



Reducing Pollution from Stationary Sources

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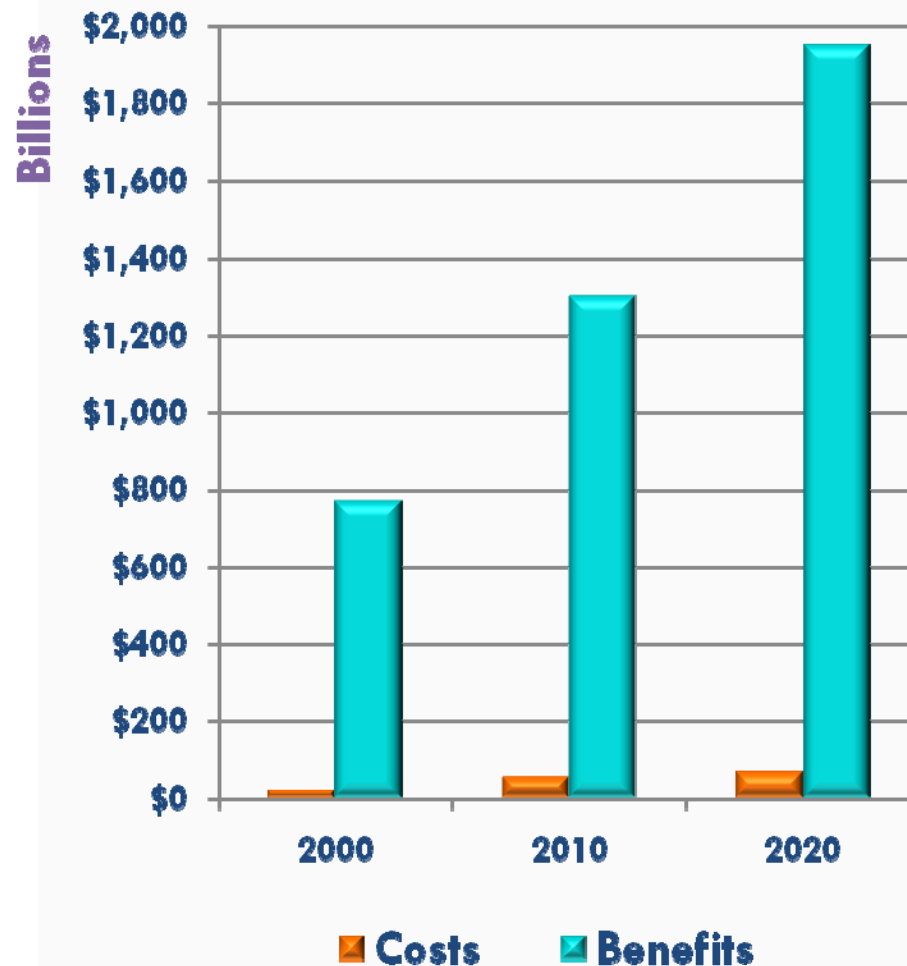
Administrator's Principles

- **Common Sense** – Promote sensible strategies to harness new, more efficient technologies, spur re-investment in U.S. industry, create jobs, and help lay the foundation for a clean energy economy.
- **Cost-Effectiveness** – Employ multi-pollutant, sector-based approaches to reduce regulatory uncertainty and keep compliance costs down.
- **Clarity, Achievability and Flexibility** – Explore and consider options to ensure the maximum environmental benefit while allowing flexibility, encouraging innovative strategies, and allowing adequate time to meet the new standards.
- **Transparency** – Seek input through open, public notice and comment provides the agency with the latest and best information and provides increased certainty.
- **Focus on the largest emitters** – Focus on large GHG emitters for which there are more cost-effective options for GHG control, and the Clean Air Act requires that cost and technical feasibility are considered.



Clean Air Act Benefits Outweigh the Costs

Primary central estimates of direct benefits and direct costs for 2000, 2010, and 2020 of 1990 Clean Air Act Programs
(In billions of 2006 dollars)





The Health Benefits are Huge

The benefits of the 1990 Clean Air Act Amendment programs include real improvements in the health of real people right now.

Health Effect Reductions (PM2.5 & Ozone Only)	Pollutant(s)	Year 2010
PM2.5 Adult Mortality	PM	160,000
PM2.5 Infant Mortality	PM	230
Ozone Mortality	Ozone	4,300
Chronic Bronchitis	PM	54,000
Acute Bronchitis	PM	130,000
Acute Myocardial Infarction	PM	130,000
Asthma Exacerbation	PM	1,700,000
Hospital Admissions	PM, Ozone	86,000
Emergency Room Visits	PM, Ozone	86,000
Restricted Activity Days	PM, Ozone	84,000,000
School Loss Days	Ozone	3,200,000
Lost Work Days	PM	13,000,000

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Key Power Plant Rules Overdue

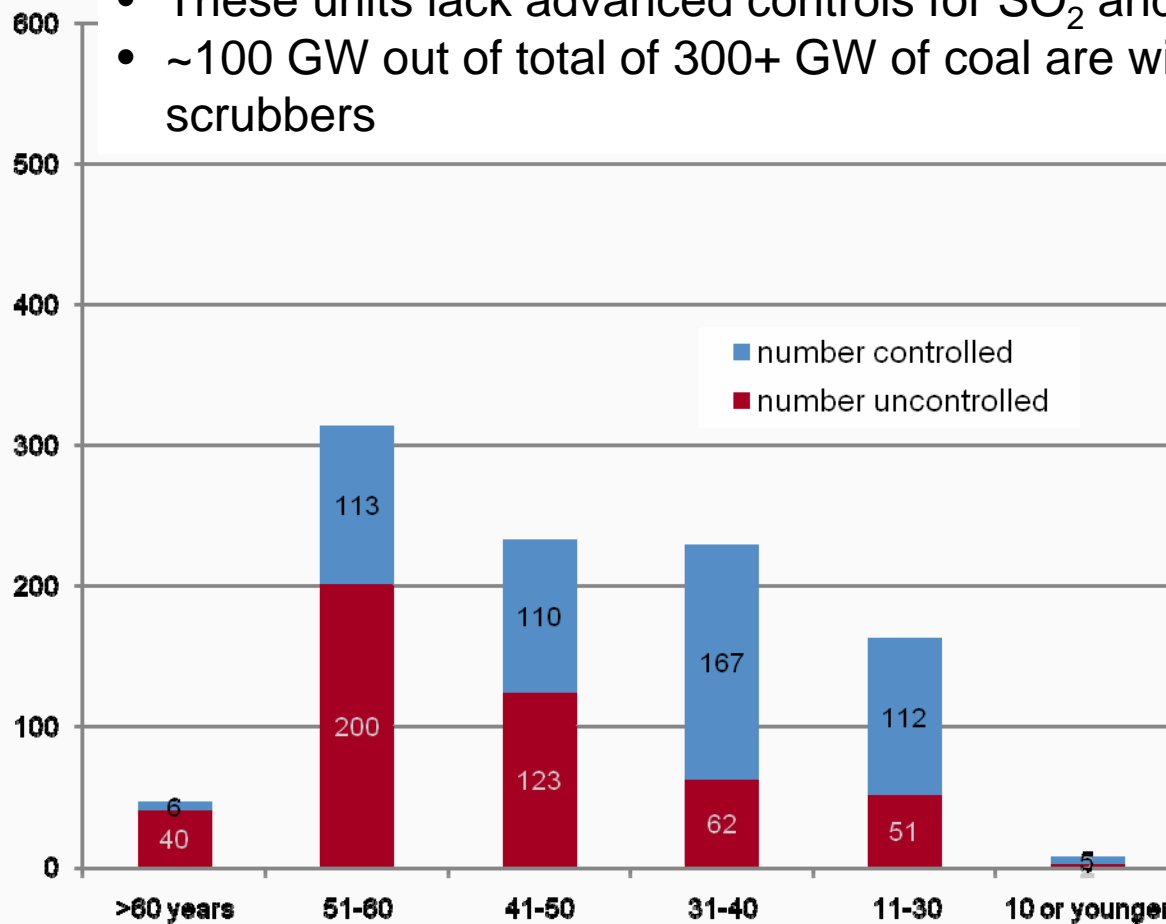
Public Health Protection Delayed

- Important Clean Air Act-required power plant controls have been delayed more than a decade.
- The Act required states by 2000 to adopt rules to control interstate pollution
 - NOX SIP Call Rule (1998) partially addressed ozone transport, but did not address fine particles.
 - Previous administration finalized Clean Air Interstate Rule (CAIR) in 2005 but court found legal flaws and ordered EPA to replace it. CAIR remains in place in the interim.
- The Act also required control of hazardous air pollutants from power plants.
 - Positive determination in 2000 meant final rule due by 2002.
 - Previous Administration issued Clean Air Mercury Rule for power plants in 2005 but court found rule legally flawed and vacated it. Also, rule failed to address all air toxics.



Many Plants Lack Controls

- 60% of the uncontrolled units are 31 years or older
- These units lack advanced controls for SO₂ and NO_x
- ~100 GW out of total of 300+ GW of coal are without SO₂ scrubbers



Total number of units



Transport Rule Overview

Scope: Addresses nonattainment and regional transport of air emissions across State borders (SO₂ and NO_x)

Coverage: Fossil-fuel fired units > 25 MW in Eastern half of the U.S.

Compliance: Phase I in 2012, Phase II in 2014

Other:

- Designed to replace the Clean Air Interstate Rule (CAIR)
- Preferred option is a flexible market-based mechanism
- 2012 compliance builds largely off controls already in place and under construction



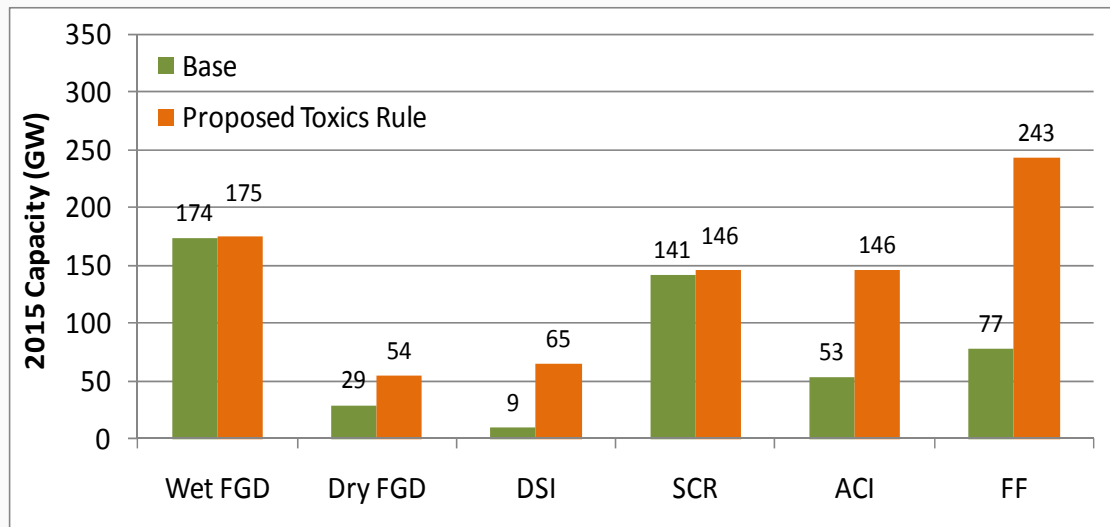
Overview of the Mercury and Air Toxics Standards

- On March 16, EPA proposal is the first national standards to reduce toxic air pollutants from new and existing coal- and oil-fired power plants
- Standards would reduce emissions of:
 - Metals, including mercury (Hg), arsenic, chromium, and nickel
 - Acid gases, including hydrogen chloride (HCl) and hydrogen fluoride (HF)
 - Particulate matter
- Linked to cancer, IQ loss, heart disease, lung disease and premature death
- Uniform emissions-control requirements based on proven, currently in-use technologies and processes
- Compliance time line: up to 4 years (3 years plus an additional year if granted by the permitting authority)
- EPA is also proposing a new source performance standard (NSPS) for particulate, sulfur dioxide (SO₂), and nitrogen oxide (NO_x) emissions from new sources



Sources Can Achieve These Standards

- Proven control technologies to reduce these emissions such as scrubbers, fabric filters, and activated carbon injection are widely available
- Many units already use one or more of these technologies
- As a result of this standard, some power plants will upgrade existing controls (especially particulate matter controls like electrostatic precipitators)
- Power plants may also install new controls (such as fabric filters, dry sorbent injection, or activated carbon injection)



Retrofit pollution control installations on coal-fired capacity (by technology) with the base case and with the proposed Toxics Rule, 2015 (measured in GW capacity). Source: Integrated Planning Model run by EPA, 2011

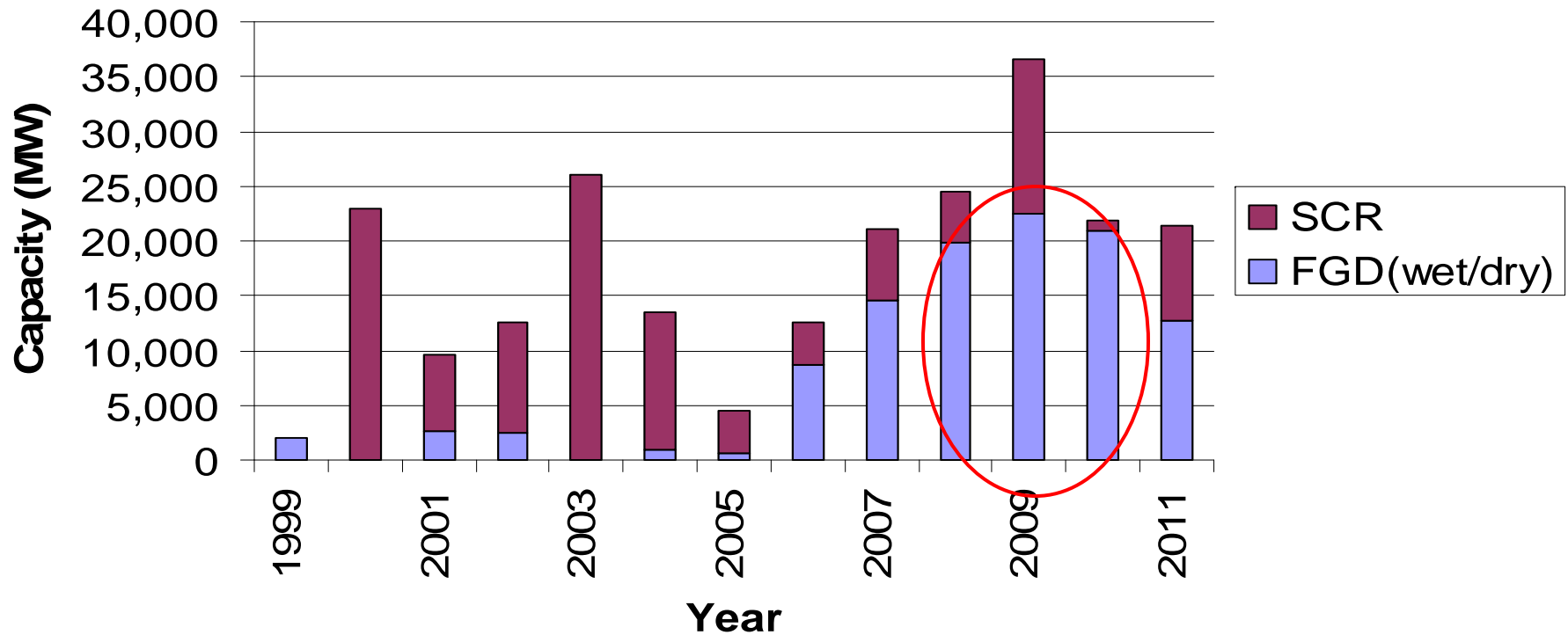
FGD: flu gas desulfurization (scrubber)
DSI: dry sorbent injection
SCR: selective catalytic reduction
ACI: activated carbon injection
FF: fabric filter



Industry Capacity to Add New Emissions Controls

Added 20+ GW of SO₂ scrubbers per year 2008 - 2010

Cumulative SCR and FGD Installations by Year



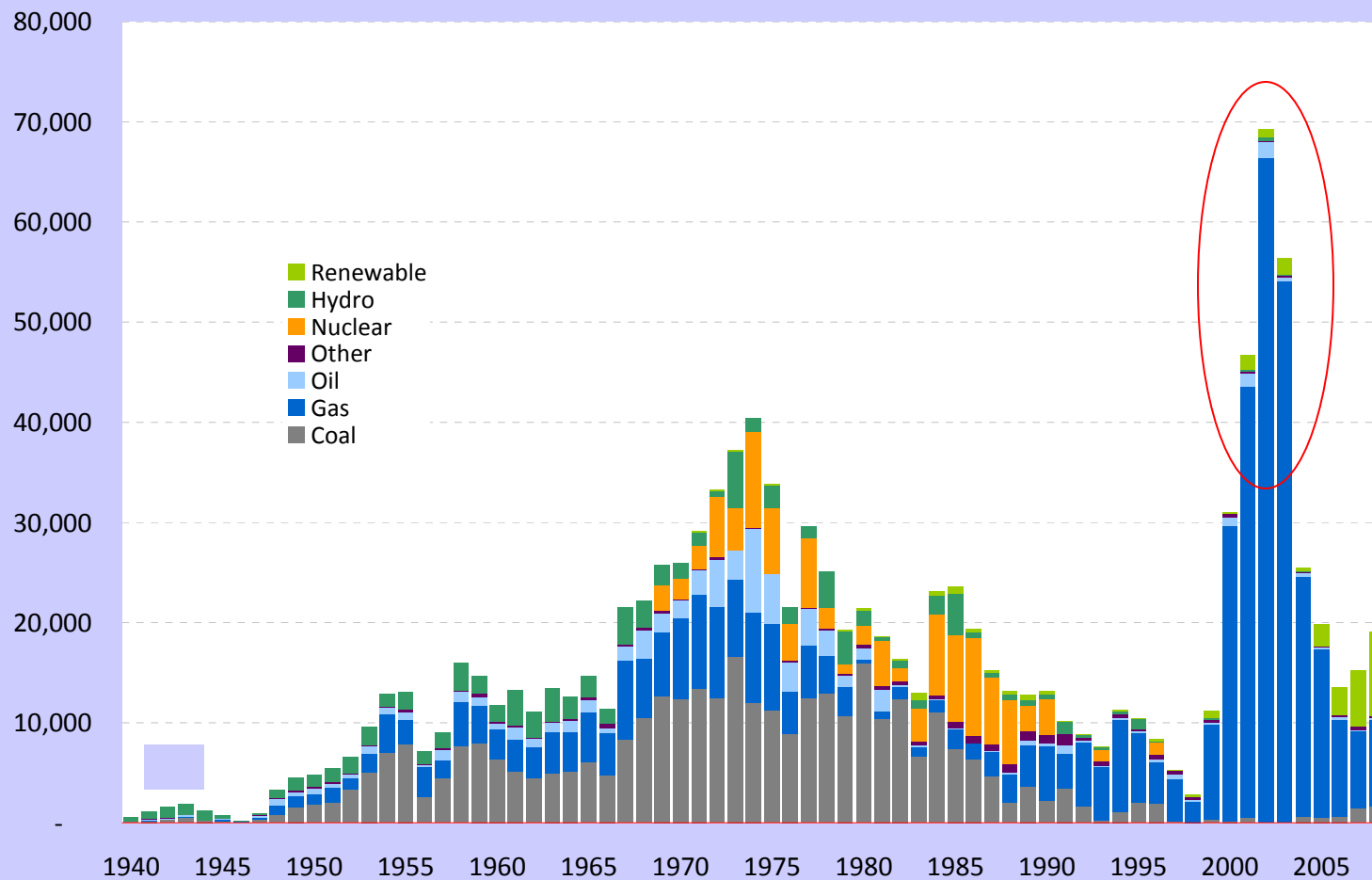
Source: David C. Foerter, Executive Director
Institute of Clean Air Companies (ICAC), October 22, 2010



Industry Capacity to Add New Generation

Between 2001 and 2003 the electric industry built over 160 GW of new generation

Capacity (MW) **U.S. Power Plant Capacity Added By In-service Year**





Boiler MACT

- Final Rule was signed in February.
- National Emissions Standard for Industrial, Commercial and Institutional Sources.
 - Limits emissions of mercury, other metals, dioxin and other organics, and acid gases for large emitters
 - Includes workplace standards (energy audits and tune ups for energy efficiency)
- Expected to apply to about 13,800 boilers at 1600 facilities primarily larger industrial sources such as refineries, chemical and manufacturing plants, pulp and paper mills
- Lower emitting sources subject to less stringent standards for mercury and CO only,
 - and work place standards (tune ups and energy audits) for larger sources among them.



Schedule of Upcoming Key Rulemakings For Traditional Pollutants

Date	Rule
End of July 2011	Proposed Risk and Technology Review and New Source Performance Standards for Oil and Natural Gas Production (Final November 30 th)
June 2011	Final Transport Rule
July 2011	Ozone NAAQS Reconsideration - Final
Summer 2011	PM NAAQS - Proposal
November 16, 2011	Final Power Plant Mercury and Air Toxics Rule



Tool Box of Pollution Control Technologies Satisfies Multiple Clean Act Requirements

- Pollution reduction controls at utilities are well-understood and available now
- SO₂ reduction technologies
 - Reduce HAPs to meet requirements of upcoming Toxics Rule
 - Help in-state areas attain the existing and upcoming PM_{2.5} NAAQS and 2010 SO₂ NAAQS
 - Help downwind states attain PM_{2.5} NAAQS
 - Address visibility (regional haze) improvement goals
- NO_x reduction technologies
 - Help in-state areas attain the existing and new ozone NAAQS
 - Help downwind states attain the existing and new ozone NAAQS
 - Address visibility (regional haze) improvement goals
- Mercury reduction technologies
 - Reduce mercury emissions to meet requirements of upcoming Toxics Rule
- Direct PM reduction technologies:
 - Help attain PM_{2.5} NAAQS and visibility program requirements
 - Reduce HAP emissions to meet requirements of upcoming Toxics Rule





EPA Activities on Greenhouse Gas Emissions

U.S. Supreme Court Decision





Greenhouse Gases from Stationary Sources

- EPA determination of health and public welfare risks related to GHG emissions from vehicles leads to implementation of Clean Air Act for stationary sources
 - Began January 2, 2011
- Clean Air Act recognizes that there will be continual improvement in environmental control technology, the need for national consistency, and provisions for case-by-case determinations.
- Tailoring Rule: Phasing in permitting requirements for the largest sources





Highlights of Greenhouse Gas Permitting Guidance

- Long-standing and familiar permitting requirements and processes apply to GHGs
 - BACT determinations continue to be state and project specific decisions
 - GHG BACT is not prescribed for any source type
- In most cases, energy efficiency improvements will satisfy the BACT requirement for GHGs.
- Carbon Capture and Sequestration (CCS) could be considered an available control option, but required consideration of costs will likely rule CCS out for now.
- Specific types of fuels or facility design neither required nor precluded
 - A BACT analysis for greenhouse gas emissions does not need to consider a fuel switch that would fundamentally redefine the source.



New Source Performance Standards (NSPS)

Proposed Greenhouse Gas NSPS
for Utility Boilers: July 26, 2011

Proposed Greenhouse Gas NSPS
for Refineries: December 15, 2011





Thank You!