EPA's Cross-State Air Pollution Rule

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Overview of Action

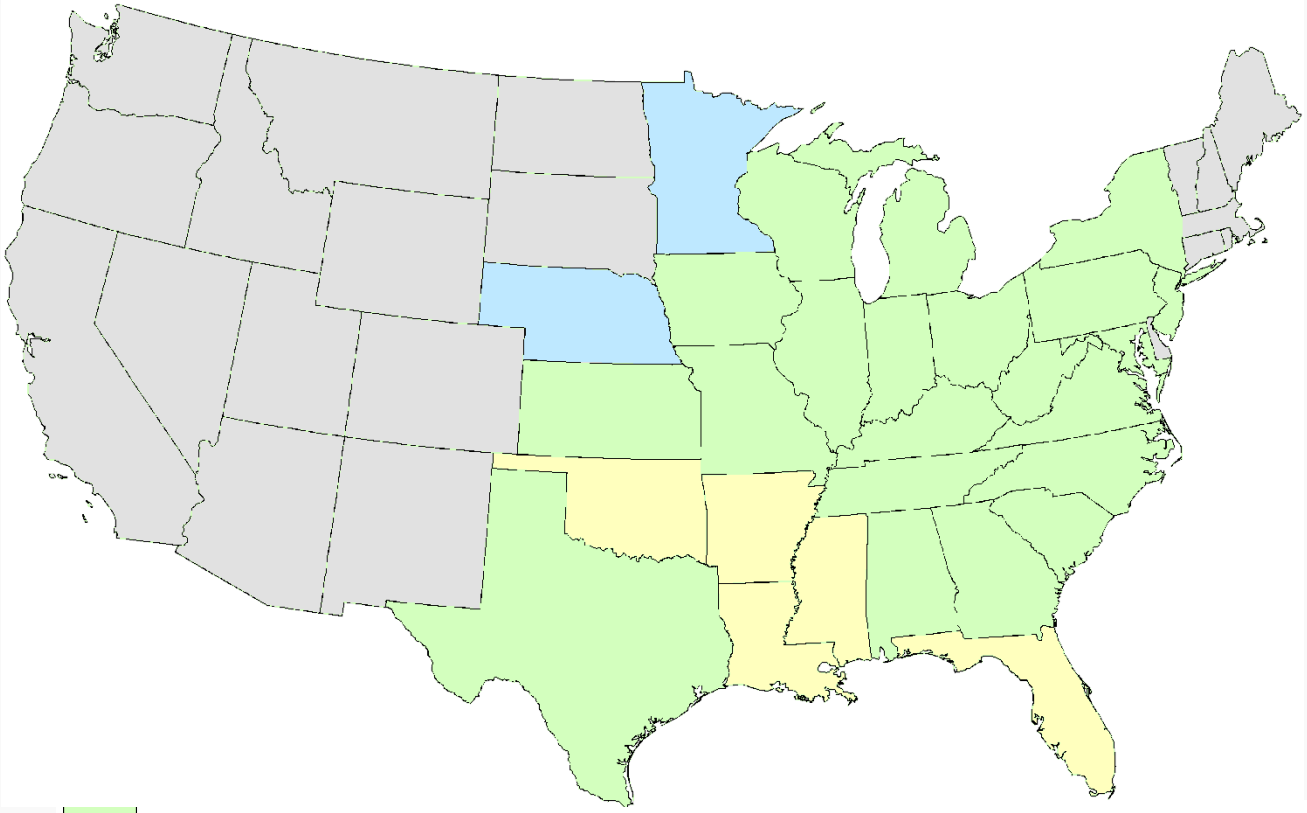
- EPA finalized Cross-State Air Pollution Rule (CSAPR “Casper”) under “good neighbor” provision of Clean Air Act (CAA) to reduce SO_2 and NOx emissions from power plants that contribute to ozone and fine particle pollution in other states.

- CSAPR covers 28 Eastern and Midwestern states

- CSAPR will replace the Clean Air Interstate Rule (CAIR); addresses all concerns of Dec 2008 Court decision.

- CSAPR lays out process for determining each upwind state's responsibility to protect downwind air quality. Each time National Ambient Air Quality Standards (NAAQS) are revised (e.g., ozone at end of July), EPA can apply process to determine whether new emission reductions are needed from upwind states.

Cross-State Air Pollution Rule States



States controlled for both fine particles (annual SO_2 and NO_x) and ozone (ozone season NO_x) (21 States)

States controlled for fine particles only (annual SO_2 and NO_x) (2 States)

States controlled for ozone only (ozone season NO_x) (5 States)

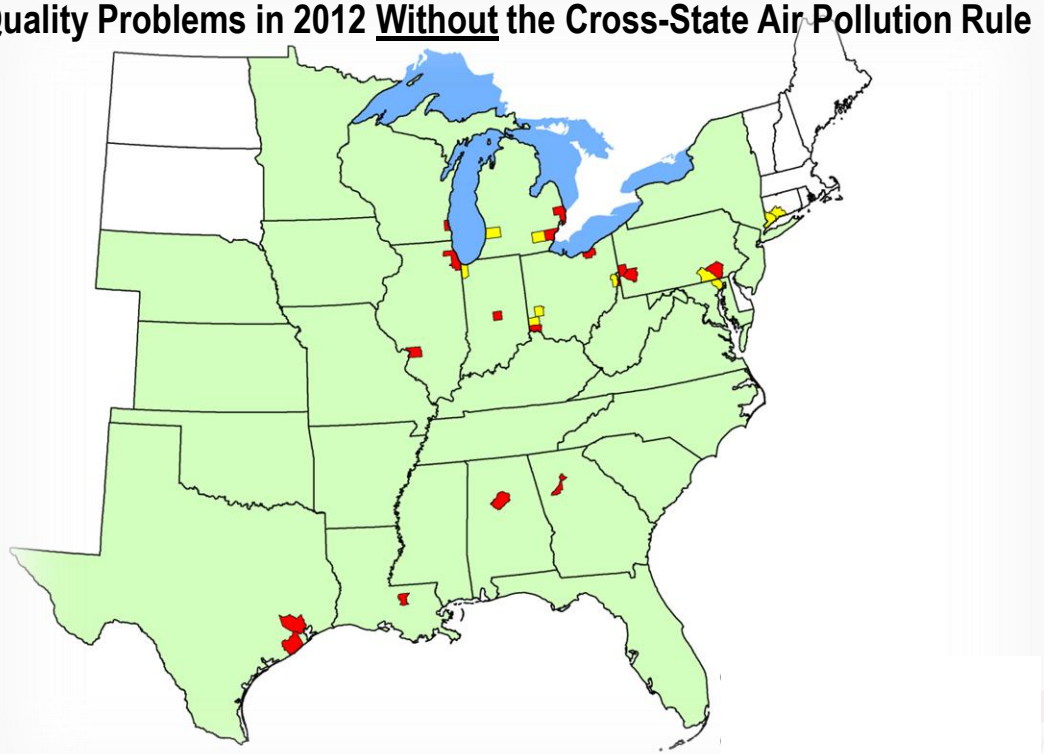
States not covered by the Cross-State Air Pollution Rule

- Cross-State Air Pollution Rule includes separate requirements for:
  - Annual SO_2 reductions
  - Annual NO_x reductions
  - Ozone-season NO_x reductions

*This map includes states covered in the supplemental notice of proposed rulemaking.

Why did EPA develop this Rule?

Counties with Monitors Projected to Have Ozone and/or $PM_{2.5}$ Air Quality Problems in 2012 Without the Cross-State Air Pollution Rule



Counties with Violating PM and/or Ozone Monitors (17)

Counties with PM and/or Ozone Maintenance Problems (10)

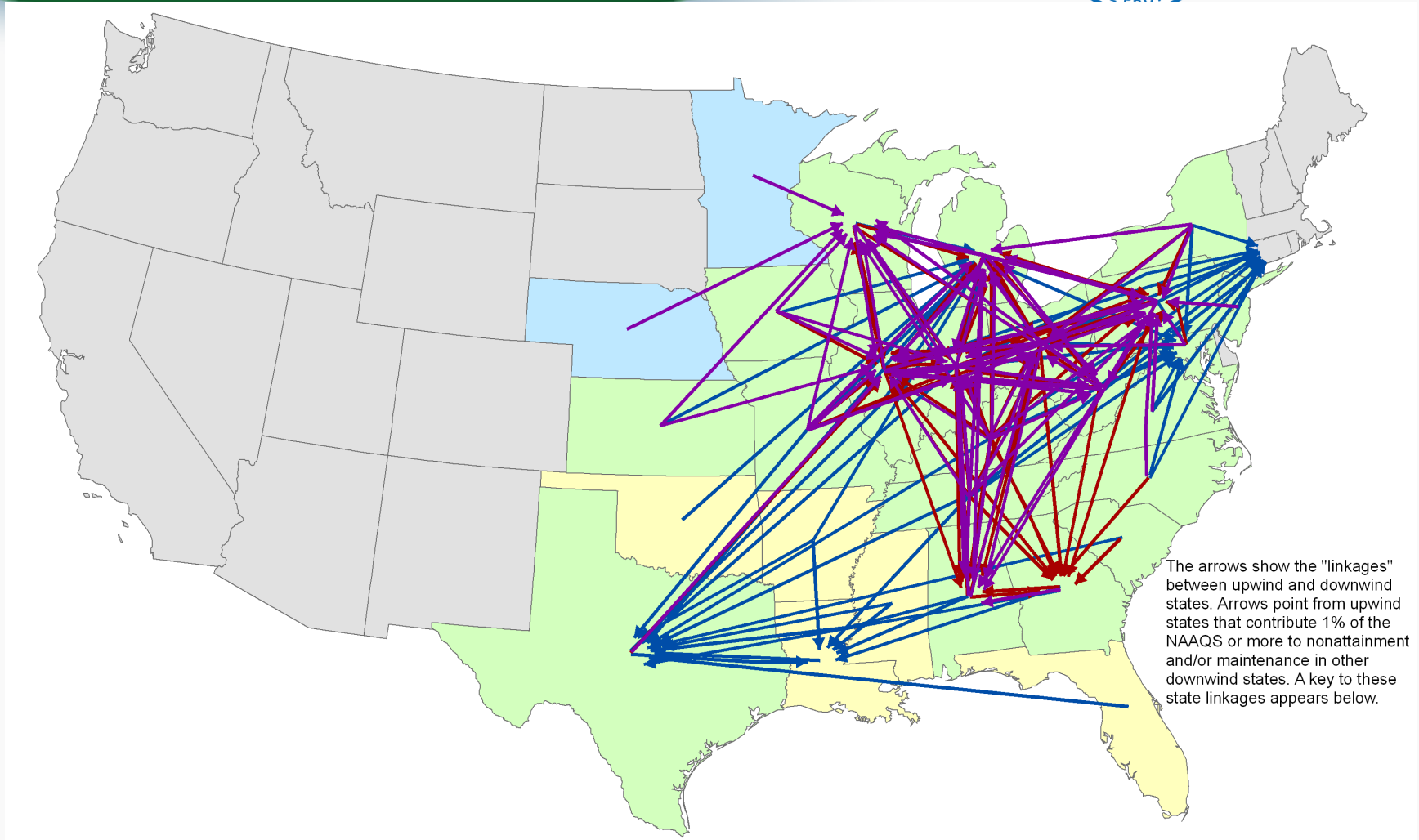
States covered by the Cross-State Air Pollution Rule (28)*

* Includes states in the supplemental proposal

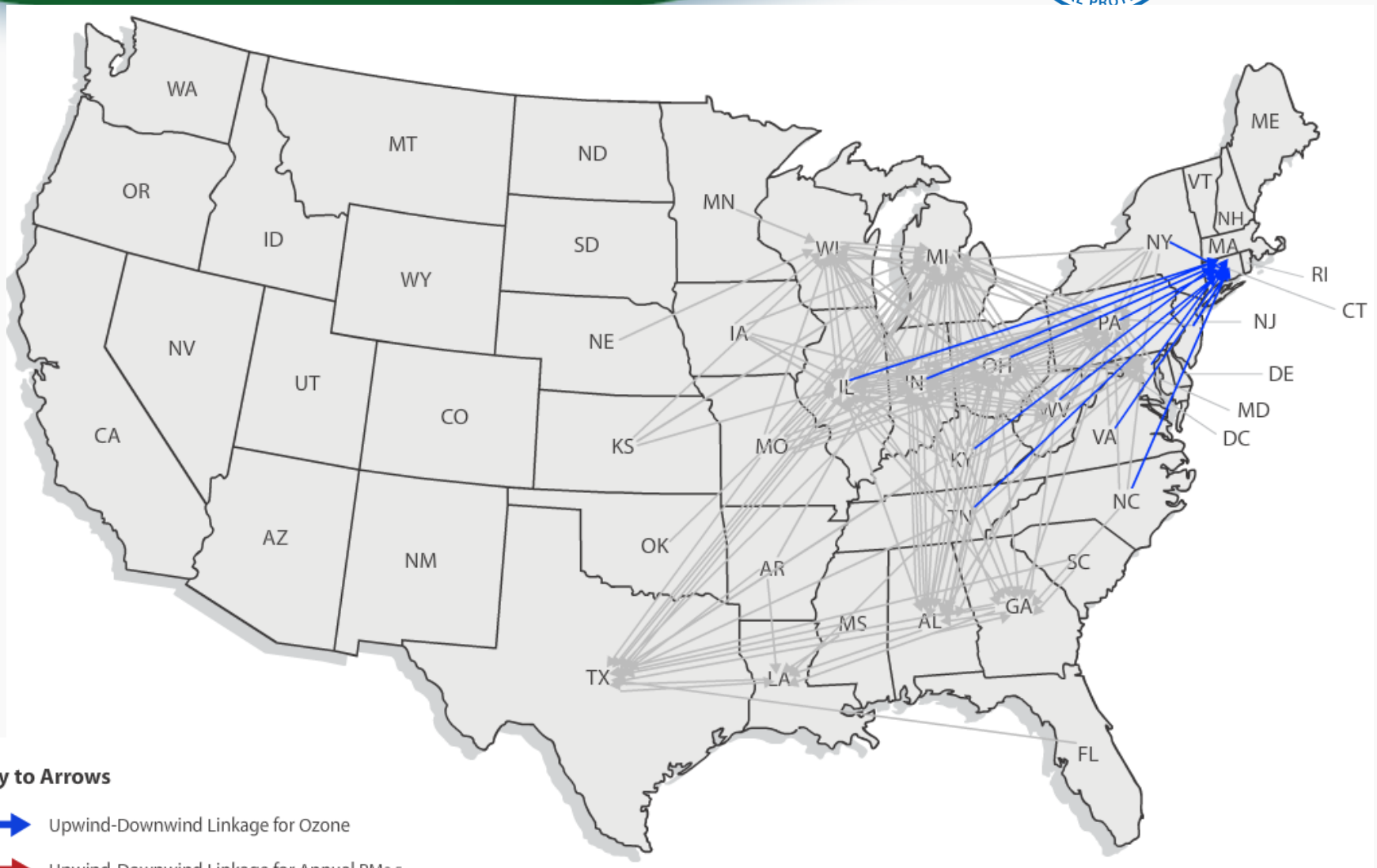
- **In 2012, EPA projects that:**
  - Some areas will still not meet NAAQS.
  - Many upwind states will still contribute significantly to downwind nonattainment areas.
- **Rule affects power plants because their emission reductions are most cost-effective.**
- **Other actions by EPA & states needed before all areas attain/maintain NAAQS.**

Analysis assumes that CAIR is not in effect, and includes other fed & state requirements to reduce emissions contributing to ozone and $PM_{2.5}$ in place as of Dec 2010.

Upwind-Downwind Linkages in Cross-State Air Pollution Rule States



Ozone Linkages to CT



Significant NO_X and SO_2 Reductions from Cross-State Air Pollution Rule

- By 2014, EPA projects CSAPR (with other state & EPA actions) will reduce 2005 emissions from electric generating units (EGUs) in covered states by:
  - 6.4 mill tons of SO_2/yr (2005 emissions: 8.8 mill tons)
  - 1.4 million tons of NO_X/yr (2005 emissions: 2.6 mill tons)
    - 340,000 tons of NO_X during ozone season

- Reductions represent 73% reduction in SO_2 and 54% reduction in NO_X emissions from 2005 levels in covered states.

Benefits Outweigh Costs

- Annual costs (2014): $800 million plus $1.6 billion capital investments as result of CAIR.

- Annual benefits (2014): $120 - $280 billion.

- Modest costs mean small effects on electricity generation. EPA estimates for 2014:
  - Household electricity bills increase by 1 percent.
  - Natural gas prices increase less than 1 percent.
  - Small changes in power generation.

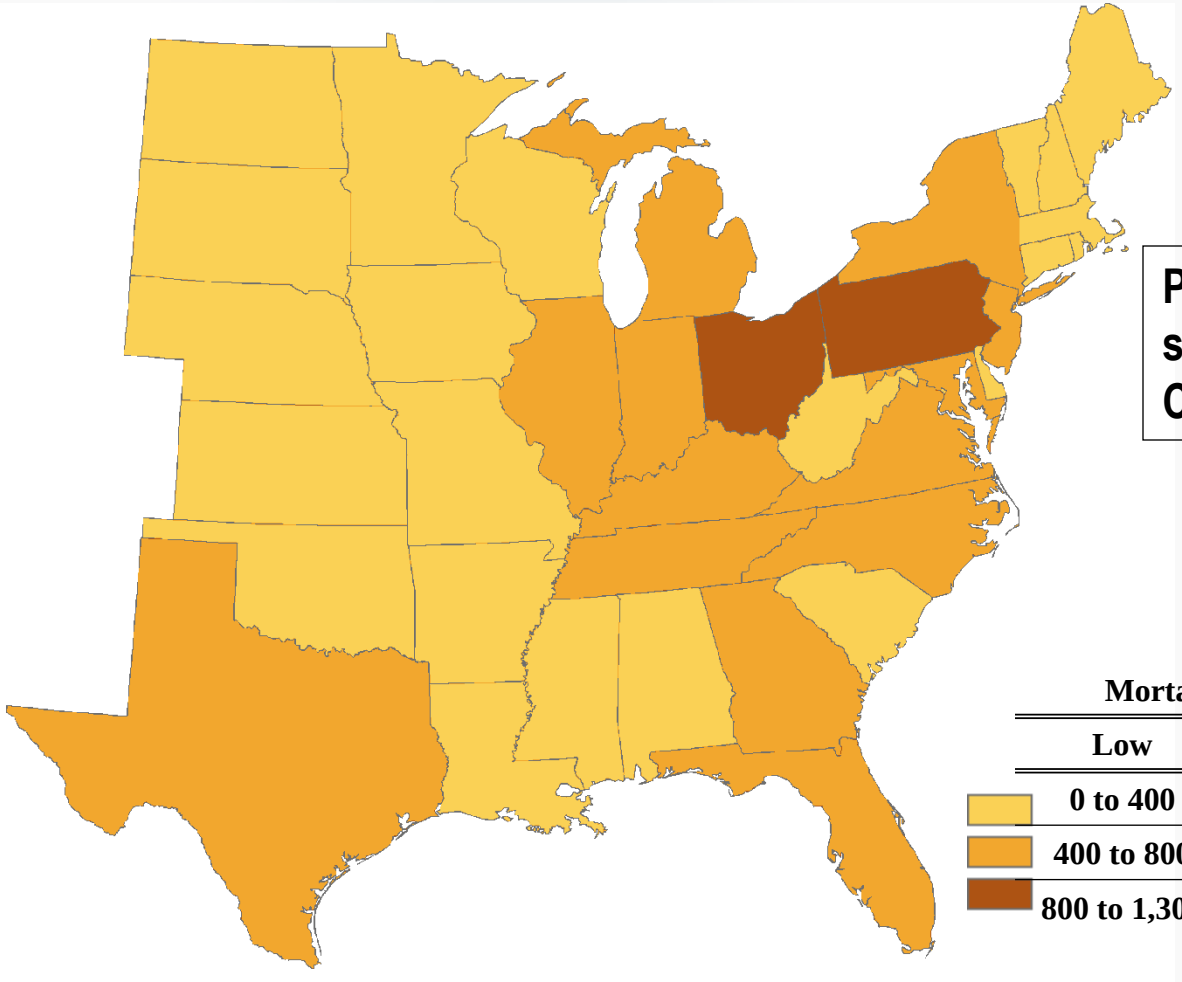
Health Benefits for Millions of Americans

Estimated Number of Adverse Health Effects Avoided under CSAPR*

Health Effect	Annual Number of Cases Avoided
Premature mortality	13,000 to 34,000
Non-fatal heart attacks	15,000
Hospital and emergency department visits	19,000
Acute bronchitis	19,000
Upper and lower respiratory symptoms	420,000
Aggravated asthma	400,000
Days when people miss work or school	1.8 million

* Impacts avoided due to improvements in $PM_{2.5}$ and ozone air quality in 2014

States Investing in Pollution Control Will See Large Benefits



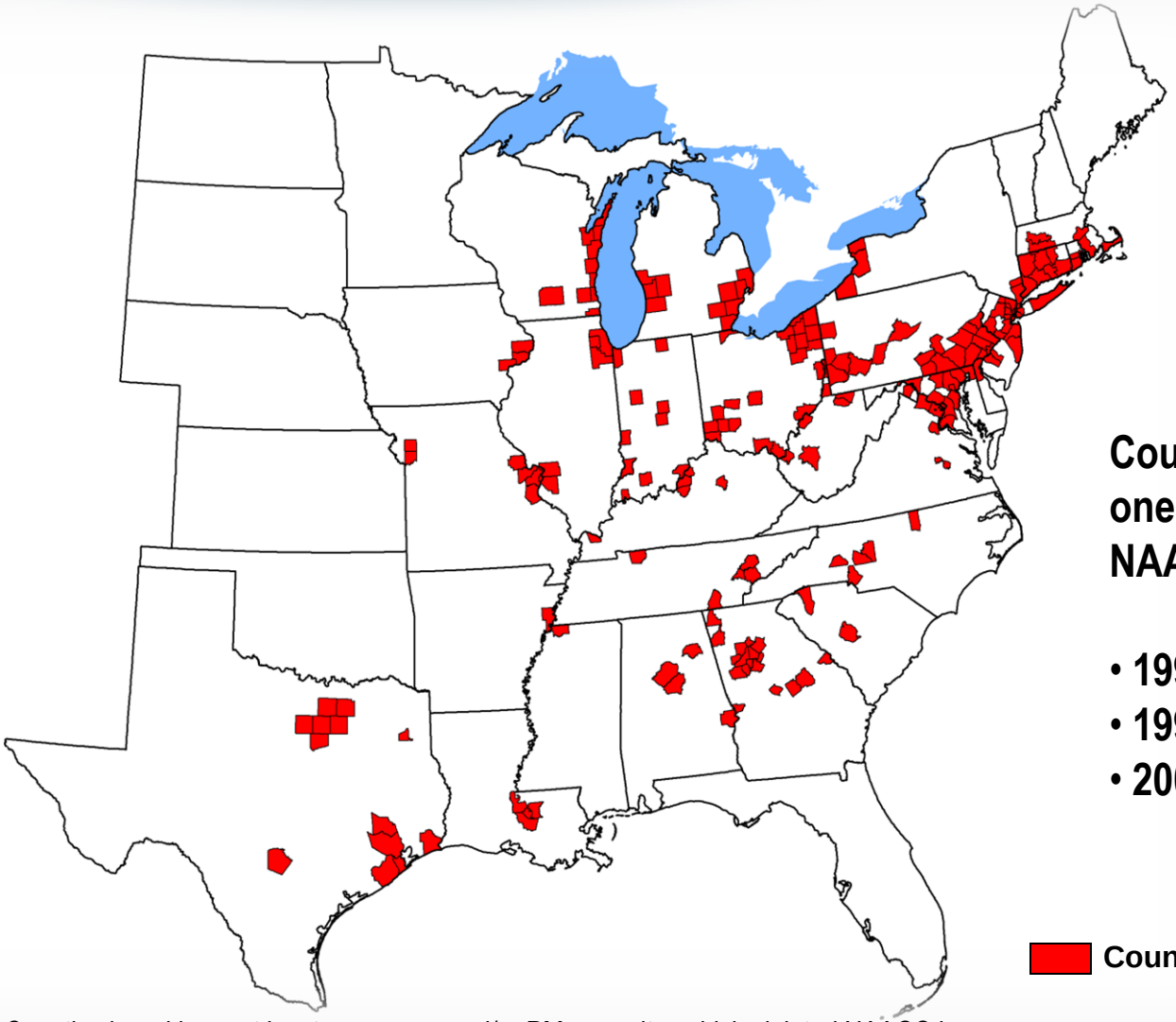
Public health benefits in most states > combined annual costs of CSAPR for entire region.

State-Level Benefits in 2014

Mortality Avoided		Monetized Benefits (billion $)	
Low	High	Low	High
0 to 400	0 to 1,000	0 to 3.3	0 to 8
400 to 800	1,000 to 2,000	3.3 to 7	8 to 17
800 to 1,300	2,000 to 3,300	7 to 11	17 to 27

Cross-State Air Pollution Rule RIA, Table 1-1 and 1-2; mortality impacts estimated using Laden et al. (2006), Levy et al. (2006), Pope et al. (2002) and Bell et al. (2004); monetized benefits discounted at 3%

Counties Violating Ozone & PM2.5 Standards in CSAPR Region (based on 2003-07 monitoring)



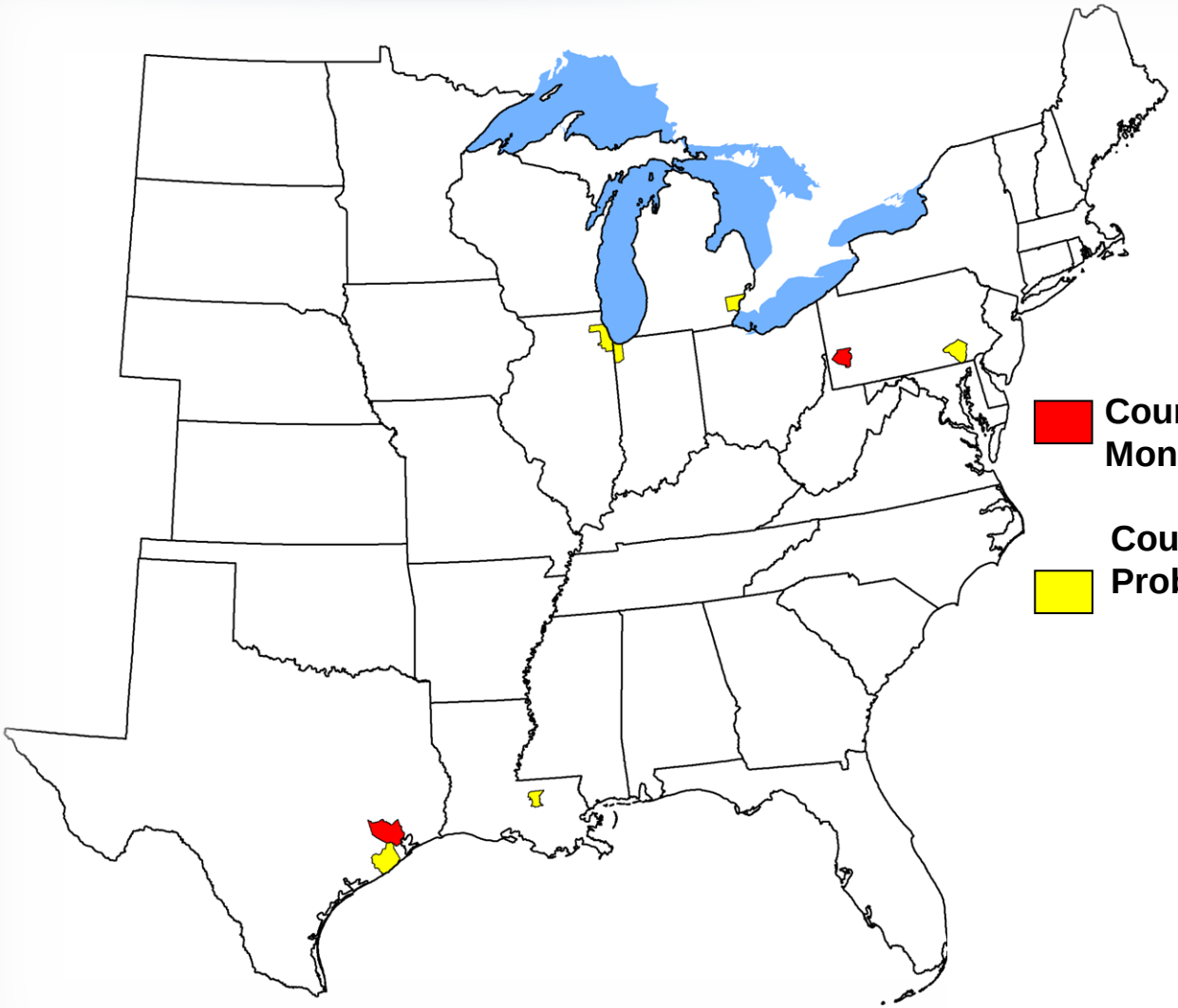
Counties in red are violating one or more of the following NAAQS:

- 1997 $PM_{2.5}$
- 1997 ozone
- 2006 $PM_{2.5}$

Counties with Violating Monitors (207)

Counties in red have at least one ozone and/or $PM_{2.5}$ monitor which violated NAAQS in periods 2003-05, 2004-06, and/or 2005-07.

Counties with Monitors Projected to Have Ozone and $PM_{2.5}$ Air Quality Problems in 2014 with CSAPR



Counties with Violating Monitors (2)

Counties with Maintenance Problems (6)

Analysis assumes that CAIR is not in effect. It includes other fed & state requirements to reduce emissions contributing to ozone and PM2.5 in place as of Feb 2009.

Key Elements of Cross-State Air Pollution Rule

- EPA's approach covers 28 states (with 1 proposed for inclusion), sets a pollution limit (or budget) for each state, and obtains reductions from power plants.

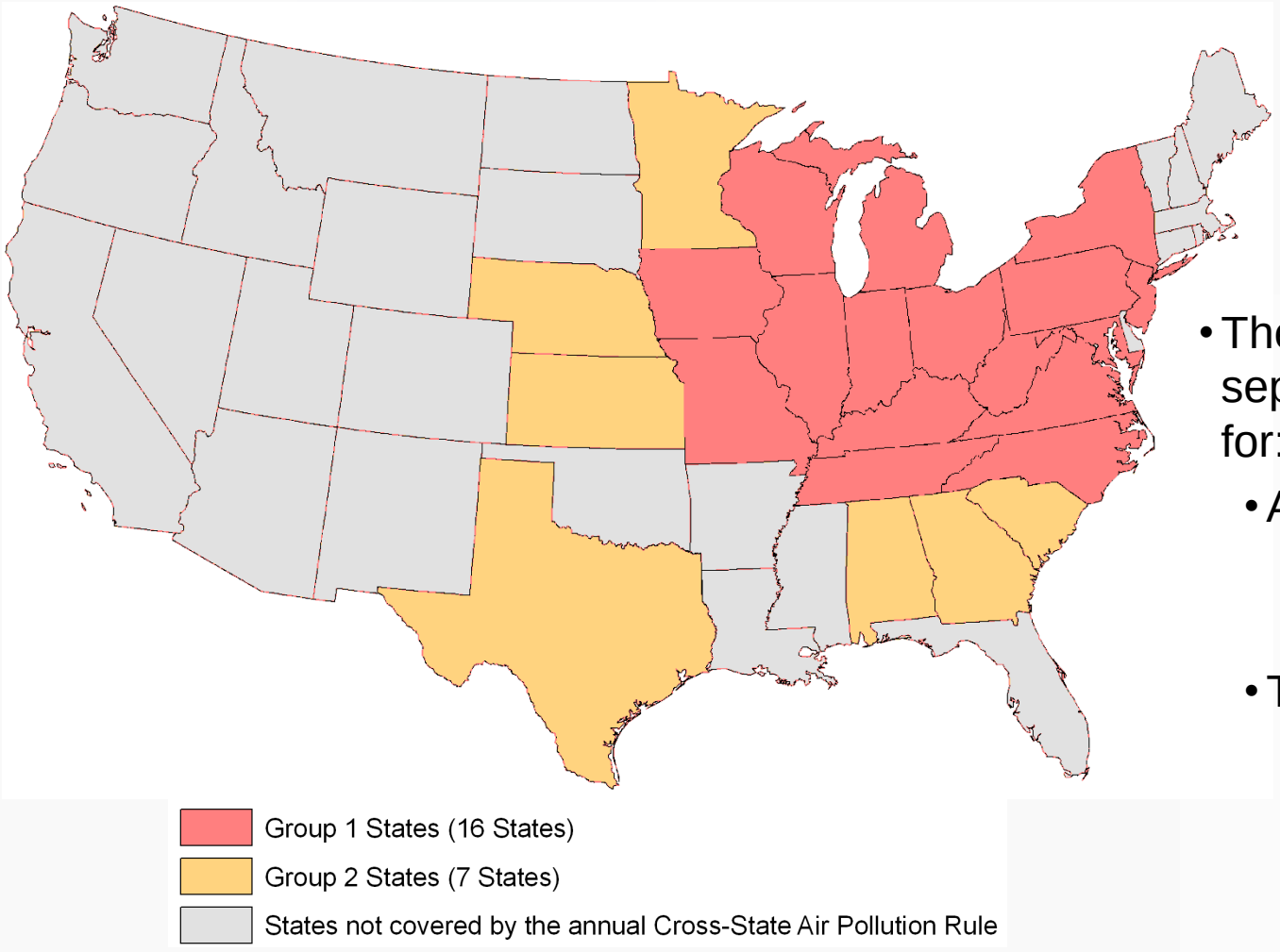
- Approach allows intrastate trading and limited interstate trading among power plants, but assures that each state will meet its pollution-control obligations.

Key Elements of Cross-State Air Pollution Rule (con't)

- To assure emissions reductions happen quickly, EPA developed federal implementation plans (FIPs) for each state covered by rule.
  - A state may choose to develop a state plan (SIP) to achieve required reductions, replacing its federal plan.

- Rule defines upwind state obligations to reduce pollution significantly contributing to downwind nonattainment areas based on:
  - the magnitude of a state's contribution,
  - the cost of controlling pollution from various sources, and
  - the air quality impacts of reductions.

Separate SO_2 Control Groups



- The rule includes separate requirements for:
  - Annual SO_2 reductions
    - Phase I (2012) and Phase II (2014)
  - Two Control Groups
    - Group 1 – 2012 cap lower in 2014
    - Group 2 – 2012 cap only

Compliance in CSARP States

- To meet this rule, EPA anticipates power plants will:
  - Operate already installed control equipment more frequently,
  - Use lower sulfur coal, switch fuels, or
  - Install or upgrade pollution-control equipment such as low NO_X burners, Selective Catalytic Reduction, or scrubbers (Flue Gas Desulfurization).
- CAIR in place through 2011 compliance periods; then replaced by CSAPR
- CSAPR establishes new allowances for all programs
  - No carryover of Acid Rain Program, NO_X SIP Call/NBP, or CAIR allowances

Changes that Occurred for the Final CSAPR

- For the final CSAPR, EPA used updated emissions inventories and modeling tools
  - Updated inventories generally have lower baseline emissions than at proposal
  - This affected the nonattainment and maintenance receptors in final rule's analysis
  - This affected covered upwind states because of decreases/increases in their emissions and thus downwind contribution

- EPA reassessed which states "significantly contribute" or "interfere with maintenance" of NAAQS
  - Texas added to the annual SO_2 and NO_X programs; CT, DE, DC FL, LA, & MA removed.
  - IA, MO & WI added to ozone-season NO_X program; CT, DE, & DC removed.

CT Linkages in Proposed Transport Rule

EPA's August 2, 2010 Proposed Transport Rule contained the following 24-hour $PM_{2.5}$ and 8-hour ozone linkages for Connecticut

UPWIND STATE TO DOWNWIND NONATTAINMENT SITE "LINKAGES" FOR 24-HOUR PM2.5

Upwind State	**Counties containing downwind 24-hour PM2.5 nonattainment sites**
Connecticut	Hudson, NJ, New York, NY

UPWIND STATE TO DOWNWIND MAINTENANCE SITE "LINKAGES" FOR 24-HOUR PM2.5

Upwind State	**Counties containing downwind 24-hour PM2.5 maintenance sites**
Connecticut	New York, NY

UPWIND STATE TO DOWNWIND NONATTAINMENT "LINKAGES" FOR 8-HOUR OZONE

Upwind State	**Counties containing downwind 8-hour ozone nonattainment sites**
Connecticut	Suffolk, NY

UPWIND STATE TO DOWNWIND MAINTENANCE "LINKAGES" FOR 8-HOUR OZONE

Upwind State	**Counties containing downwind 8-hour ozone maintenance sites**
Connecticut	Westchester, NY

2012 Base Case Nonattainment and Maintenance Receptors

Proposal

Counties with Monitors Projected to Have Ozone and/or PM2.5 Air Quality Problems in 2012 Without the Proposed Rule

- Counties with Violating PM and/or Ozone Monitors (55)
- Counties with PM and/or Ozone Maintenance Problems (28)
- States covered by the Transport Rule (31 + DC)

Final

Counties with Monitors Projected to Have Ozone and/or $PM_{2.5}$ Air Quality Problems in 2012 Without the Final Rule

- Counties with Violating PM and/or Ozone Monitors (17)
- Counties with PM and/or Ozone Maintenance Problems (10)
- States covered by the Cross-State Air Pollution Rule (28)*

* Includes states in the supplemental proposal

2012 Base Case Nonattainment and Maintenance Receptors

Northeast Counties with Monitors Projected to have Ozone and/or Fine Particle Air Quality Problems

State	County	Proposed Rule: Projected County Status 2012 Without the Transport Rule			Final Rule: Projected County Status 2012 Without the Transport Rule		
		1997 Ozone	1997 PM2.5	2006 PM2.5	1997 Ozone	1997 PM2.5	2006 PM2.5
Connecticut	Fairfield	Maintenance			Maintenance		
	New Haven	Maintenance		Violate	Maintenance		
New Jersey	Hudson			Violate			
	Union			Violate			
New York	Bronx			Violate			
	New York		Maintenance	Violate			
	Suffolk	Violate					
	Westchester	Maintenance					
Pennsylvania	Allegheny		Violate	Violate		Violate	Violate
	Beaver		Violate	Violate			Violate
	Berks		Maintenance	Violate			
	Bucks	Maintenance					
	Cambria			Violate			
	Cumberland			Maintenance			
	Dauphin			Violate			
	Lancaster		Violate	Violate			Violate
	Washington			Maintenance			
	York		Violate	Violate			Maintenance

Requirements for CAIR states not included in CSAPR

- Language in CSAPR:
  1. "Transition from CAIR to the Transport Rule" (p. 489):

     "For states covered by CAIR or CAIR FIPs that are not subject to the Transport Rule and [that] have relied on CAIR reductions to satisfy other SIP requirements, EPA will discuss with states alternative ways to satisfy requirements for those SIP requirements, e.g., through intrastate cap and trade programs that require the level of reductions on which the state has recently relied."

  2. "Interactions with NO_x SIP call" (p. 505):

     "EPA will work with states to ensure that NO_x SIP Call obligations continue to be met (e.g., through intrastate cap and trade programs that require the level of reductions on which the state has recently relied)."

- Potential options for meeting SIP requirements without backsliding
  - Source-by-source emission restrictions
  - State-administered intrastate-trading program based on CAIR reductions

Ozone:
More Needs to Be Done

- CSAPR will achieve reductions in seasonal ozone levels.
- EPA intends to analyze what additional reductions in air pollution transport would be required under the 2011 revised ozone standard.
- EPA plans to identify any needed emission reductions from upwind states in time to help downwind states attain the reconsidered ozone standards.

Upcoming Regulations

Action	*Schedule*
Cross-State Air Pollution Rule	Final July 2011
Ozone NAAQS Reconsideration	Final – End of July 2011
Power Plant Mercury and Air Toxics Standards (MATS)	Proposed March 2011/Final Nov 2011
PM NAAQS	Propose Summer 2011
Transport Rule II (NO_X)	TBD

Questions?

www.epa.gov/crossstaterule/

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