The information presented here reflects EPA's modeling of the Clear Skies Act of 2002. The Agency is in the process of updating this information to reflect modifications included in the Clear Skies Act of 2003. The revised information will be posted on the Agency's Clear Skies Web site (www.epa.gov/clearskies) as soon as possible.

CLEAR SKIES IN NEW HAMPSHIRE[1]

Human Health and Environmental Benefits of Clear Skies: Clear Skies would protect human health, improve air quality, and reduce deposition of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and mercury.[2]

- Beginning in 2020, approximately $300 million of the annual health benefits of Clear Skies would occur in New Hampshire. Every year, these would include:
  - approximately 1,000 fewer days with asthma attacks;
  - approximately 7,000 fewer days of work lost due to respiratory symptoms; and
  - approximately 47,000 fewer total days with respiratory-related symptoms.
- There are no counties in New Hampshire currently projected to be out of attainment with the annual fine particle or 8-hour ozone standards. Clear Skies would, however, achieve additional reductions in fine particle and ozone concentrations that would further protect human health.[4]
- Clear Skies delivers numerous environmental benefits by 2020:
  - visibility would improve 1-2 deciviews throughout most of the state (a change of 1 deciview is a perceptible change in visibility);
  - sulfur deposition, the major cause of acid rain, would decrease by 15-30% throughout most of the state; and
  - nitrogen deposition, which contributes to acid rain and coastal eutrophication, would be reduced by up to15% throughout the state.
  - mercury deposition would be reduced up to 25% in areas of the state.

Clear Skies Benefits Nationwide

- In 2020, annual health benefits from reductions in ozone and fine particles would total $93 billion, including 12,000 fewer premature deaths, far outweighing the $6.49 billion cost of the Clear Skies program.
- Using an alternative methodology results in over 7,000 premature deaths prevented and $11 billion in benefits by 2020—still exceeding the cost of the program.[3]
- Clear Skies would provide an additional $3 billion in benefits due to improved visibility in National Parks and wilderness areas in 2020.

[1] The projected impacts are the results of extensive emissions and regional air quality modeling and benefits analyses as summarized in the *Technical Addendum: Methodologies for Benefit Analysis of the Clear Skies Initiative, 2002*. While the policy analyses tools EPA used are among the best available, all such national scale policy assessments are subject to a number of uncertainties, particularly when projecting air quality or environmental impacts in particular locations.
[2] All human health and environmental benefits are calculated in comparison to existing Clean Air Act programs.
[3] The two sets of estimates reflect alternative assumptions and analytical approaches regarding quantifying and evaluating the effects of airborne particles on public health. All estimates assume that particles are causally associated with health effects, and that all components have the same toxicity. Linear concentration-response relationships between PM and all health effects are assumed, indicating that reductions in PM have the same impact on health outcomes regardless of the absolute level of PM in a given location. The base estimate relies on estimates of the potential cumulative effect of long-term exposure to particles, while the alternative estimate presumes that PM effects are limited to those that accumulate over much shorter time periods. All such estimates are subject to a number of assumptions and uncertainties. It is of note that, based on recent preliminary findings from the Health Effects Institute, the magnitude of mortality from short-term exposure (alternative estimates) and hospital/ER admissions estimates (both estimates) may be overstated. The alternatives also use different approaches to value health effects damages. The key assumptions, uncertainties, and valuation methodologies underlying the approaches used to produce these results are detailed in the *Technical Addendum* noted above.
[4] To permit comparisons among various analyses, the air quality data used in this analysis was fixed as the most complete and recently available as of mid-2001 (1997-1999 ozone monitoring data and 1999-2000 PM2.5 data). More complete and more recent air quality data for ozone and fine particles (1999-2001 data) indicates some differences in the likely attainment status of some counties. Future analyses of Clear Skies will incorporate the most recent data available.

<u>Changes in Emissions Under Clear Skies:</u> Clear Skies is projected to result in significant emissions reductions from power generators by 2020.

- In New Hampshire, Clear Skies is projected to significantly reduce emissions from power generators by 2020 (relative to 2000 emissions):
  - SO_2 emissions would be reduced by 90%;
  - NO_x emissions would be reduced by 55%; and
  - mercury emissions would be maintained at current levels.

Nationwide Emissions under Clear Skies in 2020

- SO_2 emissions from power generators are projected to be 3.9 million tons (a 65% reduction from 2000 levels).
- NO_x emissions are projected to be 1.7 million tons (a 67% reduction from 2000 levels).
- Mercury emissions are projected to be 18 tons (a 63% reduction from 2000 levels).
- At full implementation, the emission reductions would be 73% for SO_2, 67% for NO_x, and 69% for mercury.

Figures 1a, 1b and 1c. *Existing Clean Air Act Regulations (base case[5]) vs. Clear Skies in New Hampshire in 2010 and 2020*

Figure 1a. SO_2

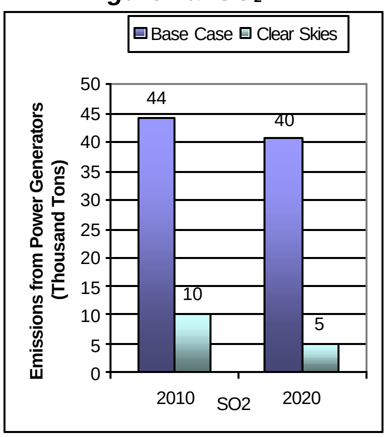


Figure 1b. NO_x

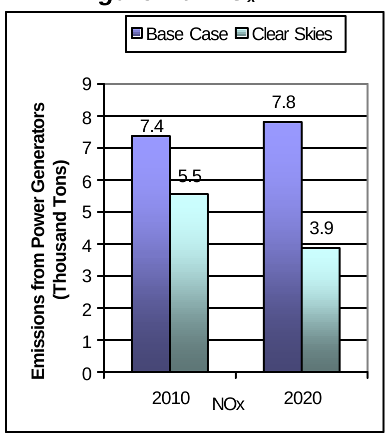
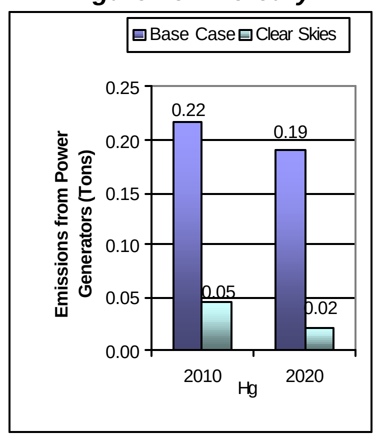


Figure 1c. Mercury



- Emissions rates in New Hampshire in 2010 and 2020:

Table 1. *Projected Emissions Rates in 2010 and 2020 in New Hampshire From Power Generators*

Year		SO_2	NO_x			Hg
		Coal	All	Coal	Gas	Coal
		lbs/MMBtu	lbs/MMBtu	lbs/MMBtu	lbs/MMBtu	lbs/TBtu
2010	Base Case	2.11	0.18	0.33	0.02	10.41
	Clear Skies	0.57	0.14	0.29	0.02	2.55
2020	Base Case	1.91	0.13	0.33	0.02	8.94
	Clear Skies	0.34	0.10	0.23	0.02	1.46

<u>Costs:</u> Nationwide, the projected annual costs of Clear Skies (in $1999) are $3.69 billion in 2010 and $6.49 billion in 2020.[6]

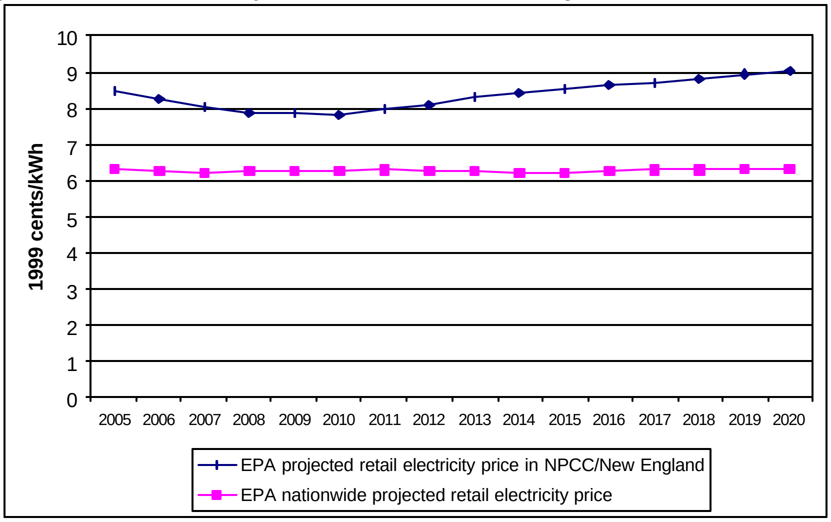
[5] The base case includes Title IV, the NO_x SIP call and State-specific caps in CT, MO and TX. It does not include mercury MACT in 2008 or any other potential future regulations to implement the current Clean Air Act.

[6] EPA uses the Integrated Planning Model (IPM) to project the economic impact of Clear Skies on the power generation sector. IPM disaggregates the power generation sector into specific regions based on properties of the electric transmission system, power market fundamentals, and regional environmental regulations. These regions do not conform to State or EPA region boundaries making some compliance options, such as dispatch, and associated costs impractical to differentiate at a State or Regional level.

Changes in Projected Retail Electricity Prices Under Clear Skies: Electricity prices in New Hampshire would vary under Clear Skies and would remain above the national average.

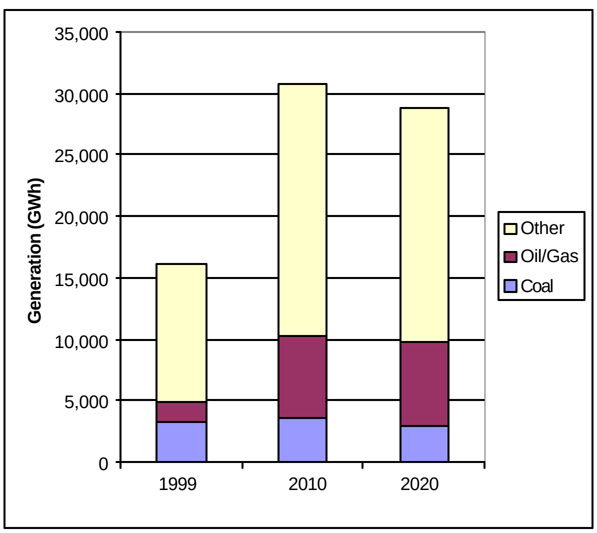
- In 1999, the average retail electricity price in New Hampshire was approximately 11.75 cents/kWh, which was almost double the average *national* retail price of approximately 6.66 cents/kWh.[7] As shown in Figure 3, retail prices in NPCC/New England (the North American Electric Reliability Council (NERC) region that contains New Hampshire) are projected to decrease from 2005 to 2010 and then increase from 2010 to 2020, resulting in the New Hampshire electricity prices being above national averages between 2005 and 2020.[8]

***Figure 2**. Projected Retail Electricity Prices in NPCC/New England under Clear Skies (2005-2020)*



Generation in New Hampshire Under Clear Skies: Coal-fired power plants currently produce 21% of the electricity generated in New Hampshire. Although coal-fired generation would remain relatively unchanged, the portion of total generation from coal-fired plants would decrease. In New Hampshire, coal-fired generation would decrease to approximately 12% of all generation by 2010 and 11% of all generation by 2020.

***Figure 3**. Current and Projected Generation by Fuel Type in New Hampshire under Clear Skies (GWh)*[9]



[7] Source: 1999 EIA data at http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/retailprice.html

[8] State-level retail electricity prices vary considerably across the United States. Variation in prices can be caused by many factors including access to low cost fuels for generating power, State taxes, and the mix of power plants in the States.

[9] Source: 1999 data from EIA at http://www.eia.doe.gov/cneaf/electricity/st_profiles/new_hampshire/nh.html#t5 (Table 5).

- EPA does not project that any facilities in New Hampshire would switch from coal to natural gas in response to the Clear Skies emissions caps. Instead, sources in New Hampshire would reduce their emissions through the installation of control technologies.
  - By 2010, coal-fired capacity in New Hampshire is projected to be approximately 570 MW under Clear Skies. Approximately 300 MW of New Hampshire's coal capacity is projected to scrubbers.
  - Between 2010 and 2020, an additional 300 MW are projected to install scrubbers.

- 92% of New Hampshire's coal-fired generation is projected to come from coal units with emission control equipment in 2010, and 91% in 2020.[10]

Coal Production in New Hampshire: New Hampshire did not produce coal in 2000 and is not projected to produce coal under Clear Skies.

Major Generation Companies in New Hampshire: The six largest plants in the State -- each over 100 MW -- are a combination of nuclear, hydro, coal-fired, and gas-fired units. The major generation companies include: Concord Electric Co. (Unitil), Exeter & Hampton Electric Co. (Unitil), Granite State Electric Co. (National Grid), New England Power Co. (National Grid), and Public Service Company of New Hampshire.

[10] Emissions control equipment includes, where applicable, scrubbers, selective catalytic reduction, selective non-catalytic reduction, gas-reburn and activated carbon injection.