

US EPA ARCHIVE DOCUMENT



The Clear Skies Act of 2003

Maine and Clear Skies



Highlights of Clear Skies in Maine

- Emissions of SO₂, NO_x, and mercury in Maine would remain unchanged by 2020 due to Clear Skies.
- The health benefits in Maine would total \$320 million annually (\$60 million under the alternative estimate) and include for the New England region approximately 500 fewer premature deaths (290 under the alternative estimate) and 860 fewer hospitalizations/emergency room visits each year.
- In addition, Maine would receive environmental benefits including reduced sulfur and nitrogen deposition and improved visibility. The value of improved visibility for Maine residents who visit National Parks and Wilderness areas nationwide would be \$10 million annually by 2020.
- Clear Skies does not significantly impact electricity prices. With or without Clear Skies, electricity prices in the electric supply region that includes Maine are expected to remain below 2000 prices.

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

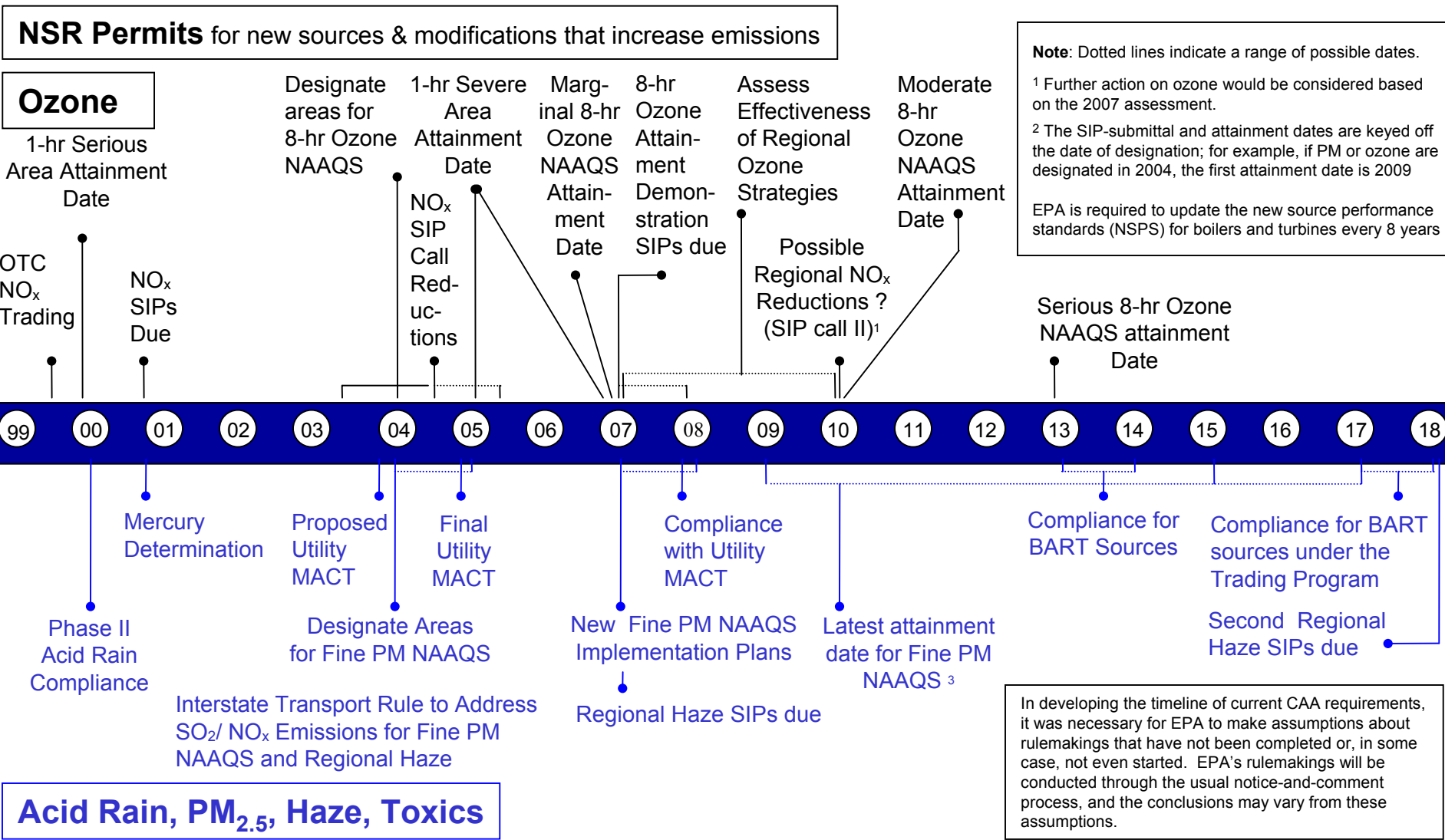
Why Clear Skies?

- **Air quality has improved, but serious concerns persist**
 - Maine'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**
 - 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



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)

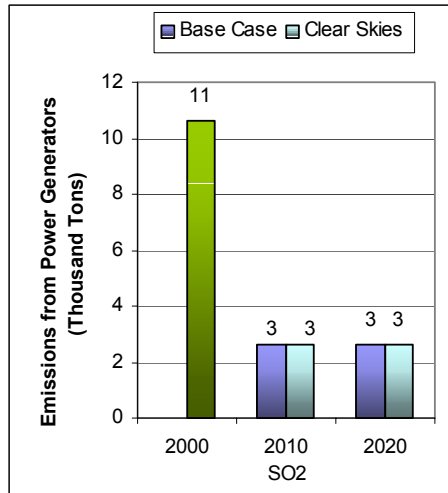
Emissions in Maine under Clear Skies

Emissions in Maine (2020) would be reduced from 2000 levels:

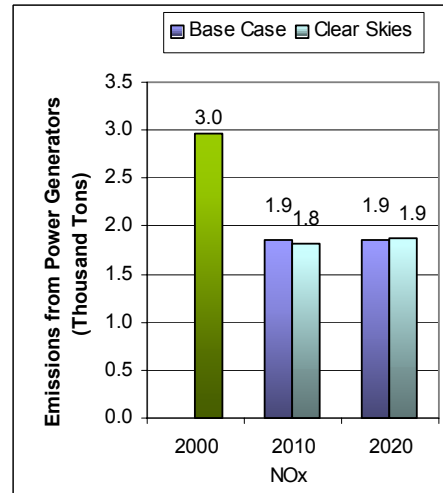
- 75% reduction in SO₂ emissions
- 36% reduction in NO_x emissions
- Mercury emissions in 2020 will be the same as in the base case

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

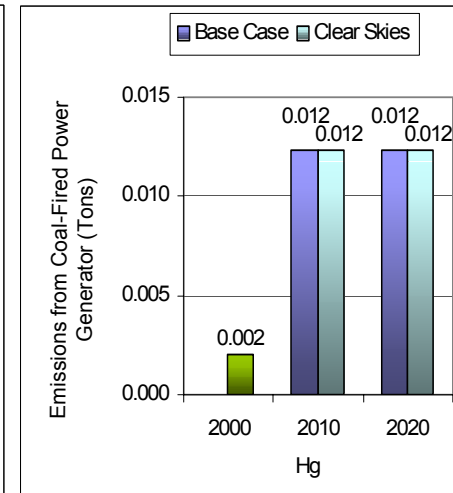
Sulfur dioxide



Nitrogen oxides



Mercury



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 part 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 and Air Quality Benefits in Maine

Improve Public Health

- Throughout the New England region, **reduced ozone and fine particle exposure** by 2020 would result in public health benefits of:
 - approximately 500 fewer premature deaths each year¹
 - approximately 320 fewer cases of chronic bronchitis each year
 - approximately 1,100 fewer non-fatal heart attacks each year
 - approximately 860 fewer hospital and emergency room visits each year
 - approximately 57,000 fewer days workers are out sick due to respiratory symptoms each year
 - approximately 4,600 fewer school absences each year
- **Reduced mercury emissions** would reduce exposure to mercury through consumption of contaminated fish, resulting in additional, unquantified benefits to those who eat fish from Maine's lakes and streams.

By 2020, Maine would receive approximately \$320 million in annual health benefits from reductions in fine particle and ozone concentrations alone due to Clear Skies.¹

Help Maintain Health-Based Air Quality Standards

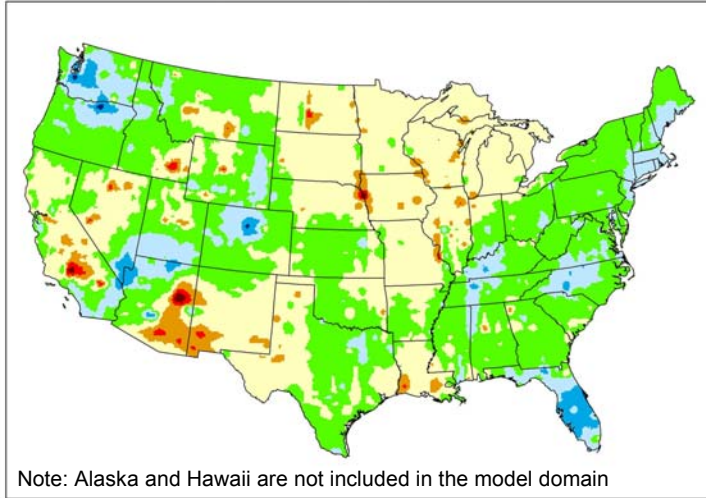
- Currently, all counties in Maine currently meet the fine particle standard; all but 2 counties currently meet the 8-hour ozone standard.²
- York and Hancock Counties (population 240,000) would be brought into attainment with the ozone standard under existing programs.
- Clear Skies would further reduce concentrations of ozone and fine particles throughout Maine.

1. An alternative methodology for calculating health-related benefits projects approximately 290 premature deaths prevented throughout New England and \$60 million in health benefits each year in Maine by 2020.

2. Based on 1999-2001 data of counties with monitors that have three years of complete data.

Clear Skies Environmental Benefits in Maine

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

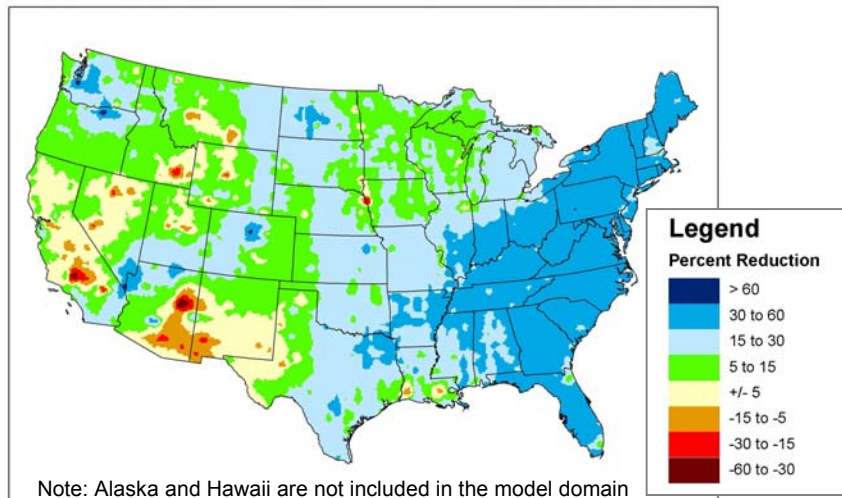


Clear Skies Would Provide Substantial Environmental Benefits in Maine

In comparison to existing programs,

- **Visibility would improve** perceptibly throughout much of the state.
 - The value of improved visibility for Maine residents who visit National Parks and Wilderness areas nationwide would be \$10 million each year by 2020.
- **Sulfur deposition, a primary cause of acid rain, would decrease** by up to 30% across the state.
- **Nitrogen deposition, another significant contributor to acid rain as well as a cause of damage in nitrogen-sensitive forests and coastal waters, such as Casco Bay, would decrease** by up to 20%.
- **Mercury deposition would decrease** by up to 5% across the state.*

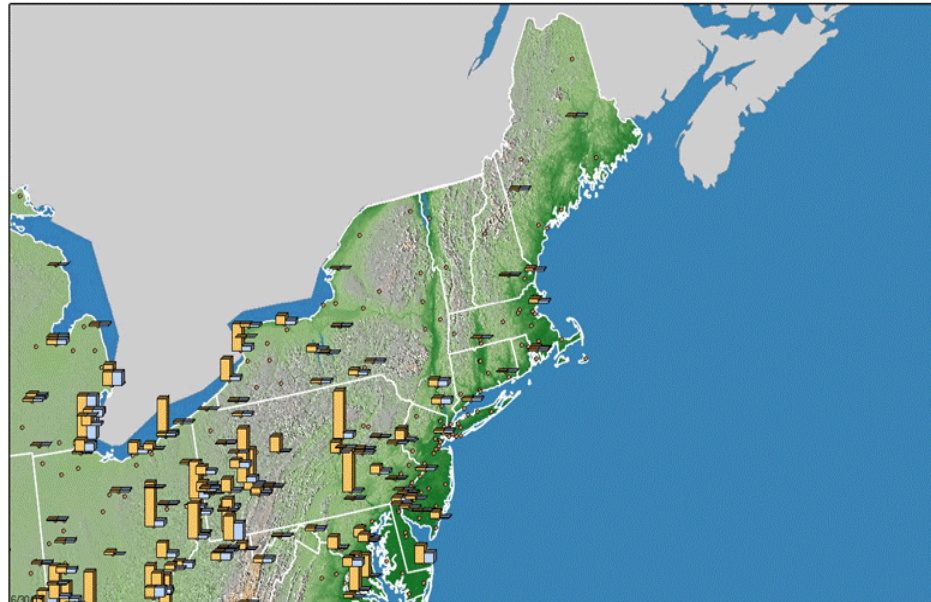
Projected Changes in Sulfur Deposition with Clear Skies and the Base Case in 2020 Compared to 2001



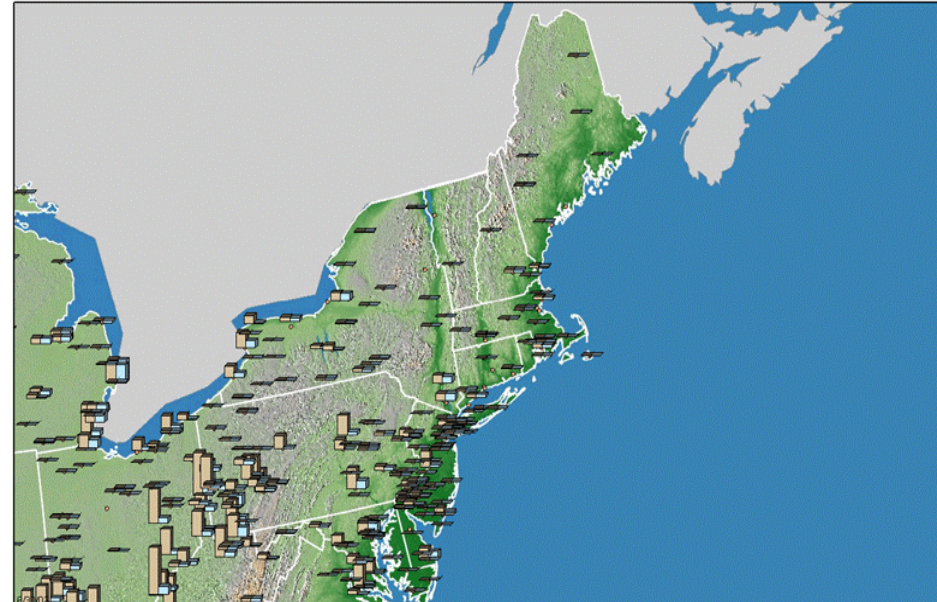
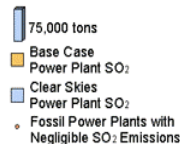
* These results are based on modeling the Clear Skies mercury cap without triggering the safety valve.

Emission Reductions under Clear Skies

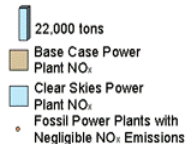
Emissions in states surrounding Maine would decrease considerably. These emission reductions would make it much easier for Maine to comply with the national air quality standards.



Projected SO₂ Emissions from Power Plants with the Base Case and Clear Skies (2020)
Northeast



Projected NO_x Emissions from Power Plants with the Base Case and Clear Skies (2020)
Northeast



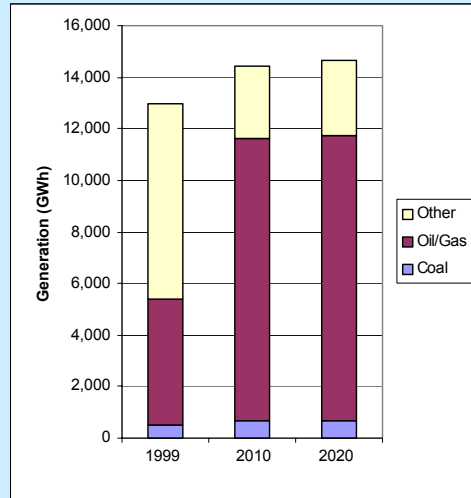
Note: The base case in IPM includes Title IV, the NO_x SIP Call, NSR settlements, and state-specific caps in CT, MA, MO, NC, NH, TX, and WI. It does not include mercury MACT in 2007 or any other potential future regulations to implement the current ambient air quality standards or other part of the Clean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

Electricity Generation and Pollution Controls in Maine under Clear Skies

- **Maine'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 28% from 1999 to 2020.

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



Pollution Controls:

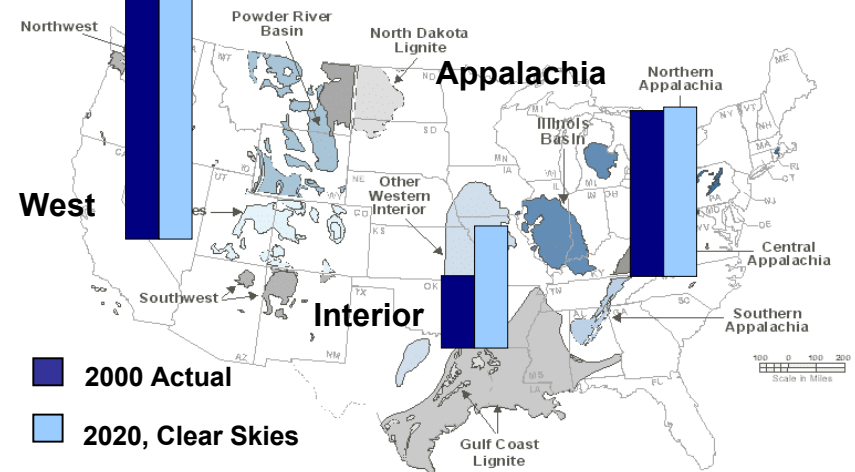
- In 2010, and 2020 none of Maine's coal-fired generation is projected to come from units with advanced SO₂ and/or NO_x control equipment.
- No pollution controls are projected to be installed in Maine under Clear Skies.
- No coal-fired units in Maine are projected to be removed from operation as a result of Clear Skies.

- **The major generation companies in Maine include:**

- FPL Energy
- Duke Energy Power Services
- Calpine
- Great Northern Paper

- **Total coal-fired capacity in Maine is projected to be 76 MW in 2010**

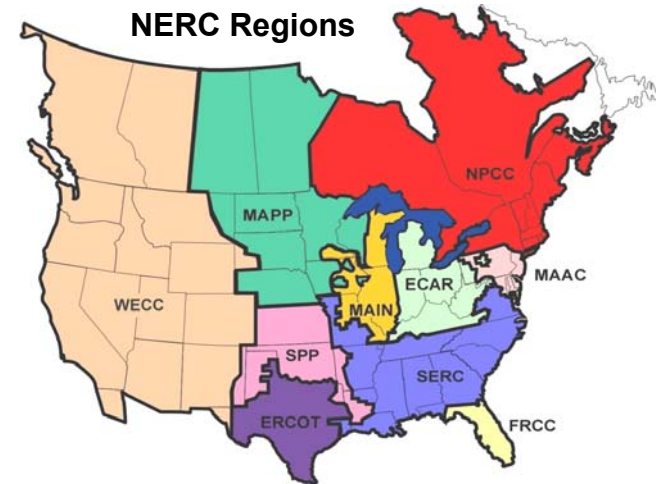
Current and Projected Coal Production for Electricity Generation



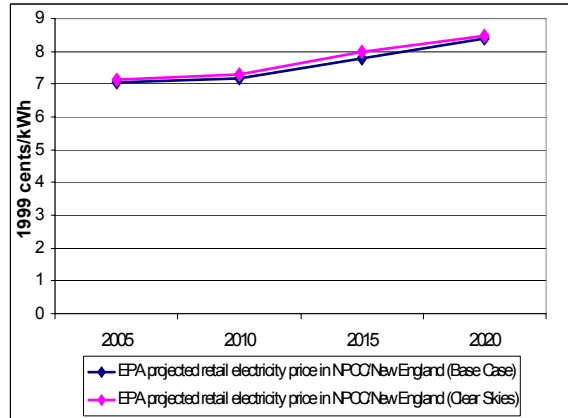
Scale: Appalachia 2000 = 299 million tons

Electricity Prices in Maine under Clear Skies

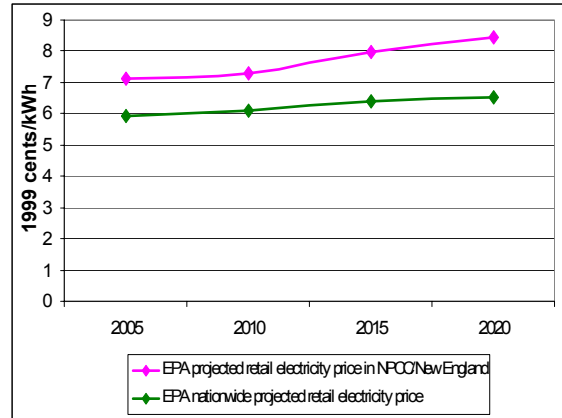
- With or without Clear Skies, retail prices in the North American Electric Reliability Council (NERC) NPCC region (the electricity supply region that contains Maine) are projected to increase between 2005 and 2020.
- With Clear Skies, retail prices are projected to be approximately 0.5 – 2.7% higher between 2005 and 2020 than in the absence of the legislation.



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



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



In 2000, the average retail electricity price in Maine was approximately 9.8 cents/kWh, which was above the average *national* retail price of approximately 6.7 cents/kWh.

Costs and Benefits in Maine under Clear Skies

Benefits Outweigh the Costs

- **In Maine, Clear Skies is projected to cost approximately \$9 million annually by 2020 while providing health benefits totaling approximately \$320 million annually.**
- **The increases in production costs under Clear Skies represent only a small percentage of total retail electricity sales revenue in Maine.**
 - Retail electricity sales revenue in Maine was almost \$1.7 billion in 2000.
 - Adjusting these sales revenues by the same growth rate used for the modeling of costs would result in revenues of over \$2.6 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 alternate 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 Maine, 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>)

