Clean Air Future – An Update on Upcoming Air Regulations

Presentation for the Council of Industrial Boiler Owner's (CIBO)
32nd Annual Meeting
Williamsburg, Virginia
October 21, 2010

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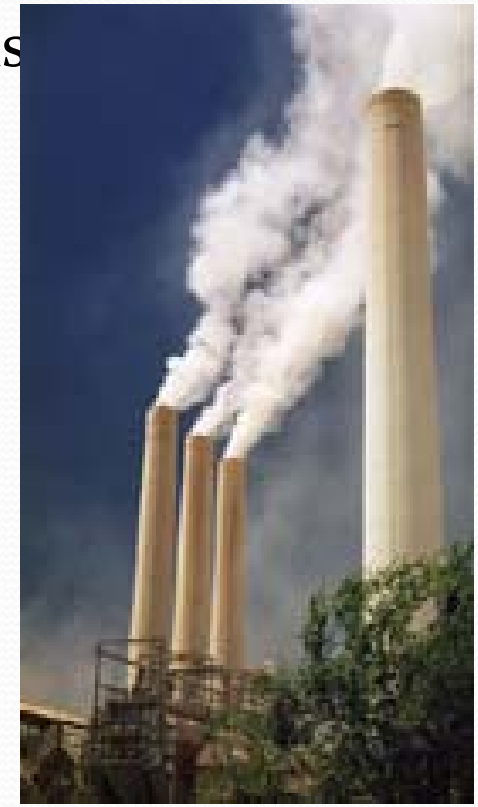
Topics for Discussion

- Overview of the National Ambient Air Quality Standards (NAAQS)
- Overview of upcoming power plant regulations
  - Transport Rule (response to CAIR remand)
  - Utility MACT
    - Office of Water
      - Clean Water Act §316(b) Cooling Water Intakes
      - Effluent Limitations Guidelines
    - Office of Resource Conservation and Recovery
      - Coal Combustion Residues
  - Subpart Da Revisions (NOx, SO_2 and PM)
- Status of Industrial Boiler MACT regulations



EPA's Near-Term Plans on National Air Quality Standards

• **Nitrogen dioxide (NO_2)**	Final - January 2010
• **Sulfur dioxide (SO_2)**	Final - June 2010
• **Ozone (O_3) Reconsideration**	Final – Oct/Nov 2010
• **Carbon monoxide (CO)**	Proposal – January 2011
• **Particulate matter (PM)**	Proposal – Winter 2011

Nitrogen dioxide (NO_2)

- In January 2010 EPA strengthened the primary national ambient air quality standard (NAAQS) for NO_2 to protect public health.
  - Added a ***1-hour*** NO_2 standard at 100 parts per billion (ppb)
  - Retained the ***annual*** average NO_2 standard at 53 ppb

Implementation Milestone	Date
Designations (Approximate effective date)	**February 2012**: EPA designates all/most areas as "unclassifiable" (because near road monitors not in place)
New NO_2 Monitoring Network	**January 1, 2013**: All monitors operating
Nonattainment Re- Designations (discretionary)	**2016/2017** (depending on date that monitoring sites become operational)
Attainment Date (Re-designations)	**2021/2022** (5 years after date of nonattainment designations)

Sulfur dioxide (SO_2)

- In June 2010, EPA proposed to strengthen the primary national ambient air quality standard (NAAQS) for SO_2 to protect public health.
  - Proposed a new ***1-hour*** SO_2 standard at a level between 50 – 100 ppb
  - Replaces annual and 24-hour primary SO_2 standards

Implementation Milestone	Date
Signature – Final Rule	June 2, 2010
Final Designations (Approximate effective date)	July 2012
Attainment Demonstration SIPs Due	January 2014
Attainment Date	July 2017

Ozone (O_3) Reconsideration

- On January 6, 2010, EPA proposed to strengthen the 8-hour primary ozone standard to a level within the range of 0.060-0.070 parts per million (ppm) to protect public health.
- EPA also proposed a cumulative, seasonal secondary standard at a level in the range of 7-15 ppm-hours.
- EPA plans to issue final standards by October/November 2010.

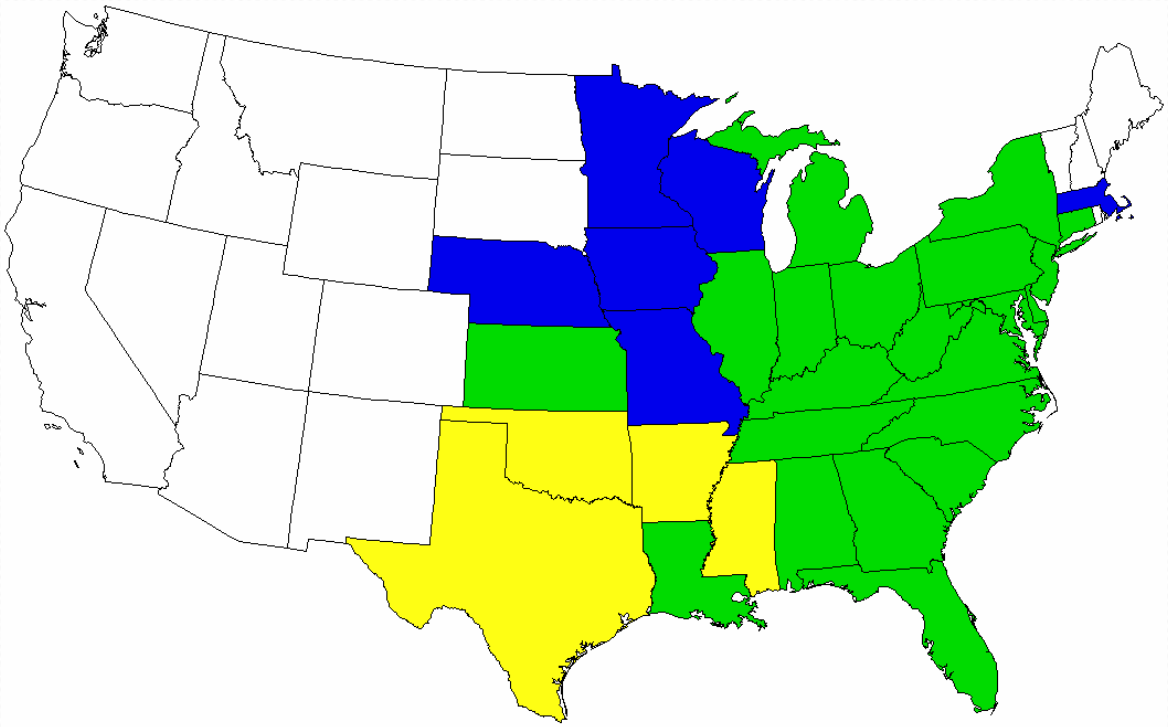
Implementation Milestone	Date
Final Designations	Late 2011
Attainment Demonstration SIPs Due (EPA proposal)	Spring 2014
Attainment Dates	Late 2017 (for moderate areas)

EPA Air Regulations Affecting the Power Sector

	March 2010	**Response to Johnson Memo**	**Final**
2010	May 2010	**Tailoring Rule**	**Final**
	July 2010	Transport Rule (CAIR Remand Response)	Proposal
	March 2011	NSPS for EGUs (anticipated)	Proposal
	March 2011	Utility MACT	Proposal
2011	Late Spring 2011	**Transport Rule (CAIR Remand Response)**	**Final**
	November 2011	**NSPS for EGUs (anticipated)**	**Final**
	November 2011	**Utility MACT**	**Final**

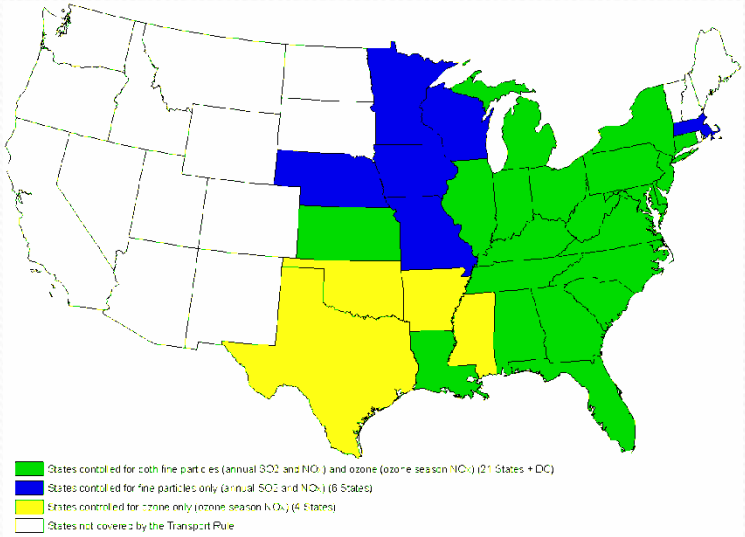
Proposed Transport Rule

- Covers 31 states plus DC and includes separate requirements for:
  - Annual SO_2 reductions
  - Annual NOx reductions
  - Ozone-season NOx reductions
- Sets emissions budgets for each state

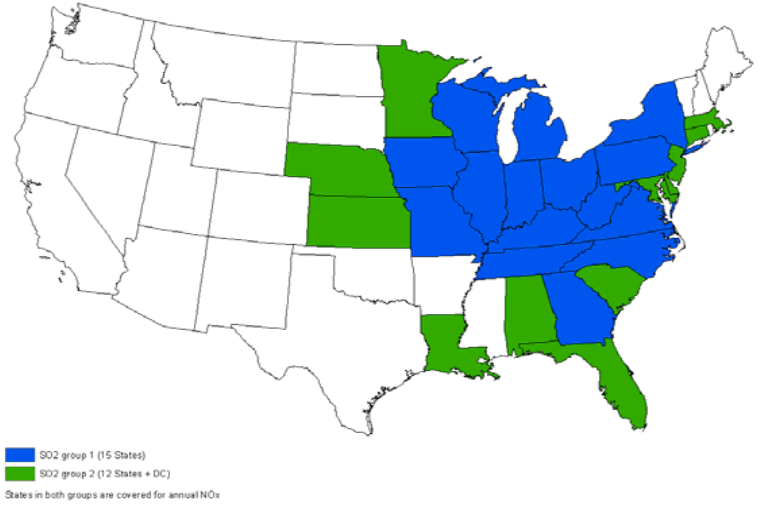


Four Separate Control Regions

- Proposal includes separate requirements for:
  - NO_x reductions (2012)
  - Ozone-season NO_x reductions (2012)
- Sets emissions budgets for each state

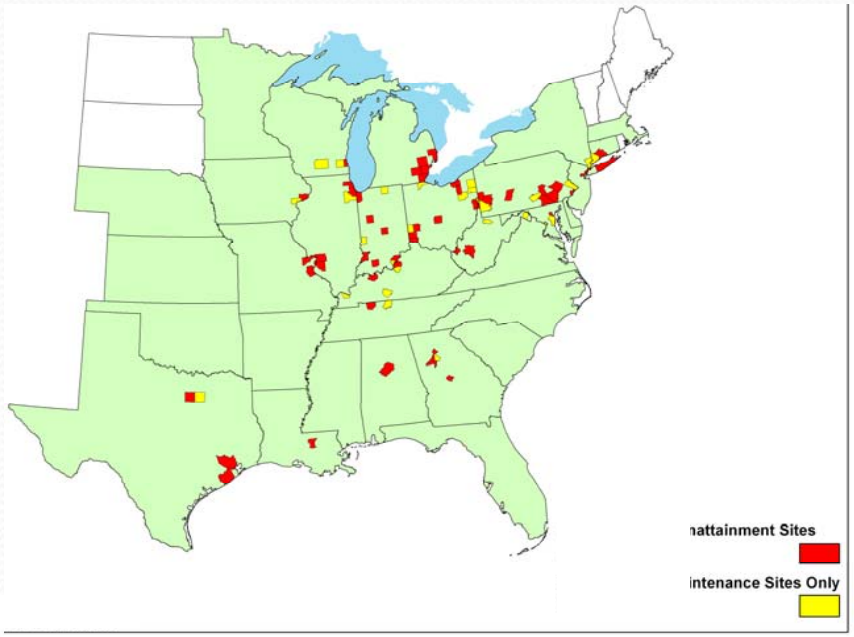


- Proposal includes separate requirements for:
  - Annual SO_2 reductions
    - Phase I (2012) and Phase II (2014)
    - Two Control Groups
      - Group 1 – 2012 cap lowers in 2014
      - Group 2 – 2012 cap only
- Sets emissions budgets for each state



Why Is EPA Doing this Rule?

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

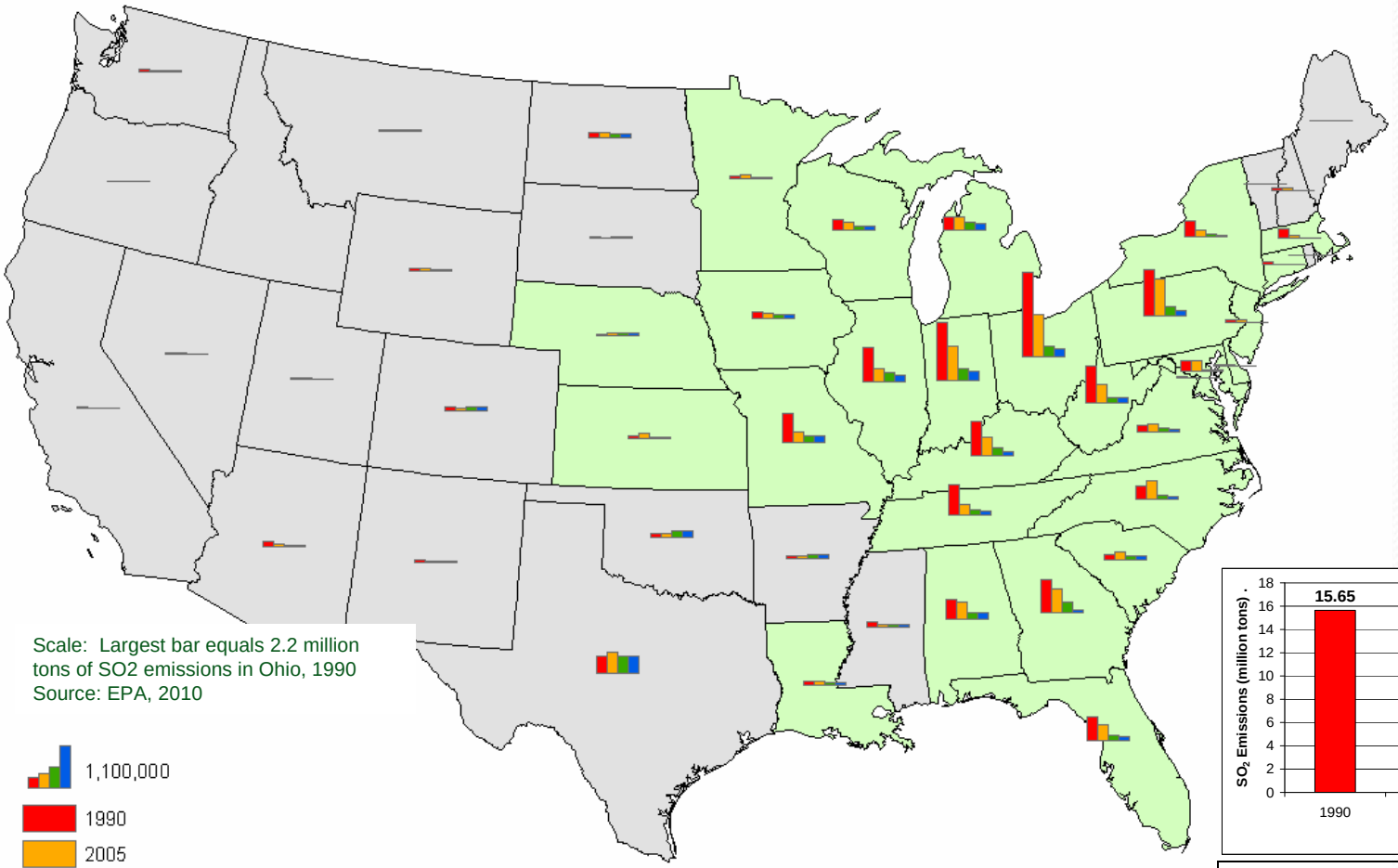
- In 2012, EPA projects that:
  - Some communities will still not meet the air quality standards.
  - Many upwind states will still contribute significantly to downwind nonattainment areas.
- This proposal affects power plants because their emission reductions are most cost-effective.
- Other actions by EPA and the states must be taken before all areas will attain the current and future National Ambient Air Quality Standards (NAAQS).

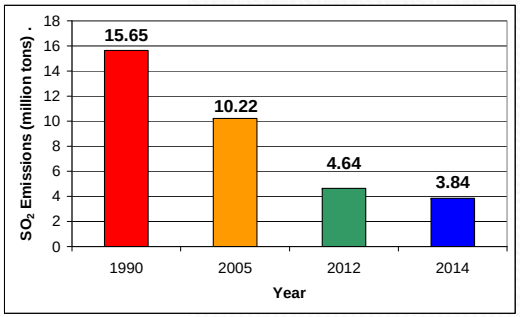
This analysis assumes that the Clean Air Interstate Rule is not in effect. It does reflect other federal and state requirements to reduce emissions contributing to ozone and fine particle pollution that were in place as of February 2009.

Proposal Responds to Court Remand

- The methodology used to measure each state's significant contribution to another state:
  - emphasizes air quality (as well as cost considerations) and uses state-specific data and information, and
  - gives independent meaning to the phrase "interfere with maintenance" in section 110(a)(2)(D) of the Clean Air Act.
- The state budgets for SO_2, annual NO_X, and ozone season NO_X are directly linked to the measurement of each state's significant contribution and interference with maintenance.
- The proposed remedy includes provisions to assure that all necessary reductions occur in each individual state.
- The compliance deadlines are coordinated with the attainment deadlines for the relevant NAAQS.
- EPA proposes to allow within-state trading and limited interstate trading to ensure that, in each state, the emissions that significantly contribute to downwind air quality problems will be eliminated.

Annual SO_2 Power Plant Emissions 1990-2014 *

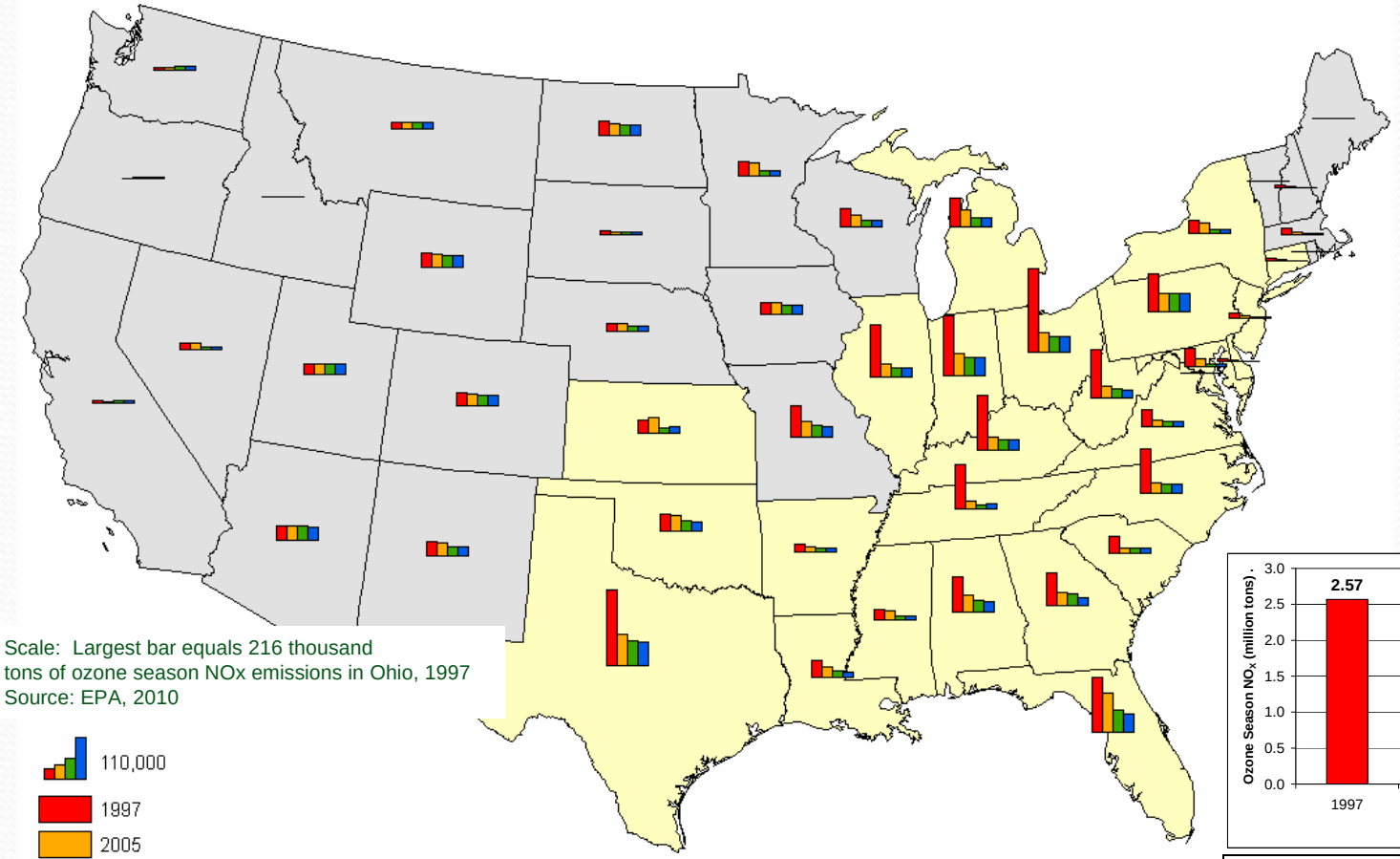


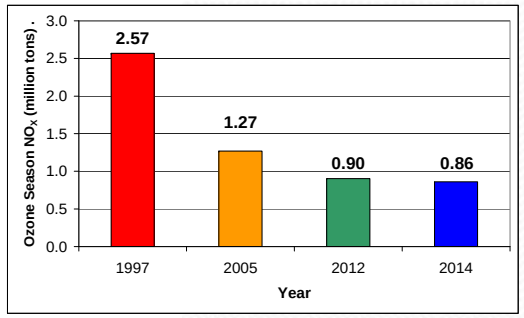


Total U.S. Emissions

* Emissions shown include only Acid Rain Program sources -- for 97% of annual Transport Rule SO_2 emissions and 88% of Transport Rule units in 2014.

O_3 Season NO_X Power Plant Emissions 1997-2014 *





Total U.S. Emissions

* Emissions shown include only Acid Rain Program sources – for 96% of ozone season Transport Rule NO_X emissions and 88% of Transport Rule units in 2014.

Proposed Transport Rule - Summary

- Achieves emissions reductions beyond those originally required by the Clean Air Interstate Rule (CAIR) through additional air pollution reductions from power plants beginning in 2012.
  - Addresses 2008 court decisions
  - The decisions kept the requirements of CAIR in place temporarily and directed EPA to issue a new rule.
- To meet this proposed rule, EPA anticipates power plants will:
  - Operate already installed control equipment more frequently,
  - Use lower sulfur coal, or
  - Install pollution control equipment such as low NOX burners, Selective Catalytic Reduction, or scrubbers (Flue Gas Desulfurization).

Integrating Power Sector Regulations

- **Key Components**
  - Energy efficiency
    - Reduced energy demand driven by energy efficiency can help lower all emissions
  - Timing matters
    - How the regulations are timed can affect investments in new equipment, technologies and jobs
  - Significant health benefits
    - Well-designed regulations can save America billions of dollars in lost work days and avoided health effects while providing more certainty to industry

Integrated Utility Strategy

- Vision of an electric power sector in a clean energy economy
  - Build new units in the United States that are clean and efficient
  - Use state-of-the-art pollution control and energy efficiencies at existing units
  - Help enable companies to make sound business decisions in the context of environmental regulations they will face over the next 10 - 15 years
  - Increased energy efficiency and reduced consumer demand for electricity can help reduce cost of regulation for industry and consumers



Components of MACT within Utility Strategy

- Utility strategy seeks to develop an integrated approach to several rulemakings that affect the electric utility sector
  - Transport Rule
  - Utility MACT
  - NSPS
  - Office of Water and Office of Resource Conservation and Recovery regulations
- Utility MACT is a major driver for investment in the power sector
  - Will prompt utilities to think more broadly about how to invest across their systems
  - Will promote a longer-term focus on investments
- Utility MACT has specific legal requirements

MACT Background: Authority and Deadlines

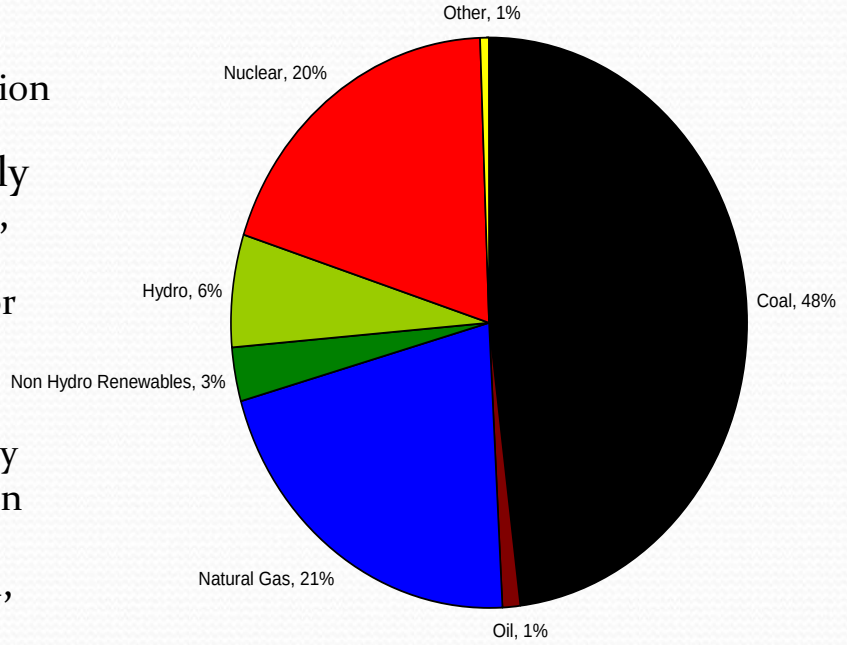
- In December 2000, coal- and oil-fired electric utility steam generating units were added to the list of sources for which MACT rulemaking is required
- Vacatur of Clean Air Mercury Rule (CAMR) in 2008 reinstated listing decision of December 2000
- Operating under a Consent Decree negotiated with litigants (*American Nurses Assn., et al.;* represented by Earthjustice)
  - No later than March 16, 2011, EPA shall sign for publication in the Federal Register a notice of proposed rulemaking
  - No later than November 16, 2011, EPA shall sign for publication in the Federal Register a notice of final rulemaking
- Tier 1 rule
  - Workgroup: OAR, OGC, OECA, ORCR, OP, OW, ORD
- Proposal on or before March 16, 2011
- Final Rule on or before November 16, 2011

Section 112 – MACT Standards

- Coal- and/or oil-fired electric utilities emit many of the 187 hazardous air pollutants listed in the Clean Air Act
- EPA sets national emission standards for hazardous air pollutants (NESHAP), also known as maximum achievable control technology (MACT) standards
- MACT for new sources must be at least as stringent as the emission reduction achieved by the best performing similar source
- Existing source MACT standards must be at least as stringent as the emission reductions achieved by the average of the top 12 percent best controlled sources
- Setting a MACT standard is a two step process
  - The "MACT floor" is established based on what is currently achieved by sources – costs may not be considered
  - EPA may regulate "beyond the floor" where justified – costs and other issues must be considered
- Source-specific, no trading beyond fence-line

Affected Facilities

- Approximately 1,200 coal-fired boilers at approximately 450 facilities in 44 States and Puerto Rico
  - Many units are base-load or load following with generally high capacity factors
  - Approximately 48 percent of nationwide net generation
- Approximately 150 oil-fired boilers at approximately 75 facilities, mostly in Northeast, Midwest, Florida, Hawaii, Guam, Puerto Rico
  - Many units are peaking units with low capacity factor utilization over the past 3 – 5 years
  - Many co-fire with natural gas or use natural gas preferentially but must have oil capability for use during periods of natural gas curtailments to industry
  - Approximately 1 percent of nationwide net generation
- Industry includes investor-owned, publicly-owned, and rural cooperatives
- Natural gas was not included in the December 2000 regulatory determination
  - Approximately 21 percent of nationwide net generation



Central Decision Points Requiring Data Analysis

- Recent Court decisions relating to how floors are established, subcategorization, pollutants covered, etc. will need to be examined
  - Setting the standard
    - Strict adherence to statutory language
    - Constraints on how variability may be determined
    - Consideration of "beyond-the-floor" options
  - Subcategorization
    - Authorized if consistent with the statute and case law, based on "classes, types, and sizes" of sources in the category or subcategory
  - Pollutants covered
    - All hazardous air pollutants need to be addressed
    - Expect to set limits for five pollutants/groups that will cover all the hazardous air pollutants (mercury, PM, HCl, THC, dioxin/furan)
      - Same controls will be installed regardless of use of surrogates
      - Saves on monitoring cost

Data Needs

- Have considerable data from 1999 for mercury from coal-fired units; limited data for all other hazardous air pollutants and for oil-fired units
  - Earlier effort focused on mercury from coal-fired units and nickel from oil-fired units
  - Now must address all hazardous air pollutants from both fuel types, necessitating data gathering
  - There have been changes in emissions control equipment since 2005 that result from implementation of CAIR and State-based mercury regulations
- Have initiated a major information collection request (ICR) to obtain the necessary data from coal- and oil-fired units
  - ICR issued December 31, 2009
  - Requires update of facility information, submittal of available data, and emission testing of ~800 units
  - Data will be received by the end of September 2010
  - $76.5 million burden (estimated)
    - Initial Phase I data requests have been received
    - Site-specific stack testing at Phase II facilities is almost complete
    - Preliminary data is available at http://www.epa.gov/ttn/atw/utility/utilitypg.html

Section 111 - New Source Performance Standards (NSPS)

- Multiple State Attorney general offices and public interest groups filed for court review of the 2006 amendment to the criteria pollutant standards in the electric utility steam generating unit NSPS, subpart Da
  - EPA requested and received a voluntary remand of the NO_X, SO_2, and $PM_{2.5}$ standards
  - 2006 final amendments still in effect for facilities that commenced construction after February 28, 2005
- Anticipate coordinating proposal and final rules with the EGU MACT schedule
  - Proposal in March, 2011 and final in November, 2011

OVERVIEW – ICI Boiler MACT

- Schedule
  - Proposal signed on April 29, 2010
    - Published in the **Federal Register** on June 4, 2010
  - Public Comment period ended August 23, 2010
  - Promulgation – January 14, 2010 (Court-ordered)
- Sources Impacts
  - Boiler MACT
    - Covers about 13,555 boilers and process heaters at about 1,600 major source facilities
      - 11,500 of the major source units are gas-fired
    - Mostly industrial but include universities, municipalities, and military installations
    - Eleven subcategories based on boiler design
  - Boiler Area Source Rule
    - Covers about 183,000 boilers at an estimated 92,000 area source facilities
      - 1.3 million gas-fired boilers located at area sources are not included in source category
    - Mostly commercial and institutional but include industrial sources
    - Three subcategories based on boiler design

Boiler MACT – Proposed Standards

- **Existing units**
  - Proposed limits for nine of the eleven subcategories for PM, Hg, HCl, CO, D/F
  - Emission limits only applicable to units with heat input capacities ≥ 10 MMBtu/hour
  - Work practice standard for existing units with heat input capacities less than 10 MMBtu/hour (biennial tune-up) and for units in Gas 1 and Metal Process Furnaces subcategories (annual tune-up)
  - Beyond-the-floor energy assessment proposed for all major source facilities
- **New units**
  - Proposed limits for nine of the eleven subcategories for same subcategories and pollutants as existing units
  - Emission limits applicable to all units, regardless of size
  - Work practice standards for units in Gas 1 and Metal Process Furnaces subcategories (annual tune-up)
  - No beyond-the-floor standards proposed
- **EPA Impacts Assessment**
  - Total capital cost of $9.5 billion; total annualized cost of $2.9 billion
  - Near-term job losses approximately 8,000
  - Annual monetized health benefits range from $17 to $41 billion

Boiler Area Source Rule – Proposed Standards

- **Existing units**
  - Coal-fired boilers: proposed emission limits for Hg and CO (both limits based on MACT)
  - Biomass–fired boilers and oil-fired boilers: proposed emission limits only for CO (based on MACT)
  - Emission limits only applicable to units with heat input capacities ≥ 10 MMBtu/hour
  - Work practice standard (biennial tune-up) for units with heat input capacities < 10 MMBtu/hour
  - Beyond-the-floor energy assessment proposed for area source facilities having boilers with heat input ≥ 10 MMBtu/hour
- **New units**
  - Proposed emission limits for each of the three subcategories for PM (based on GACT), Hg (only for coal-fired boilers; based on MACT), and CO (based on MACT)
  - Emission limits applicable to all units, regardless of size
  - No work practice standards proposed
  - No beyond-the-floor standard proposed
- **EPA Impacts Assessment**
  - Total capital cost of $2.5 billion; total annualized cost of $1.0 billion
  - Near-term job losses less than 1,000
  - Annual monetized health benefits range from $1 to $2.4 billion

Public Comments

- Over 2,000 submitted on both Boiler proposals
- Main comments:
  - Biomass boilers
    - Limits unachievable or significant adverse impact on use of biomass
  - Retain the health-based compliance alternatives
  - MACT floors should be determined on a source basis, not pollutant-by-pollutant
  - Variability
  - CO
    - Not an appropriate surrogate for organic HAP
    - Can be an appropriate surrogate but not at very low CO levels.
    - Impact of increased NO_x as a result of very low CO were not considered
  - Energy assessment
    - Should require implementation of findings.
  - Allow for a unit to bounce between sections depending what they are burning at the time.


Thank you!
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