

# **ROLE OF EPA AND STATE ENERGY OFFICES IN IMPROVING AIR QUALITY**

*NASEO Midwest Regional Meeting  
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Indianapolis, Indiana*



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Office of Air and Radiation  
U.S. Environmental Protection Agency**

## Overview

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- Energy Use and Air Quality in the Midwest
- Recent Clean Air Regulations
- Climate Change and Energy at EPA
- Collaborating for Clean Air



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# National Ambient Air Quality Standards

# Schedule of NAAQS Reviews

as of June 18, 2012

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MILESTONE	POLLUTANT						
	NO <sub>2</sub> /SO <sub>2</sub> Secondary	PM	Ozone	Lead	NO <sub>2</sub> Primary	SO <sub>2</sub> Primary	CO
NPR	<u>Jul 12, 2011</u>	<u>Jun 14, 2012</u>	2013	Jan 2014	Aug 2015	Feb 2016	Jul 2016
NFR	<u>Mar 20, 2012</u>	<u>Dec 14, 2012</u>	2014	Nov 2014	May 2016	Nov 2016	Apr 2017

## NOTES:

Underlined dates indicate court-ordered or settlement agreement deadlines

**Green** dates indicate actions that have occurred

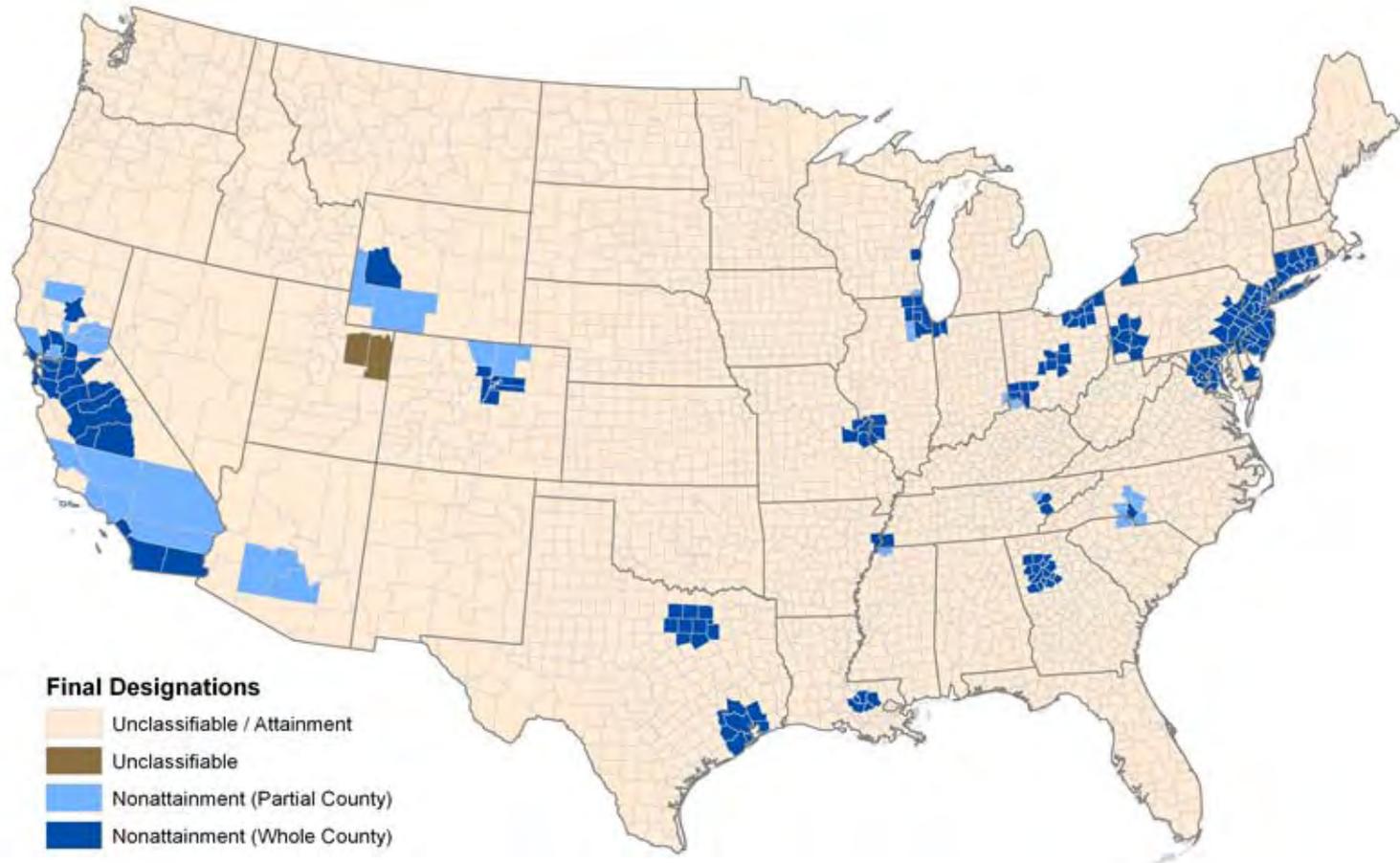
# Ozone NAAQS

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- In 2008, EPA revised the 8-hour “primary” ozone standard to a level of 0.075 parts per million (ppm).
- May 31, 2012 -- EPA completed designations for all areas
- Current schedule for the next ozone NAAQS review
  - Proposal in December 2013
  - Final in September 2014

# 2008 Ozone Standards: Final Nonattainment Areas

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**Notes:**

EPA has not designated as nonattainment any areas outside the Continental US.

# Particulate Matter NAAQS

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- ❑ On June 14, 2012, EPA proposed to:
  - ❑ Strengthen the annual health standard for  $PM_{2.5}$  by setting the standard within the range of 12-13 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ );
  - ❑ Retain the existing 24-hour  $PM_{2.5}$  standard at  $35 \mu\text{g}/\text{m}^3$ ;
  - ❑ Set a separate  $PM_{2.5}$  standard to improve visibility
  - ❑ Retain existing secondary standards for  $PM_{2.5}$  and  $PM_{10}$  identical to primary standards; and
  - ❑ Retain existing 24-hour standard for  $PM_{10}$  at  $150 \mu\text{g}/\text{m}^3$ .
- ❑ Public comment period ends August 31, 2012.
- ❑ EPA will issue final standards by December 14, 2012.
- ❑ EPA anticipates attainment/nonattainment designations by December 2014, with those designations likely becoming effective early 2015.

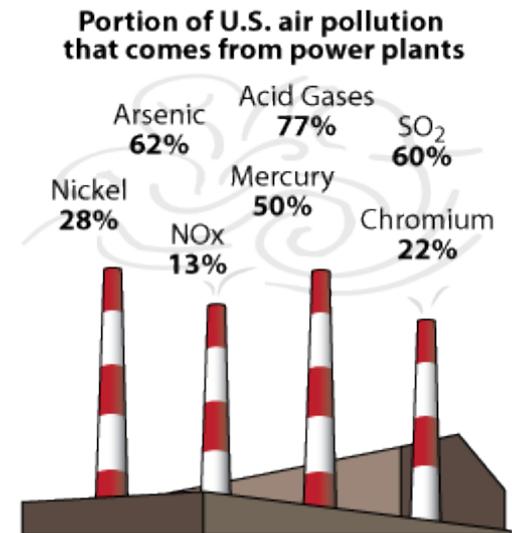


# Mercury and Air Toxics Standards (MATS)

# MATS: Background

- On December 16, EPA finalized the Mercury and Air Toxics Standards—the first national standards to reduce emissions of mercury and other toxic air pollutants from new and existing coal- and oil-fired power plants
- Standards will reduce emissions of:
  - ▣ Metals, including mercury (Hg), arsenic, chromium, and nickel
  - ▣ Acid gases, including hydrogen chloride (HCl) and hydrogen fluoride (HF)
  - ▣ Particulate matter
- Vital health protections that benefits most vulnerable—children and older Americans.
  - ▣ In 2016 and each year afterward, these standards prevent:
    - 11,000 premature deaths
    - 4700 heart attacks
    - 130,000 cases of asthma.
- Final rule ends 20 years of industry uncertainty, leveling the playing field for power plants, and ensuring that modern, proven and widely available pollution controls are installed

## Portion of US air pollution that comes from power plants



# MATS: Flexibilities

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- These standards are achievable and rely on cost-effective and commercially available technology
  - EPA projects that sources will use a range of controls to meet the standards
- EPA increased flexibilities, including control installation timelines
  - 4<sup>th</sup> year provided by the CAA as needed to complete installation of control technologies
  - Pathway for units critical for electric reliability to obtain an additional year beyond the four years
- Federal government working with wide variety of stakeholders to promote early, coordinated and orderly planning
  - Ensuring that the Presidential Memorandum to ensure electric reliability issued with the final MATS rule is implemented
  - Working directly with power plant owners—including rural electric cooperatives—and operators to share info on flexibilities and compliance timelines

# MATS: 4th Year

- The law authorizes government entities issuing operating permits (generally states) to grant a permit providing up to an additional year for compliance where necessary for the installation of air pollution controls.
- The MATS rule provided EPA's view indicating that this 4<sup>th</sup> year should be broadly available. In the rule, EPA discusses a range of illustrative scenarios:
  - Installation of controls or construction of on-site replacement power.
  - Retiring unit needed for reliability reasons until (1) another unit can install controls, (2) offsite replacement power can be constructed, or (3) transmission upgrades can be completed.
- Where a unit is retiring or deactivating, permitting authorities should consider information regarding reliability impacts that are the basis of the request.
- EPA will provide outreach to and support for state permitting authorities to support broad availability and expeditious implementation.

# MATS: Policy Memorandum

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- Memo describes EPA's "intended approach regarding the use of Section 113(a) administrative orders ('AOs') with respect to sources that must operate in noncompliance with the MATS for up to a year to address a specific and documented reliability concern."
  - EPA intends to address other situations "as it has in the past, by assessing each situation on a case-by-case basis, at the appropriate time, to determine the appropriate enforcement response and resolution."
- A source that qualifies for 1-year extension under Clean Air Act section 112(i)(3)(B) (4<sup>th</sup> year) may also qualify for an AO at the end of this extension.
- EPA will "rely for identification and/or analysis of reliability risks upon the advice and counsel of reliability experts including" FERC, RTOs and other planning authorities, NERC and the regional entities, and public utility commissions (PUCs).
- <http://www.epa.gov/compliance/resources/policies/civil/erp/mats-erp.pdf>

# MATS: Cost-Effectiveness, Electricity Prices, Reliability

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- EPA and DOE analyses show that plants across the country will be able to meet these standards on time, while maintaining more than enough electricity generating capacity to meet our nation's energy needs.
- \$9 in health benefits for every \$1 spent to comply with the rule
  - Annual benefits \$37-90 billion
- Price changes for retail electricity will be very small
  - Will not cause prices to rise even to 1990 levels
  - Rates within the range of normal fluctuations—below 2009 levels

# MATS: Sensitivity Analysis- Energy Efficiency Policies

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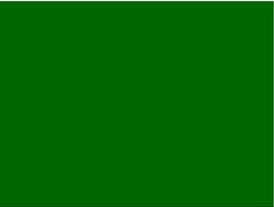
- Examined how moderate energy efficiency policies would affect implementation costs/ retail electricity prices
  - Included DOE appliance standards and state incentives to promote energy efficiency
- We found that, if these energy efficiency policies were to be put into place and maintained over time:
  - The overall costs of generating electricity are reduced significantly (\$2 billion in 2015 and the reduction increases thereafter)
  - The costs of MATS compliance are reduced
  - Retail electricity prices are lower even with MATS than they would be in the base case without MATS by 2020
  - The reliability of the bulk power system is enhanced and more efficient use of electricity means that some generating resources are no longer needed.

# MATS:

## Implementation and Next Steps

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- Federal government working with wide variety of stakeholders to promote early, coordinated and orderly planning
  - Ensuring that the Presidential Memorandum issued with the final MATS rule is implemented
  - Working directly with power plant owners—including rural electric cooperatives—and operators to share info on flexibilities and compliance timelines
- EPA is meeting regularly with FERC and DOE as well as the ISOs and RTOs, including MISO, SPP and PJM.
- 20 petitions for reconsideration, 30 petitions for judicial review



# Transport Rule

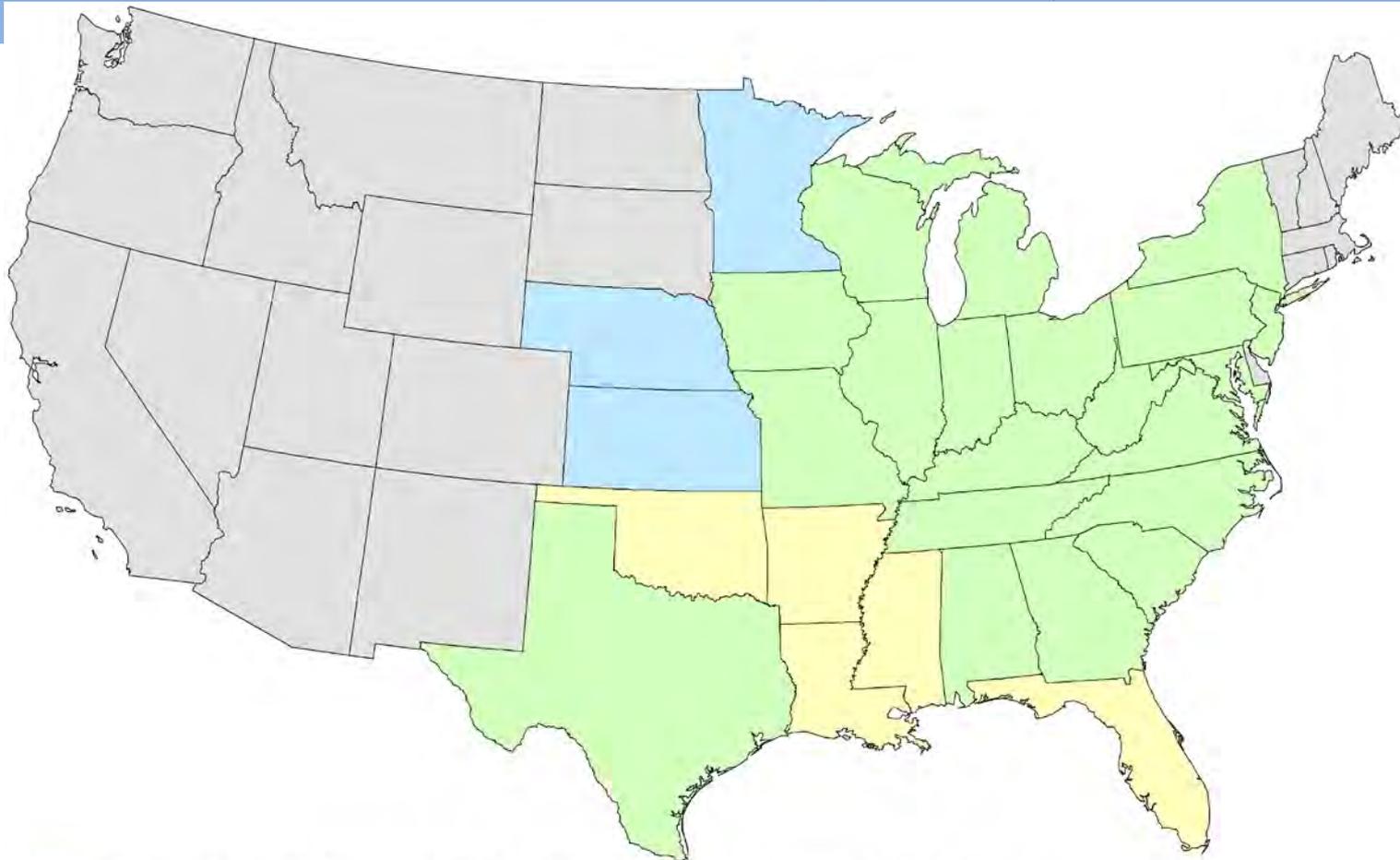
# Reducing Emissions Transported Across Statelines: Cross State Air Pollution Rule (CSAPR)

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- CSAPR promulgated in July 2011
- Requires reductions in SO<sub>2</sub> and NO<sub>x</sub> from utilities in 28 states to address emissions that contribute to air pollution in downwind states
- Will help those states meet and maintain the 1997 ozone and 2006 PM health standards
- Replaces the Clean Air Interstate Rule
- EPA estimates the annual benefits from the rule range between \$120-\$280 billion (2007 \$) in 2014.
  - Most of these benefits are public health-related.
    - 13,000-34,000 annual cases of premature mortality avoided
    - 15,000 non-fatal heart attacks
    - 19,000 cases of acute bronchitis

# Reducing Emissions Transported Across Statelines: Cross State Air Pollution Rule (CSAPR)

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-  States controlled for both fine particles (annual SO<sub>2</sub> and NO<sub>x</sub>) and ozone (ozone season NO<sub>x</sub>) (20 States)
-  States controlled for fine particles only (annual SO<sub>2</sub> and NO<sub>x</sub>) (3 States)
-  States controlled for ozone only (ozone season NO<sub>x</sub>) (5 States)
-  States not covered by the Cross-State Air Pollution Rule

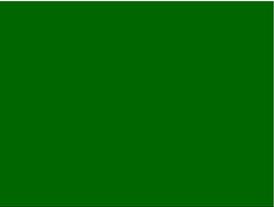
# Reciprocating Internal Combustion Engines (RICE) 2012 Proposal

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- On May 22, 2012, EPA proposed amendments to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for stationary reciprocating internal combustion engines (RICE).
- EPA proposes to allow emergency engines to operate for 100 hours per year without meeting numeric emission limits for the following purposes:
  - maintenance and readiness testing,
  - demand response for Energy Emergency Alert Level 2 situations, and
  - responding to situations when there is at least a five percent or more change in voltage.
- EPA proposes a temporary allowance of 50 hours of operation per year for peak shaving, until April 2017, for certain emergency engines.
- Proposed amendments restate that engines can run for any amount of time in a true emergency.
- The final rule is anticipated in December 2012.

# Reducing Emissions from Boilers

- ❑ On December 2, 2011, EPA proposed reconsidered standards for toxic air pollutants from boilers at major and area sources and certain solid waste incinerators.
- ❑ Expect to finalize reconsidered standards soon.
- ❑ The proposed changes would cut emissions of pollutants such as mercury, particle pollution, sulfur dioxide, dioxin, lead, and nitrogen dioxide.
- ❑ Together, the standards will avoid up to 8,100 premature deaths, 5,100 heart attacks, and 52,000 cases of aggravated asthma.
- ❑ EPA estimates that Americans would receive \$12 to \$30 in health benefits for every dollar spent to meet the proposed standards.



# Climate Change and Energy

# Climate Change and Energy at EPA

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- ▣ Endangerment Finding
- ▣ Light-Duty Vehicle GHG Emissions Standards and CAFE Standards
- ▣ Renewable Fuels Standard
- ▣ Carbon Capture & Sequestration
- ▣ GHG permitting requirements on large industrial facilities (Tailoring Rule)
- ▣ Carbon Pollution Standard for new electricity generation facilities
- ▣ Reporting of GHG Emissions
- ▣ A variety of voluntary and other initiatives

# Clean Energy and Clean Air

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- Clean energy offers multiple benefits:
  - Lowers costs of clean air rule compliance
  - Supports reliability
  - Reduces multiple pollutants, including GHGs
  - Supports local economies, creating new jobs and business opportunities
- EPA is recognizing the unique characteristics of energy efficiency, combined heat and power, and renewable energy in air rules
  - Output-based standard or alternatives
  - State implementation plans (SIPs) for meeting national air quality standards
  - Analysis on costs and emissions benefits
- State Energy Offices play critical role
  - Expertise in policies and programs
  - Engagement with environmental regulators to support least-cost compliance strategies for near and longer term
  - Relationships with energy partners

# Why Renewable Energy?

- **Renewable energy technologies are key to creating a clean energy future for not only the nation, but the world**
  - Constantly replenished and will not run out
  - Our nation has abundant renewable energy resources
  - Can have a smaller environmental impact than traditional (e.g., fossil fuel) sources



# Continued State Momentum on Clean Energy

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- Growing body of data that support the benefits of policies and funding strategies to support EE, RE and CHP (“clean energy”)
  - Co-benefits of CE include capacity savings, pollution reduction, fewer health incidences
  - EPA modeling conducted for MATS documents a range of benefits from increased EE investments
  - Evaluation, measurement, and verification of EE

# Energy Efficiency and Renewable Energy in SIPS

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- On July 3, 2012, the EPA released the “Roadmap for Incorporating Energy Efficiency and Renewable Energy Efficiency Policies and Programs in State Implementation Plans and Tribal Implementation Plans”
- Roadmap helping air quality planners to incorporate emission reductions from EE/RE Policies and Programs in SIPs
  - Many states are already enacting EE/RE policies and programs
  - This manual will help them take credit towards meeting air quality goals
    - [www.epa.gov/airquality/eere.html](http://www.epa.gov/airquality/eere.html)
- EPA will be providing training, additional data and tools for quantifying emission reductions
- By reducing emissions and demand, EE/RE policies and programs can cost less than other emission reduction programs.

# Time is Right to Renew Implementation of EE/RE Guidance

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- Significant growth in state investments in electric EE programs to over \$5 billion in 2011
- Twenty-nine states (and DC) have adopted renewable portfolio standards
- States need to find greater emission reductions to meet revised NAAQS
- Information on the energy and emissions impacts of EE/RE is increasingly widely available

# Examples of Potential SIP EE/RE Policies, Programs and Measures

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- Energy Efficiency Resource Standards
- State energy efficiency appliance standards
- State-mandated municipal government electricity consumption reductions
- Renewable Portfolio Standards
- Local Renewable Energy Certificate (REC) purchases exceeding a state Renewable Portfolio Standard

# Resources for States

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- Manual that serves as a roadmap to existing EE/RE guidance
  - Detailed and comprehensive
  - Accessible and easy to read
  - Provides four different pathways for incorporating EE/RE policies and programs into SIPs
  - Includes four approaches for quantifying EE/RE emissions impacts
- Tools to quantify the emissions benefits of EE/RE strategies
  - Power Plant Emissions Calculator (P-PEC)
  - Hourly Marginal Emissions Tool (HMET)
- Energy savings information for state EE policies
- Training on the electric energy sector

# Efficiency Opportunities with EPA Air-Quality Rules EE(1)

	How it Works	Opportunity for EE	Tools & Resources
<b>NAAQS</b>	<ul style="list-style-type: none"> <li>• Sets ambient standards for 6 criteria pollutants</li> <li>• Areas designated “nonattainment” develop plans to attain</li> </ul>	<ul style="list-style-type: none"> <li>• Nonattainment areas for O<sub>3</sub>, PM or SO<sub>2</sub> can account for emission reductions from CE</li> <li>• Use 1 of 4 “pathways” in CE Roadmap</li> </ul>	<ul style="list-style-type: none"> <li>• Roadmap for CE in SIPs</li> <li>• Avoided Emissions Calculator</li> </ul>
<b>CSAPR</b>	<ul style="list-style-type: none"> <li>• Limits power plant emissions that cross state lines, contribute to O<sub>3</sub> &amp; PM in other states</li> <li>• Establishes flexible emission budget trading programs</li> </ul>	<ul style="list-style-type: none"> <li>• States can develop CE emission allowance set-asides in CSAPR SIPs</li> <li>• Set-asides expand funding for CE programs, incentivize CE projects</li> </ul>	<ul style="list-style-type: none"> <li>• EPA will share best practices on set-asides</li> </ul>

# Efficiency Opportunities with EPA

## Air-Quality Rules (2)

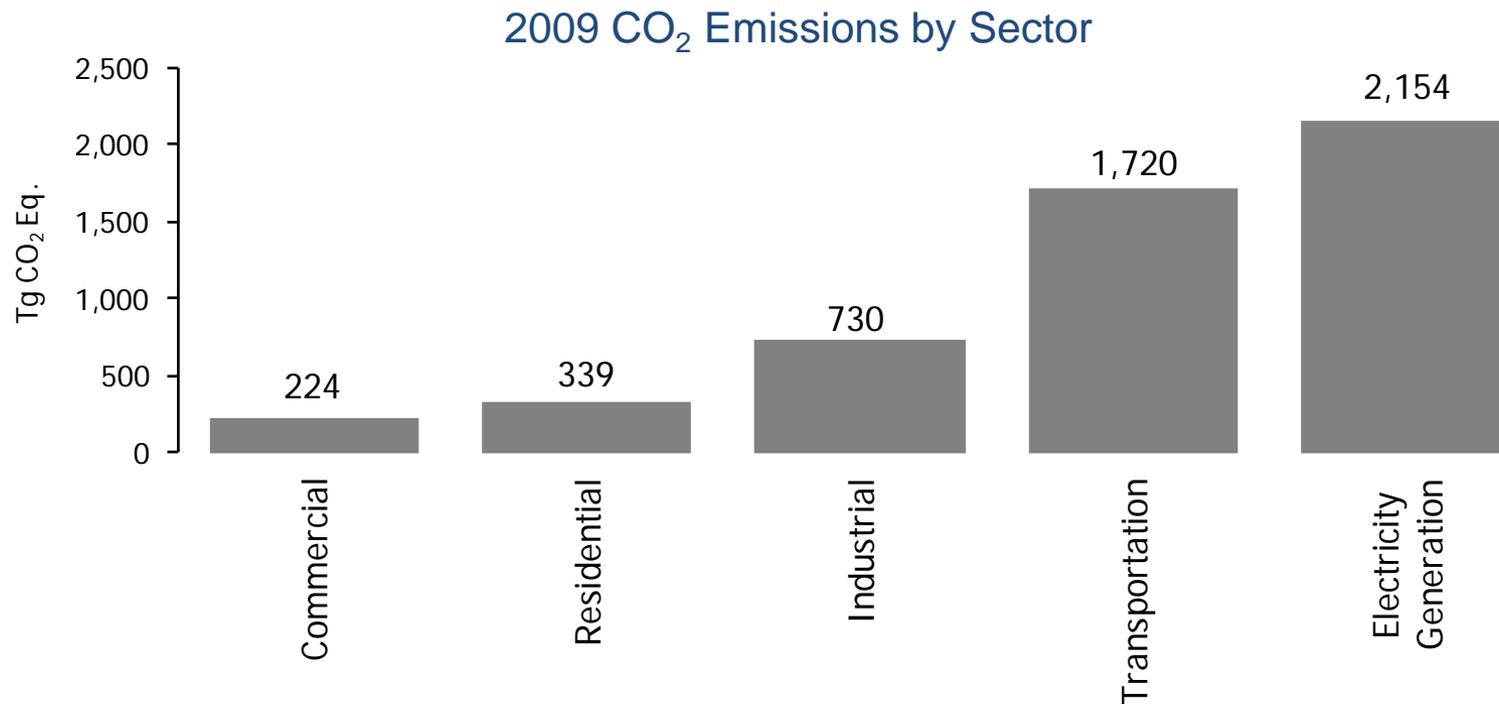
	How it Works	Opportunity for EE	Tools & Resources
<b>MATS</b>	<ul style="list-style-type: none"> <li>• Sets emissions limits for Hg, other hazardous air pollutants (HAPs)</li> <li>• Limits apply to coal- and oil-fired power plants</li> </ul>	<ul style="list-style-type: none"> <li>• Output-based standards reward efficiency by limiting pollution emitted per unit energy output</li> <li>• CHP efficiency benefits accounted for</li> <li>• Side case shows benefits of increased EE investment</li> </ul>	<ul style="list-style-type: none"> <li>• Modeling Demand-Side Energy Efficiency Side Case as part of the Proposed Rule</li> <li>• Output Based Regulation Handbook for Air Regulators</li> </ul>
<b>Boiler MACT (Proposal)</b>	<ul style="list-style-type: none"> <li>• Sets limits on toxic air emissions</li> <li>• Applies to boilers at industrial, commercial, and institutional facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Output-based standards reward efficiency</li> <li>• CHP incentivized</li> <li>• Boiler tune-ups and energy assessments may be required</li> </ul>	<ul style="list-style-type: none"> <li>• DOE Boiler MACT Technical Assistance Program</li> </ul>

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# Reducing Greenhouse Gas Emissions from Stationary Sources

# Sources of CO<sub>2</sub> Emissions

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# GHGs:

## Carbon Pollution Standard for New Power Plants

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- On March 27, 2012 EPA proposed a carbon pollution standard for new fossil-fuel fired power plants
- Currently there are no national limits on the amount of carbon pollution new power plants can emit
- The proposed standard would ensure that new power plants use modern technology to limit this harmful pollution
- EPA's proposed standard is flexible, achievable and can be met by a variety of facilities using different fossil fuels, such as natural gas and coal
- Working to respond to the over 2 million comments we received

# GHGs:

## Carbon Pollution Standard for New Power Plants

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- Proposes output-based emission standard of 1,000 pounds of CO<sub>2</sub> per megawatt-hour (lb CO<sub>2</sub> /MWh gross)
- Applies to new
  - Fossil fuel-fired boilers,
  - Integrated Gasification Combined Cycle (IGCC) units, and
  - Natural Gas Combined Cycle (NGCC) units
- New combined cycle natural gas power plants could meet the standard without add-on controls.
- New coal or petroleum coke power plants would need to incorporate carbon capture and storage technology (CCS).
  - The proposal includes an alternative 30-year compliance period to allow these new plants to incorporate CCS at a later date to reach compliance

### Transitional Sources:

- EPA is proposing that sources with the necessary construction permits already completed will not be covered by this standard, provided they begin construction within 1 year of the proposal's publication
- EPA is also proposing that sources looking to renew permits and that are part of a Department of Energy (DOE) demonstration project would also not be required to comply with this standard, provided that they begin construction within 1 year of the proposal's publication

# Greenhouse Gas Reporting Program

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- Purpose is to collect accurate and timely GHG data to inform future policy decisions
- EPA issued Mandatory Reporting of Greenhouse Gases Rule
  - Requires reporting of GHG emission data from specific entities in the U.S.
    - GHG suppliers
    - Direct emitting source categories
    - Facilities that inject CO<sub>2</sub> underground
- For CY11 emissions, reports were due to EPA due March 31, 2012
- EPA had a very high response rate and is currently in the process of analyzing and verifying these data

## Highlights for 2010 Direct Emitters

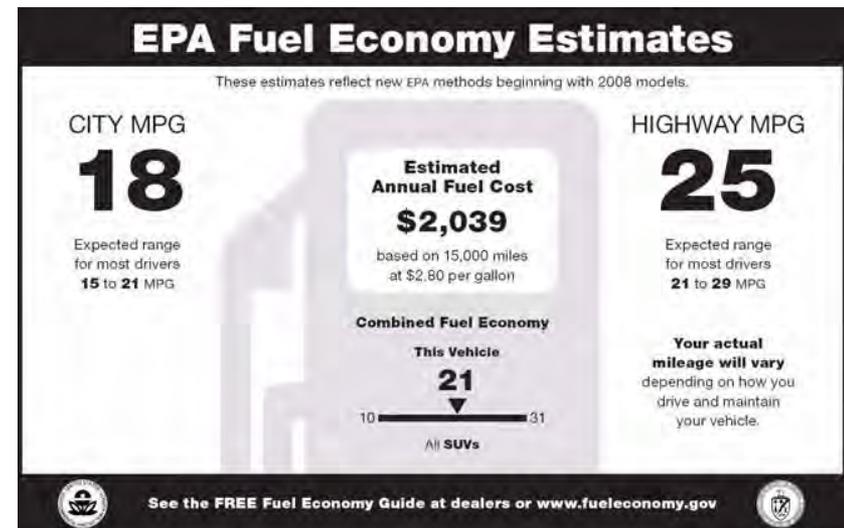
- Power plants were the largest stationary sources of direct emissions - 2,324 million metric tons of carbon dioxide equivalent (mmtCO<sub>2</sub>e); petroleum refineries second - 183 mmtCO<sub>2</sub>e
- CO<sub>2</sub> accounted for 95% of emissions; methane second at 4%; NO<sub>2</sub> and fluorinated gases remaining 1%
- 100 facilities with emissions over 7 mmtCO<sub>2</sub>e (96 power plants, two iron and steel mills, two refineries)

# Mobile Source GHG/CAFE Standards

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- Final rule (published 5/7/10) - Passenger cars, light-duty trucks, and medium-duty passenger vehicles, model years 2012 through 2016
  - Average 250 grams CO<sub>2</sub> per mile, 35.5 mpg in model year 2016
- Final rule (published 9/15/11) - Medium- and heavy-duty engines and vehicles, model years 2014 through 2018
  - Estimated combined projected standards will reduce CO<sub>2</sub> emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of vehicles built for the 2014 to 2018 model years, providing \$49 billion in net program benefits
- Proposed rule (published 12/1/11) – Extends passenger vehicle program to model year 2017 through 2025
  - Average 163 grams CO<sub>2</sub> per mile, 54.5 mpg in model year 2025

<http://epa.gov/otaq/climate/regulations.htm#1-1>



# GHG Litigation

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- On June 26, 2012, the U.S. Court of Appeals for the D.C. Circuit issued its decision in legal challenges to EPA's GHG regulations issued under the Clean Air Act.
- The regulations at issue include:
  - GHG Endangerment Finding
  - GHG Light Duty Vehicle Rule
  - GHG Tailoring Rule
- Confirmed that EPA followed both the science and the law in issuing an Endangerment Finding for greenhouse gases
  - And in proceeding to take common sense actions to address carbon pollution from vehicles and other large sources.
- Confirmed the Clean Air Act required EPA to set greenhouse gas standards for cars and light trucks
  - The Act “unambiguously” requires application of stationary source permitting programs to greenhouse gases
  - Ruled that EPA's Tailoring Rule alleviates burdens on industry and states, and that these parties therefore lack standing to challenge the rule.

# Partnership Programs Work with States, Others to Address Energy/Climate



# Collaborations for Clean Air

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- SEOs play an important role in cross-collaborations with air agencies and PUCs
- Work together to look at policies and programs on the books and in the works
  - Estimate emissions benefits
  - Document data, and gaps to be filled
  - Determine appropriate role for EE/RE in helping meet energy and environmental plans
- Work with EPA
  - We offer analyses, tools, guidance, more

A wide-angle photograph of a vast field of yellow daisies and green grass under a clear blue sky with a few wispy clouds. The field stretches to the horizon, and the sky occupies the upper half of the frame.

# Questions?

[www.epa.gov/air](http://www.epa.gov/air)

[www.epa.gov/climatechange](http://www.epa.gov/climatechange)

<http://www.epa.gov/airquality/eere/>