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Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: Office of Environmental Initiatives
Series/Staff Member: Roger Ballentine
Subseries:

OA/ID Number: 19512
FolderID:

Folder Title:
Climate Change Other Utilities [2]

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Utilities - legal

1) Can we talk to co's w/ enforcement actions?

2) Do we have auth. to hold off on NSR for a co?

3) Can we get a carbon agreement.

4) Do we have authority to apply NSR on company-wide basis.

5) Can we give co's a break on NSR vs a vs other co's if they take on a target?

Electricity Generation and Air Pollution

In the 1970 Clean Air Act Congress made a decision to require that all new powerplants and other large pollution sources to be designed to minimize air pollution using state-of-the-art techniques. But the Act exempted existing plants from this performance requirement. Instead existing plants, if controlled at all, were required only to clean up to the degree needed to address local air quality problems.

There were several reasons for this approach. First, most air quality problems were perceived as local. Second, the electric power industry was mostly a local one. Third, the exemption was assumed to be temporary, since as existing plants were retired, they would be replaced by new ones meeting modern performance standards.

Now, nearly 30 years later, we know that the facts on the ground have changed but our policy has not changed to confront reality. We know now that many of our most threatening air pollution problems are not local—they are regional, national, and even global. Our electric generating industry is rapidly becoming a national industry with all parts of the country connected by wires that move the product anywhere in the lower 48 states. And those powerplants that were supposed to retire have kept on running like the Energizer bunny. As a result pollution from electric power generation is a dominant cause of nearly all our most pressing air quality related problems.

Four pollutants cause a host of public health and environmental damage: sulfur dioxide, nitrogen oxides, mercury, and the pollutant no one can get away from, carbon dioxide, the dominant greenhouse gas. Electric generation in the U.S. is the largest single source of these four horseman of air pollution. Electric powerplants release over 2/3 of total U.S. emissions of sulfur dioxide, and over 1/3 of each of the other three pollutants. These pollutants are responsible for a Pandora's box of health and environmental harm:

- fine particles, that contribute to tens of thousands of premature deaths in the U.S. each year;
- smog that plagues our major cities, and causes respiratory attacks in kids and seniors;
- acid rain, that still damages lakes, streams, forests, and monuments;
- regional haze, that spoils trips to national parks for millions of visitors annually;
- nitrogen emissions that help over-fertilize estuaries, including the Chesapeake Bay, Long Island Sound, Pamlico Sound, and the Gulf of Mexico, leading to dead zones where aquatic life perishes;
- mercury contamination of lakes and streams that has lead 40 states to issue continuing advisories of the fish that store this toxin;

- and, carbon dioxide driven climate change, that threatens to create disruptive weather patterns and sea-level rise that modern human civilizations have never experienced.

This plague of pollution problems is a product of the grandfather loopholes in current federal law that allows 30, 40 and 50-year plants to keep operating without meeting modern performance standards. The patchwork of lenient or nonexistent rules at the state and local level has created pollution havens where grandfathered plants can engage in domestic environmental dumping, distorting fair energy markets. As we move to modernize the electricity market economically, we must accompany it with modern environmental performance measures. A central purpose of electric industry restructuring legislation is to create a free and fair, competitive market for energy services. But fair competition is impossible in an environment where air pollution performance requirements are balkanized. Because all markets are connected by wires, different pollution standards promotes a “survival of the filthiest” market, where plants that are the dirtiest bid power at the cheapest prices and increase their market share.

These market distortions do not deliver consumer benefits. The price differences caused by different pollution requirements are quite small—usually 2-3 mils per kilowatt-hour or less—but these small differences are enough to give dirtier producers a decisive market advantage in many areas. The market distortions also discourage investment in new, cleaner, more efficient generation and in renewable resources. Under the current rules, an entrepreneur who seeks financing for, say, a clean, high-efficiency natural gas plant can point out that it emits no sulfur, no mercury, and much less NO_x and CO₂ than the competition. But, with the partial exception of sulfur (for which allowance programs exist under the acid rain law), this superior environmental performance has no economic value in the market place. The financier wants to know whether the plant will be able to run more cheaply than the competition and if the competition is a set of grandfathered coal-fired powerplants, the answer often will be no and the new plant will not be financed.

To address the egregious health, environmental, and economic flaws in the current air pollution control programs a number of bills have been introduced in Congress. Notable examples include the Jeffords-Lieberman “Clean Energy Act” (S. 1369), the Pallone bill (H.R. 2569), and the Waxman-Boehlert “Clean Smokestacks Act” (H.R. 2900). These bills all establish industry-wide caps on tons of each of the “four-horseman” pollutants: SO_x, NO_x, CO₂, and mercury. The caps on SO_x and NO_x would provide building blocks for meeting health-based smog and fine particle standards and to reduce acid rain further. The mercury cap would attack the largest single remaining U.S. source of this pollutant. And the CO₂ cap would return emissions to 1990 levels—the target set in the 1992 Rio Climate Treaty that the U.S. has ratified.

With the exception of mercury, for which there are both local and regional concerns,

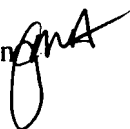
these bills would implement the cap through a marketable permit program where power generators could trade their clean-up obligations to meet the caps in the most efficient manner. A “generation performance standard” would create a level playing field for generators—the standard would define the amount of pollution that could be legally emitted for a kilowatt-hour of electricity. This system will directly reward cleaner, more efficient generators. In contrast to the current situation, under these bills a developer of a new clean powerplant would be able to show direct tangible economic benefits from its reduced environmental impact—because the new plant would be able to generate electricity below the law’s “generation performance standards,” for every kilowatt-hour sold, the plant will also produce another profit-making product: emission allowances that can be banked or sold on the market. This additional revenue stream will make financing such projects that much more attractive.

A final benefit of these integrated pollution cleanup bills is that they provide a clear roadmap for business in planning long-term investments. The history of clean air progress has developed as a series of unconnected initiatives, typically focused on a single pollutant. Today we can survey the next 10-15 years and be confident that additional measures will be pursued to reduce the four horseman pollutants. But if we pursue the traditional approach, no one can say with confidence now, when, how deep, and in what order these important steps will occur. As a result business planners must approach today’s investments by making educated guesses about environmental requirements. Billions of dollars are changing hands as generation plants are sold under state restructuring programs. One thing we can say for sure is that someone is guessing wrong. By enacting integrated cleanup programs Congress could both provide certainty and reduce the tendency to prolong dependence on existing outmoded plants through the traditional process of applying end-of-pipe cleanup devices normally aimed at controlling only one pollutant.

Utilities

- EPA said: 7% below 1990 on carbon by 2010.
- CEA showed 10-15% below business as usual as what utilities would need to do.
- EPA also said about 50% reduction in SO₂, 65% - 80% NO_x year round.
- EPA gave nothing on NSR.

Memo to: Roger Ballentine

From: Janet Anderson 

Date: 29 June 1999

Subject: framework for negotiations on air emissions

background

This is a framework and its necessary foundations upon which we can build negotiated agreements with electric utility companies. They are the result of many discussions with industry officials over the past year. Provided the Administration can show some flexibility with NO_x reductions in the early years, I believe we can achieve guaranteed, substantial reductions in all areas.

NO_x emission limits are currently expressed in terms of lbs/MBtu (pounds of NO_x per million British thermal units heat input); for this effort, I would use lbs/MWh (pounds per megaWatt hour) to allow firms to capture the benefits of improvements in generation efficiency (including combined heat and power).

New Source Review continues to be an issue of major concern to utilities and the following four principles are very important to them for discussions to proceed:

1. Hold off on finalizing NSR reform rules until progress is made or attempt is abandoned
2. Issue no Notice Of Violations until process is complete; "early" NOV's will negate any deal
3. EPA should make official response to Utility Air Regulatory Group NSR proposal (indicate where progress might be made)
4. View reformed NSR as a backstop for other reductions, not as efficient method to achieve environmental improvements from utility sector

proposal

NO_x: xx lbs/MWh by 2004 (seasonal or annual)
xx lbs/MWh by 2008 (seasonal or annual) * this round may be unnecessary depending on 2004 level)
1.5 lbs/MWh by 2010 (annual; equal to .15 lbs/MBtu for a coal unit)

SO₂: xx % reduction (measured in tons) from Title IV limits by 2010

*Hg: xx % reduction (achievable by control equipment installed for other purposes)
*mercury may not be appropriate to include as part of package because EPA has not yet made a determination on whether to regulate

CO₂: 10-15 % reduction from 1999 baseline (measured in rate – lbs CO₂/kWh or kWh/MBtu heat input)

by 2010 what about Btu?

In addition:

Agreements will be legally binding

Facilities must be in compliance with all NAAQS

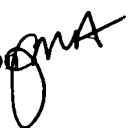
Carbon Monoxide (CO) not presumed to be an issue for utility sources

No further reductions in criteria pollutants required by US EPA until after 2012 except for compliance with NAAQS

NSR and NSPS requirements apply only to new and reconstructed units

Agreement will include resolution on enforcement actions (settlement agreements where necessary)

memo to: Roger Ballentine

from: Janet Anderson 

date: 1 July 1999

subject: plans to proceed on integration package with electric utilities

schedule

- Informal discussions with companies (28 June – 9 July)
- Companies make joint/separate proposals (19 July – 6 August)
- Administration evaluates proposals (9 August – 27 August)
- Negotiations (7 September – 17 September)
- Agreements/ Event

team

Linda Lance, Bob Perchiaspe (plus staff), Janet Anderson

issues

No FACA concern if Administration doesn't ask the group for advice or manage the group

Different proposal for gas-based utility?

Does basic package have to be the same? Different based on SIP call status?

Companies:

1. Southern
2. AEP
3. TVA
4. CINergy
5. WEPCO
- 6.

Roger —

This was the utilities
response to EPA's framework on
reductions in all air emissions.
I wouldn't spend much time —
it's very general — hard to
disagree in detail.

Gmit

16 June 99

TENETS OF POWER GENERATION STAKEHOLDERS

BACKGROUND

Power generators from all segments of the industry are participating in the Air Quality Integration Dialogue with the U.S. Environmental Protection Agency (EPA). This dialogue addresses the intersection of air and climate regulation, especially how to optimize air regulatory decision-making and implementation of controls, while at the same time possibly undertaking additional, new activities to voluntarily reduce, avoid and sequester greenhouse gases. The industry seeks increased certainty in air quality regulatory requirements; better coordination of the timing of different regulatory requirements; minimized compliance costs; the ability to minimize stranded assets/investments; and assurance that actions taken to address environmental concerns are effective.

This dialogue stems from a meeting of industry executives with the Administration, including the Vice-President, in July 1998. After the discussion raised such air quality issues as new source review (NSR)/WEPCO, EPA was charged with addressing air regulatory barriers to voluntary greenhouse gas reductions.

The industry executives were in agreement that before they could consider significant further greenhouse gas reductions under an expanded voluntary program, the Administration should:

- Remove roadblocks in the air, nuclear and hydro areas.
- Provide recognition for reductions already accomplished (and to be made in the future).
- Identify and make available incentives to further voluntary greenhouse gas reductions.

The Air Quality Integration Dialogue is linked to separate dialogues with the Department of Energy (DOE) regarding hydro and nuclear issues and to an effort by the industry to address incentives needed to pursue additional voluntary greenhouse gas reductions. The results of this latter effort are described in a May 1999 document from the Edison Electric Institute, "A Portfolio of Voluntary Climate Change Actions."

TENETS OF THE INDUSTRY STAKEHOLDERS FOR THE AIR QUALITY INTEGRATION DIALOGUE

On May 18, 1999 EPA staff presented a proposal to industry that was intended to provide the electric power industry with regulatory certainty and stability for the next 10 to 15 years regarding future emissions reduction requirements. EPA's proposal called for aggressive additional reductions of SO₂ and NO_x as well as new controls on emissions of mercury and CO₂. The proposal was represented as allowing flexibility in emissions control programs to minimize costs and disruption of power industry activities - using market-based tools (e.g., cap-and-trade) and appropriate administrative actions (e.g., phasing of controls), wherever possible, consistent with the prevention of local problems.

While most parties in the industry believe it is premature to discuss the actual amounts of future emission reductions that may be required, given the significant uncertainties (e.g., industry proposals to revamp the new source review system, the recent court decisions regarding ozone and particulate matter, etc.), it does believe that some of the principles presented in EPA's proposal should be incorporated into the regulatory framework governing future emissions reductions requirements.

This document presents tenets or principles that the industry stakeholders believe should govern the Air Quality Integration Dialogue with EPA. General tenets are noted followed by tenets divided into categories suggested by the industry executive meeting with the Administration.

General Tenets

- 1) The energy policy consequences of environmental policy decisions should be considered and industry, EPA and DOE should work closely to address such consequences.
- 2) Diversity of fuels used to generate electricity provides numerous benefits to the nation: increased use of natural gas; continued use of coal, with current and advanced technologies; renewables, including hydroelectric and biomass; and nuclear energy. Each play a key role in maintaining a diverse and stable electric system able to withstand upsets due to changing international conditions. In contrast with the Administration, the stakeholders believe that implementation of a Kyoto Protocol-like greenhouse gas program would significantly curtail coal-fired electricity production.
- 3) EPA's regulatory requirements should be rooted in statute and be based upon sound environmental science, health and economic analyses. Emission reductions should be tied directly to environmental and health protection needs (i.e., emission reductions should not be made solely for emission reductions' sake). For example, regarding mercury, the stakeholders believe that additional information now being developed must be fully evaluated before EPA can justify mercury controls on power generation facilities. Finally, when deciding upon the optimal level of reductions of any emissions, EPA should seriously consider marginal costs and marginal benefits.
- 4) Welfare concerns should not be given higher priority than health concerns by EPA. Specifically, regional haze should not drive emission reductions more quickly than fine particulate matter controls.
- 5) EPA should support flexible, cost-effective market-based solutions (e.g., emissions trading, phasing in of controls, and early reduction credits) in any regulatory programs:

- i) EPA should avoid counterproductive NOx allowance allocation schemes.
 - ii) Early reductions of SO2 and NOx should be bankable and such banked should not be adversely affected by subsequent regulation.
 - iii) All significant emitting sectors should be targeted for reductions. There should be opt-in opportunities for lower-emitting sectors to allow effective control opportunities to be taken advantage of.
- 6) Restructuring legislation should not address environmental issues.
- 7) EPA should support policies and actions that encourage utilities to maintain and improve the efficiency and reliability of generation assets.

Removing Roadblocks in the Air, Nuclear and Hydro Areas

- 8) EPA should work with other government agencies to alleviate barriers to hydroelectric and nuclear power, which produce essentially zero emissions of SO2, NOx, CO2 and mercury. See "A Portfolio of Voluntary Climate Change Actions."
- 9) Improved coordination and scheduling of different regulatory requirements is needed. The industry desires greater certainty and believes that a 10-15 year period without new direct Federal requirements should follow finalization of any new regulation of a particular pollutants, absent compelling new health findings.
- 10) EPA and industry should work together to minimize stranded assets/investments caused by new regulatory programs.
- 11) EPA needs to work with the industry to establish a more rational new source review (NSR) policy:

- i) Two approaches have been suggested: 1) the UARG proposal and 2) an alternative proposing that when emissions caps exist, NSR should be eliminated.
- ii) EPA should simplify the permitting process for new technologies and eliminate what now often amounts to essentially a ratcheting to virtually zero emission for new facilities.
- iii) EPA should reevaluate and appropriately align its enforcement initiative in light of the discussion of a new, more rational NSR policy.

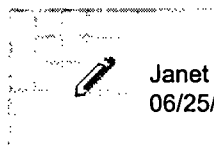
Identifying and Making Available Incentives to Cause Further Reductions

- 12) EPA and the Administration should provide incentives to better enable the power generation and delivery industry to reduce greenhouse gas emissions (with concurrent reductions in SO₂, NO_x and mercury). Such incentives are described in EEI's "A Portfolio of Voluntary Climate Change Actions" and should be applied in an equitable fashion for all segments of the industry. The incentives should reward but not mandate renewable energy, energy efficiency and pollution prevention. Examples of the incentives are:
 - i) Incentives for advancements and removing barriers for different types of generation -- fossil generation (clean coal technologies, heat rate improvements, natural gas supply and delivery, and combined heat and power); nuclear (relicensing, capacity improvement, spent fuel, decommissioning, new reactors); and renewables (hydroelectric, biomass, wind, solar).
 - ii) Incentives for research, development and demonstration activities in the areas of health/environmental effects and emissions controls and practices.

- iii) Incentives for research on, and purchase of, advanced transmission and distribution technology, including advanced transformers.
- iv) Incentives for research on, and purchase of, energy efficiency and electric end use technologies (such as electric vehicles, motors, new electric technologies for various industrial applications, heating and cooling equipment, appliances, etc.).

Provide Recognition for Reductions Already Accomplished (and to be Made in the Future)

- 13) Voluntary greenhouse gas reductions can be invigorated by EPA and the Administration through properly addressing the issues raised previously in this paper.
- 14) Past and future voluntary greenhouse gas reductions would be recognized and administered through the DOE Climate Challenge program and Energy Policy Act section 1605(b). Such a program should not include any constraints on the use of mechanisms to reduce, avoid or sequester all greenhouse gases. More information on this is provided on pages 29-31 of "A Portfolio of Voluntary Climate Change Actions."



Janet Anderson
06/25/99 06:31:29 PM

Record Type: Record

To: Roger S. Ballentine/WHO/EOP@EOP
cc: jseabright@aol.com @ inet
Subject: AEP mtg

Roger:

I got some background from Stephen Fotis re: the Monday mtg. Historically, AEP has taken a hard line on what the future holds w.r.t. environmental regulations; they have recently begun to model more realistic (read that more stringent regs) futures; the result is that their position is changing -- for the better. They recently offered a more progressive package on NSR reform (new source review) within a utility group and were voted down.

Stephen believes you should tell AEP the WH is looking for a package of reductions -- NO_x , SO_2 , and CO_2 over a long (10-12 years) time horizon and that the WH will be helpful on harmonizing these reductions with other actions within EPA (read that as NSR).

I also asked him to attend the meeting.

J.

11 June 1999

Roger Ballentine
Jeff Seabright
Julie Anderson

Re: background on electric utility air regulation issues

So we can have some common background, I am sending three documents:

1. Electric Power Generation and the Clean Air Act (by EPA)
2. Air Quality Integration Dialog (framework for the dialog begun in Dec.)
3. Potential Integrated Approach to Emission Reductions... document distributed by EPA at the AQ Integration Dialog meeting in May. Specific ranges of reductions for pollutants were discussed at the same meeting.

The Dialog will have another meeting on Wednesday, the 16th. Please let me know if you have questions.

Regards,
Janet

ELECTRIC POWER GENERATION AND THE CLEAN AIR ACT

The electric power industry complies with many types of environmental requirements today and will face a wide range of new environmental requirements over the next 15 years in its generation, transmission, and distribution of electric power. The major types of electric generation – fossil fuel, nuclear, and hydroelectric – will each face different types of environmental issues. The Clean Air Act requires EPA to take actions to protect the public and the environment from the air emissions of electric power generation that uses fossil fuels – coal, oil, and natural gas. This has been the Agency's main focus under the Act.¹

In considering how the Clean Air Act's requirements affect the power industry, three basic points are important:

- EPA implements the Clean Air Act in conjunction with the States to control air pollutants in appropriate ways across all sources of air emissions.
- The Agency has several existing programs covering air emissions from power plants – the major ones address acid rain, particulate matter (soot) and pollution from new sources of electric generation to reduce ambient ozone concentrations in the lower atmosphere (addressing smog).
- Electric power generation is a leading source of air emissions for the most significant problems that EPA plans to address in the future under with Clean Air Act.

EPA Implements the Clean Air Act in Conjunction with the States to Control Air Pollutants in Appropriate Ways across All Sources of Emissions.

The Clean Air Act requires EPA to control air pollution across all of American industry. In certain sections (titles of the Act), the law mandates that the Agency set up a national program of controls. In others, it requires that the Agency set ambient air quality standards (allowable concentrations of pollutants in the air) and to work with the States to obtain compliance with them through specific controls that they place on their sources of emissions (e.g. cars, power plants, and industrial facilities). The titles of the Act that require EPA to control power plant emissions, or could lead to future environmental controls on the power industry are discussed below.

Title IV of the Act requires EPA to address acid rain by setting up a national sulfur dioxide (SO₂) allowance trading program primarily covering steam-electric generator plants using coal, oil, and natural gas and place national controls on nitrogen

¹ Although this has been the main focus of the Agency over the last 10 years, EPA has also controlled the air emissions from municipal waste combustors that produce electric power.

oxide (NO_x) emissions from coal-fired power plants. These two air pollutants react in the atmosphere with other chemicals to form harmful acidic gases and particles that are washed down as "acid rain," or are deposited on the land and in water bodies over time. Congress created this title in 1990 amendments to the Act to develop a national solution to the acid rain problem and it relies primarily on a market-based regulatory approach – the SO₂ allowance-trading program.

Title I requires EPA to set national ambient air quality standards (NAAQS) to address widespread pollutants from several types of sources and to set standards for new sources for those pollutants that require State implementation. These widespread pollutants are commonly referred to as "criteria air pollutants".² As part of this effort, EPA is also responsible for managing a process where States place greater controls on electric generation units that are in areas where tighter controls are warranted to bring them into attainment, or maintain their existing air quality. In nonattainment areas (where air pollutant concentrations are above the air quality standard), States prepare state implementation plans (SIPs) for each ambient air pollutant. The SIPs lay out how States will get their sources to lower air emissions in order to bring about, and/or maintain State compliance with the NAAQS. EPA reviews and approves the SIPs. The States issue individual electric generation unit permits in line with their SIPs. The Act requires EPA to periodically review the NAAQS and revise them as warranted. For power plants, the ambient air quality standards that are of the greatest importance cover ozone in the lower atmosphere (smog) and particulate matter (soot) – both large and fine particles. Prior to 1990, EPA set NAAQS for these pollutants and revised them in 1997.

Title I has two elements that enable EPA to address air emissions from new power plants. EPA sets New Source Performance Standards (NSPS) for criteria air pollutants that cover all new units in the source category (e.g. coal steam-electric) covered by the NSPS -- these standards serve as a floor for controls. In addition to this, in areas where EPA is concerned about nonattainment with the NAAQS, or maintenance of the NAAQS, States are required to have new units use lowest achievable control technology (LAER), or best available control technology (BACT), respectively. LAER and BACT requirements become more stringent over time as technology improves and units install it.

Title I also requires EPA to control air toxics from specific sources through the provision of industry-specific controls based on the maximum achievable control technology (MACT) under Section 112. These are national standards directly administered by the Agency. Although EPA has set MACT standards for toxic air pollutants from several other industries, it has not done so for electric power generation.

In EPA's *Mercury Study Report to Congress*, submitted to Congress in December 1997, the Agency identified coal-fired electric power plants as the largest source category of anthropogenic mercury emissions. In February 1998, EPA submitted a *Study of*

² The criteria air pollutants are nitrogen dioxide, sulfur dioxide, particulate matter, ozone, lead, and carbon monoxide. The electric power industry emits large amounts of the first three pollutants and ozone results from nitrogen dioxide (the 1st pollutant) reacting with volatile organics.

Hazardous Air Pollutant Emissions from the Electric Utility Steam Generating Units, which identified mercury as the hazardous air pollutant of greatest concern to public health from this industry. The study also noted that cost-effective control technologies for mercury emissions from power plants are not currently commercially available. The Administrator is to consider the results of the February study to determine whether to regulate hazardous air pollutants from electric power plants under the Title I program.

The Agency Has Several Existing Programs Covering Air Emissions from Power Plants – the Major Ones Address Acid Rain, Particulate Matter (Soot), and Pollution from New Sources of Electric Generation to Reduce Ambient Ozone Concentrations in the Lower Atmosphere (Addressing Smog).

The most significant recent programs that EPA has put in place are under Title IV of the Act. They are the SO₂ allowance trading program and emission limitations (allowable rates) on nitrogen oxide emissions from coal-fired power plants. In accordance with the Clean Air Act, EPA is phasing-in compliance with these programs.

The first phase of the SO₂ allowance trading program went into effect in 1996 and covers the largest coal-fired generation units. Under a fixed annual SO₂ emissions cap for these units, EPA allocated to them SO₂ "allowances" that allows them to emit the amount of SO₂ that they cover. Sources can emit more SO₂, if they buy allowances from other units, or emit less and sell excess allowances to other sources. Power plants also can save allowances that they did not need to cover their emissions in any year and "bank" them for future use, or sale. The second phase of the SO₂ allowance trading program will go into effect in 2000. It establishes one large nationwide annual emissions cap-and-trade program through the added coverage of the remaining power plants using fossil fuels that are over 25 megawatts. For the most part, the units that are covered by the program are coal-fired units.

The first phase of the NO_x control program went into effect in 1996 and covers the largest coal-fired generation units that used the most prevalent types of steam boilers. The second phase of the NO_x control program goes into effect in 2000 and covers the remaining boilers that are large enough to afford the controls that EPA places on them. EPA's NO_x controls are based on technologies that improve boiler operations to lower NO_x emissions, as opposed to removing the NO_x through post-combustion controls. Under this program, the Agency set up an innovative regulatory approach for lowering industry emissions. The Agency allows electric generation units within the same company to control their collective emissions as they see fit, as long as, in total, the company's units do not exceed the emissions that they are all allowed to have (i.e. EPA allows emissions "averaging" between plants.)

Power plants also face controls on large particle emissions (particulate matter, or PM) under the NAAQS which has led existing and new plants to install electrostatic precipitators, and baghouses to remove these particles from their flue gas under State permits. Under the new source performance standards (NSPS) for SO₂, new coal-fired

units must limit the sulfur emissions of their generation plants (this could require flue gas desulfurization units ("scrubbers") in new plants. There are new NSPS standards for NOx that place controls on coal, oil, and gas-fired steam electric units. BACT and LAER requirements are now consistent with the NSPS and are outlined in State permits for units.

Electric Power Generation Is a Leading Source of Air Emissions for the Most Significant Problems that EPA Plans to Address under Clean Air Act

From examination of air emissions trend data and information on public health, environmental, and general welfare effects, EPA believes that the most pressing air pollution problems that it must address under the Clean Air Act in the next 15 years include ozone, fine particles, visibility, and mercury.³ The Agency is also very concerned about climate change. Power plants are a major source of each of the pollutants that contribute to each of these problems. Therefore, any program to address these pollutants is going to consider controls on power plant emissions.

EPA has found that because of their size, power plants are often the most cost-effective sources to regulate as well. Also, it's important to recognize that for some pollutants, such as NOx, the power industry has not experienced the same level of controls as other sources have in the past (e.g. automobiles have reduced their rate of NOx emissions by well over 90 percent in the last 15 years.)

After a long deliberative process of working with the States, power industry and other stakeholders, EPA is finalizing a rule to control the interstate transport of ozone in eastern states that will be out per the direction of the President by September 1998. This rule will lead to a large-scale reduction of NOx emissions from power plants. NOx and volatile organic compounds in the presence of sunlight combine to form ozone, which at elevated levels is generally associated with urban smog.

EPA is working to set up a regional cap-and-trade program in 22 States and DC for NOx emissions like it did for SO2 (to provide the most efficient way of gaining power industry compliance). However, in this case EPA is working with the States to set up the trading program through their SIPs. The ozone transport rule should keep many areas from violating the revised ozone NAAQS and avoid more costly local controls in various parts of the eastern US. (The revision of the ozone NAAQS occurred in 1997.)

There will be the need for additional local controls on various sources in a limited number of areas, which the States would require through their SIPs. States will consider further controls on power plants, because they are one of the most cost-effective sources

³ Ozone is linked to asthma, respiratory ailments, reduced lung functioning, and premature death as well as damage to crops and forest species. Fine particle emissions are linked to premature death, respiratory ailments, and visibility impairment. Visibility concerns arise from pollution impairing the ability of the public to enjoy seeing our national parks. Mercury is linked to nervous system disorders and neonatal effects, as well as harmful effects on wildlife. Close to 40 States have health advisories out to avoid fish consumption in areas where mercury is bioaccumulating in wildlife at unsafe levels.

to control. This set of controls could occur after 2003 and will vary by the seriousness of the ozone problem in each locale that is still out of attainment.

The Agency revised its particulate NAAQS to add a standard covering fine particles in 1997. A major source of fine particles is nitrates and sulfates formed from NO_x and SO_x emissions from power plants and other chemicals in the atmosphere. EPA believes that a regional control approach like the one that the Agency is using for ozone is worth considering to minimize compliance costs and has done limited work examining how a program would work that lowers the national SO₂ emissions cap under the Title IV program described above. Ultimately, however, the States will decide how to implement the fine particle NAAQS with help from EPA.

Controls on power plants for fine particles will not be set through the SIP process until after 2005 and actual compliance is likely to occur several years later. Before controls will be devised, EPA and the States have to install a monitoring network and from that network to determine areas that are not in attainment. The determinations will happen in various States between 2002 to 2005. As States and EPA determine nonattainment, States will have to develop SIPs, which the Agency will need to approve. This process will begin about 2005 and continue through 2008.

EPA is under a settlement agreement deadline to make a determination regarding whether regulation of mercury emissions from electric power plants under Section 112 is necessary and appropriate in November 1998. The Agency is currently considering the results of the utility and mercury study mentioned above as well as other information. Among the options being discussed is negotiating a further extension of the deadline for making the regulatory determination in order to allow the Agency and others additional time for research on control technologies.

EPA plans to finalize its visibility standards in early 1999. However, Congress recently directed EPA to have the States implement the requirements on the same schedule as the fine particle NAAQS. In this rule, States are to devise programs for protecting certain national parks from pollutants that reduce visibility. Power plant emissions are likely to be covered in programs by some States, since they are major sources of particle emissions that impair visibility. There is an obvious overlap in what will be required of States for lowering NO_x and SO₂ emissions under other federal programs.

There are other types of requirements that EPA will be considering in the future, which will affect power plants, such as changes in the permitting processes, or how BACT/LAER determinations will be made. However, these other changes are not as significant to power companies. They will not necessitate the same level of capital expenditures for compliance, or alter electric generation practices and fuel choices like the above four requirements may do in some cases. The power industry is concerned over how the above four rules will be implemented, because of their need to account for them as they plan future operations.

DRAFT

AIR QUALITY INTEGRATION DIALOG

1. Broad Objective: To examine ways of minimizing the potential for stranded investments and other problems (e.g., scheduling) when EPA undertakes new regulatory initiatives to implement the Clean Air Act and if the U.S. undertakes a carbon reduction program. The focus will be on major air regulatory actions (e.g., regional haze, particulate matter, 8-hour ozone, mercury) that are currently underway or could occur in the future). The aim of the discussion is to identify major implementation concerns, characterize them, provide options on how to mitigate concerns, and assess how effective these options could be.
2. Product: Joint presentation by EPA and industry representatives to government officials from EPA, the White House and other departments (e.g., DOE) on the potential for stranded investments and other problems; their environmental, administrative and economic implications; and ways to address the issues.
3. Industry Participants: Broad industry representation to ensure a wide range of views, including: primarily coal-fired investor-owned utilities (IOU's) in the Eastern U.S., IOU's with a broader mix of fossil fuels, IOU's with nuclear capacity, independent power producers, publicly-owned utilities, cooperatives, a member of the Clean Energy Group, and western utilities.
4. Administration Participants: Staff from the EPA Office of Air Quality Planning and Standards, Office of Atmospheric Programs, and the Office of Policy Analysis and Review. EPA's Office of the Administrator and the White House Climate Change Task Force will have an open invitation to participate. Although the Assistant Administrator, Air and Radiation and the Chairman of the Climate Change Task Force are not expected to attend all meetings, their participation in special meetings may be vital. EPA or industry may invite participation by representatives of other government agencies to serve as technical resources.
5. Two Ground Rules: First, there initially will be free exchange of ideas and analysis at the staff level in a series of meetings, with participants not bound to pre-existing positions, followed by identifying areas of agreement or disagreement if possible. Second, it is recognized that neither EPA nor industry staff have been granted negotiating or decision-making authority.
6. Time Frame: There will be a goal to develop the "product" within 6 months, starting at the beginning of 1999.
7. Topics to be Covered:
 - a. EPA's current plans on major Clean Air Act rules and other Administration activities.
 - b. Analyses of utility controls by industry and government sources (e.g., EEI, EPRI, EPA, DOE, EIA, CEA).
 - c. Options to minimize potential stranded investments and other major problems (e.g., schedule) related to a possible program to reduce carbon before 2010.
 - d. Examination of the implications of options in c.
8. Logistics: Industry will host meetings.
9. Public Communications: Representatives of industry and EPA will discuss communications with the public regarding these meetings.
10. Documentation: Decisions and action items will be documented cooperatively by industry and EPA participants.

Potential Integrated Approach to Emission Reductions From the Electric Power Industry

Objectives and Principles:

- Respond effectively to the problems from sulfur dioxide (SO₂), nitrogen oxide (NO_x), mercury, and carbon dioxide (carbon) by controlling emissions from the electric power industry. (Other sources of these pollutants will also face future controls.)
- Provide the electric power industry with regulatory certainty and stability for 10 to 15 years.
- Allow flexibility in emissions control programs to minimize costs and disruption of power industry activities – use market-based tools (e.g., cap-and-trade) and appropriate administrative actions (e.g. phasing of controls), wherever possible, consistent with the prevention of local problems.
- Pursue broad stakeholder support for approach to controls.

Approach:

- Replace the current process of addressing pollutants and environmental objectives one-after-the-other with one coordinated national approach. The full set of control requirements would be known early, but go into effect over time.
- Replace diverse program structures with a consistent and flexible cap-and-trade architecture wherever possible. Allow banking of emissions for SO₂, NO_x, and carbon emissions in a manner suitable to these pollutants.
- Revise NSR process, where appropriate, to complement this coordinated approach.
- Use international market mechanisms and carbon sequestration credits for carbon.
- Commit to making no changes to the coordinated approach that would require additional control actions over the next 10 to 15 years.

Proposal Outline:

- **Baseline requirements:** Existing requirements including NO_x SIP call.
- **Initiation:** Determine and announce key elements of the coordinated approach as soon as possible. Key elements cover aspects of the program necessary to allow future planning by industry.

- **Cap-and-trade programs:**
 - **SO₂:** Lower Title IV SO₂ allowance cap between 2005 and 2007. Maintain existing trading program structure.
 - **NO_x:** In 2005, begin phasing in a winter season emissions cap for all generation units using fossil fuels in States covered by the NO_x SIP call. Begin phase-in during 2005 separate winter and summer season controls for the rest of the country for the same type of units. Allow trading within region and season.
 - Build off the NO_x SIP call's requirements to avoid disruption of control efforts.
 - Consider future merger of the two seasonal programs by 2010.
 - **Carbon:** Initiate a cap-and-trade program for carbon reduction for years 2008-2012 that operates under a 5-year emissions budget. A binding program could be based on voluntary agreements, or new legislation.
- **Traditional Controls:** Establish MACT for mercury that goes into effect before 2008 (since mercury does not lend itself to a cap-and-trade approach).
- **Emissions Levels of Programs by 2010:** The programs will lower emissions to the following levels:
 - **SO₂:** ___% below Title IV emission levels. Due to the large number of banked emissions allowances that can be used in the future, the Title IV emissions cap would need to be set between 2005 to 2007 to a level that would be lower than the emissions objective set for 2010. The actual cap level depends on which year it is put in place.
 - **NO_x:** ___% below the levels of Title IV.
 - **Carbon:** ___% below 1990 emission levels from electric power generation.
 - Compliance options to include purchase of carbon allowances internationally and credit for investments in sink enhancement and early action.
 - Proposed cap level premised on proportional sectoral effort. Sectoral efforts could be differentiated.
 - Cap level could change based on resolution of pending carbon sink policy issues.
 - **Mercury:** Set performance-based standards that require coal-fired units to lower mercury emissions exiting from their boilers by ___% depending on the type of pollution control equipment and type of coal that they burn. These MACT standards are based on activated carbon injection technology, but would allow alternative technologies that meet the performance levels that are set.
- **Allocation of Allowances:** Consider the range of ways to allocate allowances for each trading program based on consideration of fairness, practicality, incentives for efficiency and cleaner power generation, and other factors. Consider an early action credit program for at least carbon emissions.

Note to Roger Ballantine
From David Doniger
May 27, 1999

I want to give you a bit more information on our analytical findings on electric generation. Attached are the summary of the "multi-pollutant analysis" EPA published in March, and also a set of slides summarizing its findings.

One insight is that present and future measures to address other pollutants result in little reduction in CO₂.

- Carbon dioxide emissions from power generation grow steadily under our current regulations for SO₂ and NO_x, including the NO_x reductions from the eastern states' SIP call. (p.6 of slides)
- Cutting mercury emission by 70% leads to no significant change in CO₂. (p.2 of fact sheet)
- Cutting SO₂ by another 50% beyond the acid rain requirements by 2010 would lead to only about a 2% reduction in CO₂ from the base case of growth. (p.2 of fact sheet)
- On the other hand, CO₂ reduction programs can yield substantial reductions in the other pollutants. (p.9 of slides)

A second insight is that uncertainty about potential future CO₂ requirements poses a significant compliance planning dilemma for power companies. See p.13 of the slides, showing how many scrubbers and combined cycle gas plants you would see with, and without, a CO₂ program.

Third, a lot of money can be saved if industry knows the future requirements for all pollutants in advance and can plan compliance strategies accordingly. See p.12 of the slides.

Please contact Sam Napolitano (564-9751) if you want further information on these results.

March, 1999

FACT SHEET

Analysis of Emissions Reduction Options for the Electric Power Industry Report

The *Analysis of Emissions Reduction Options for the Electric Power Industry* report presents the results of "multiple pollutant analyses" by the U.S. Environmental Protection Agency regarding the four most significant air pollutants from electric power generation: nitrogen oxides, sulfur dioxide, mercury, and carbon dioxide.

Pollution control strategies to reduce emissions of these pollutants are highly inter-related. Strategies to reduce emissions of any one pollutant from power generation can have effects of differing magnitude on emissions of the other pollutants. The cost and other impacts of control strategies for these pollutants are also highly interdependent.

Multiple pollutant analyses examine these inter-relationships and can provide valuable information to the electric power industry, the public, Federal agencies, and Congress about the relationships between policy choices to address the major pollutants from this industry. The current report continues a series of multiple pollutant analyses of electric power generation facilities that EPA has undertaken over the past three years. The report is intended specifically to help inform a determination that EPA must make under the Clean Air Act on whether to regulate mercury emissions from electric power plants.

The current report examines the effects of hypothetical options for reducing emissions of one or more pollutants from electric power generation by 2010. For each option, the report estimates changes that would occur for mercury, NO_x, SO₂, and carbon emissions. The report also presents information on the cost and other impacts of undertaking these pollution control options alone or in various combinations. The base case for each option consists of current air quality requirements, including the NO_x reductions required by 2003 in 22 States and the District of Columbia in order to decrease the transport of ozone in the eastern United States.

In all but one case, the hypothetical options are structured as "cap-and-trade" programs, based on the model used in the Clean Air Act's acid rain program for sulfur dioxide. "Cap-and-trade" programs minimize costs by establishing a limit on total national emissions and allowing individual plants to choose their least costly compliance options, including emissions trading. For mercury, both cap-and-trade and more traditional plant-by-plant technology requirements are examined.

The options presented in this report are hypothetical approaches to emission controls on the electric power industry for each pollutant and do not represent the EPA or Administration position on how any of these pollutants should be reduced in the future. EPA has made no

determinations whether or how much additional SO₂ control could be needed to address fine particulate or visibility problems, or whether and to what extent there should be future reductions of mercury or carbon dioxide emissions. Specifically with regard to carbon dioxide, the Administration has committed not to implement the Kyoto Protocol without the advice and consent of the Senate.

The report includes the following results and conclusions:

Mercury

- Results suggest that mercury emissions in 2010 can be reduced by more than 70% through plant-by-plant technology requirements at an estimated cost of \$1.9 billion per year (all costs are expressed in 1990 dollars). The same total mercury reduction could be achieved for an estimated \$1.7 billion through a "cap-and-trade" program.
- These cost estimates are more than 60% less than the \$5 billion cost projected in EPA's 1997 *Mercury Study: Report to Congress*. The cost reductions reflect preliminary updated information on mercury control technologies developed by the EPA Office of Research and Development.
- A mercury reduction strategy by itself would not significantly reduce emissions of the other three pollutants.

Sulfur dioxide

- The report examines a range of potential SO₂ reductions going 40-55% beyond the requirements of the acid rain program by 2010 in order to meet federal health standards for fine particles and to cut visibility impairment.
- For example, a 50% additional reduction in SO₂ could be achieved in 2010 at an estimated cost of \$2.5 billion per year.
- A 50% additional SO₂ reduction by itself is estimated to reduce mercury emissions by 13%, but would have smaller effects on NO_x and CO₂ (reductions of 3% and 2%, respectively).

Carbon dioxide

- The report examined two hypothetical strategies to reduce CO₂ emissions from electric power generation.
 - Both strategies assume use of both a domestic cap-and-trade program and international emissions trading to meet a target derived from the Kyoto Protocol — a 3% reduction from the electric power sector's 1990 emission levels (this

reflects credit for enhanced carbon sinks).

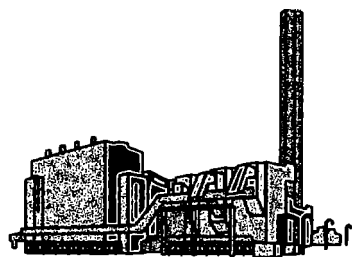
- Both strategies assume that additional carbon allowances can be purchased on the international market at \$23 per ton (\$19.50 in 1990 dollars), as estimated by the White House Council of Economic Advisors in 1998.
- The first strategy assumes no changes to electricity demand. The second strategy assumes implementation of policies to reduce electricity demand at a net savings to electricity consumers, yielding correspondingly lower levels of domestic emissions and international allowance purchases.
- The first carbon strategy by itself is estimated to reduce domestic carbon emissions from the electric sector in 2010 to about 9% below the emission level projected in this report in the absence of a carbon strategy, with the remaining reductions coming from international emissions trading.
 - The estimated cost would be about \$3 billion per year (\$1 billion for domestic emission reductions and \$2 billion for purchase of carbon allowances on the international trading market).
 - Mercury and NO_x emissions in 2010 would decline by 15%. SO₂ emissions are not significantly changed (because they are already subject to a cap under the current acid rain program).
- The second carbon strategy — coupling a carbon target with policies to promote end-use energy efficiency — is estimated to reduce domestic carbon emissions from electric plants in 2010 by about 17% below the level otherwise projected in this report. Compared with the other case, about half as many allowances would be purchased through international emissions trading.
 - The estimated direct cost to power producers would be about \$3 billion per year (\$2 billion for domestic emission reductions and \$1 billion for purchase of carbon allowances on the international trading market) — about the same total cost as the first carbon strategy, but reflecting more domestic action and less reliance on international trading.
 - These costs to power producers would be *almost entirely offset* by net savings to consumers of about \$2.9 billion from reduced energy expenses, if end-use energy efficiency policies are successfully implemented.
 - Mercury and NO_x emissions in 2010 would each decline by 23%. As in the first carbon strategy, SO₂ emissions are not significantly changed.

Integrated Strategies

- The analysis shows that having advance knowledge of potential requirements for all four pollutants could lead firms to follow significantly different compliance strategies at individual plants, compared with compliance choices made when the pollutants are addressed one-by-one.
- For example, modeling results suggest that firms complying with a potential SO₂ reduction requirement would choose to install substantially fewer sulfur scrubbers if they had advance knowledge that a specific carbon reduction will also be required.
- Integration of control strategies for multiple pollutants can produce substantial cost reductions. For example, a 50% SO₂ reduction undertaken together with a 9% domestic carbon reduction (the first carbon strategy described above) is estimated to cost \$450 million less per year than the total cost of the two strategies examined separately.
- This integrated strategy would have more modest impacts on fuel patterns than many other analysts have predicted.

The report is available at the following web site: <http://www.epa.gov/capi>. Data input files and important sections of the modeling runs will also be available at this web site a week from today. The Agency invites review and comment on the analyses provided in this report. Please send comments to the Electric Power Air Emissions Study Docket, Office of Air and Radiation, U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460. For further information on the report, contact Sam Napolitano on (202) 564-9751.

Analysis of Emissions Reduction Options for the Electric Power Industry



**Office of Air and Radiation
U.S. Environmental Protection Agency
April 1999**

Reasons for the Study

- Continuation of Multiple Pollutant Analysis for the Electric Power Industry
- Support Regulatory Determination for Mercury Emissions from Coal-fired Power Plants
- Settlement with Natural Resources Defense Council

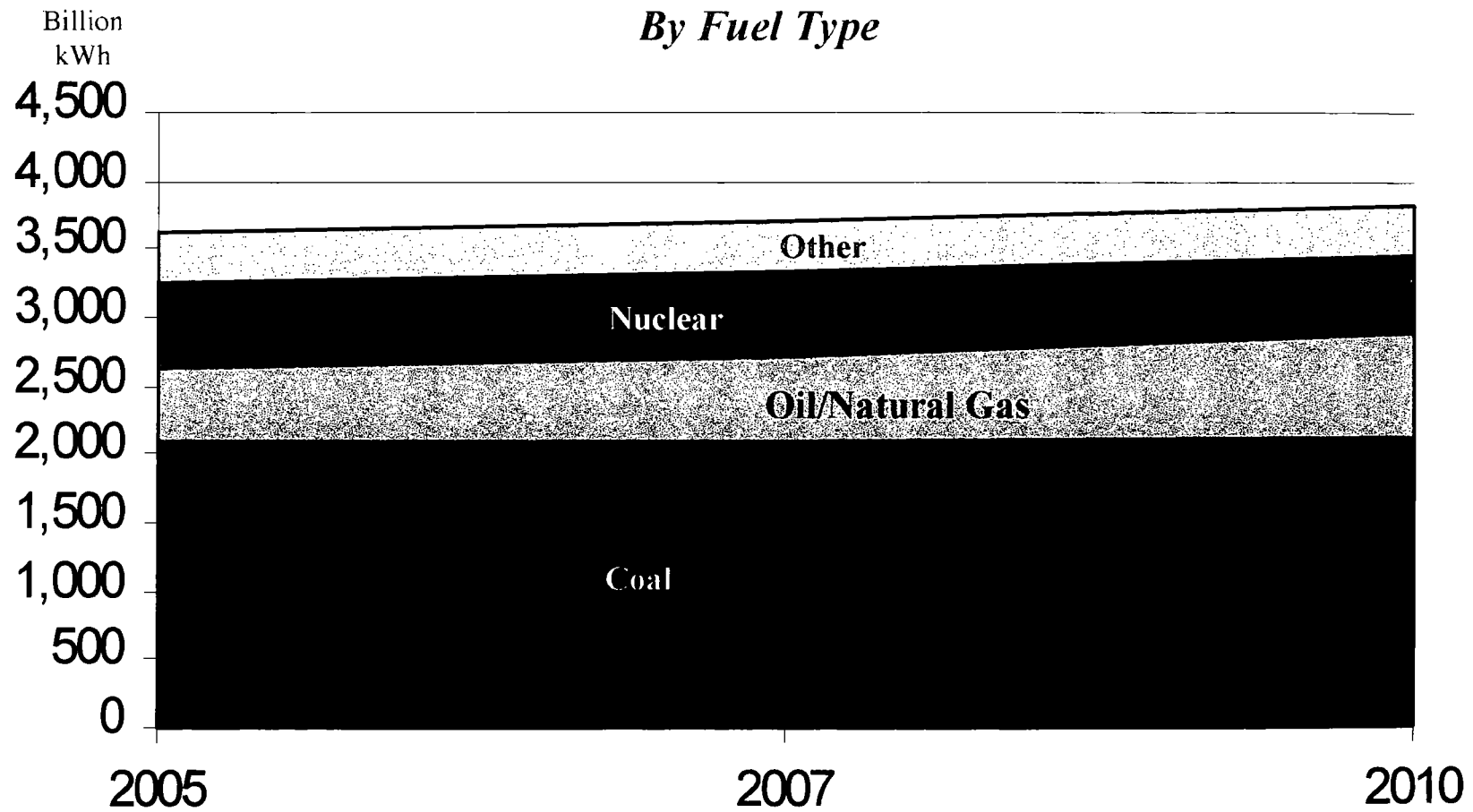
Study Examines Hypothetical Options

- **Base Case:** CAAA Title IV, NSPS, BACT/RACT, State Controls, and the NO_x SIP Call. Focus on 2005 to 2010.
- **Hypothetical Options** Designed to Lower Air Emissions of:
 - SO₂ (for Fine Particles)
 - Carbon
 - Mercury
 - SO₂ and Carbon
 - SO₂, Carbon and Mercury
- Consider Controls through Cap-and-Trade -- Also Maximum Achievable Control Technology (MACT) for Mercury

General Limitations

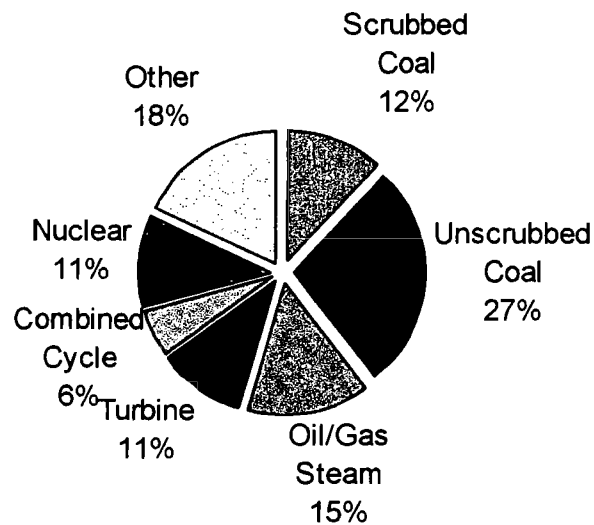
- **The Study Examines Hypothetical Options. The Options Do Not Represent EPA or Administration Positions.**
- **Mercury Pollution Control Costs and Removal Rates Are Preliminary Estimates that Use Best Available Information.**
- Deregulation at the Wholesale Power Level Occurs throughout the U.S. by 2005.
- Implementation of Options Occurs Smoothly.
- The Costs of the Administrative Elements of the Options Are Not Included.
- Data Limitations Exist on Pollution Controls on Boilers.

Base Case Electric Generation Forecast

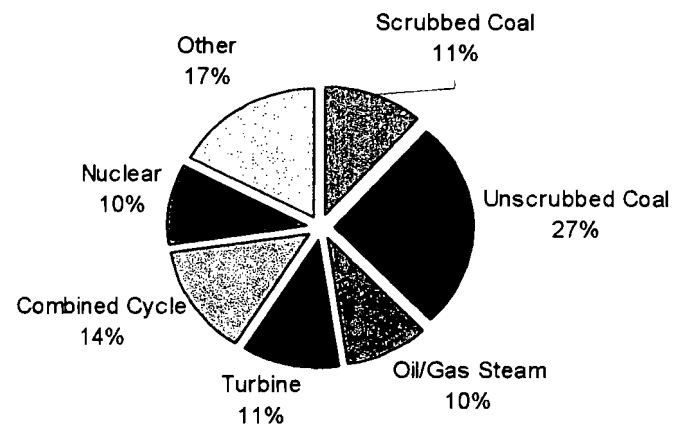


Base Case Generation Capacity Forecast

2005 Generation Capacity: 770 GW

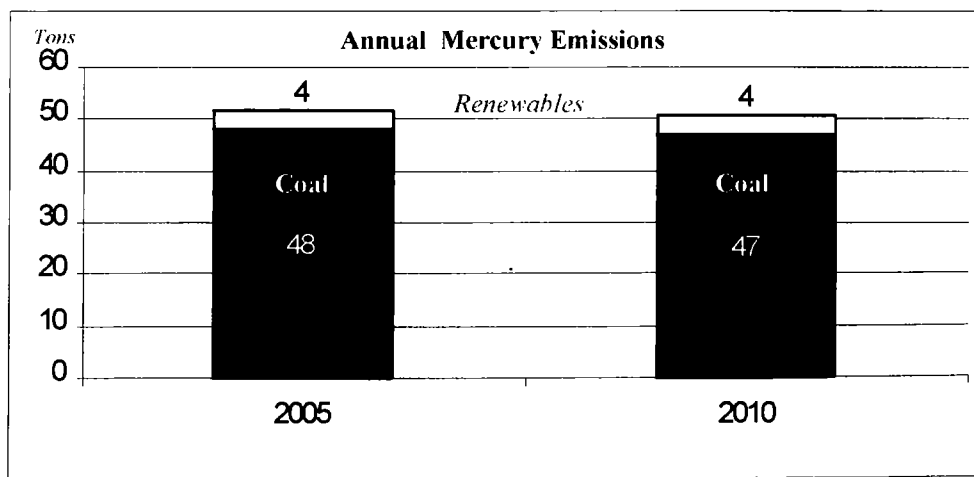
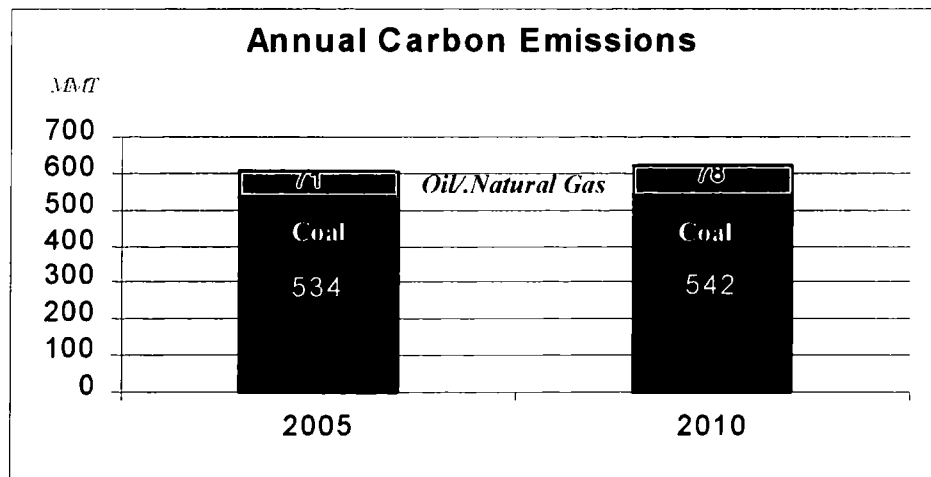
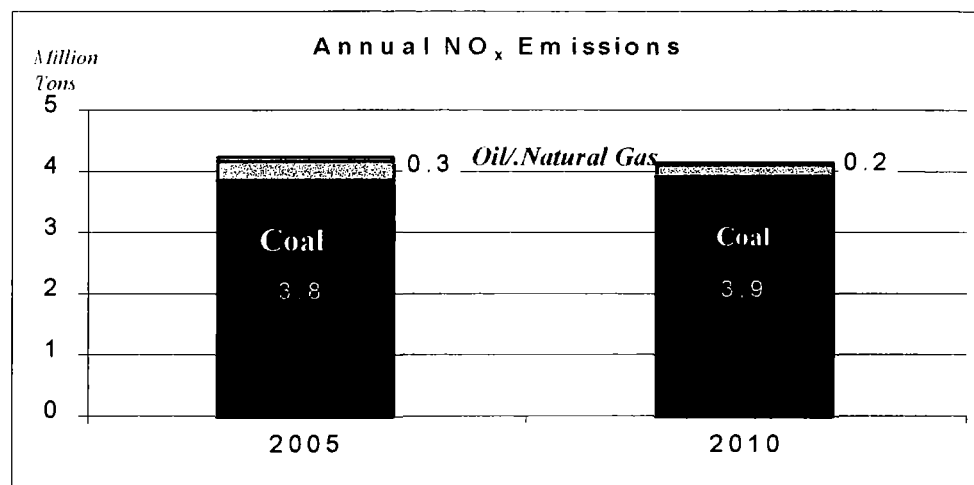
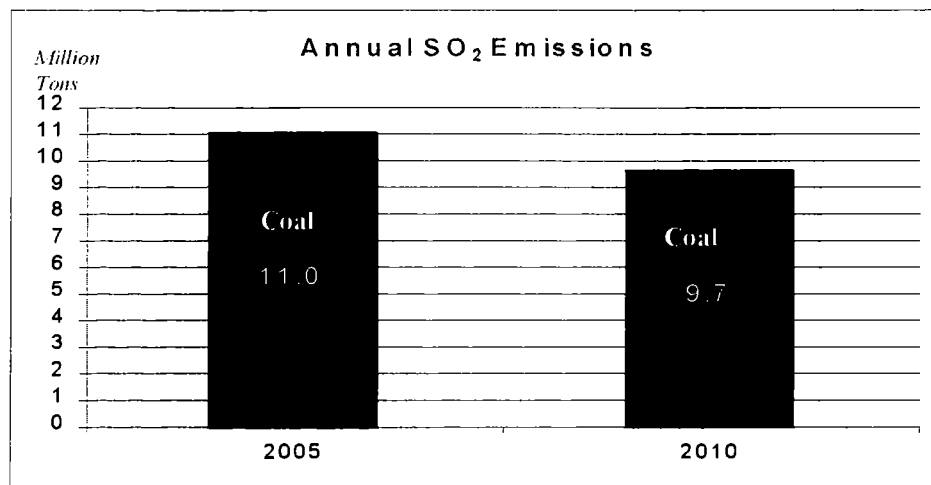


2010 Generation Capacity: 805 GW



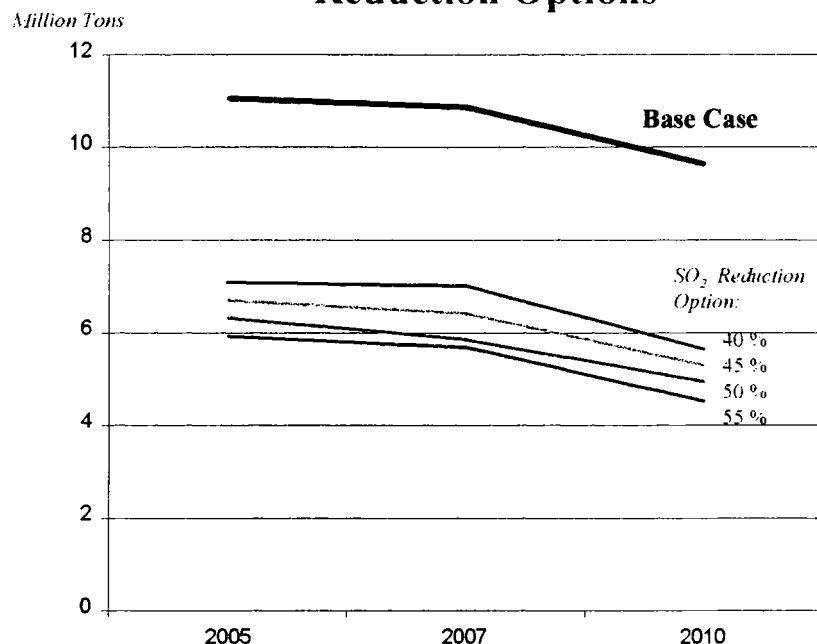
- Coal-fired Generation Has 305 GW and 304 GW of Capacity in 2005 and 2010, Respectively.
- Oil/Natural Gas-fired Generation Has 240 GW and 282 GW of Capacity in 2005 and 2010, Respectively.

Emissions by Fuel Source for Major Air Pollutants from the Electric Power Industry in 2005 and 2010

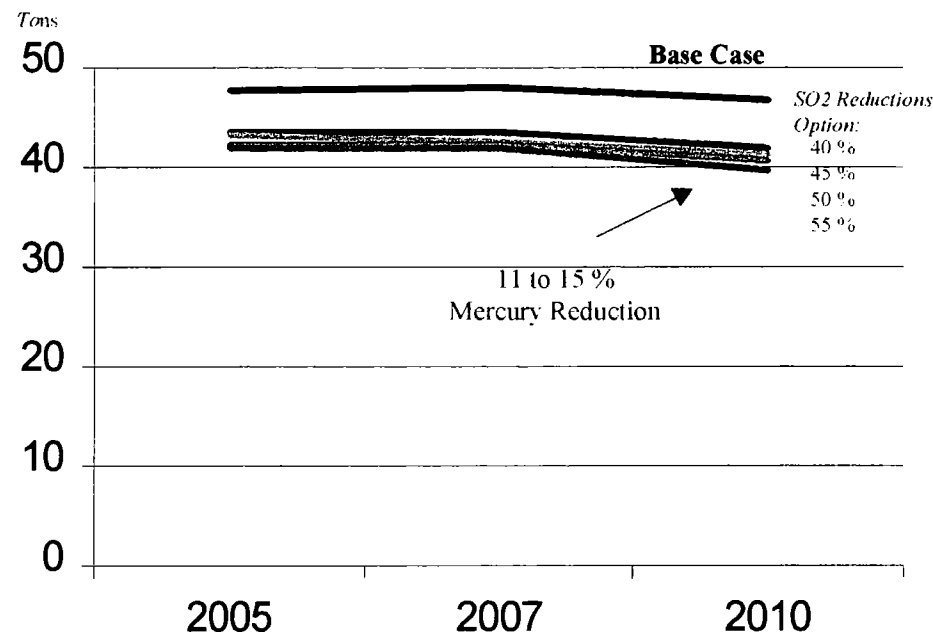


Further SO₂ Reductions Lower Mercury Emissions

SO₂ Emissions of the Base Case and SO₂ Reduction Options



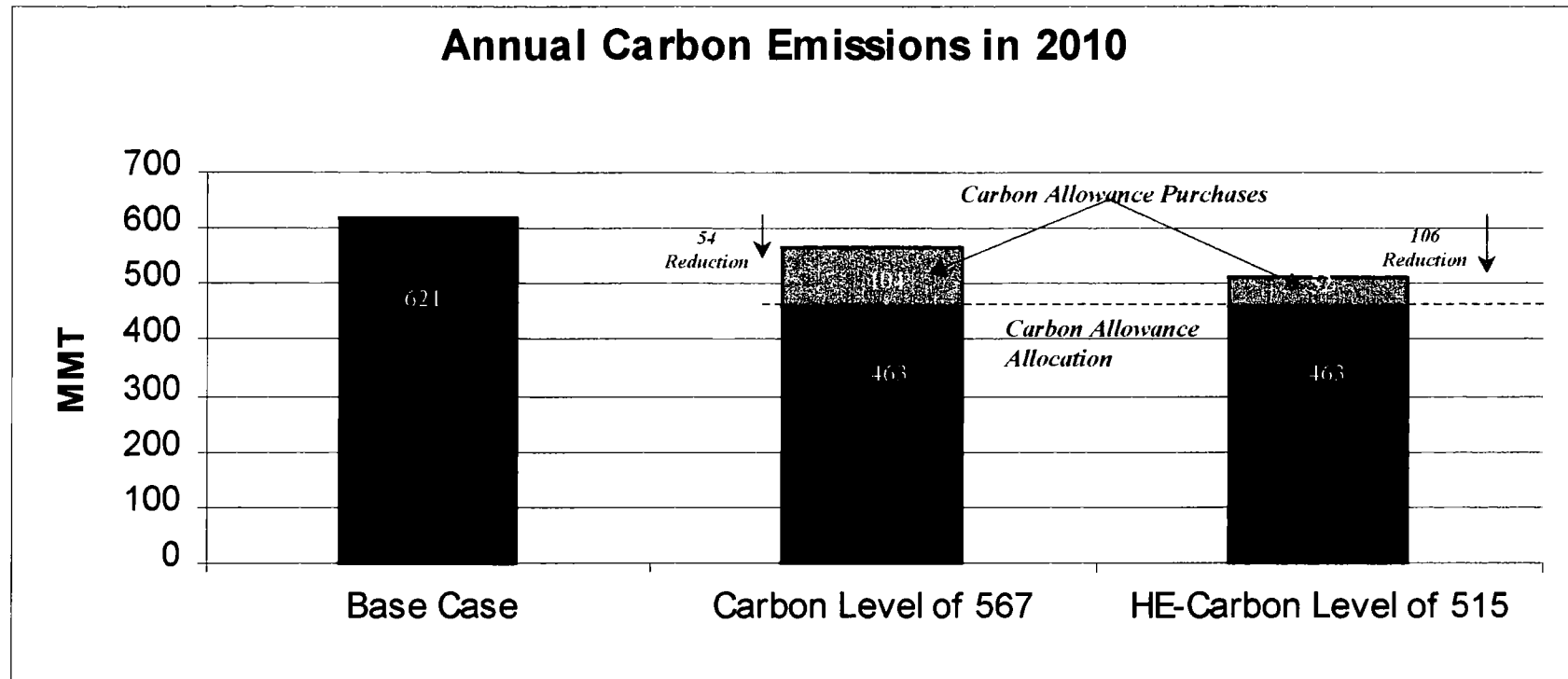
Mercury Emissions from Coal-fired Units in the Base Case and SO₂ Reduction Options



- Mercury Reductions Occur, because Scrubbers Are Installed and More Power Is Supplied by Natural Gas.
- Some Carbon and NO_x Emissions Reductions Occur.
- In 2010, the Annual Costs for the SO₂ Reduction Options Range from \$1.9 to \$2.8 Billion.
- Total Coal Demand Drops and Important Supply Shifts Occur.

Note: All Costs Are in 1990\$. A Recent MIT Paper by Ellerman et al. "The Costs of Reducing Utility SO₂ Emissions -- Not as Low as You Might Think," Indicates that in 1989 EPA and the Edison Electric Institute (the "Industry Estimate") Had Midpoint Estimates for the Title IV SO₂ Allowance Trading Program of \$4.2 and \$4.9 Billion, Respectively. EPA Estimates that in 2010 an Option for 50% SO₂ Reduction Beyond Title IV Costs \$2.5 Billion and that the Title IV SO₂ Allowance Trading Program Will Cost \$1.6 Billion. This Leads to Total Annual Costs of Both SO₂ Reduction Actions of \$4.1 Billion in 2010. More Recent Resources for the Future and Electric Power Research Institute Cost Estimates of the Title IV Program Suggest that EPA's Estimate of the Program Costs May Be Too High.

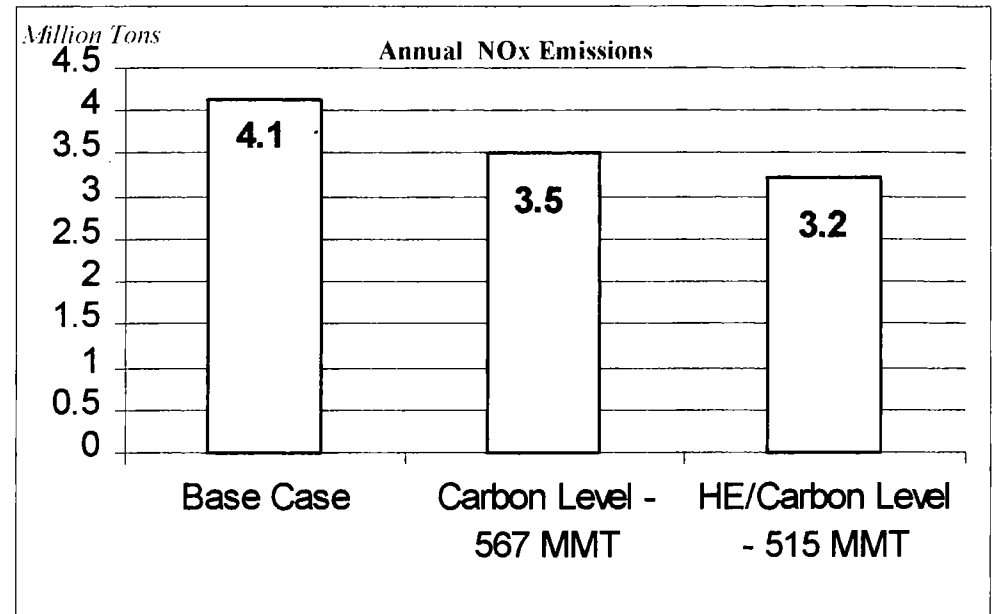
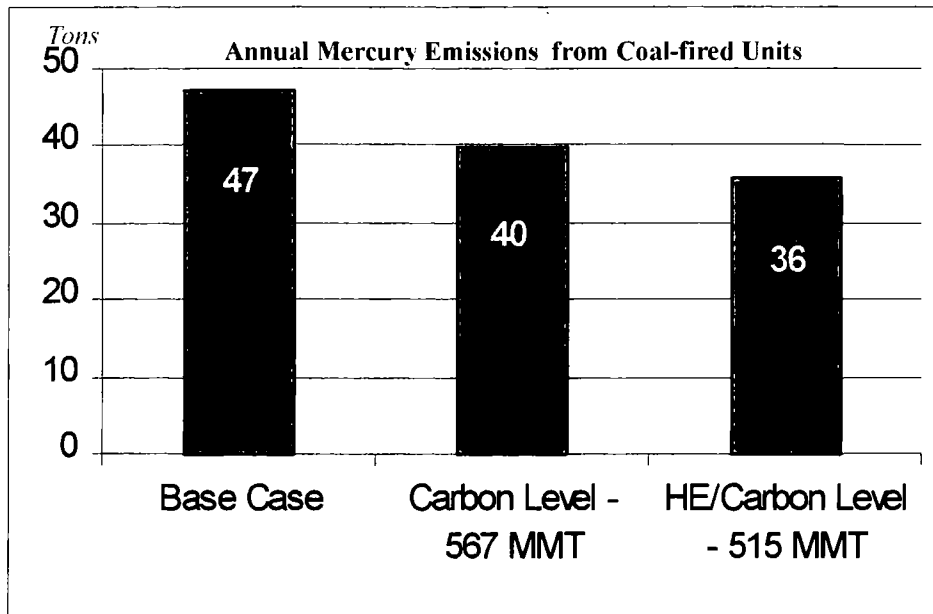
The Study Examined Hypothetical Carbon Reduction Options that Rely on International Trading. They Are in the Range under Discussion.



- In 2010:
 - The *Carbon Level of 567 MMT in 2008 Option* Has an Annual Direct System Cost of \$1.0 Billion, Plus the Power Industry Will Purchase Allowances that Annually Cost \$2.0 Billion.
 - The *High Efficiency / Carbon Level of 515 MMT in 2008 Option* Has an Annual Direct System Cost of \$2.0 Billion, Plus the Power Industry Will Purchase Allowances that Annually Cost \$1.0 Billion. Power Users Are Annually Investing \$5.0 Billion and Saving \$7.9 Billion. There Is a Net Cost of \$.1 Billion.

Note: All Costs Are in 1990\$. Carbon Allowances Are Valued at CEA Value in 1996\$ of \$23 per Ton
In the HE-Carbon Level of 515 MMT Case, Demand Reduction Lowers Emissions to 590 MMT Annually Before Generation System Changes

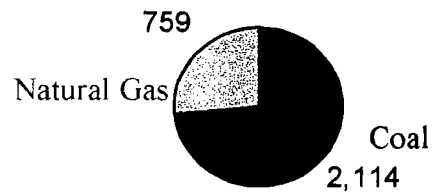
The Hypothetical Carbon Reduction Options Lower Mercury and NO_x Emissions Significantly in 2010



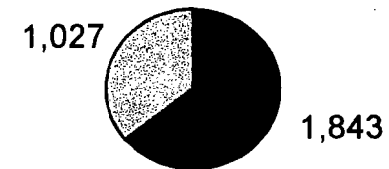
- Carbon Reduction Options Lower:
 - Mercury Emissions from Coal-fired Units: 15% to 23%
 - Annual NO_x Emissions from All Units: 15% to 23%
- There Is Not Much Change in SO₂ Due to the Emissions Cap.

How the Electric Power Industry Lowers Carbon Emissions to 567 MMT in 2010

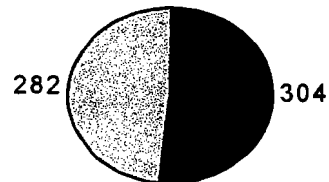
Fossil Electric Generation in 2010 in the Base Case (Billion kWh)



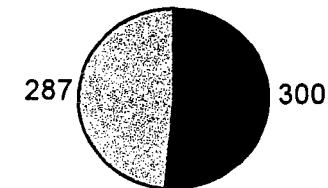
Fossil Electric Generation in 2010 for 567 MMT Carbon Level (Billion kWh)



Fossil Generation Capacity in 2010 in the Base Case (GW)



Fossil Generation Capacity in 2010 for 567 MMT Carbon Level (GW)



Combined SO₂ and Carbon Reduction Options Lead to Further Air Emission Reductions

- Study Has Two SO₂ and Carbon Reduction Options:
 - 50% Reduction in SO₂/Carbon Level of 567 MMT (*Combined Option 1*)
 - 50% Reduction in SO₂/HE - Carbon Level of 515 MMT (*Combined Option 2*)
- In 2010, the SO₂ and Carbon Reduction Options Lower:
 - Annual SO₂: 52% to 53%
 - Annual Carbon: 9% to 17%
 - Annual NO_x: 15% to 24%
 - Annual Mercury from Coal-Fired Units: 26% to 34%
- In 2010, the Annual Costs Are:
 - *Combined Option 1*: \$3.0 Billion System Operation Costs Plus Allowance Costs of \$2.0 Billion. Total: \$5.0 Billion
 - *Combined Option 2*: \$3.6 Billion System Operation, \$5.0 Investment in Energy Reduction, \$7.9 Savings from Energy Reduction, and \$1.0 Billion for Allowances. Net Costs: \$1.8 Billion

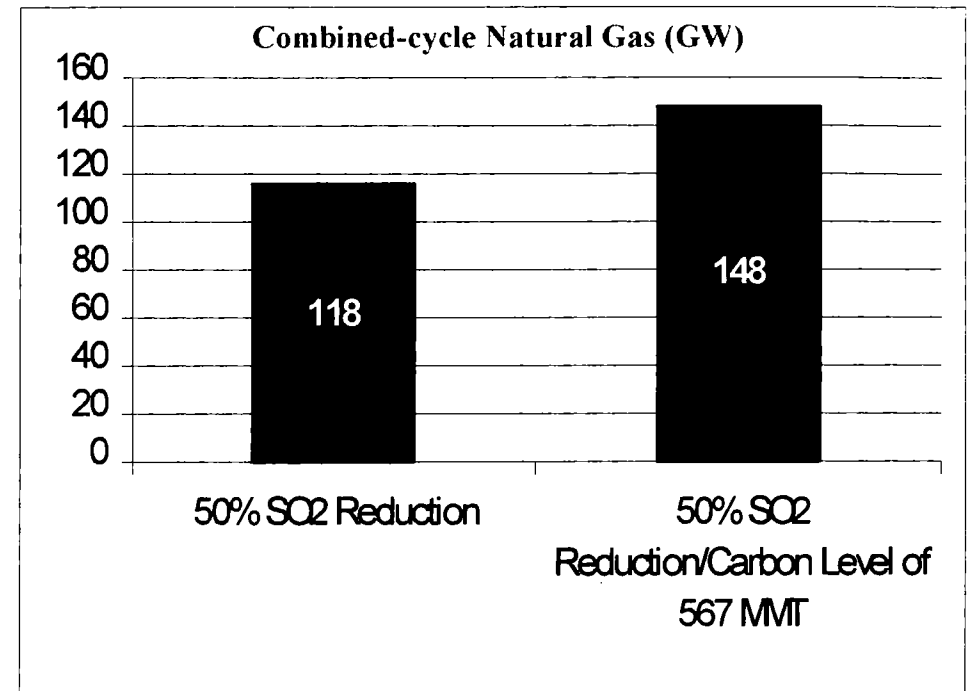
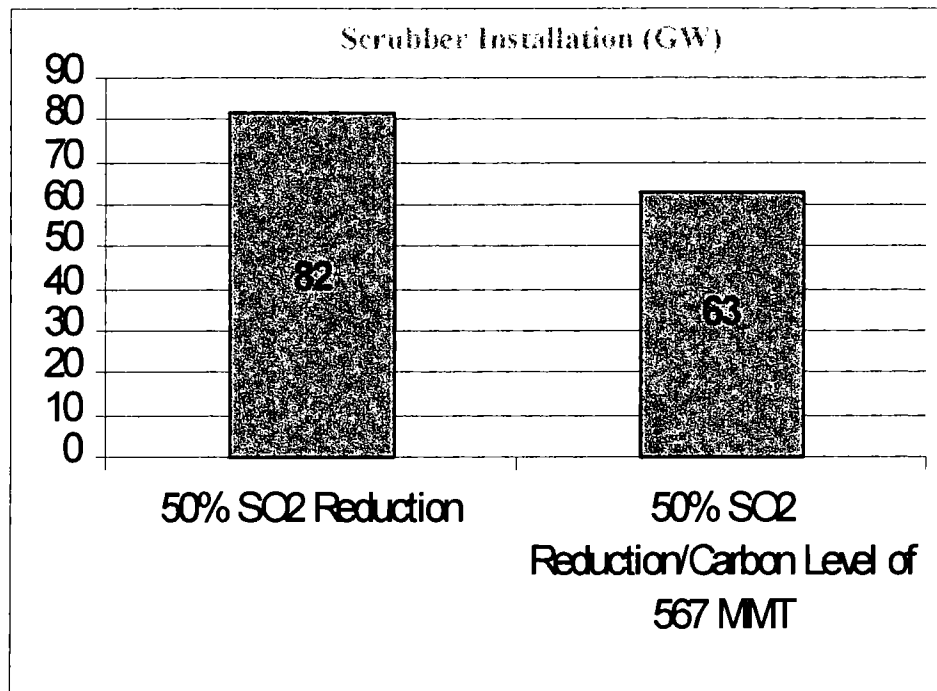
Note: All Costs Are in 1990\$. Carbon Allowances Are Valued at CEA Value in 1996\$ of \$23 per Ton.

Two Other Important Insights Emerge from Examining the Combined SO₂ and Carbon Options

- The Combined SO₂ and Carbon Options Have Lower Costs than Individual Option Analyses Suggest. In 2010:
 - The 50 Percent SO₂ Reduction Option (\$2.5 Billion Cost) and the Carbon Level of 567 MMT in 2008 (\$3.0 Billion Cost) Appear to Have a Total Cost of \$5.5 Billion. However, in the Combined Option Analysis, the Annual Cost Was \$5.0 Billion -- \$500 Million Less.
 - The 50 Percent SO₂ Reduction Option (\$2.5 Billion Cost) and the High Efficiency/Carbon Level of 515 MMT in 2008 Option with (\$.1 Billion Cost) Appear to Have a Total Cost of \$2.6 Billion. However, in the Combined Option Analysis the Cost Was \$1.8 Billion -- \$800 Million Less.
 - The Electric Power Industry Will Add Different Controls, If It Sees Only Part of Its Future in the Next 10 Years, Rather Than All of It (*See Next Page Example.*)

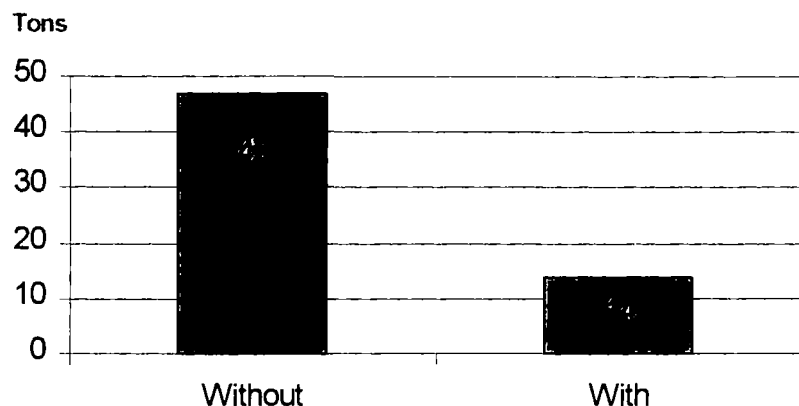
Note: All Costs Are in 1990\$. Carbon Allowances Are Valued at CEA Value in 1996\$ of \$23 per Ton.

Looking at the 50% SO₂ Reduction Option and the 50% SO₂ Reduction/Carbon Level of 567 MMT in 2008 Option

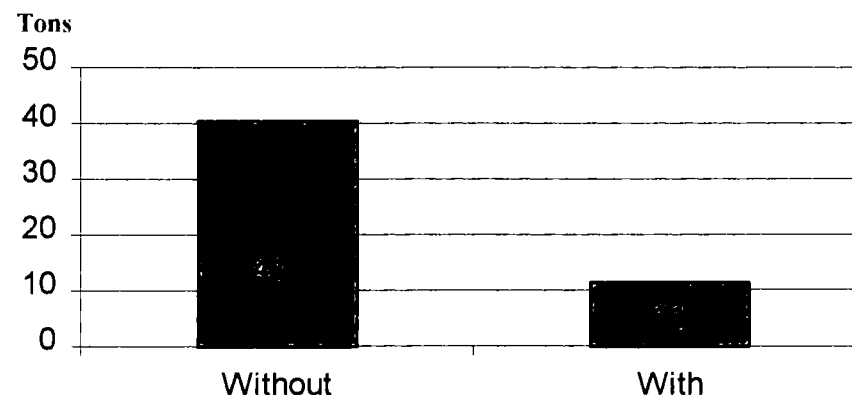


Mercury Emission Changes under Different “Baselines” for a MACT for Coal-fired Generation Units

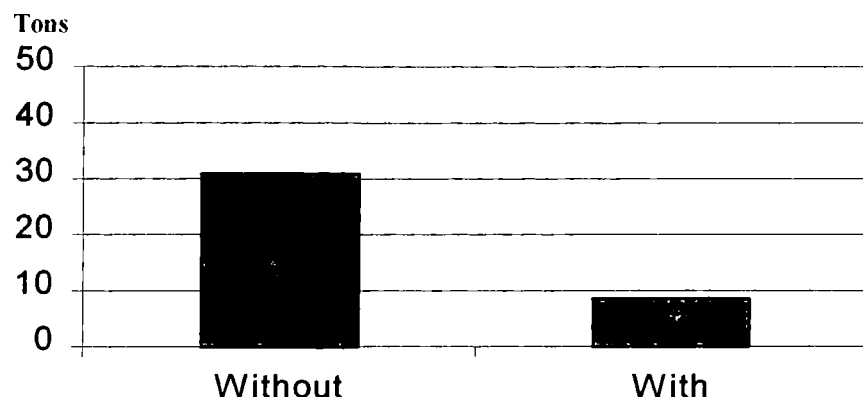
Mercury Emissions in 2010 in the Base Case without and with MACT



Mercury Emissions in 2010 with 50% SOx Reduction Baseline without and with MACT

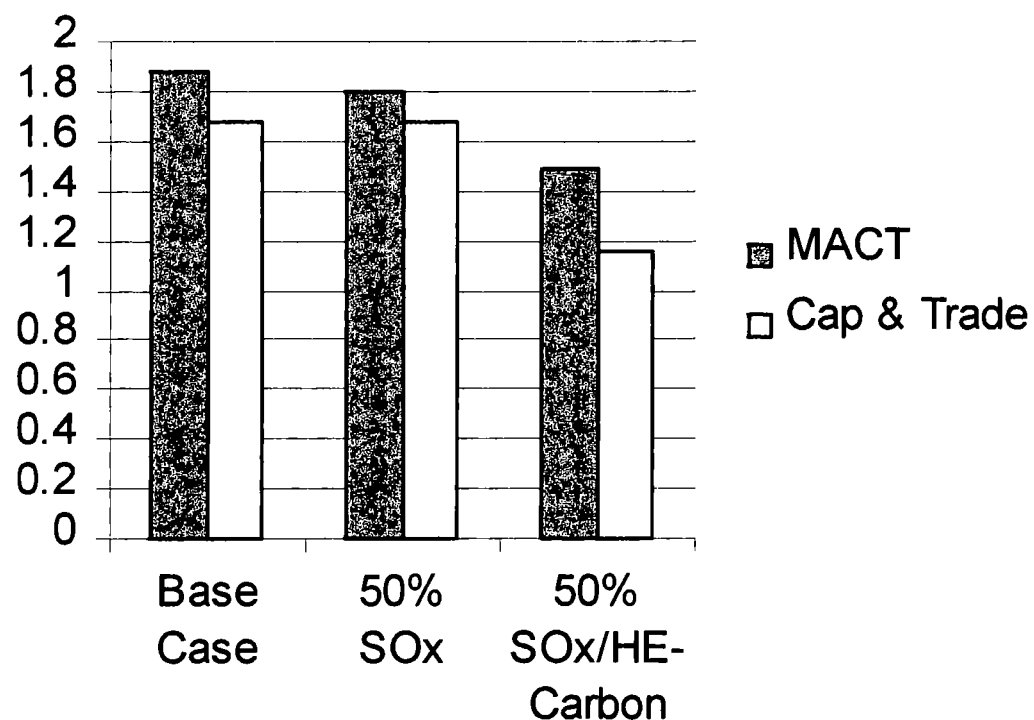


Mercury Emissions in 2010 with 50% SOx Reduction /HE- Carbon Emission Level of 515 MMT Baseline without and with MACT



- In All “Baselines” in 2010, There Is More than a 70 Percent Reduction in Mercury Emissions from Coal-fired Units -- 22 to 33 Tons Annually.

Preliminary Estimates of the
**Costs of Mercury MACT and Cap-and-Trade for Coal-fired
Power Plants under Three Baselines in 2010**
(Billions of 1990\$)

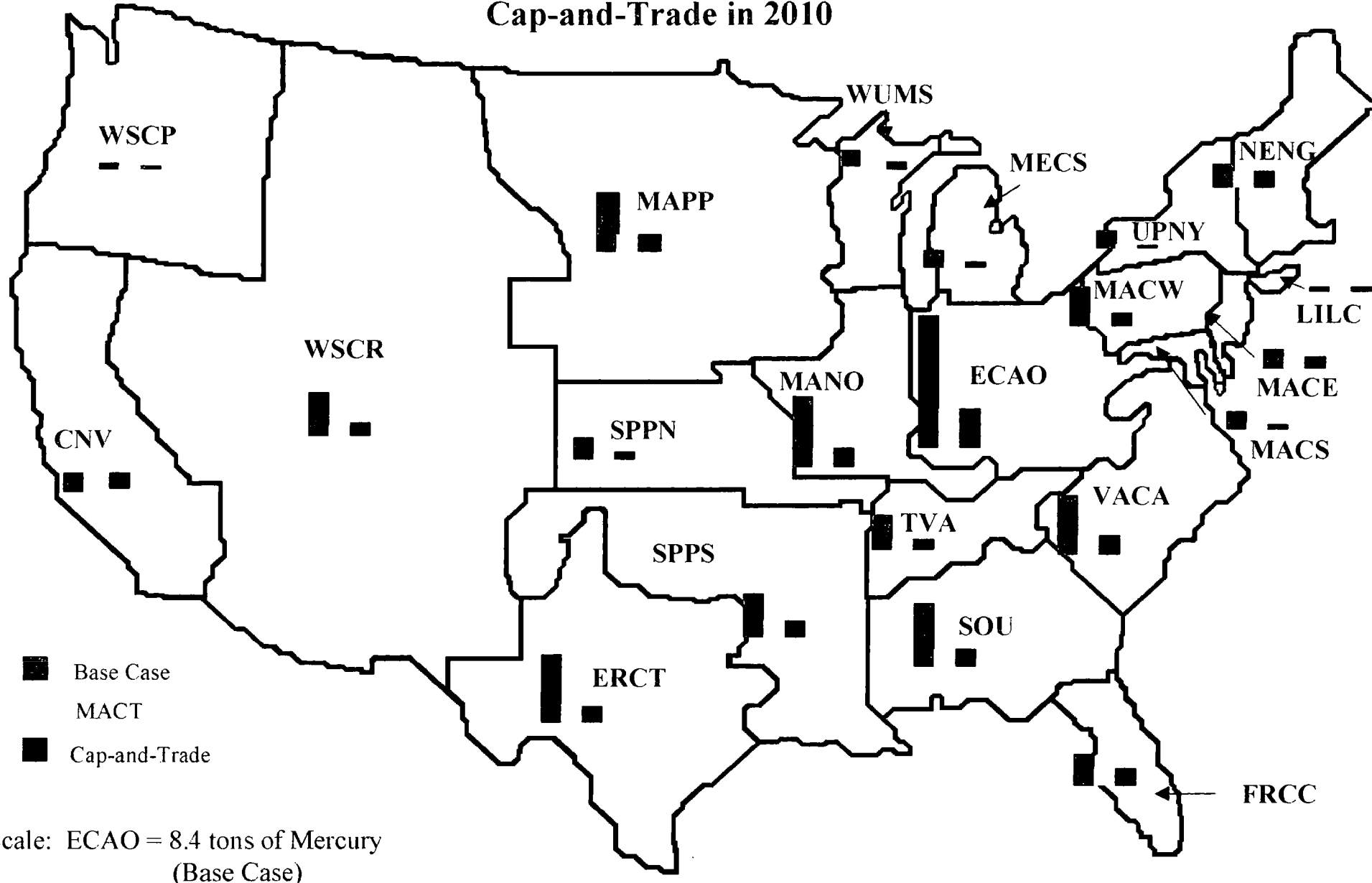


- The Annual Cost of the NO_x SIP Call Is \$1.4 Billion.
- In the *Mercury Study Report To Congress*, EPA Estimated that a “90 Percent” Reduction (37 tons) Has an Annual Cost of \$5 Billion.

Two Other Important Insights about Air Emissions Emerge from the Preliminary Mercury Analysis

- Mercury Controls Led to Limited Changes in Other Pollutants.
- When Mercury Cap-and-Trade Alternatives Were Analyzed, They Show Similar Regional Reductions to the Mercury MACT. However, More Research Is Warranted, Particularly with Regard to Local Impacts.

Mercury Emissions in the Base Case and Hypothetical Mercury MACT and Cap-and-Trade in 2010



Carrying the Study's Preliminary Cost Analysis a Step Further Provides Other Important Insights

- The Combined Option of a *Mercury MACT with Further SO₂ Reduction and Carbon Reduction that Is Complemented by a Significant Electricity Demand Reduction (High Efficiency/Carbon Level of 515 MMT)* Annually Costs \$3.2 Billion in 2010.
- The Combined Option of a *Mercury Cap-and-Trade with Further SO₂ Reduction and Carbon Reduction that Is Complemented by a Significant Electricity Demand Reduction* Annually Costs \$2.9 Billion in 2010.
- To Place These Costs in Perspective...
 - In 2010, the Energy Information Administration Forecasts A Restructured Power Industry with Electricity Sales of \$194 Billion and GDP Will Be \$9.3 Trillion.
 - EPA Estimates Annual SO₂ Reduction Benefits Alone of \$12 to \$61 Billion in Just the Eastern U.S. from a *Clean Air Power Initiative* Option that Lowered Power Industry SO₂ Emissions 50% Below Title IV Levels
 - In 1996, National Health Care Expenditures Were \$879 Billion.
 - American's Are Expected to Spend \$3.3 Billion in 1999 on Home Video Games.

Note: All Dollar Estimates Are in 1990\$. Perspective Sources: EIA's *Annual Energy Outlook 1999* (Electricity Sales and GDP), Census Bureau's *Statistical Abstracts of the United States 1998* (Health Care and Video Games), and Abt Associates Memo to EPA. Dated November 1996 (Benefits of SO₂ Reduction). EPA Benefits Analysis Covered 204 Million People Living in the East of a Resident US Population Predicted to Be 298 Million in 2010.

Findings

- Further SO₂ and Carbon Reductions by the Electric Power Industry Should Lower Mercury Emissions Significantly. Carbon Reduction Options Can Also Lower Summer and Annual NO_x Emissions Significantly.
- Preliminary Analysis Suggests that Mercury Reductions at Coal-fired Generation Units May Not Lower NO_x, SO₂, or Carbon Emissions Significantly.
- Preliminary Analysis Suggests Considering Both MACT and Cap-and-Trade Options for Lowering Mercury Emissions from Coal-fired Units.
- Options for Further SO₂ Reduction Annually Cost \$1.9 to \$2.8 Billion in 2010.
- In 2010, Carbon Reduction Options Relying on International Trading Can Have Direct Net Costs of \$ 3 Billion, or \$.1 Billion, If Linked to Reductions in Electricity Use.
- Preliminary Analysis of Mercury Control Options Suggests that Controls on Coal-fired Units May Annually Cost under \$2 Billion in 2010.
- Analysis of Combined Options Shows that the Total Costs of a Set of Actions Is Less than a “Piecemeal” Approach.
- Study Shows the Value of Knowing What Future Requirements Will Be Over Time. Nothing in the Report Supports a Need to Delay CAAA Actions.

Note: All Costs Are in 1990\$. Carbon Allowances Are Valued at CEA Value in 1996\$ of \$23 per Ton.



**Northeast
Utilities System**

Northeast Utilities Service Company
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Fax (202) 508-5304

Ruth Ravitz Smith
Director - Federal Governmental Affairs

June 1, 1999

Mr. Todd Stern
Assistant to the President
The White House
Washington, D.C. 20500

Dear Todd:

It is hard to believe that a year has gone by since I joined Northeast Utilities. What a year it has been! With the successful recovery of the nuclear units at Millstone Station and the implementation of the restructuring laws in Connecticut and Massachusetts, it seems that a day doesn't go by without some good news from our region.

The environment in New England continues to be a priority for Northeast Utilities. We undertook many environmental projects last year and I am pleased to share with you our 1998 Environmental, Safety and Ethics Performance Report.

One of the exciting things we did recently was to embrace the principles of the Coalition for Environmentally Responsible Economies. As you may know, the CERES principles are the first independent corporate code of environmental conduct and reporting. NU joins respected companies from around the country in supporting the principles.

The report also includes descriptions of some of the specific programs NU supports such as the solar-powered video camera mounted in an eagle's nest on an island at NU's Northfield Mountain hydroelectric facility, and the sheep grazing project in New Hampshire.

You may also find the statistics included in the report of interest as well. If you had any doubt that nuclear power is "clean power," just look at the increase in our CO₂ and SO₂ emissions due to the shutdown of the nuclear units in the region in recent years. With Millstone Units 2 and 3 back on line, these statistics should drop significantly for the second half of this year.

I hope that you enjoy reading this report. If you have questions after reviewing the material, please be sure to contact me by phone or via email at: smithrx@nu.com.

Sincerely,

Ruth R. Smith

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Dear Stakeholder,

Last year I told you that our company faced environmental problems and that our past performance as it affected the environment was not acceptable to me or to anyone in management at Northeast Utilities.

I'm happy to report that this year we have a better story to tell. Not all our problems are behind us, but we have made important progress...

Center for Clean Air Policy

Ned

Eric Gauder

Tony

(Former WISC Gov.)

- started by bipartisan group of Gov's - focused on state level / b/c of Reagan.
- Title IV best work by part of CAA
- Did VI project in Czech
- ~~W~~EPSCO did project. (Abdu is EEO)
- WHI verified project
- David Hawkins on Bd.
- ~~ambush~~
- Org. funded by green utilities

CHAPTER 1. INTRODUCTION

This report presents the approach and results of multiple pollutant analyses that the U.S. Environmental Protection Agency has conducted on the interrelationships between hypothetical pollution control options to reduce emissions of the most significant air pollutants from electric power generation. The analyses presented here continue a series of multiple pollutant analyses that EPA has undertaken over the past three years to look at the relationship among the major pollutants from the electric power industry. Multiple pollutant analyses such as this provide valuable information to the electric power industry, the public, and EPA about the relationships between policy choices to address the major pollutants from this industry.

The analyses presented in this report will help inform a determination that the EPA Administrator must make under Section 112(n)(1)(A) of the Clean Air Act Amendments of 1990 (CAAA) regarding the regulation of mercury emissions from electric power plants.¹

The pollution control options that were examined include lowering power plant sulfur dioxide (SO₂) emissions beyond the requirements of the Clean Air Act's Acid Rain program to address the fine particle problem, reducing future levels of carbon dioxide (carbon) emissions, and controlling mercury emissions. Each of the hypothetical control options that the Agency examined considered in the Base Case the implementation of a nitrogen oxide (NO_x) reduction program that EPA recently promulgated in the NO_x SIP call. That rule requires 22 States and the District of Columbia to submit State Implementation Plans under the CAAA that will decrease the transport of ozone in the eastern United States.² The NO_x controls required by that rule will go into effect in 2003. This is before any of the hypothetical pollution control options examined in this study will go into effect.

For each pollution control option examined in this study, the Agency estimated changes that would occur for NO_x, SO₂, carbon, and mercury emissions. The study estimates the changes in air emissions (not changes in air quality concentrations or environmental damage) that would occur if any of the control options were implemented.

¹ Issuance of this report satisfies a provision in a settlement agreement between EPA and the Natural Resources Defense Council concerning mercury from electric power plants. See *Natural Resources Defense Council, Inc v. U.S. Environmental Protection Agency, et al.*, No.92-1415 (D.C. Circuit). The settlement requires an analysis of the reduction in emissions of mercury (and the effect on mercury removal costs) that would be achieved through an array of strategies to control the emissions of SO₂, NO_x, CO₂ and mercury, and an analysis of the reduction in emissions of SO₂, NO_x, and CO₂ that would be achieved through an array of strategies to control the emissions of mercury.

² U.S. Environmental Protection Agency, 40 CFR Parts 51, 72, 75, and 96 Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for the Purposes of Reducing Regional Transport of Ozone; Rule," 63 FR 57357-538 October 27, 1998.

The options presented in this report are hypothetical approaches to emission controls on the electric power industry for each pollutant and do not represent the EPA or Administration position on how any of these pollutants should be reduced in the future. EPA has made no determinations whether or how much additional SO₂ control could be needed to address fine particulate problems, or whether and to what extent there should be future reductions of emissions mercury or carbon dioxide emissions. Specifically with regard to carbon dioxide, the Administration has pledged not to implement the Kyoto Protocol without the advice and consent of the Senate, and to work with the Congress on any necessary legislation.

For interested readers, EPA has placed its data input files and important sections of the modeling runs at the following web site: <http://www.epa.gov/capi>. The Agency invites review and comment on the analyses provided in this report.³

The remainder of this report is organized in the following chapters:

- Chapter 2 describes the methodology and the Base Case used in the analysis.
- Chapter 3 provides the results of the analysis on hypothetical options to lower SO₂ and carbon emissions in the future.
- Chapter 4 provides the results of the analysis on hypothetical options to lower mercury emissions.

³ Please send comments to Mercury Co-benefits Study Docket, Office of Air and Radiation, U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

EXCERPTS OF CHAPTER 3

CARBON REDUCTION OPTIONS

In the current debate about future U.S. efforts to address climate change, various stakeholders and analysts have advanced a number of ways to lower emissions of carbon dioxide and other greenhouse gases. For this study, EPA selected two of these many options to analyze the effects that alternative carbon control levels will have on the electric power industry's costs and emissions. These options were chosen simply to represent very different approaches to possible limitations on carbon emissions for electric power generators. They do not represent the full possible range of carbon control alternatives for the electric power industry. They also do not represent an EPA or Administration position on what the electric power industry should do to address climate change.

The two hypothetical options are:

- **Carbon Level of 567 MMT in 2008** - In this hypothetical case, the following assumptions are made:
 1. Beginning in 2008, electric power companies are required to have emissions allowances to cover their carbon emissions. The industry is issued a certain number of U.S. emissions allowances and is permitted to buy more allowances in an international trading market. No banking (stockpiling of allowances for later use) is allowed to keep the case simple and to provide a better reflection of the costs that there will be in meeting a specified level of carbon emissions level in the near term.¹
 2. The power industry is allocated 463 MMT of carbon emissions allowances per year.² This is 3 percent below the 1990 carbon emissions level of the power industry.³
 3. The power industry finds it most economical to lower its annual domestic carbon emissions down to 567 MMT and to purchase 104 MMT of allowances annually on the international market.^{4 5} In the analysis of this

¹ Banking can make a program less expensive over its lifetime by providing inter-temporal flexibility. However, its consideration in this analysis may have led to an over statement of the costs of meeting a commitment for 2010, if the industry decided to over control its carbon emissions in that year and stock pile allowances for future use.

² The Kyoto Protocol actually sets up a total carbon allowance budget for five years (2008 to 2012). The budget is based on five times what the annual emissions allowances should be for a country. The US can use the allowances over time in any manner that it wishes, as long as the total budget is met for the five-year period.

³ The Kyoto Protocol requires a 7 percent reduction in greenhouse gases below 1990 levels between 2008 and 2012. Many analysts believe that since the Kyoto Protocol allows the consideration of sinks (such as forest growth), that the U.S. is really required to lower carbon emissions to 3 percent below 1990 levels. Assuming that each industry must lower its own share of carbon emissions to 3 percent below its 1990 levels leads to the allowance level assumed for the power industry in these hypothetical options. The electric power industry's 1990 carbon emissions level was 477 MMT.

⁴ This is the level of carbon emissions from the electric power generation industry that the Energy Information Administration (EIA) estimated best represents the carbon emissions of electric power generators if compliance with

option, the 567 MMT carbon emissions level is modeled as a domestic carbon cap and power plants are allowed to trade emissions allowances with each other.

This alternative is similar to the hypothetical option analyzed by the White House Council of Economic Advisors in a cost analysis prepared for Congress in early 1998.⁶ Electricity demand in this option is the same as in the Base Case. This hypothetical option does not account for the electricity demand reductions that could result from possible increased electricity prices caused by the cost of meeting the alternative carbon levels. This option does not include additional energy efficiency measures assumed in the second option described below.

- **High Efficiency/Carbon Level of 515 MMT in 2008** – In this hypothetical case, assumptions 1 and 2 are the same, but the following different assumptions are made:
 1. Domestic demand side programs are in place that lower electric demand by about 1.5 percent per year from 2000 through 2010 and by about 1 percent per year from 2010 through 2020.⁷ By 2010, electricity demand would be 15 percent lower than the power industry has projected it will be and forecasted carbon emissions for the power industry would be 590 MMT.
 2. The power industry finds it least expensive to lower emissions to 515 MMT annually and purchase 52 MMT of allowances annually. The 515 MMT carbon emissions level is modeled as a carbon emissions cap on the industry and domestic power plants are allowed to trade emissions allowances.⁸

EPA and Lawrence Berkeley National Laboratory of the Department of Energy have examined an option similar to this in a recent study.⁹

the Kyoto protocol could be achieved with unlimited international trading of carbon allowances that the Council of Economic Advisors laid out in a study that it did in July 1998 (see reference 6 below).

⁵ This is 19 percent above 1990 levels and 15 below where Energy Information Administration (EIA) has forecasted that the US will be in its reference case in 2010 in a recent study that EIA published on options to lower carbon emissions in the energy sector. The recent EIA study is entitled *Impacts of the Kyoto Protocol on U.S. Energy Markets and Economic Activity*, October 1998.

⁶ Council of Economic Advisors, the White House, *The Kyoto Protocol and the President's Policies to Address Climate Change: Administration Economic Analysis*, July 1998.

⁷ North American Electric Reliability Council, *Electricity Supply & Demand*, 1997, electronic files released in fall 1997.

⁸ A carbon emissions level of 515 MMT is nine percent above 1990 levels and 21 percent below where Energy Information Administration (EIA) has forecasted that the US electric power industry will be in its reference case in 2010 (657 MMT), in a recent study that EIA published on options to lower carbon emissions in the energy sector. The recent EIA study is entitled *Impacts of the Kyoto Protocol on U.S. Energy Markets and Economic Activity*, October 1998.

⁹ U.S. Environmental Protection Agency and Ernest Orlando Lawrence Berkeley National Laboratory, *Technology and Greenhouse Gas Emissions: An Integrated Scenario Analysis Using the LBNL-NEMS Model*, October 1998.

Costs and Power System Changes

In the model, electric power generators make adjustments in such things as fuel use, generator capacity utilization and new generation construction in response to changes in assumed energy demand and emissions limitations. Exhibit 3-33 shows the annual incremental costs of these adjustments for the carbon reduction options.

Note that in both cases domestic carbon emissions remain above power generators' 1990 levels. The cost of purchasing international emissions allowances is not shown in this analysis.¹⁰ The costs and emissions reductions shown in this report are only those that result from the reductions from the Base Case level to 567 MMT and 515 MMT.

The costs shown in Exhibit 3-33 are the annualized incremental costs of reducing domestic carbon emissions from levels associated with the baseline electricity demand. In the case of the 567 MMT Carbon Cap option, this is a reduction of 53 MMT. This option assumes that electricity demand is the same as that used in the Base Case. For the High Efficiency option, there is a reduction of 106 MMT from Base Case levels in 2010. About 30 MMT of this reduction come from the reduction in electricity demand caused by the assumed energy efficiency measures (see Appendix E for references describing such measures) included in this option. The investment costs and the resultant savings from electricity use are shown in Exhibit 3-34. The costs of achieving the remaining 76 MMT tons from changes in electricity production are shown in Exhibit 3-33.

Exhibit 3-33
Annual Costs in 2010 for Electric Power Generation
For Two Options to Lower Carbon Emissions

<i>Options</i>	Million 1990\$
Carbon Level of 567 MMT in 2008	\$ 1,038
High Efficiency – Carbon Level of 515 MMT in 2008	\$ 2,030

Note: Costs include the additional resources that are expended to produce electric power, if the industry is lowering carbon emissions to the levels specified in each option. It does not include purchasing of carbon allowances in an international trading program. A discussion of allowance purchase costs occurs in reference 11 below.

¹⁰ The costs to the power industry of buying allowances under an international cap-and-trade approach are difficult to estimate. They depend on the amount of allowances that the industry is awarded and the price of carbon allowances. If it is assumed that the power industry is annually awarded 463 MMT of carbon allowances and that the international cost of allowances is \$19.50 per ton in 1990 dollars (the high end of the range in the CEA report referenced earlier which is 1996\$ is \$23 per ton), the costs can be estimated. For the Carbon Cap at 567 MMT in 2008 option, the annual allowance costs are \$2 billion. For the High Efficiency – Carbon Cap at 515 MMT in 2008 alternative, the annual allowance costs are \$1 billion.

Exhibit 3-34
Annual Costs for the Electric Power Industry and Power Users
And Savings Resulting from Lower Electricity Use in 2010
In the High Efficiency – Carbon Cap of 515 MMT in 2008 Option

<i>Cost Categories</i>	Million 1990\$
Increased Production Costs*	\$ 2,030
Investment in Energy Reduction	4,986
Savings from Energy Reduction	7,864
Net Societal Savings	\$ 848

* Costs include the additional resources that are expended to produce electric power, if the industry is lowering carbon emissions to the levels specified in each option. It does not include purchasing of carbon allowances in an international trading program. A discussion of allowance purchase costs occurs in reference 11 in this chapter.

The Climate Challenge Program

The Climate Challenge Program is the world's largest and most successful voluntary initiative to reduce greenhouse gas emissions.

In partnership with the Department of Energy (DOE), the electric utility industry — through the Edison Electric Institute — created the Climate Challenge program. To date, more than 650 electric utilities have pledged to reduce, avoid or sequester more than 174 million metric tons of carbon dioxide-equivalent emissions in the year 2000. This is more than four times the goal established with the government for the industry.

In addition to a wide array of programs underway in individual companies, the Climate Challenge program includes five industry-wide initiatives. Most of these initiatives are international in scope, and many involve the application of efficient electric technologies. The Climate Challenge includes:

The EnviroTechSM Investment Funds

Two electric utility industry venture capital funds (with a total capitalization of \$52 million) invest in companies that focus on emerging electric and renewable energy technologies.

International Utility Efficiency Partnerships, Inc.

IUEP promotes projects among electric utilities, U.S. government agencies and international organizations that identify and support energy development in an environmentally beneficial manner.

UtiliTree Carbon Company/Utility Forest Carbon Management Program

The nonprofit UtiliTree Carbon Company consists of 41 utilities sponsoring a

portfolio of forestry projects that manage greenhouse gases, particularly carbon dioxide (CO₂). The projects are identified by the Utility Forest Carbon Management Program.

EV America

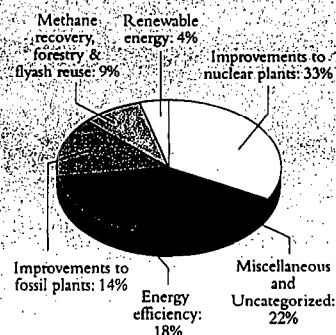
EV America promotes electric utility-sponsored activities to accelerate the introduction of electric vehicles (EVs) into the retail marketplace and into commercial, government, transit and private fleets.

National Earth Comfort Program

The National Earth Comfort Program promotes the growth of energy-efficient, environmentally friendly heating and cooling technology.

Portfolio of Utility Actions

More than 174 million metric tons of CO₂ equivalent



Source: U.S. DOE



**EDISON ELECTRIC
INSTITUTE**

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May 1999

The EnviroTechSM Investment Funds

Two electric utility industry venture capital funds invest in companies that focus on emerging electric and renewable energy technologies.

These technologies promote environmental responsibility and reduce greenhouse gas emissions in the generation of electricity. They are also more energy efficient than those currently in the marketplace. The following tables highlight the current investments being made by both funds: The EnviroTech Fund, managed by Advent International, and the Utech Climate Challenge Fund, managed by Arete Ventures, Inc.

EnviroTech Fund

Fund Size: \$31.5 Million

Total Invested: \$17.6 Million

The EnviroTech Fund has invested in companies that are developing products in the following technical categories:

- Automated materials handling equipment;
- Flywheel energy storage systems;
- Automotive and truck tire technologies;
- Dry gas seals and magnetic bearings;
- Thermography and thermal imaging;
- Electromechanical motion control systems, motors and drives;
- Engineering software;
- Fiber optic connection technology, high-precision molding and micro-drilling; and
- Integrated high-speed voice and data transmission.

Utech Climate Challenge Fund

Fund Size: \$20.6 Million

Total Invested: \$20.6 Million

The Utech Climate Challenge Fund has invested in companies that are developing products in the following technical categories:

- Integrated circuit technologies;
- Distributed control technologies for energy management systems;
- Photovoltaic cell technology;
- Renewable power generation systems;
- Electronic security systems;
- High-capacity long-distance telephone networking systems;
- Hydrogen-based technologies;
- Internet communication, connectivity and data services equipment; and
- Zinc-air fuel cells.

Over \$38 million has been invested in 26 companies that are developing these electric and renewable technologies.



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May 1999

EV America

EV America promotes electric utility-sponsored activities to accelerate the introduction of electric vehicles (EVs) into the retail marketplace and into commercial, government, transit and private fleets.

EV America works to commercialize electric vehicles and helps local governments address public policy needs that will arise in the course of EV introductions.

The environmental benefits of electric vehicles — including autos, trucks, non-road vehicles and buses — are accompanied by new business opportunities and jobs, and reduced reliance on imported oil. Depending on the fuels used to generate the electricity, EVs can reduce greenhouse gases by as much as 50 percent or more compared to gasoline-powered vehicles.

Nationally, assuming a 3 percent EV market share and average U.S. electricity generation mix, greenhouse gas reductions are estimated to be 9.5 million tons of carbon dioxide-equivalent greenhouse gas emissions per year, according to the Electric Power Research Institute and the U.S. Department of Energy.

Fleets

Federal, state and local governments and electric utilities are committed to purchasing electric fleet vehicles and demonstrating performance, reliability, low cost of operation and customer applications. Volume fleet purchases of EVs will help lower per unit costs. Participants use these vehicles in their fleets and assist in placement of these vehicles into other fleets, including commercial and transit. Utilities ensure charging and technical maintenance support for the EVs placed into service through various energy service programs.

Retail Markets

Electric vehicles are now available to retail customers in California and Arizona. Many EV owners use the EV as their primary vehicle and cite the environmental benefits and time savings as important to their purchase decision.

Non-Road Electric Vehicles

Non-road electric vehicles include lift trucks, tractors and airline ground support. The market for these EVs is significant and is growing in large part due to their environmental benefits.

Real World Vehicles

EV America is an integral part of the market process that has resulted in electric vehicles being sold to customers across the nation. These include vehicles from Ford, General Motors, Chrysler, Honda, Toyota, Nissan and Solectria. With the introduction of fast charging, nickel-metal hydride and lithium battery technology, vehicle range is proving to be more than adequate in a wide range of applications across many industries and retail markets.



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May 1999



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GLOBAL
Positive progress and
CLIMATE
continued commitment
CHANGE

Geothermal Heat Pump Consortium

*The Geothermal
Heat Pump
Consortium is a
nonprofit
organization whose
mission is to
implement the
National Earth
Comfort Program.*

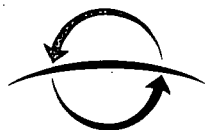
The Geothermal Heat Pump Consortium's (GHPC's) specific area of interest is in increasing the use of GeoExchange (geothermal heating and cooling) technology. GeoExchange is a high-comfort, cost-effective and environmentally sound technology that takes advantage of the Earth's ability to store renewable energy. GHPC is a voluntary partnership among the U.S. Department of Energy, U.S. Environmental Protection Agency and the nation's electric utilities. The partnership seeks to improve awareness about the technology's many environmental, economic and energy efficiency benefits.

GHPC's public/private collaborative has attracted participation by more than 250 electric utilities serving over half of the electric customers in the U.S., as well as more than 700 trade allies, including manufacturers, contractors, energy service companies, engineers, architects, universities and national environmental trade organizations.

GHPC's specific goal is to increase annual installations of GeoExchange systems in the U.S. tenfold — from 58,000 to 430,000 units — by 2005. Attainment of this aggressive goal will result in annual reductions of greenhouse gas emissions by 5.5 million metric tons of carbon dioxide. This reduction is equivalent to taking over half a million cars off the road, or planting over a million acres of trees.

Currently in its fifth year, the Consortium's progress is significant. Over the period from 1994 through 1997, sales have grown more than 32 percent. For 1998, industry

Continued



GEOEXCHANGE™

GeoExchange Facts

- Over 400,000 systems are already in place.
- If just 10 percent of the homes in the United States used GeoExchange systems, annual emissions reduction would be almost 48 million metric tons of carbon dioxide by 2010.
- The average home with GeoExchange saves an electric utility from burning an additional 9.24 tons of coal each year.

estimates put GeoExchange installation growth at more than 20 percent. One of the latest successes includes the first school in the state of Maryland to use a GeoExchange system — Choptank Elementary School in Cambridge, Maryland. The school's GeoExchange system will cut emissions of sulfur dioxide by 1,505 pounds, nitrogen oxide by 3,201 pounds and carbon dioxide by 423,630 pounds, according to the Maryland Energy Administration.

A development in Nevada is demonstrating how GeoExchange can be done cost effectively on a large scale. The Lake Las Vegas community will have the first common community-wide Earth connection in the U.S. All homes will enjoy the comfort and efficiency of GeoExchange from a single Earth connection. In a region where there are concerns about air quality, this community is strongly committed to using environmentally sound technologies to help combat air pollution and address greenhouse gas emissions.

For Further Information

Geothermal Heat Pump Consortium, Inc.
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www.geoexchange.org



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May 1999

IUEP

The International Utility Efficiency Partnerships, Inc. (IUEP) promotes projects among electric utilities, U.S. government agencies and international organizations that identify and support energy development in an environmentally beneficial manner.

Status of Project Submittals to the U.S. Initiative on Joint Implementation (USIJI)

IUEP PROJECTS APPROVED BY USIJI

Country	Name of Project	Type of Technology	Date Approved	CO ₂ Offset (Million MT)	Benchmarks
Honduras	The Bio-Gen Biomass Power Generation Project, Phase I	Biomass (Wood Chip)	Dec. 1995	3.4	Fossil Fuel
Honduras	The Bio-Gen Biomass Power Generation Project, Phase II	Biomass (African Palm Waste)	Dec. 1996	3.4	Fossil Fuel
Belize	The Bel/Maya Biomass Power Generation Project	Biomass (Wood Chip)	Dec. 1996	3.0	Fossil Fuel
Argentina	The Capex, S.A. Project	Natural Gas Combined Cycle	Mar. 1999	30.0	Natural Gas Simple Cycle

IUEP PROJECTS "UNDER DEVELOPMENT" IN USIJI PROCESS

Country	Name of Project	Type of Technology	Submission Date	CO ₂ Offset (Million MT)	Benchmarks
Bolivia	Taqesi River Hydroelectric Project	Hydropower	Jun. 1997	7.8	Fossil Fuel
China	Yu-Wei-Quing Pipeline Project	Coal Cleaning; Power Development	Jun. 1997	20.0	Coal Transportation (via trucks and trains)
Czech Republic	The ECKG Project	Fluidized Bed Combustion	Oct. 1996	3.76	Pulverized Coal Combustion
Guatemala	Bio-Gen Power Generation Guatemala	Biomass	Jun. 1997	3.4	Fuel Oil
Nicaragua	Bio-Gen Power Generation Nicaragua	Biomass	Jun. 1997	3.4	Fuel Oil
Paraguay	The Carlos Casado S.A. Laguna Tigre / Mariscal Estigarribia Project	Carbon Sequestration	Jun. 1997	0.5	—
Philippines	Philippines Bioten Biomass Project	Biomass	Jun. 1997	3.0	Fuel Oil

For Further Information

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May 1999

UtiliTree Carbon Company

*The nonprofit
UtiliTree Carbon
Company consists
of 41 utilities
sponsoring a
portfolio of forestry
projects that
manage greenhouse
gases, particularly
carbon dioxide.*

Properly implemented, forestry projects are proven technically and can offset a large amount of CO₂. Forestry programs often have secondary environmental and social benefits, including restoration of degraded lands, wildlife habitat protection and protection of biodiversity. Forest carbon management opportunities can be among the most economical ways to address CO₂ emissions. Joint implementation of international projects with developing nations is an especially promising arena for forestry programs.

UtiliTree Carbon Company projects, identified by the Utility Forest Carbon Management Program (see box on reverse), consist of a diverse mix of rural tree planting, forest preservation, forest management and research efforts at both domestic (Louisiana and Oregon) and international (Belize and Malaysia) sites. The UtiliTree Carbon Company has committed more than \$2.5 million to reduce more than 2 million tons of carbon dioxide (CO₂) through these projects.

Bottomland Hardwood Forest Restoration in the Upper Quachita River Valley
The project will reestablish hardwood forests on a 1,000-acre site in Morehead Parish, Louisiana, on land owned by the U.S. Fish and Wildlife Service. Benefits are expected to exceed 600,000 tons of CO₂ over 70 years.

Rio Bravo Carbon Sequestration Project

This project consists of two components. Component A includes the purchase of a 14,400-acre parcel of endangered forest land in the northwest corner of Belize. Component B establishes a sustainable forestry management program at the Rio Bravo Conservation and Management Area, a 120,000-acre area. Anticipated CO₂ benefits are over 1 million tons.

Reduced Impact Logging of Natural Forests in Sabah, Malaysia

This project involves implementation of techniques to reduce the release of sequestered CO₂ associated with uncontrolled logging of natural tropical forests. The anticipated greenhouse gas benefits are 147,000 tons of CO₂ by the year 2000 and 379,000 tons of CO₂ over the project's 40-year life.

Utility Forest Carbon Management Program

UFCMP is an initiative developed by the Edison Electric Institute — with support from 55 electric utilities — to expand electric utility industry efforts to manage CO₂ via forestry projects, both domestic and international. The goals of the program are to advance the state of knowledge regarding options for managing greenhouse gases via forestry; to establish low-cost forestry options; to implement projects; and to promote environmental stewardship by the electric utility industry.

Western Oregon Carbon Sequestration Project

This project sequesters carbon by planting trees on over 300 acres of unforested, non-industrial timberland in western Oregon that otherwise would not be replanted. Anticipated CO₂ benefits are over 200,000 tons.

Bottomland Hardwood Forest Restoration in the Mississippi River Valley

This project investigates the feasibility of using hardwood forest restoration on marginal farmland in the Mississippi River Valley as a means of sequestering atmospheric carbon. The anticipated CO₂ benefits are about 50,000 tons.

For Further Information

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May 1999

Biomass

*Biomass is a
renewable energy
resource derived
from the organic
waste of natural
and human
activities.*

Biomass electricity is fueled from many sources, including timber industry by-products, raw forest material, agricultural crops, household waste and demolition wood.

Biomass Fuels Can Help Reduce Atmospheric Carbon Dioxide

Biomass is a renewable resource. It can be burned or gasified by electric generators. Biomass power is one of the most attractive options for addressing concerns over carbon dioxide (CO₂) because trees and other plants sequester atmospheric CO₂. The growth of plants and their conversion to energy as biomass fuels recycle atmospheric carbon. The result is no net addition of CO₂ into the atmosphere.

The use of biomass for power generation has increased over the last decade. Today, biomass represents 1 percent of all electricity generated in the U.S. (utility and non-utility) — 37,000 GWh in 1997. Facilities which burn woodchips have been developed in the Northeast, and various agriculture and feedstocks are in use in the Midwest and California. In Europe, biomass currently accounts for about 2 percent of total energy consumption.

Biomass is an important resource in developing nations — particularly in rural areas where it is often the only cheap and affordable source of energy — accounting for approximately 35 percent of the local energy supply. Biomass energy systems can be used for village-power applications, for larger scale municipal electricity and heating, in agricultural applications and for utility-scale applications.

Because of the widespread application of biomass, the United BioEnergy Commercialization Association, an industry-wide group, is undertaking steps to stimulate applications of biomass by power generators. The members seek the development and commercialization of a variety of biomass technologies.

U.S. Electricity Restructuring and Biomass

Marketplace, policy and regulatory changes will shape both the domestic and global energy industry, improving opportunities for clean, low-cost energy, competitively priced fuels and environmentally responsible power systems. Biomass energy providers are ready to take advantage of those opportunities. In addition to cleanliness and low price, other benefits of biomass energy include local economic development, job growth and sustainable agriculture.



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May 1999

E Seal

*E Seal is the
electric utility
industry's energy
efficiency and
environmental
housing initiative.*

The core of the E Seal initiative is its certification system, which ensures that utility new home construction programs exceed the highest nationally recognized energy efficiency and environmental criteria, and offer comfort, safety, convenience and financial benefits to consumers. E Seal homes enjoy a 20 to 30 percent reduction in space heating, cooling and water heating energy consumption.

E Seal also incorporates environmental measures, with a view to the environment within the home, at the home site, and in the community and the world. E Seal's unified package of environmental criteria — based on input from customers, utilities and environmental advisors — includes renewable energy, indoor air quality, home waste management, and water quality and conservation.

To date, utilities serving more than 24 million residential customers in the U.S. participate in the E Seal initiative. These utilities and their more than 900 participating builders have completed more than 110,000 homes built to exceed the energy criteria of utility E Seal certified programs. E Seal is already responsible for estimated energy savings of more than 206 million kilowatt-hours nationwide, and the initiative is growing. Customers of E Seal homes also save more than \$17 million on energy costs annually.

As the electric utility industry becomes more competitive, E Seal can provide solutions for electric utilities' marketing needs. Through the E Seal Mortgage program, utilities can offer their customers 100 percent financing of energy efficiency upgrades for new or refinanced homes, with no increase in the down payment or private mortgage insurance requirements, and with full recognition and valuation of the upgrades in the home.

The E Seal Home Improvement Loan program helps owners of existing homes finance 100 percent of the purchase of high-efficiency replacement heating, cooling, and water heating equipment and related products. Through the new E Seal Partners program, participating utilities can now offer their customers a variety of preferentially priced products and services that can increase the energy efficiency, comfort, safety and environmental responsiveness of homes and transform the residential market sector.





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May 1999



EDISON ELECTRIC
INSTITUTE

GLOBAL
Positive progress and
CLIMATE
continued commitment
CHANGE

Photovoltaics and UPVG

*Solar power is a
renewable source
of energy that has
minimal
environmental
impact.*

Many electric utilities in the U.S. are beginning to make solar electricity — generated by photovoltaic cells grouped and placed on rooftops and other sunny locations — available to more and more customers. The availability of solar power from utilities will increase significantly as solar system prices continue to fall, customer demand for solar continues to rise, and uniform rules, regulations and standards for the use of solar electricity are determined.

Solar Electricity Today

Currently, about 100 megawatts of solar photovoltaic-generated electric power is in use in the U.S. That's just a tiny fraction of 1 percent of all the electricity generated in this country. However, investments by private industry and government in solar power since the 1970s cut the average price of a photovoltaic module 90 percent since 1976, from \$52 per watt to less than \$5 per watt.

Utility Photovoltaic Group (UPVG)

The Utility PhotoVoltaic Group (UPVG) — an international association of electric utilities and energy service companies — is paving the way for the increased use of solar electricity around the world. A relatively small drop in photovoltaic system prices

Continued

PV Facts

- Photovoltaic demand worldwide has increased by nearly 290% over the last 10 years. During the same period, U.S. PV companies have increased their share of the global PV market by 41%.
- The U.S. PV industry does more than \$350 million in business annually and has increased its manufacturing capacity to 40 megawatts per year.
- Cumulative sales are expected to surpass 400 megawatts by the year 2000 and 10,000 megawatts by 2030, enough power to serve 5 million households.

Source: U.S. Department of Energy

could open a market for thousands of megawatts of solar power in dozens of applications, according to UPVG studies.

UPVG's TEAM-UP program was launched in 1993 to help build a domestic market for PV. The Department of Energy has invested \$4.85 million in the program (which has leveraged \$24.82 million from industry), resulting in the deployment of 3.5 megawatts of PV at about 1,000 installations. Participating utilities have also deployed another 4.2 megawatts of PV at about 500 locations; in fact, several U.S. electric utilities have solar programs in place at schools, providing electricity, as well as an educational tool. Real-time data from a number of UPVG's locations can be found at www.upvg.org.

Million Solar Roofs Initiative

Electric utilities and other energy service providers are important partners in President Clinton's Million Solar Roofs Initiative's goal — 1 million solar systems on U.S. rooftops by 2010. As established experts in the delivery of reliable electricity to homes and businesses, utilities are stepping into more proactive roles as marketers of diverse energy service options demanded by customers as a result of industry deregulation and restructuring. The attractions of clean, renewable energy — as promoted through the Million Solar Roofs effort — will increase demand for solar power.



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May 1999

Wind Power

*Wind power has
established itself
as a reliable
source of
renewable energy.*

Worldwide, wind power is one of the fastest growing sources of electricity production (on a percentage basis). Each year in the U.S., wind power plants generate more than 3.5 billion kilowatt-hours of electricity, reducing carbon dioxide emissions by about 3.5 million metric tons — based on the average U.S. fuel mix. With concern over the environment growing and a new generation of highly efficient wind turbines entering the market, utilities across the country are actively considering wind power as another element of a comprehensive resource portfolio.

Wind power facilities are producing power — or being installed — in Hawaii, California, Colorado, Oregon, Nevada, Wyoming, Texas, Minnesota, Iowa, Vermont, Wisconsin, Nebraska, Maine and other states. Other wind facilities are being planned now.

Wind power is used by utilities in a number of ways, including peaking load generation and base load for “green power” providers. In Alaska, for example, some electric utilities are installing wind turbines in remote communities to reduce the high cost of producing electricity using diesel fuel and to bring new jobs to the region.

Through participation in the Utility Wind Resource Assessment Program, 26 utilities have measured the wind speed at 34 separate locations in 7 states. Results from this program will help to remove one of the barriers to utility-scale wind power production — the lack of detailed information about which areas have development potential for wind resources.

In Texas, Colorado and other states, utilities are offering customers the opportunity to buy “green power” from wind power plants. The “Windsources” Program of Public Service Company of Colorado, for example, sold out of its initial wind capacity. Based on positive customer response, more utility green pricing programs are likely and will open a significant new market for wind power. Already, new wind turbines have been built in California from funds generated by green pricing programs. And in Minnesota and Iowa, utilities have agreed to purchase several hundred megawatts of electricity from wind power plants.

Many utilities undertaking these programs are members of the Utility Wind Interest Group, Inc. UWIG is a nonprofit organization whose mission is to accelerate the appropriate integration of wind power for utility applications. UWIG members include 24 utilities from 12 U.S. states and Canada. UWIG seeks to enhance the credibility of, and identify opportunities for, wind power application in the electric utility sector.



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May 1999

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EDISON ELECTRIC INSTITUTE

A PORTFOLIO *of*

VOLUNTARY
Climate
Change
ACTIONS

May 1999

*For
Discussion
Purposes*

FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...FAX...



ENVIRONMENTAL PROTECTION AGENCY

1200 Pennsylvania Avenue, N.W.

Washington D.C. 20004

TO: Roger Ballentine

David Gardiner

Phone:

Fax: 456 1736 / 395 2312

FROM:

David Dougor

Phone:

Fax:

The EPA is taking steps NOW to ensure no disruption in service or environmental protection occurs when our data systems convert to the year 2000. We are preparing for the year 2000 — are you?

The Office of Air & Radiation moved to the Ariel Rios (AR) Building, 1200 Pennsylvania Avenue, N.W., Washington, DC 20004, on September 23, 1999. The main office number is 202-564-7400. Thank you.

DATE: 4/11/00

MESSAGE:

As promised

Page 1 of 2 (including cover sheet)

OFFICE OF AIR AND RADIATION FAX AND PHONE NUMBERS

office	fax	phone	mailcode	room #
immediate office	(202) 501-0394	(202) 564-7400	6101	5426AR
OAOPS-DC	(202) 564-1543	(202) 564-1657	6101	5443AR
OPMO	(202) 564-1327	(202) 564-1234	6102	6350AR
OMS	(202) 564-1686	(202) 564-1682	6401	6520AR
ORIA	(202) 565-2043	(202) 564-9701	6601	Judiciary Square
OAP	(202) 565-2149	(202) 564-9081	6201	Judiciary Square
OPAR	(202) 564-1554	(202) 564-1677	6103	5442AR
OAOPS-NC	(919) 541-2464	(919) 541-5616	MD-10	RTP

Two integrated scenarios have been modeled using the IPM model.

Scenario 1

- Annual emissions caps/levels from electricity generators (cap-and-trade programs except for Hg):
 - SO₂: 4.5 million tons (50% reduction in Title IV (acid rain) SO₂ allowances beginning in 2005)
 - NO_x: 1.88 million tons beginning in 2007 (0.15 lbs/mmbtu applied annually and nationally)
 - CO₂: 1.75 billion metric tons beginning in 2008 (modeled as electric generators controlling to 19% above 1990 levels and obtaining remaining reductions to 1990 levels by means of domestic offsets; both in-system and offset costs limited to \$23/ton)
 - Hg: 13.75 tons beginning in 2007 (73% reduction from 1990 levels achieved through technology-based controls (MACT), not cap-and-trade)
- Annual cost in 2010 for this integrated strategy: \$8.56 billion (1997\$)

Scenario 2

- Annual emissions caps/levels from electricity generators – same structure and timing as above except:
 - SO₂: 3.58 million tons (60% reduction in Title IV SO₂ allowances)
 - NO_x: 1.25 million tons (0.10 lbs/mmbtu)
 - CO₂: 1.75 billion metric tons (modeled as electric generators controlling to 1990 levels within the electric sector, i.e., no out-of-system offsets)
 - Hg: Same as scenario 1
- Annual cost in 2010 for this integrated strategy: \$10.54 billion (1997\$)

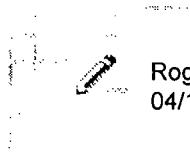
Notes:

- NO_x costs are over-and-above costs of the already-required NO_x SIP Call (22 eastern states, summertime only), approximately \$1.5 billion.
- A non-integrated, pollutant-by-pollutant approach (with trading) would add as much as \$1 billion or more to costs.
- Achieving 90% mercury reduction (to 5 tons/year) could cost \$2-3 billion/year more.
- Above analysis does not account for emission reductions and costs possible as a result of new source review.

Cost Issues

1. EPA models predicting cost of four pollutant, integrated cap, with trading, and offsets (sinks) available to meet carbon targets: *\$8.5 billion/yr by 2010* (but with targets kicking in 2007-2008). (A slightly tougher bill with no offsets was estimated to cost *\$10.5 billion*). This is at levels considered to be tough, but not toughest (mainstream environmentalist acceptable). This may not count cost-savings from New Source Review suspension.
2. CEA has modeled our electricity restructuring proposal as *saving \$20 billion/yr*. Many see this as overly optimistic. (The savings number from restructuring essentially constitutes the monopoly profits currently in the system that could absorb some cost increases).
3. EPA estimates annual healthcare cost savings from integrated pollution control at *\$50 billion*. Economic agencies think this number should be discounted at least 50%.
4. EIA costs the Jeffords bill at *\$29 billion* (Jeffords targets in effect by 2005).
5. Bush Administration (1990) predicted it's Clean Air Act amendments would cost up to *\$25 million/yr*.

Therefore, we could argue that the cost of a clean up proposal would be less than credible estimates of savings that would result from restructuring and saved healthcare costs.



Roger S. Ballentine
04/10/2000 06:13:37 PM

Record Type: Record

To: Monica M. Dixon/OVP@OVP

cc:

Subject: PPs

This is the answer to your second question. Call me and I'll fill you in on the Hill. I am also putting together an updated list of bills with co-sponsors -- (in general it's northeastern/new york and CA democrats, along with some NY and New England Republicans).

Any proposal to limit emissions hits coal-based power plants the hardest, particularly old plants. More than half of all electricity is generated at coal plants more than 25 years old (which enjoy a loophole from the Clean Air Act). The 15 states with the most of this kind of power are: TX, OH, IN, PA, KY, WV, IL, AL, FL, MI, GA, NC, MO, TN, WI. The three biggest companies that would be most affected are: Southern (GA, AL, MS, FL, etc.), American Electric Power (OH, KY, WV, MI, IN, etc.) and TVA.



David Gardiner
04/11/2000 11:55:46 AM

Record Type: Record

To: Roger S. Ballentine/WHO/EOP@EOP

cc:

Subject: RFF outline

Note that RFF covers only the period from 2002-2008, but the principles could be applied to other time periods.

- Budget Period 2002-2008
- Emissions Cap 1996 Levels or approximately 10% above 1990 levels
- Upstream Auction of Permits
- Safety Valve at \$25/ ton in 2002, with 7% inflation per year until 2008
- Rebates 75% of government income from auctions to households
- Rebates 25% of government income from auctions to states for low-income programs



Roger S. Ballentine
04/10/2000 02:20:53 PM

Record Type: Record

To: John Podesta/WHO/EOP@EOP, George T. Frampton/CEQ/EOP@EOP, Charles M. Brain/WHO/EOP@EOP, Jacob J. Lew/OMB/EOP@EOP
cc: Wesley P. Warren/OMB/EOP@EOP, Linda Lance/CEQ/EOP@EOP, Julie M. Anderson/WHO/EOP@EOP, Lisa M. Kountoupes/WHO/EOP@EOP
Subject: LL Position

Here is my crack at the Lew-Podesta compromise (pls give comments and we will work this into the Leg Affairs talking points):

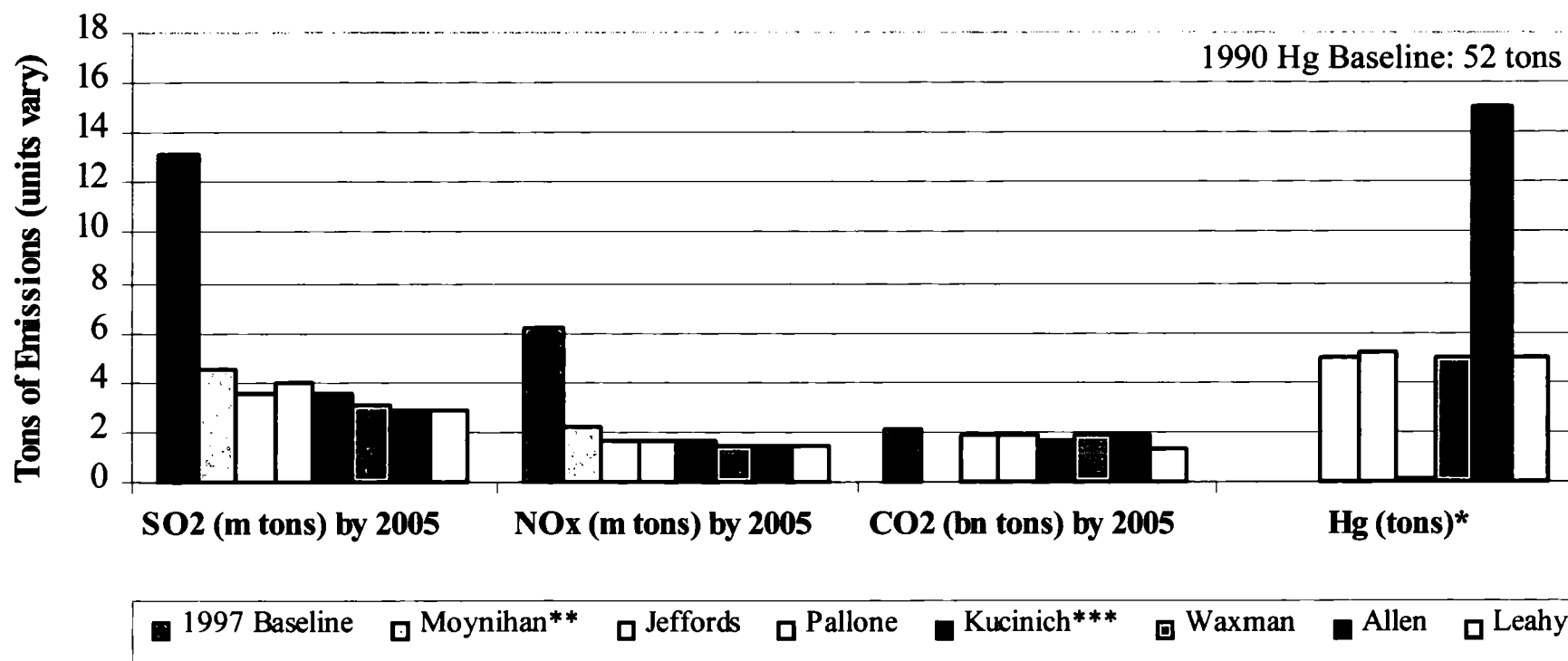
We strongly believe that now is the time to provide significant *and permanent* new resources to support state and community efforts to protect wildlife and local green spaces, to support federal efforts to save natural and historic treasures, and to expand efforts at all levels to protect ocean and coastal resources. We need to do this for our kids and for future generations. These priorities are reflected in my Budget as part of my Lands Legacy Initiative.

I am happy that the Miller-Young bill seeks to achieve many of these same goals, and for that reason I urge the House take up this bill right away. We do, however, have concerns about several aspects of H.R. 701, and we will work strongly in the House to enact amendments to address those concerns and to ~~pass this bill as soon as possible~~.

[If asked if this means we would oppose an unamended bill:] We hope that each of our concerns will be addressed in the House. If not, we would insist that these issues be resolved in the Senate or otherwise prior to enactment of the legislation.

support prompt House passage of the bill.

Bills to Control Electric Power Industry Emissions: Comparison of Emissions Caps



* Date of Hg cap varies between bills (2005-2010)

** Moynihan does not cap CO₂ or Hg emissions

*** Kucinich eliminates Hg emissions by 2010

(Utilities from NY, NJ, PA)

March 27, 2000

Clean Energy Group

Integrated Air Quality Strategy Legislative Strawman Proposal

The following framework (referred to as the Integrated Strategy) is offered as a starting point to initiate discussion of a national uniform multiple pollutant regulatory strategy for the power generation industry. This framework has evolved based on input from various stakeholders, and will continue to evolve as the dialogue continues.

Introduction

The Integrated Strategy proposes a mandatory national regulatory program designed to reduce and minimize impacts to human health and the environment resulting from multiple air pollutants emitted at electric generating units on an integrated basis.

The Integrated Strategy provides a hybrid approach for addressing future air regulatory challenges, including technology forcing requirements and air quality based emission reduction targets. Affected units would be subject to an enforceable commitment to operate under cap-and-trade programs for NO_x, SO₂, CO₂, and mercury. These cap-and-trade programs would provide participating companies with a set of emission targets that would not change for a period of 15 years, unless further reductions are needed to attain and maintain health based standards. The national emission caps proposed are based on air quality objectives. In addition, the Integrated Strategy would provide affected units flexibility under EPA's New Source Review (NSR) program, while maintaining certain technology forcing aspects of the program.

After 15 years, EPA would reevaluate the national emission performance targets under the program based on an analysis of air quality needs, commencing no later than 5 years in advance of the 15 year deadline.

Key Components

The key elements of the Integrated Strategy include:

- Mandatory national program
- Declining tonnage caps for NO_x, SO₂, CO₂, and mercury by dates certain
- Compliance flexibility (banking & trading)
- Streamlined NSR requirements

Framework Objectives

- Significant air quality improvements
- Regulatory stability over a period of 15 years for improved management of existing assets and new capital investments (i.e., business certainty)
- Reduced compliance costs for superior environmental results

- Accelerated introduction of new lower-emitting power plants

Principles for Implementing Proposed Reduction Targets

- 1) national declining tonnage caps for NO_x, SO₂, mercury and CO₂ to be achieved by dates certain;
- 2) performance targets based on air quality objectives, as opposed to technological capability;
- 3) allocations under tonnage caps based on a portfolio output basis (i.e., total energy), insuring that new and existing sources receive equal treatment;
- 4) NO_x cap should be lower during the summer ozone season versus non-ozone season;
- 5) reward early reductions and efficiency;
- 6) mercury control requirements should avoid a command-and-control approach, based on a source-by-source control requirement that would limit compliance options and increase costs;
- 7) national trading and banking of allowances;
- 8) new sources coming in to the program would receive an allocation of allowances from the outset based on their permitted emission rate (i.e., new sources would not be placed at a disadvantage by forcing them to go to the market to purchase an initial allocation of allowances).

Principles for Streamlining New Source Review

Revise the new source review program to enable sources to operate under a series of cap-and-trade programs and to use a "potential-to-potential" (i.e., potential to emit to potential to emit) test for NSR applicability determinations when making modifications to a unit (except major repowering/rehabilitation projects and new project developments). New sources would have to install BACT or LAER technology. However, given the aggressive emission caps that would be in place, the definition of what constitutes BACT/LAER technology would be revised to avoid situations where clean sources are required to make disproportionately large investments in pollution control equipment to generate only small incremental emission reductions.

In addition, with the implementation of a strong system of pollutant caps, policymakers should consider options for modifying the existing NSR program requirements that require new sources to obtain offsets. These alternative options should seek to reduce barriers to entry for new, clean generation, while recognizing the significant investments that certain generating companies have made in generating emission reduction credits (e.g., by providing a transition period preceding the elimination of the offset requirement, by allowing the conversion of offset credits to allowances, etc.).

Summary of Pollutant Caps

Pollutant reductions for NO_x, mercury, and CO₂ would be implemented under a national cap and trade program, with allowances allocated on a total energy/output basis and credit awarded for early action. SO₂ reductions would be implemented under the existing Acid Rain program. Further emission reductions beyond the national, proposed targets may be required in order to insure attainment and maintenance of existing health based standards. Carbon monoxide (CO) and coarse particulate (PM₁₀) would also be incorporated into the program, although trading and averaging of emissions reductions would not be allowed. Rather, CO emissions would be controlled by exercising

best combustion control practices. PM₁₀ emissions would be capped at an average annual emission level of 0.03 lbs TSP/mmBtu beginning in 2008.

The following table presents the proposed reduction targets and schedule for the Integrated Strategy.

Please note that the following targets should be reviewed in the context of an integrated NSR flexibility program. The reduction targets and schedules have been carefully developed and coordinated to deliver timely air quality improvements, while creating an incentive for participating companies to evaluate the impact of their compliance strategies on all of the pollutants listed (e.g., optimizing scrubbers for mercury control).

Because of the aggressive targets proposed and the substantial costs associated with meeting these targets, the principles outlined above (e.g., trading and banking, as well as the allocation of allowances to new sources) are especially important.

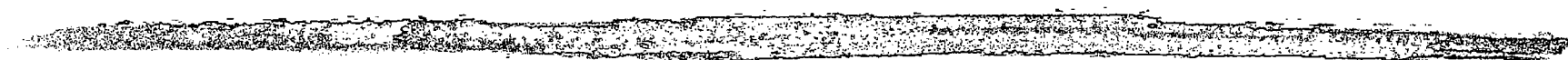
CEG Integrated Strategy Legislative Strawman Proposal

Pollutant	National Tonnage Cap	Reduction Target	Schedule
NO _x	Two-phase program: 4.22 million tons	Two-phase program: Reductions consistent with current commitments, including implementation of the NOx SIP Call Rule in the 22-state SIP call region	2003
	2.11 million tons	50% reduction*	2008
SO ₂	4.5 million tons	50% reduction beyond Phase II Acid Rain requirements	2008
mercury	Two phase program: 26 tons	Two phase program**: 50% reduction	2008
	5-16 tons	70%-90% reduction	2012
CO ₂	Two phase program: 1,925 million tons	Two phase program: Stabilization at 1990 emission levels	2008
	Unknown	Consistent with national emission goal	2012

* Environmental benefits resulting from implementation of the NOx SIP Call are not to be affected in transitioning to a national/annual NOx program. Also, ozone season NOx levels in the 22-state NOx SIP Call region will not be tightened in phase-two beyond levels consistent with an emission rate of 1.5 lbs/MW hr.

** Given the uncertainty surrounding mercury control technology effectiveness as well as the fact that EPA continues to evaluate the scientific evidence regarding the health effects of mercury, these proposed mercury reduction targets may be revised to be consistent with EPA's on-going regulatory determination process.

Integrated Air Quality Strategy



Legislative Strawman Proposal

Clean Energy Group

Senate Staff Briefing

March 29, 2000

The Clean Energy Group

Members of the Clean Energy Group are major electric generating and distribution companies committed to responsible environmental stewardship. Members of the group own and operate all forms of generation: coal, oil, gas, nuclear, hydroelectric and renewables.

Consolidated Edison, Inc.

KeySpan Energy

Niagara Mohawk Power Corp.

Northeast Utilities

PECO Energy

Public Service
Electric & Gas

PG&E Generating

Sempra Energy

Status Quo

- ❑ Delay in achieving air quality objectives
- ❑ Further litigation challenging EPA's actions
- ❑ Stranded investments in pollution control equipment
- ❑ Uncertainty regarding the future costs of compliance

CEG Motivation

- ❑ With the electric generating industry entering a period of unprecedented change precipitated by restructuring developments, this climate of uncertainty becomes increasingly difficult to manage
- ❑ It is from this basis that the Clean Energy Group companies have pursued an alternative approach, one that would provide a high degree of regulatory certainty for companies seeking to manage new and existing assets, while meeting the air quality objectives set out by environmental policy makers

The CEG Process

- ❑ Integrated strategy was initially considered in a regulatory context (i.e., NSR alternative)
- ❑ This approach was limited in certain respects, primarily as a result of *voluntary* opt-in
- ❑ The process that Senator Smith has initiated provides an opportunity to consider an integrated approach without the constraint of current Clean Air Act authority

Advantages of Mandatory Approach

- ❑ Ensuring meaningful emission reductions
- ❑ Creating a level playing field among suppliers operating in competitive wholesale electric markets
- ❑ Facilitating the development of a robust emissions trading program

Framework Overview

- ❑ Mandatory national program
- ❑ Declining *tonnage* caps for NO_x, SO₂, CO₂, and mercury by dates certain
- ❑ Compliance flexibility (banking & trading)
- ❑ Streamlined NSR requirements

Framework Objectives

- ❑ Significant air quality improvements
- ❑ Regulatory stability over a period of 15 years for improved management of existing assets and new capital investments (i.e., *business certainty*)
- ❑ Reduced compliance costs for superior environmental results
- ❑ Accelerated introduction of new lower-emitting power plants

Strawman Reduction Targets

Pollutant	Reduction Target	Timeframe
NO _x	Phase 1: Reductions consistent with current commitments, including implementation of the NO _x SIP Call Rule in the 22-state SIP call region	2003
	Phase 2: 50% Reduction from phase 1 target	2008
SO ₂	50% reduction beyond Phase II Acid Rain requirements	2008

Strawman Reduction Targets, cont.

Pollutant	Reduction Target	Timeframe
Mercury	Phase 1: 50% reduction	2008
	Phase 2: 70%-90% reduction	2012
CO ₂	Phase 1: Stabilization at 1990 emission levels	2008
	Phase 2: Consistent with national emission goal	2012

*Given the uncertainty surrounding mercury control technology effectiveness as well as the fact that EPA continues to evaluate the scientific evidence regarding the health effects of mercury, these proposed mercury reduction targets may be revised to be consistent with EPA's on-going regulatory determination process.

Implementing Proposed Reduction Targets

- ❑ National trading and banking of allowances for NO_x, SO₂, CO₂, and mercury
- ❑ *Tonnage* caps
- ❑ Reward early reductions
- ❑ Allocations based on a total portfolio output basis
- ❑ Equitable treatment for new sources

The Advantages of Trading

- ❑ Cost effective reductions
- ❑ Aggressive reduction targets
- ❑ Facilitating the development of mercury control technologies with a flexible, phased approach
- ❑ Incorporating innovative market incentives for CO₂ control

Age Based Approach

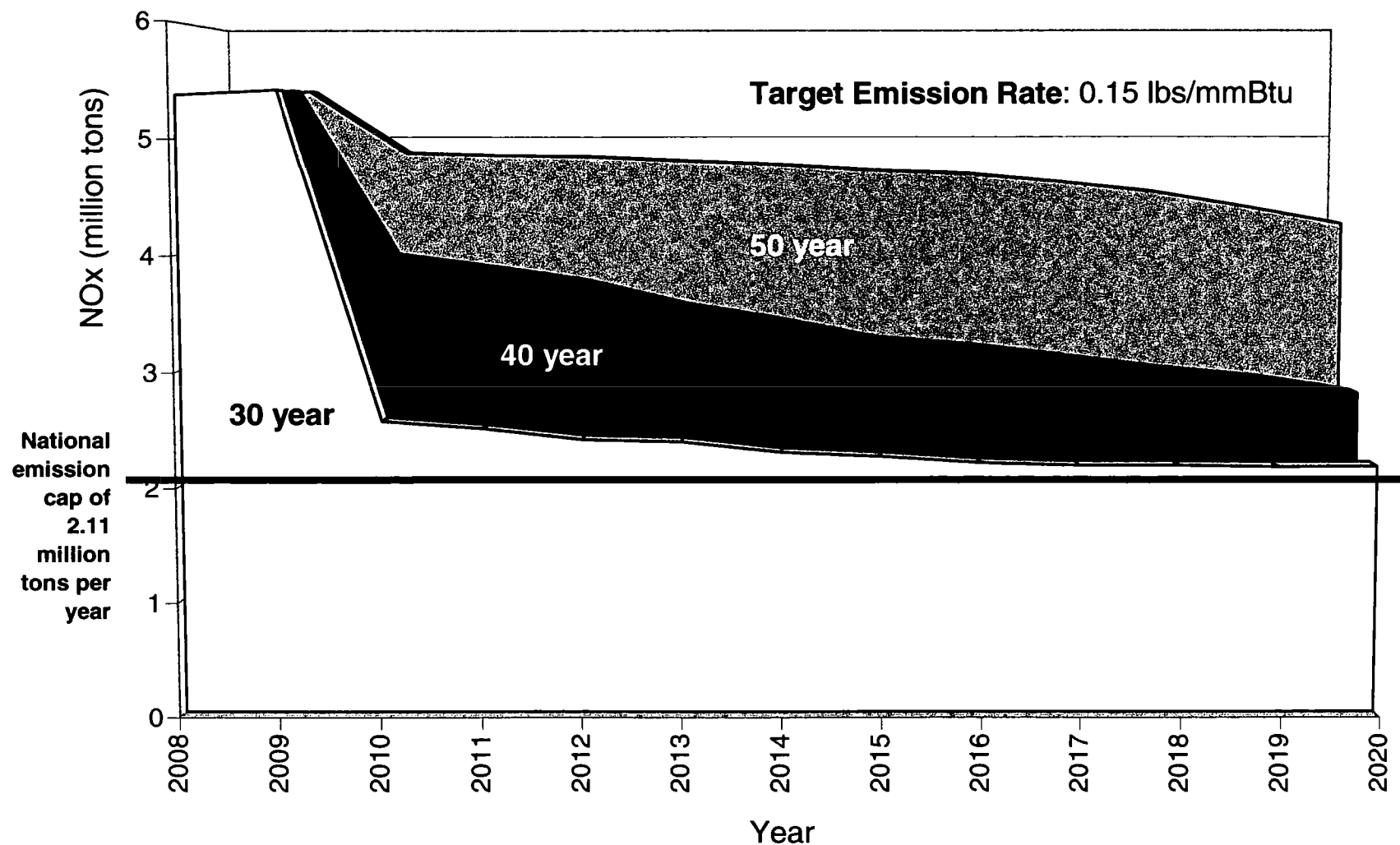
An arbitrary approach:

- ❑ Unit age doesn't necessarily correspond to emissions or emission rates
- ❑ Unit age doesn't necessarily correspond to marginal abatement costs (i.e., violates rules of economic efficiency)

Result:

- ❑ delayed improvement in environmental quality

Projected NOx Emissions Under Various Age Triggers



Streamlining New Source Review

- ❑ "potential-to-potential" test for NSR applicability determinations when making modifications to a unit (except major repowering/rehabilitation projects and new project developments)
- ❑ Lower barriers to encourage new, clean generation
- ❑ Consider cost-effectiveness in making BACT/LAER determinations

The Timing is Right

- ❑ In the face of increasing competition, the electric generating industry will benefit greatly from increased regulatory certainty and fair competition
- ❑ U.S. EPA has suffered several important set backs in attempting to implement its air quality objectives -- stakeholders must come together to ensure the attainment and maintenance of the nation's air quality standards and goals in a cost-effective manner
- ❑ NSR is in need of reform

Summary

- ❑ A hybrid air quality/technology forcing approach
- ❑ A comprehensive program (NO_x, SO₂, CO₂, mercury) delivering a higher degree of regulatory certainty for an industry in transition
- ❑ A cost-effective approach for achieving future regulatory targets

A Continuing Process

- ❑ The CEG strawman framework is put forward as an evolving proposal, which seeks to balance the objectives of industry and environmental stakeholders

Frank Cassidy
President and COO

PSEG Power LLC

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February 29, 2000

Mr. Roger Ballentine
Deputy Assistant to the President for
Environmental Initiatives
115 Old Executive Office Building
17th Street and Pennsylvania Avenue NW
Washington, DC 20502

Dear Mr. Ballentine:

I listened with great interest to your presentation at the AEIC Power Generation Committee meeting on February 3. I was particularly heartened by your comments that continued economic growth and an improved environment are not mutually exclusive and that business and government should be able to find comprehensive solutions that will meet environmental goals while lowering regulatory uncertainty and investment risk. I share these views, and it's my intention to foster this kind of dialogue between the electric power industry and public policy decision-makers.

PSEG has been a leading advocate in the electric power industry for both the move to competition and improved environmental performance. We continue to advocate the need to include environmental safeguards in the form of more stringent, uniform air quality standards into federal electric industry restructuring policy, and we've actively supported the Environmental Protection Agency's regulatory focus on reducing power plant air emissions.

During your talk, you asked for input on how best to rationalize economic policy with continued environmental progress. I offer the following points, and I'm also taking the liberty of sending you a copy of a recent speech I delivered on these issues:

- The Administration should deliver a strong, unambiguous message that federal electric industry restructuring legislation should not go forward without an environmental title that includes uniform, nationwide power plant emissions standards.
- Emission standards should provide a comprehensive approach to controlling nitrogen oxide (NOx), sulfur dioxide (SO₂), carbon dioxide (CO₂), and mercury

(Handwritten notes and signatures)
①
Jeff Janney
We need to follow up.
wch
(A - pls call his office and see when he plans on being in D.C. so we can set up a few minutes together)

and be implemented through emissions caps, source-neutral generation performance standards, and emissions trading provisions covering all four pollutants.

- The Administration also should indicate its willingness to engage the industry and the environmental community in discussions aimed at reaching agreement on the amount of emissions reductions, a timetable for achieving them, and related issues such as the New Source Review provisions of the Clean Air Act.
- Legislation sponsored by U.S. Rep. Frank Pallone (D-NJ) that would implement uniform emissions controls for NOx, SO2, CO2, and mercury as well as environmental disclosure and consumer protection provisions, deserves strong consideration as an appropriate environmental title to comprehensive federal electric industry restructuring legislation.

I very much appreciate the opportunity to share my thoughts with you and would be happy to discuss these ideas in greater detail.

Sincerely,

Frank Gering
and

Mark _____

Attachment

C Hon. Frank Pallone, Jr.
U. S. House of Representatives
420 Cannon House Office Building
Washington, DC 20515-3006

• Need to be firm that 2003 SIP Call will go into effect. This will

ENERGY POLICY AND ENVIRONMENTAL COMPARABILITY:
THE CASE FOR FEDERAL STANDARDS

FRANK CASSIDY

PRESIDENT AND CHIEF OPERATING OFFICER

PSEG POWER LLC

Conference on Implementing the New Federal Standards
Center for Business Intelligence
Washington, DC
January 20, 2000

I want to thank the Center for Business Intelligence for both organizing a conference around issues I and my company care about very strongly and for providing me with the opportunity to take part in the discussion.

I note with some concern, however, that my presence here today might raise expectations that will be difficult for me to meet. First, I've got to deliver on what's been billed as not only a keynote address, but a special keynote address; and, after I get back to work, my associates may be wearing tee-shirts that say, "My Boss Went to a Conference on Business Intelligence and Didn't Come Home Any Smarter Than When He Left." And I suspect they may be right.

The reality for all of us in the electric power industry is that business intelligence is a commodity in great demand and in very short supply. Our industry is in the midst of a rapid, fundamental transformation. This transition to competition has already spurred business transactions in the form of mergers, acquisition, and asset sales involving billions of dollars and affecting the lives and livelihoods of tens of thousands of utility employees and millions of shareholders.

Business intelligence, if accurate, pertinent, timely, organized, integrated, and applied correctly, is the stuff that wisdom is made of – as measured by investment decisions that enhance shareholder value, serve the needs of customers, support economic growth, provide meaningful employment, and allow those making the investment decisions to keep their jobs.

As one who can be included in that last category, I can say very clearly that the environmental performance standards we're here to discuss and to which our industry ultimately will be held, constitute an important category of business intelligence. I will say more about this later, but I first want to provide some background on my company, how we've changed, where we are headed, and why we believe environmental performance and environmental responsibility are such vital parts of our industry's future.

PSEG Power LLC is a very new company. We are part of a corporate family, however, with very strong bloodlines in the energy business. This heritage includes more than 90 years of electric generation and electric and gas sales and distribution experience, first as Public Service Electric and Gas Company (PSE&G), one of the nation's largest combined electric and gas utility companies. Over the past 15 years, we've evolved, and, in fact, are still evolving, from PSE&G, the utility, into Public Service Enterprise Group (PSEG), an international energy holding company with operations and assets around the world, and an expanding business scope of which PSEG Power is an integral part.

Right now, the PSEG family includes:

- The utility company, which serves more than two million customers in New

Jersey. Many of you may be aware that New Jersey has completed – and PSE&G took the lead in promoting – one of the country's most aggressive and far-reaching electric restructuring plans. As a result, all electric customers in our state now can choose their electric energy suppliers. Indeed, some of you here today may represent companies that have entered the New Jersey market.

- PSEG Energy Technologies is an unregulated marketer of wholesale and retail energy and energy services. Technologies has a current market focus on the Middle Atlantic to Northeast region of the country and has already built a strong presence in the HVAC and mechanical contracting business in this region.
- PSEG Global develops, acquires, and operates power generation and energy distribution facilities throughout the world. While this company was established in 1985, it really has been focusing on international development for about the past six years and currently has interests in about 35 electric generation and electric and gas distribution projects worldwide.

And there is my company, PSEG Power, which was established last summer as an unregulated affiliate of the holding company. Our mission is to make, market, and sell electricity on a wholesale basis and engage in commodity trading of electricity, gas, and emissions credits. When the transfer of assets from the utility to Power is completed later this year, we will rank as one of the world's largest independent power producing companies, with a generation portfolio of about 10,200 megawatts. And, when we close on some recent acquisitions of nuclear and fossil capacity, we will have more than 11,000 megawatts of capacity under the PSEG Power brand.

We expect to increase our generation portfolio by 3,000 to 5,000 megawatts over the next five years. Our goal is to be a major player in electric generation, wholesale energy sales, and energy trading in a region that extends as far north as Maine, as far south as the Carolinas, and as far west as Ohio.

Taken as an entity, PSEG companies represent more than \$18 billion in assets. Yesterday, we reported 1999 financial results that included approximately \$6.5 billion in revenue and operating earnings of \$723 million. We own or have under development approximately 15,000 megawatts of electric generating capacity and sell about 4 billion therms of natural gas. Our combined domestic and international service territories encompass 121,000 square miles and we serve about 5 million customers. It's interesting to note, and an indication of how much our company has changed, that for the first time in its history, PSEG now has more customers overseas than in the United States.

This transformation of our company reflects a sea change in how we view our business. It presents myriad new challenges as well as opportunities and will require of us the ability to think and act on the run, to change aspects of our culture, to learn new skills, and to evolve.

As a corporate entity and as individual companies, we are embracing the dynamics of a real marketplace, and to quote a somewhat ubiquitous automobile advertisement, "This Changes Everything."

Well, almost everything.

Here's what will not change.

-- Our corporate commitment to environmental responsibility;

-- Our belief that the electric power industry must improve its environmental performance.

-- And our belief that restructuring of the industry presents a public policy crossroads for reconciling and rationalizing the economic benefits of a robust, competitive energy marketplace with environmental safeguards and uniform air quality standards that will deliver these benefits while improving air quality and protecting public health.

These views have been associated with PSEG for more than a decade. They have been brought to the forefront of the national electric industry restructuring debate through the vision, voice, energy, and leadership of Larry Codey, president of PSE&G, who unfortunately -- for us and the industry -- has announced his retirement effective at the end of next month.

In this regard, if there is one clear message I'd like to get across today, it's this:

Our corporate structure may be changing and our corporate leadership may be changing but our commitment to -- and campaign for -- uniform, comparable, and equitable emission standards implemented in conjunction with national industry restructuring policy is not changing and will go forward.

Larry, in a speech to the National Association of Regulatory Utility Commissioners about three years ago, called the impending restructuring of the electric power industry, "the last, best chance for clean air." He was right then and he is right now.

I expect that because of PSEG Power's mission and business scope, changes in the way our corporation is now organized, and the requirement for the utility to focus on meeting the challenges of retail competition in New Jersey, PSEG Power will assume the role as primary advocate for this policy.

Different messenger.

Same message.

As an industry and as a society we have both the responsibility and a unique opportunity to achieve the economic goals of a more efficient, lower-cost, more innovative energy market and use this transition as a catalyst for improving environmental performance at costs that are reasonable and allocated fairly.

This is good business policy and good public policy.

As Congress continues to move ahead on forging a national consensus on industry restructuring we also will continue working with other energy companies and representatives of the environmental community to expand and strengthen the bipartisan coalition that I believe will be successful in building environmental equity into a consensus legislative solution.

PSEG is in a unique position to comment on the restructuring of the electric power industry and the potential impact – both positive and negative – on the environment.

As a corporation, we have more than 10 years of experience in natural gas deregulation;

PSEG has been an active advocate within the electric industry for the move to competition;

And, we've backed up our rhetoric on environmental issues by successful implementation of innovative, voluntary programs that solved business and operational problems while improving environmental performance.

In 1992, our electric operations in New Jersey accounted for about 27% of all nitrogen oxide (NOx) emissions produced in the state. We came to the realization that it would be impossible for the state to achieve health-based standards for clean air at reasonable cost unless we became part of the solution instead of continuing as part of the problem. We decided to confront the issue head-on and announced a voluntary commitment to cut these emissions 80% by the year 2000. Y2K is here and I'm here to say we will make our target and keep our commitment. As a result, our New Jersey operations now account for only 5% of the state's NOx emissions.

I'm also pleased to announce this morning that PSEG Power will maintain its focus on controlling emissions through a new voluntary commitment.

Starting this year, we will implement a seasonal, nitrogen oxide generation performance standard of 1.5 pounds-per-megawatthour that will apply across all generating facilities owned by PSEG Power. This standard will keep in place the operational discipline and management focus that allowed us to meet our 80% NOx reduction commitment. It will make us better prepared to meet the rigors of complying with the regional and national emissions reductions requirements that we've been advocating. And it will deliver emissions reductions during the summer months when

ozone pollution is at it's worst.

We will also factor the generation performance standard into the economic equation as we consider options to grow our generation fleet. If we acquire additional coal-fired assets as part of this strategy we will take whatever steps necessary to bring the facilities into compliance.

Our environmental focus has not been limited to clean air issues.

We responded to regulatory concerns about the potential for adverse environmental impact from the cooling water intake system at our Salem Nuclear Generating Station by proposing and implementing the world's largest privately funded wetlands restoration project, a solution that involves restoration and preservation of more than 30 square miles of degraded wetlands in New Jersey and Delaware. The project has precluded construction of costly cooling towers and will benefit the ecology of the Delaware River estuary long after Salem station ceases operation.

We've been a national leader on finding ways to minimize production of solid and hazardous wastes and we've made good progress in building into our culture the notion that finding ways to reduce pollution and eliminate waste ultimately leads to improving efficiency, lowering costs, and increasing competitive vitality.

And while it is, indeed, the fact the scope of PSEG's business now ranges from the eastern half of the U.S. to South America, Europe, and the Far East, our corporate roots are in New Jersey. I and many of my colleagues have spent the better part of our business careers serving the consumers and economy of this small state.

New Jersey is the most densely populated state in the nation but it includes the natural beauty of ocean shoreline, the ecological complexity of bayshore estuaries, and the natural wonder of the Pinelands forest, all available and reachable in a day's drive. We are a heavily urbanized, industrialized state but agriculture still remains an essential part of our economy. You can't live or work in New Jersey and not understand that natural resources are finite, fragile, and under constant pressure. The state is a national laboratory for not only reconciling environmental protection with economic development but for building the understanding that the two are inextricably linked.

It is because of this perspective that we first worked to gain an understanding of the impact of our own operations on the environment and economy of the state, and then translated that awareness into an understanding of our industry's impact on the nation's environment, and how deregulation could affect that relationship. Here is what we've learned:

First, it's important to understand that power plant emissions are a major contributor to air quality problems in the United States.

Electric generating facilities account for about 66% of all sulfur dioxide (SO₂)

emissions; about 29% of nitrogen oxide emissions; and 36% of carbon dioxide (CO₂) emissions.

I think it's also significant that most of the emissions are produced by the nation's 50 biggest utility generating companies, all located east of the Mississippi River. These companies operate coal-fired plants that account for about 73% of all electric industry nitrogen oxide emissions and about 78% of sulfur dioxide and 64% of carbon dioxide that power plants put into the air.

These statistics only tell part of the story. They don't include emissions of acid gases, air toxics, and metals such as mercury, that are of growing environmental concern and regulatory focus.

Second, power plant emissions travel hundreds of miles from their source and affect air quality on a local and regional basis. There are those in the industry who continue to dispute this point but the phenomenon has been studied, documented, and validated by the U.S. Environmental Protection Agency, the Ozone Transport Assessment Group process, and by other independent agencies and environmental organizations, such as the Northeast States for Coordinated Air Use Management, a consortium of state air quality managers.

Third, the existing system of state and federal power plant emissions standards, some based on fuel source, some on age of the facility, some on geography, has evolved as a kind of regulatory patchwork stitched together over a time when power plants were not competing with each other and we lacked an understanding of the long-range pollution transport problem.

With these three lessons in mind, it doesn't make business sense or sound public policy to move ahead with restructuring and the opening of markets on a nationwide basis without the appropriate environmental safeguards and emission standards. To do so will make existing air quality problems worse, make the cost of mitigation more onerous, unfairly shift those costs among regional economies, and distort the emerging competitive market because the ability to escape the cost of controlling pollution will be translated into an unfair competitive advantage. In short, the dirtiest power will be the cheapest power and the ability to pollute will wind up as a competitive edge.

We've been advocating these positions and making these points for a number of years in a number of forums. And as events have unfolded, the facts are that the environmental, public policy, and competitive consequences we've been talking about are becoming part of an unpleasant and unfair reality.

In plain terms, what we said was going to happen is happening:

In 1994, during the debate over FERC Order 888, we made the case that opening up wholesale markets would favor dirtier, and therefore, cheaper coal-fired generation sources and result in emissions increases affecting regional air quality.

Here's what the latest data shows: In the three-year period from 1995, when Order 888 opened wholesale markets, to 1998, coal-fired generation in the eastern half of the country increased 8.2%. The rate of increase for the previous three years, 1992 to 1995, was 4.6%. This equates to more than 36 million megawatthours of additional coal-fired power that produced annual increases of about 55,000 tons of nitrogen oxide emissions and about 40 million tons of carbon dioxide. The increase in emissions from coal-fired generation is considerably more than the annual emissions produced by all power plants in New Jersey.

We've supported EPA regulatory action aimed at tightening health-based standards and reducing regional power plant emissions. We were one of a handful of energy companies to support EPA's call for new National Ambient Air Quality Standards for ozone and particulates. And we were a leading and vocal advocate for EPA's rule calling for a seasonal cap on nitrogen oxide emissions that would have required significant cuts at power plant sources in 22 eastern states. This is what is usually referred to as the "SIP Call," shorthand for EPA's requirement for developing State Implementation Plans to achieve the reductions. In supporting regulatory action, we pointed out that it still would be necessary to codify emission caps and uniform emissions standards in federal industry restructuring legislation because of anticipated attempts to delay or derail implementation of the regulations through political maneuvering and legal challenges. Well, there has been plenty of both.

As we meet here today we are presented with the following:

EPA's congressional opponents used the federal budget process and the tactic of attaching riders to funding bills as an arena for political skirmishing that involved and finally exhausted just about everyone on both sides of the issue.

-- Utilities sued EPA to block both the new air quality standards and the SIP Call and succeeded in getting a panel of the Federal Appeals Court to overturn the air quality standards and stay implementation of the SIP Call. EPA has vowed to continue the legal fight and both issues might wind up being adjudicated by the Supreme Court.

And in what is perhaps the most regrettable development, EPA has filed suit against a number of utilities alleging violations of the Clean Air Act's New Source Review (NSR) requirements. Some of the utilities suing EPA are also the subject of the agency's NSR complaints. The State of New York has filed a separate suit alleging NSR violations and other states may not be far behind.

EPA has upheld petitions filed by four Northeastern states under Section 126 of the Clean Air Act that would require a number of Midwest emissions sources, including power plants, to reduce nitrogen oxide and sulfur dioxide emissions, a decision that also will soon be the subject of its own federal court challenge.

This is not the best way to develop good public policy and underscores, once

again, the need for a comprehensive legislation solution.

We've also said all along that implementing wholesale and retail competition without resolving environmental inequities in terms of emissions control requirements provides an unfair subsidy to suppliers who can continue to offer a price that doesn't include the cost of controlling emissions.

In New Jersey, shortly after retail markets opened, two large industry associations representing chemical and other manufacturers reached power supply deals with Midwest companies actively employing the pollution subsidy.

And, it what seems to me to be a rather striking example of the problem, the federal government awarded a power supply contract for federal facilities in New Jersey, including the Statue of Liberty, to a company that a few days earlier was accused by EPA of violating the Clean Air Act. When questioned, the General Services Administration, which awarded the contract, had a very simple answer: a cheaper price.

Now, I will state for the record that PSEG has been supplying the Statue of Liberty with electricity for more than 50 years. It's been a great source of pride to the company and our employees who took a leading role in helping to raise funds to refurbish the statue and repair the decades of environmental damage.

We openly and actively support competition, and if we get beat fairly on the basis of price, so be it; we'll try harder. The fact is that in a fair and efficient market, low-cost producers will run their plants and sell power. Low cost, however, should be a function of efficiency, innovation, better processes, and better quality. It should not be the result of regional, regulatory discrepancies that were never designed to cope with the realities of a marketplace extending beyond native load. The Statue of Liberty may be getting cheaper power but at the cost of increases in sulfur dioxide emissions and acid deposition the impact of which may ultimately prove to be no bargain at all.

The public and political reaction to these developments in New Jersey has taken the form of a backlash against the decision to deregulate the utility industry. There have been rumblings in the state legislature about imposing unilateral environmental standards for all energy suppliers seeking to operate in the state, which, to me, is another clear indication why these issues need to be coordinated and resolved on the national level.

The question, then, is how best to achieve this goal.

We support EPA action to tighten national health-based air quality standards. We support EPA's focus on reducing power plant emissions through implementation of the SIP Call and Phase II of the acid rain program. And we also support EPA's most recent action involving the Section 126 petitions.

As we've noted, however, these initiatives, which would have helped provide a reasonable and orderly timetable for achieving these seasonal reductions, either have

been, or soon will be drawn into the black hole of the legal process and federal courts. And you can probably surmise from that last comment that I'm an engineer by training and not a lawyer.

The real solution resides with Congress and with electric industry restructuring legislation that should be on its agenda early this year.

We know that the time has come to coordinate on a national basis the fundamental changes in the economic rules affecting our industry and that competition has great potential to produce the efficiencies and innovations that will mean lower costs and a more productive national economy.

We know that the electric power industry produces pollution that affects the environment and public health.

We know that at some juncture public policy decisions will be made that demand a reduction in these emissions to protect public health.

We also know that by coordinating these reductions on a national basis through rational implementation policies and market-based emissions trading systems, our industry can deliver the efficiencies and innovations that will mean lower costs, cleaner air, and a more productive national economy than the current course of litigation, delay, and denial.

For all of these reasons, I am today renewing our call for incorporating uniform, more stringent emissions requirements into comprehensive national electric industry restructuring legislation. These standards should include national caps on power plant emissions of nitrogen oxide, sulfur dioxide, carbon dioxide, and mercury.

We can achieve the caps through output based, fuel-neutral generation performance standards applicable to all – and the key word is all – generating facilities.

This approach will:

- Ensure that as the industry responds and grows to meet the demands of the national economy, it won't be at the expense of national environmental quality.
- Link implementation of emission standards to opening of markets on a nationwide basis.
- Result in all generators of electricity internalizing the costs of the environmental controls necessary to protect public health.
- Prevent the shifting of these costs to other regions and other competitors.
- And result in reduced emissions and cleaner air at a cost well below the

savings– and without jeopardizing the other economic benefits – that will accrue from competition.

Congress is a key – but not the only venue – where these issues can be resolved.

We can engage the EPA – now – in meaningful discussions aimed at settling the dispute over application of the new source review provisions of the Clean Air Act and the SIP Call.

We can engage the Administration and environmental organizations – now – in discussions on creative, market-based ways to approach the issues of climate change and the regulatory and public health concerns about mercury and air toxics and perhaps work toward a kind of unified, integrated solution that addresses all of these concerns logically and efficiently.

And we can work with government at the state and federal level – now – on ways to encourage investment in energy efficiency and renewable energy sources.

I think it's important for me to state that these policies are not anti-coal nor are they meant to exacerbate regional political antagonisms. I represent an unregulated electric generating company that currently either owns or operates more than 2,000 megawatts of coal-fired capacity. Coal is an abundant and valuable energy resource and its continued use will be essential to bridge the gap until the next generation of energy technologies is available.

I reject the notion, however, that the use of coal and environmental responsibility are mutually exclusive.

We have the technology and the ability to deploy emissions controls and processes that can achieve significant reductions in emissions at reasonable cost.

What we don't have right now is information and clear public policy direction on the amount and timing of emissions reductions requirements. We have legal entanglements, political wrangling, uncertainties, confusion, and delay.

This doesn't sound like business intelligence to me. It sounds like additional risk which as a businessperson contemplating investment decisions involving lots of money and the collective future of good, talented, hard-working people, I don't like very much.

This situation really is at the heart of the voluntary emissions control commitments that we've implemented.

Meeting the 80% target was a real challenge. And meeting the nitrogen oxide performance standard I announced this morning, especially in light of competitive pressures and the financial realities of our business plan, isn't going to be any kind of slam dunk, either.

Ultimately, however, there will be a payoff in the form of the elusive commodity of business intelligence. We will have traveled part of the road and we will be better prepared to meet the rigors of making the environmental improvements that will become an economic reality for our industry.

We don't know how much and we don't know how soon but social responsibility and public policy will demand that we clean up our act. We can resolve these issues fairly and in a manner that achieves the economic promise of a vigorous, competitive marketplace. Let's just do it and get on with the task of re-inventing our industry.