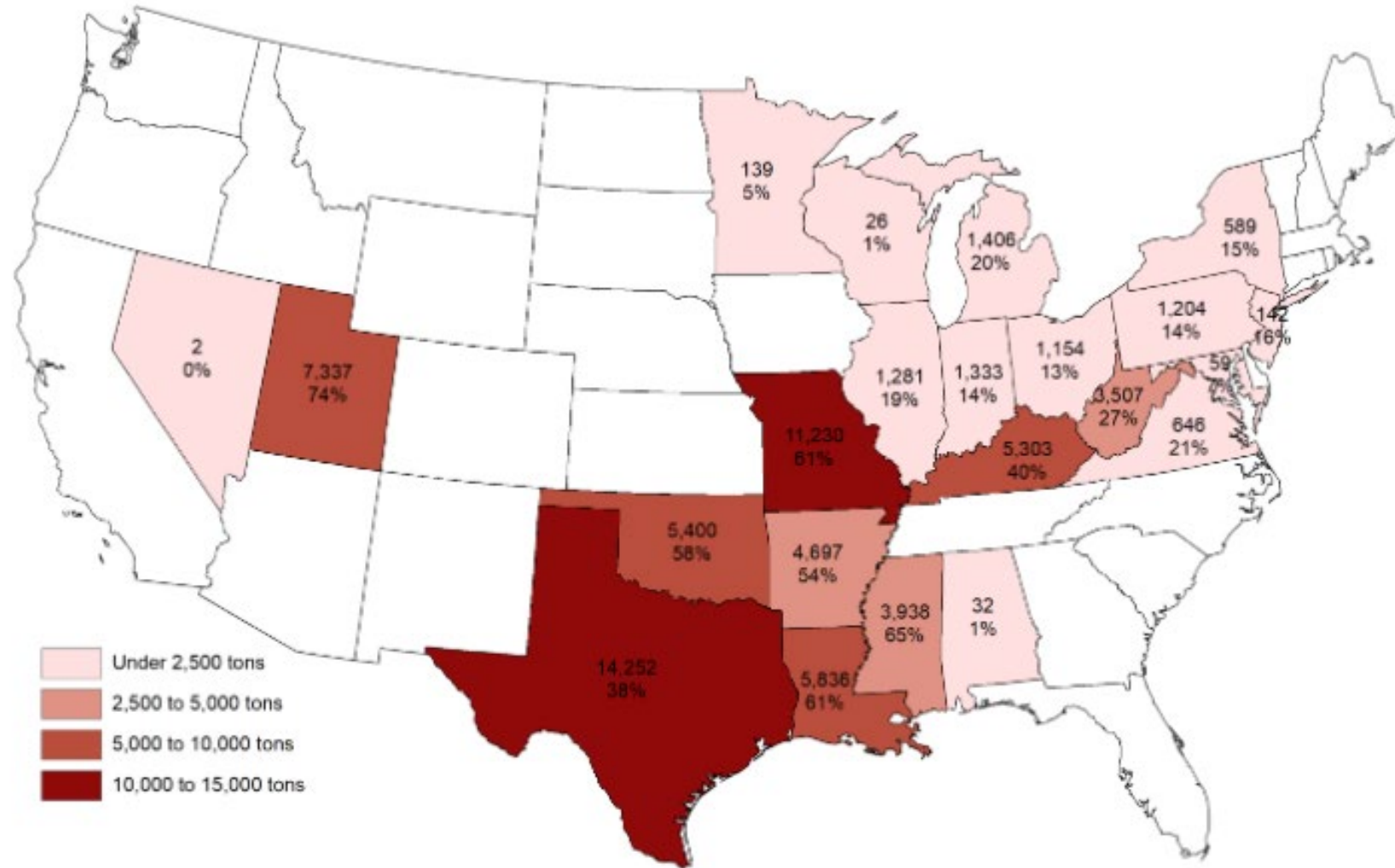
Impact to Power Plant and Industrial Sources

- ▶ New and existing industrial sources need to prepare for emissions reductions
- ▶ Emissions reductions need to happen as quickly as possible
 - Initial phase of reductions occurs prior to August 3, 2024
 - Further emissions reductions phase is the beginning of the 2026 ozone season (coincides with August 3, 2027 attainment date)
- ▶ Emissions budgets will decline over time based on level of reductions
- ▶ Subject facilities may be required to install control systems to comply
 - Will the controls be available for all sources to meet the required schedules?

NO_x Allowance Trading Program for Fossil Fuel-Fired Power Plants

- ▶ Group 3 CSAPR ozone season trading program has been revised and strengthened
- ▶ EPA is setting the initial control stringency based on the level of reductions achievable through immediately available measures
- ▶ Final rule sets emission budgets that decline over time based on the level of reductions achievable through phased installation of emissions controls
- ▶ The program will provide power plants the flexibility to continue providing reliable and affordable electric service
- ▶ The final rule's 2027 budget for power plants reflects a 50% reduction from 2021 ozone season NO_x emissions levels

Power Plant Ozone Season Emissions Reductions in 2027 Relative to 2021 Under the Final Good Neighbor Plan

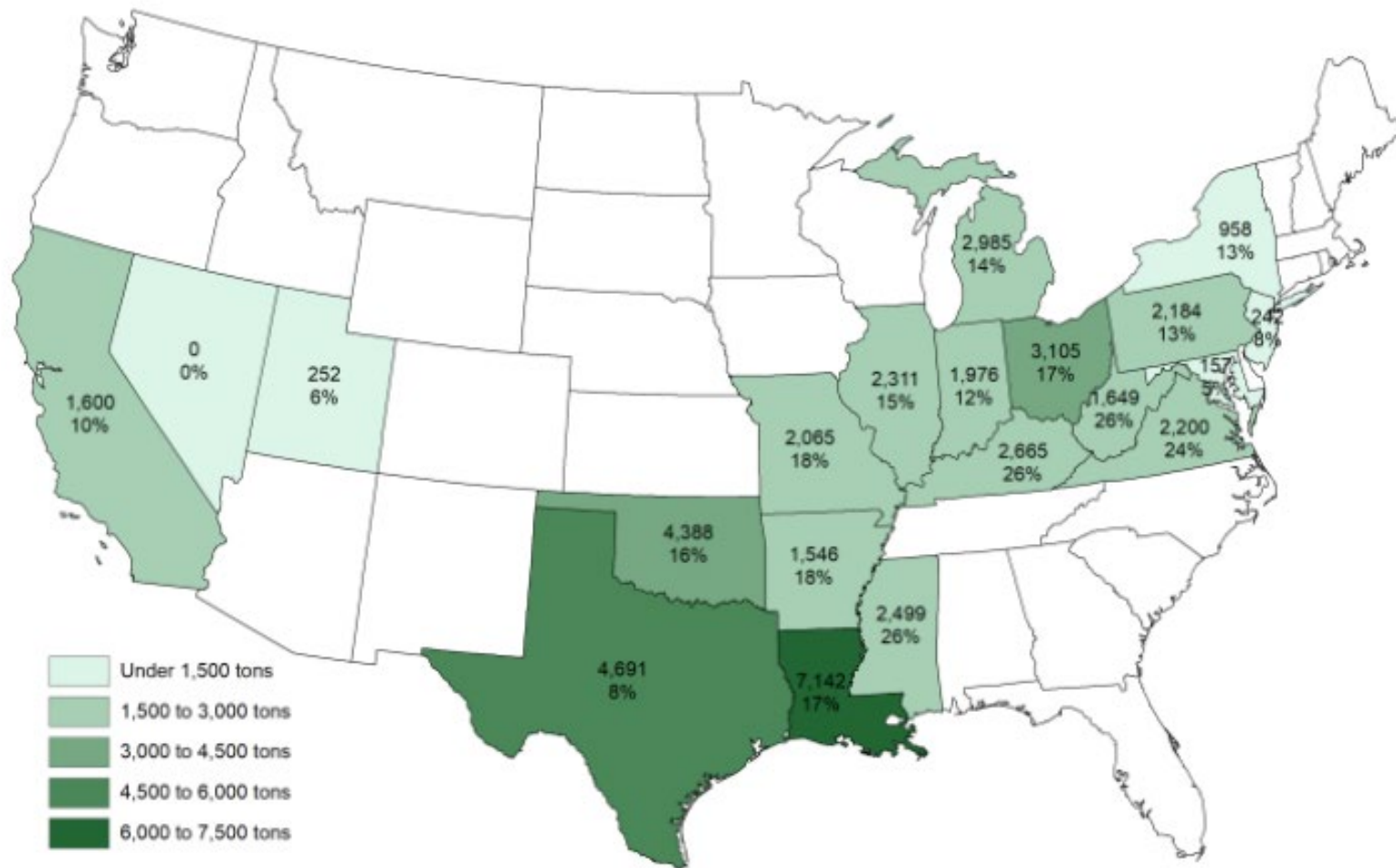


Source: <https://www.epa.gov/csapr/good-neighbor-plan-2015-ozone-naaqs>

Industrial Sources with NO_x Emissions Standards

- ▶ Reciprocating internal combustion engines in **Pipeline Transportation of Natural Gas**
- ▶ Kilns in **Cement and Concrete Product Manufacturing**
- ▶ Reheat furnaces in **Iron and Steel Mills and Ferroalloy Manufacturing**
- ▶ Furnaces in **Glass and Glass Product Manufacturing**
- ▶ Boilers in **Iron and Steel Mills and Ferroalloy Manufacturing, Metal Ore Mining, Basic Chemical Manufacturing, Petroleum and Coal Products Manufacturing, and Pulp, Paper, Paperboard Mills**
- ▶ Combustors and incinerators in **Solid Waste Combustors or Incinerators**

Industrial Source Ozone Season Emissions Reductions in 2026 Relative to 2019 Levels Under the Final Good Neighbor Plan



<https://www.epa.gov/csapr/good-neighbor-plan-2015-ozone-naaqs>

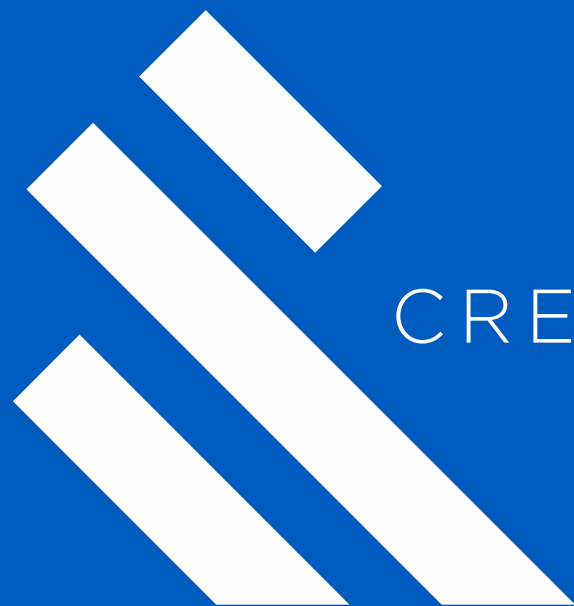
Benefits of the Good Neighbor Plan

- ▶ Reduce ozone forming NO_x emissions by approximately 70,000 tons during the 2026 ozone season (May 1 to September 30)
 - 25,000 tons from power plants
 - 45,000 tons from industrial sources
- ▶ Will reduce SO₂, particulate, and CO₂ emissions from power plants (co-benefit)
- ▶ Will prevent up to 1,300 premature deaths in 2026 and improve the health of thousands of people with respiratory problems and asthma
- ▶ Broad range of unquantified benefits that will protect the environment

Where are we going?

- ▶ Litigation concerns?
- ▶ The EPA will continue to implement and regulate interstate transport of air pollution.
- ▶ Will the Clean Air Act be amended?





CREATE AMAZING.