



The Clear Skies Act of 2003

New York and Clear Skies



Highlights of Clear Skies in New York

- **New York sources would reduce emissions of SO₂ by 62%, NO_x by 35%, and mercury by 72% by 2020 due to Clear Skies.¹ Some of these reductions will occur as a result of New York's state rule.**
- **The health benefits in New York would total \$6 billion (\$1.2 billion under the alternative estimate) and include approximately 800 fewer premature deaths (500 under the alternative estimate) and 1,400 fewer hospitalizations/emergency room visits.**
- **In addition, New York would receive environmental benefits, including elimination of chronic acidity from Adirondack lakes and visibility improvements valued at \$170 million for New York residents who visit National Parks and Wilderness Areas nationwide.**
- **Clear Skies does not significantly impact electricity prices. With or without Clear Skies, electricity prices in the electricity supply region that includes New York are expected to remain below 2000 prices.**

¹ New York adopted state-specific caps as part of its Acid Deposition Reduction Program for the power sector that may lower emissions for the Base Case. However, EPA was not able to analyze New York's program since it was adopted March 26, 2003.

Clear Skies: An Innovative Approach to Improving Human Health and the Environment

Why Clear Skies?

- **Air quality has improved, but serious concerns persist**
 - New York's citizens suffer ill effects from air pollution, including asthma attacks and premature death
- **Electricity generation sector remains a major emissions source**
 - Very cost-effective to control the power sector, relative to other sources
 - Sources are concerned about upcoming complex and burdensome regulations

Advantages of the Clear Skies Approach

- **Guarantees significant nationwide emissions reductions – beginning years before full implementation**
 - New York sources would substantially reduce emissions of SO₂, NO_x, and mercury
 - Delivers dramatic progress towards achievement of critical health and environmental goals
- **Uses proven, market-based flexible approach with incentives for innovation**
 - Recognizes environmental needs as well as industry constraints, allowing industry to better manage its operations and finances while lowering risks to the public
 - Sources are projected to install pollution controls to enable continued reliance on coal
- **Increases certainty across the board for industry, regulators, and consumers**

Under Current Clean Air Act Power Plants Would Face a Complex Set of Requirements

NSR Permits for new sources & modifications that increase emissions

Ozone

1-hr Serious Area Attainment Date

Designate areas for 8-hr Ozone NAAQS

1-hr Severe Area Attainment Date

Marginal 8-hr Ozone NAAQS Attainment Date

8-hr Ozone Attainment Demonstration SIPs due

Assess Effectiveness of Regional Ozone Strategies

Moderate 8-hr Ozone NAAQS Attainment Date

Note: Dotted lines indicate a range of possible dates.

¹ Further action on ozone would be considered based on the 2007 assessment.

² The SIP-submittal and attainment dates are keyed off the date of designation; for example, if PM or ozone are designated in 2004, the first attainment date is 2009

EPA is required to update the new source performance standards (NSPS) for boilers and turbines every 8 years

OTC NO_x Trading

NO_x SIPs Due

NO_x SIP Call Reductions

Possible Regional NO_x Reductions? (SIP call II)¹

Serious 8-hr Ozone NAAQS attainment Date



Phase II Acid Rain Compliance

Mercury Determination

Interstate Transport Rule to Address SO₂/ NO_x Emissions for Fine PM NAAQS and Regional Haze

Proposed Utility MACT

Designate Areas for Fine PM NAAQS

Final Utility MACT

New Fine PM NAAQS Implementation Plans
Regional Haze SIPs due

Compliance with Utility MACT

Latest attainment date for Fine PM NAAQS³

Compliance for BART Sources

Compliance for BART sources under the Trading Program

Second Regional Haze SIPs due

In developing the timeline of current CAA requirements, it was necessary for EPA to make assumptions about rulemakings that have not been completed or, in some case, not even started. EPA's rulemakings will be conducted through the usual notice-and-comment process, and the conclusions may vary from these assumptions.

Acid Rain, PM_{2.5}, Haze, Toxics

Clear Skies Sets a Firm Timeline for Emission Reductions

2004: The NO_x SIP call (summertime NO_x cap in 19 Eastern States + D.C.)

2004

The existing Title IV SO₂ cap-and-trade program provides an incentive and a mechanism to begin reductions upon enactment of Clear Skies years before regulatory action under the current Act.

2008: Clear Skies NO_x Phase I (2.1 million ton annual cap assigned to two Zones with trading programs)

2008

2010: Clear Skies Hg Phase I (26 ton annual cap with a national trading program)

2010

2010: SO₂ Phase I (4.5 million ton annual cap with a national trading program)

2018: Clear Skies NO_x Phase II (1.7 million ton annual cap assigned to two Zones with trading programs)

2018

2018: Clear Skies Hg Phase II (15 ton annual cap with a national trading program)

2018: Clear Skies SO₂ Phase II (3.0 million ton annual cap with a national trading program)

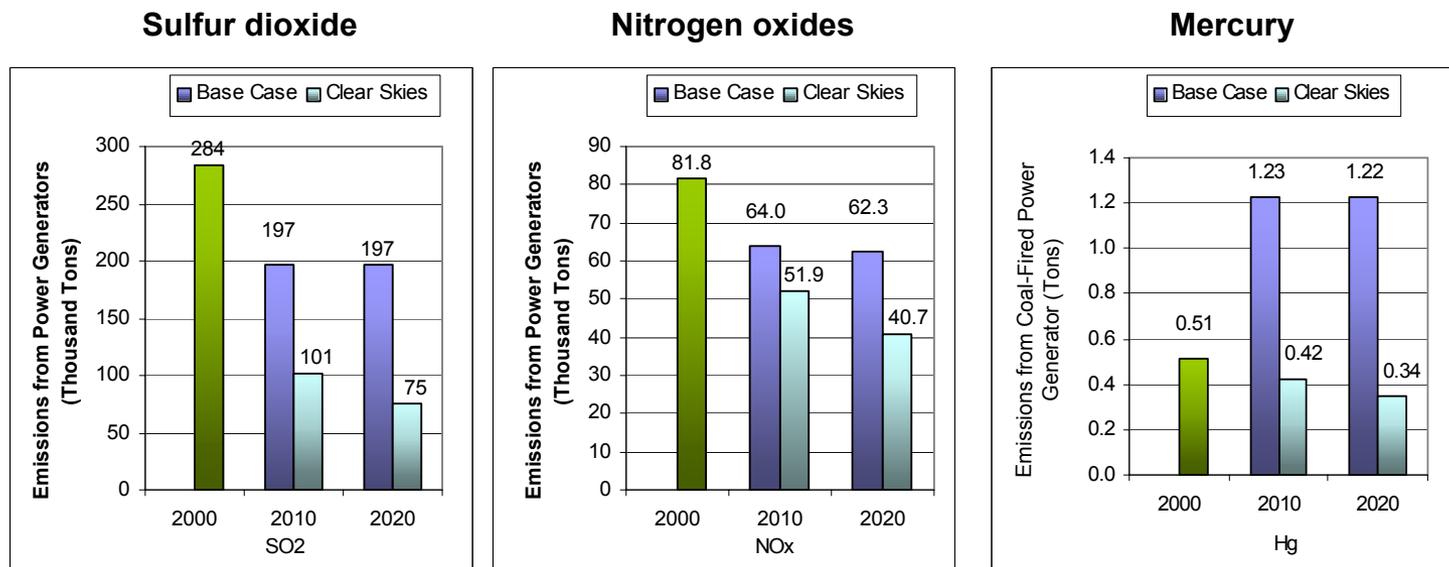
Emissions in New York under Clear Skies

Emissions in New York (2020) would be significantly reduced from 2000 levels:

- 74% reduction in SO₂ emissions
- 50% reduction in NO_x emissions
- 33% reduction in mercury emissions

Some of these reductions will occur as a result of New York's state rule which was not included in EPA modeling because the rule was passed in March of 2003.

Emissions: Current (2000) and Existing Clean Air Act Regulations (base case*) vs. Clear Skies in New York in 2010 and 2020



Note: The base case using IPM includes Title IV, the NO_x SIP Call, NSR settlements, and state-specific caps in CT, MA, MO, NC, NH, TX, and WI. It does not include mercury MACT in 2007 or any other potential future regulations to implement the current ambient air quality standards or other parts of the Clean Air Act. Base case emissions in 2020 will likely be lower due to state and federal regulatory actions that have not yet been promulgated.

Clear Skies Health Benefits in New York

Improve Public Health

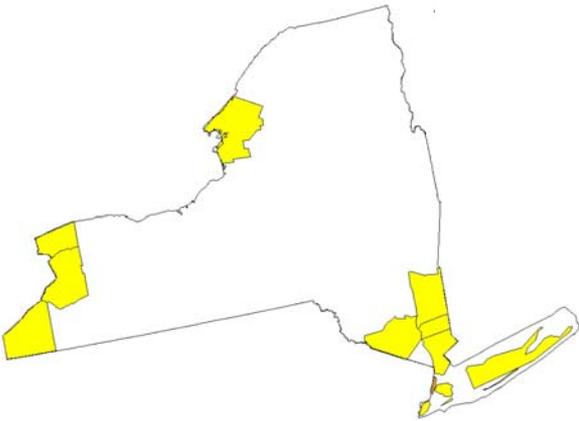
- **Reduced ozone and fine particle exposure** by 2020 would result in public health benefits of:
 - approximately 800 fewer premature deaths each year¹
 - approximately 500 fewer cases of chronic bronchitis each year
 - approximately 1,600 fewer non-fatal heart attacks each year
 - approximately 1,400 fewer hospital and emergency room visits each year
 - approximately 90,000 fewer days workers are out sick due to respiratory symptoms each year
 - approximately 10,000 fewer school absences each year
- **Reduced mercury emissions** would reduce exposure to mercury through consumption of contaminated fish, resulting in additional, unquantified benefits for those who eat fish from lakes and streams in New York that are contaminated with mercury.

By 2020, New York would receive approximately \$6 billion in annual health benefits from reductions in fine particle and ozone concentrations alone due to Clear Skies.¹

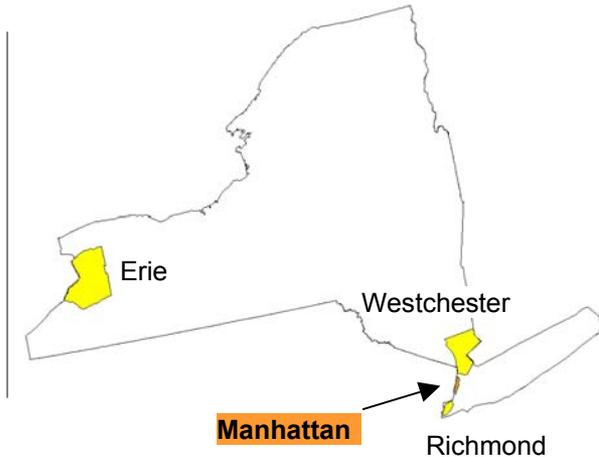
1. An alternative methodology for calculating health-related benefits projects approximately 500 premature deaths prevented and \$1.2 billion in health benefits each year in New York by 2020.

Counties Projected to Remain Out of Attainment with the PM_{2.5} and Ozone Standards in New York

Current Conditions



2010 Base Case



2020 Base Case



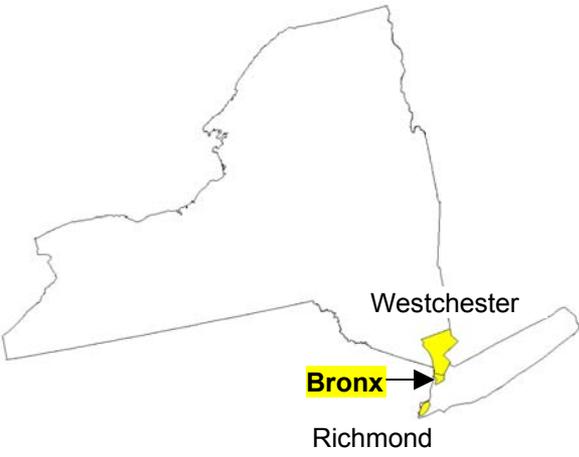
Legend

- out of attainment with the 8-hour ozone standard only
- out of attainment with the annual fine particle standards only
- out of attainment with both standards

2010 Clear Skies



2020 Clear Skies



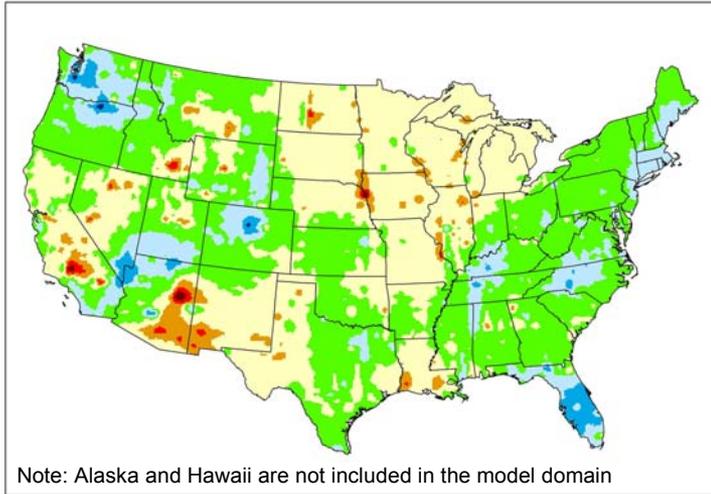
Note: Based on 1999-2001 data of counties with monitors that have three years of complete data. The base case includes Title IV, the NO_x SIP Call, the Tier II, Heavy-Duty Diesel, and Nonroad Diesel rules, final NSR settlements as of early spring 2003, and state-specific caps in CT, MA, MO, NC, NH, TX, and WI. It does not include mercury MACT or any other potential future regulations to implement the current ambient air quality standards or other parts of the Clean Air Act.

Clear Skies Would Help New York Meet Air Quality Standards

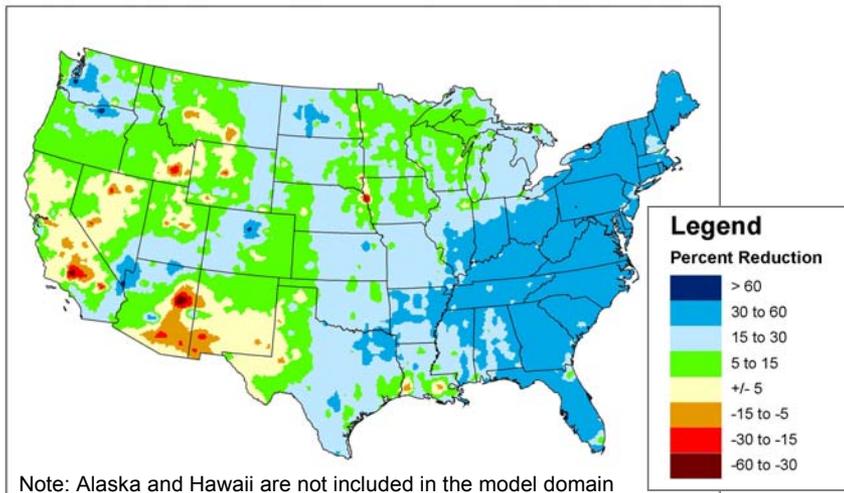
- Currently there is one county exceeding the annual fine particle standards and eleven counties exceeding the 8-hour ozone standard.
 - Many of these counties are expected to be brought into attainment with the ozone standard under existing programs.
- **Clear Skies would significantly improve air quality in New York** beyond what is expected from existing programs.
 - By 2010, Clear Skies would bring Erie County (population approximately 1 million) into attainment with the 8-hour ozone standard.
 - By 2020, Clear Skies would bring Manhattan (population approximately 1.5 million) into attainment with the annual fine particle standard.
- In addition, Clear Skies would reduce ozone and fine particle concentrations in counties throughout the state and move the remaining ozone non-attainment counties in New York (Westchester, Bronx, and Richmond counties) closer to attainment.

Clear Skies Environmental Benefits in New York

Projected Changes in Sulfur Deposition with the Base Case in 2020 Compared to 2001



Projected Changes in Sulfur Deposition with Clear Skies and the Base Case in 2020 Compared to 2001



Clear Skies Would Provide Substantial Environmental Benefits in New York

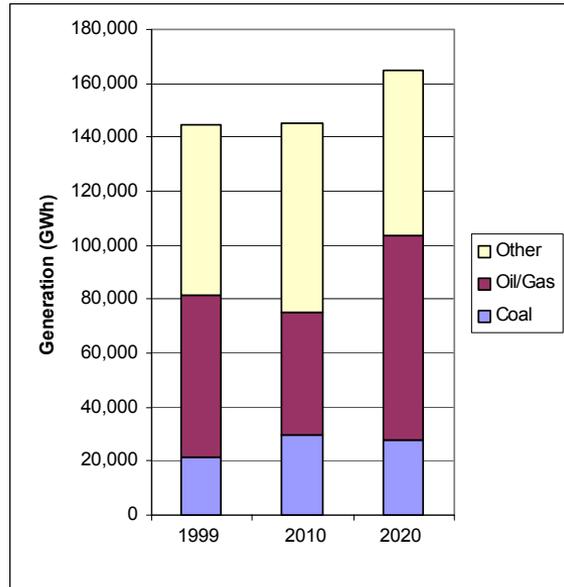
In comparison to existing programs,

- **Visibility would improve** perceptibly, particularly in the Adirondacks.
 - The value of visibility improvements for New York residents who visit National Parks and wilderness areas nation wide is \$170 million.
- **Sulfur deposition, a primary cause of acid rain, would decrease** by up to 60% in most of the state.
 - Clear Skies would eliminate chronic acidity in Adirondack lakes by 2030.
- **Nitrogen deposition, another significant contributor to acid rain as well as a cause of damage in nitrogen-sensitive forests and coastal waters, would decrease** by up to 20%.
- **Mercury deposition would decrease** by up to 15% across much of the state and up to 30% in western New York.*

* These results are based on modeling the Clear Skies mercury cap without triggering the safety valve.

Electricity Generation in New York under Clear Skies

Current and Projected Generation by Fuel Type in New York under Clear Skies (GWh)

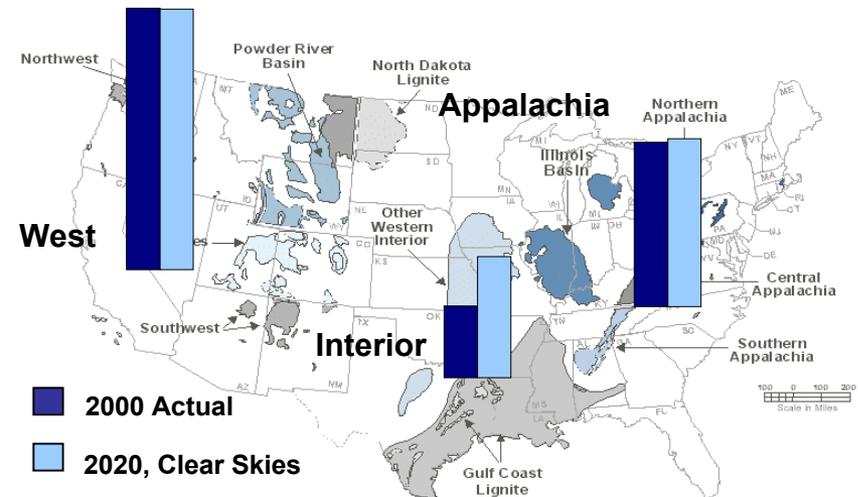


- **New York's sources are projected to reduce their emissions through the installation of emission controls, rather than through a switch from coal to natural gas.**
 - In 2010, 46% of New York's coal-fired generation is projected to come from units with advanced SO₂ and/or NO_x control equipment that also substantially reduce mercury emissions; in 2020, the percentage is projected to increase to 59%.
 - No coal-fired units are projected to be removed from operation as a result of Clear Skies.

- **New York's electricity growth is projected to be met by increases in gas-fired and coal-fired generation. Clear Skies does not significantly alter this projection.**

- Electricity from coal-fired generation will increase by 30% from 1999 to 2020.

Current and Projected Coal Production for Electricity Generation



Scale: Appalachia 2000 = 299 million tons

Emission Controls in New York under Clear Skies

- **Under Clear Skies by 2020...**

- 25% of coal-fired capacity would install SCR
- 21% would install scrubbers

- **The major generation companies in New York include:**

- AES
- Consolidated Edison of New York
- New York Power Authority
- KeySpan Energy
- Huntley Power

- **Total coal-fired capacity in New York is projected to be 3,728 MW in 2010.**

Units in New York Projected to Be Retrofitted Due to Clear Skies by 2020

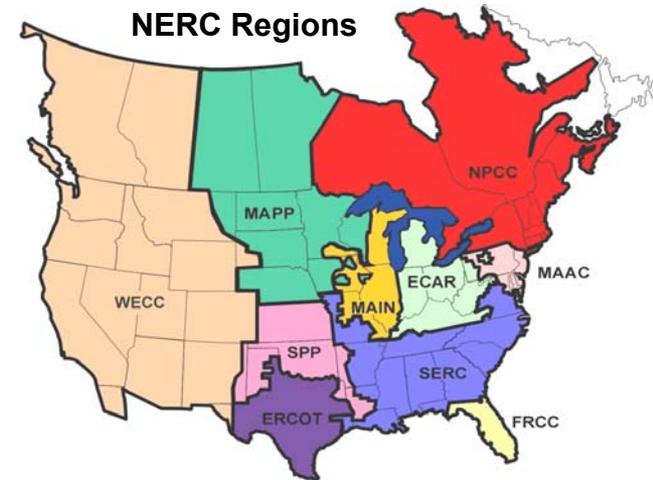
Plant Name	Unit ID	Technology
C R HUNTLEY	67	Scrubber/ SCR
C R HUNTLEY	68	Scrubber/ SCR
DUNKIRK	3	Scrubber*/ SCR*
DUNKIRK	4	Scrubber*/ SCR*
MILLIKEN	2	SCR

* Retrofit was installed under Clear Skies by 2010

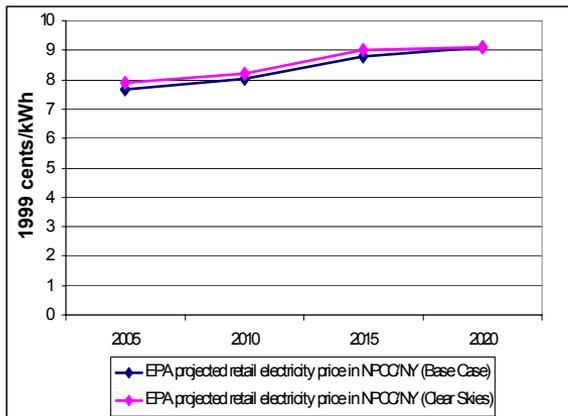
Note: Retrofits and total coal-fired capacity apply to coal units greater than 25 MW.

Electricity Prices in New York under Clear Skies

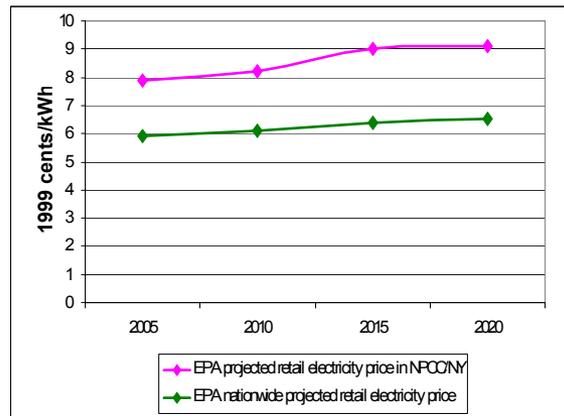
- With or without Clear Skies, retail prices in the North American Electric Reliability Council (NERC) NPCC/NY region (the electricity supply region that contains New York) are projected to increase between 2005 and 2020.
- With Clear Skies, retail prices are projected to be approximately 0.4 – 2.6% higher between 2005 and 2020 than in the absence of the legislation.



Projected Retail Electricity Prices in New York under the Base Case and Clear Skies (2005-2020)



Projected National Retail Electricity Prices and Prices in New York under Clear Skies (2005-2020)



In 2000, the average retail electricity price in New York was approximately 11.2 cents/kWh, which was above the average *national* retail price of approximately 6.7 cents/kWh.

Costs and Benefits in New York under Clear Skies

Benefits Outweigh the Costs

- **In New York, Clear Skies is projected to cost approximately \$244 million annually by 2020 while providing health benefits totaling approximately \$6 billion annually.**
- **The increases in production costs under Clear Skies represent only a small percentage of total retail electricity sales revenue in New York.**
 - Retail electricity sales revenue in New York was \$15.2 billion in 2000.
 - Adjusting these sales revenues by the same growth rate used for the modeling of costs would result in revenues of almost \$23.4 billion annually in 2020.
- **Nationwide, the projected annual costs of Clear Skies (in \$1999) are \$4.3 billion in 2010 and \$6.3 billion in 2020; the nationwide benefits of Clear Skies are expected to be over \$113 billion annually by 2020.**
 - An alternative estimate projects annual health benefits totaling \$23 billion.

Clear Skies....

- **Guarantees significant emissions reductions – beginning years before full implementation**
- **Uses a proven and flexible market-based approach with incentives for innovation**
- **Increases certainty across the board for industry, regulators, and consumers**

Note: Costs include capital costs, fuel, and other operation and maintenance costs (both fixed and variable) associated with the achievement of the emissions caps in the legislation (for example, the installation and operation of pollution controls). These state-level production costs are estimates; they do not account for the costs associated with the transfer of electricity across regions, nor the costs or savings that could be associated with allowance movement between sources.

Notes on EPA's Analysis

- The information presented in this analysis reflects EPA's modeling of the Clear Skies Act of 2003.
 - EPA has updated this information to reflect modifications:
 - Changes included in the Clear Skies Act of 2003.
 - Revisions to the Base Case to reflect newly promulgated rules at the state and federal level since the initial analysis was undertaken.
 - The Clear Skies modeling results presented include the safety valve feature
- This analysis compares new programs to a Base Case (Existing Control Programs), which is typical when calculating costs and benefits of Agency rulemakings.
 - The Base Case reflects implementation of current control programs only:
 - Does not include yet-to-be developed regulations such as those to implement the National Ambient Air Quality Standards.
 - The EPA Base Case for power sector modeling includes:
 - Title IV, the NO_x SIP Call, NSR settlements, and state-specific caps in Connecticut, Massachusetts, Missouri, New Hampshire, North Carolina, Texas, and Wisconsin finalized before March 2003.
 - For air quality modeling, the Base Case also includes federal and state control programs, as well as the Tier II, Heavy Duty Diesel, and Non-Road Diesel rules.
- **For more information regarding the Clear Skies Act, please visit the EPA website:**

(<http://www.epa.gov/clearskies>)

