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# Section A:

## Program Elements in the Clear Skies Act

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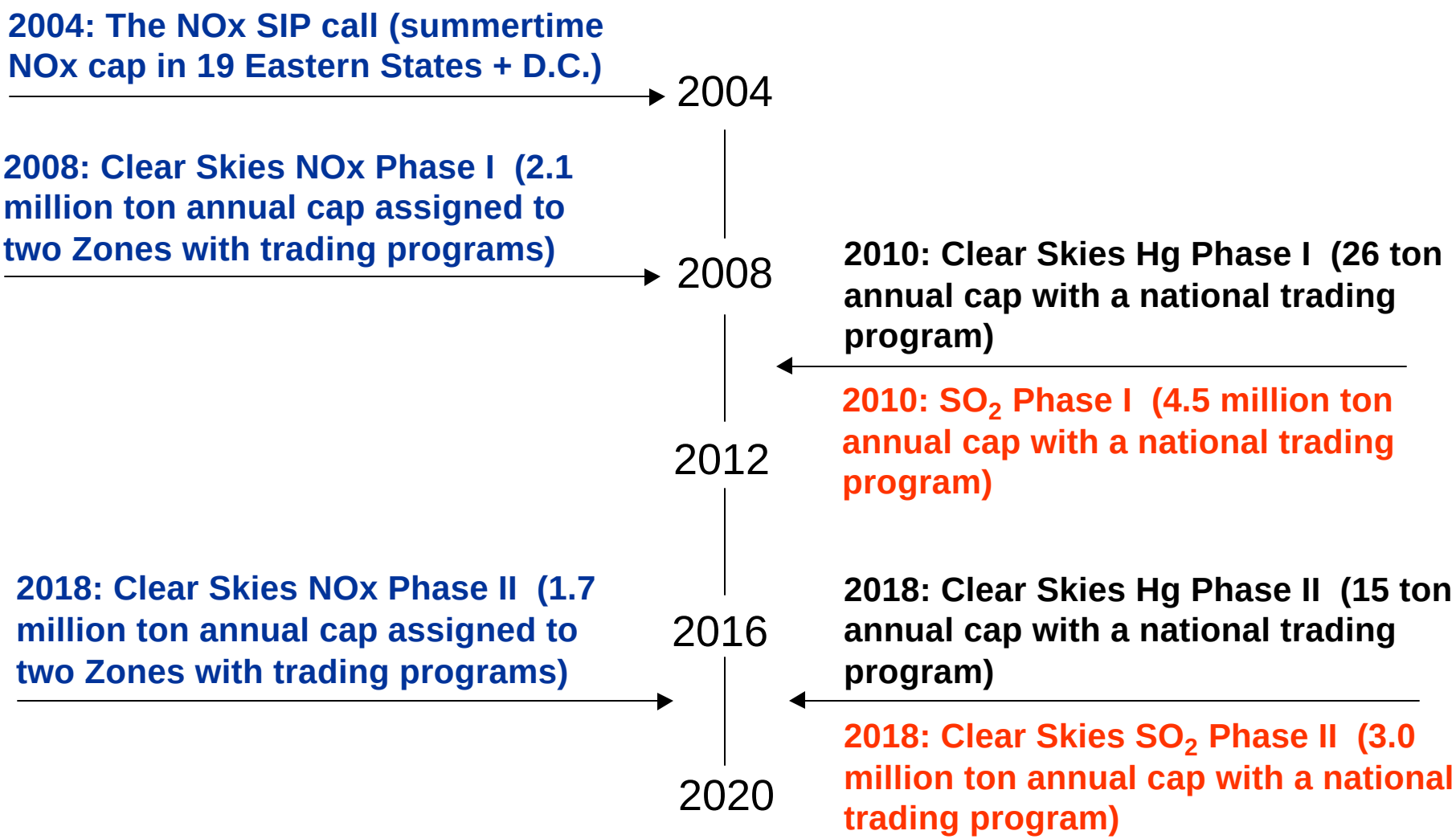
# Caps and Timing for the Electric Power Sector under the Clear Skies Act



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# Affected Sources

## Definition of Affected Units:

- For $SO_2$ and NOx, the program will cover all fossil fuel-fired boilers and turbines serving an electric generator unit with a nameplate capacity greater than 25 MW and producing electricity for sale, except cogeneration units that produce for sale less than 1/3 of the potential electrical output of the generator that they serve.
- For mercury, the program will cover all *coal-fired* units serving an electric generator with a nameplate capacity greater than 25 MW; the same exclusion for cogenerators applies as for NOx and $SO_2$ .
- For new units, there would not be a generator size cut-off, except for new gas-fired units under 25 MW. New units would have the same cogeneration exception as existing units.

## Factors Considered in Defining Coverage:

- Since 1990, there have been dramatic changes in the electric power industry associated with the emergence of competitive markets for electricity generation.
  - Most new generation comes from non-utility generators.
  - Many existing “utility” plants are being purchased by Independent Power Producers (IPPs) and operate as non-utility wholesale power suppliers.
  - Applicability of the program should recognize the emergence of competitive markets.
- The need for emissions reductions from the electricity generating sector was balanced with the desire to not discourage combined heat and power (CHP).
- The program includes units generating significant amounts of electricity that compete in the electricity generation market.

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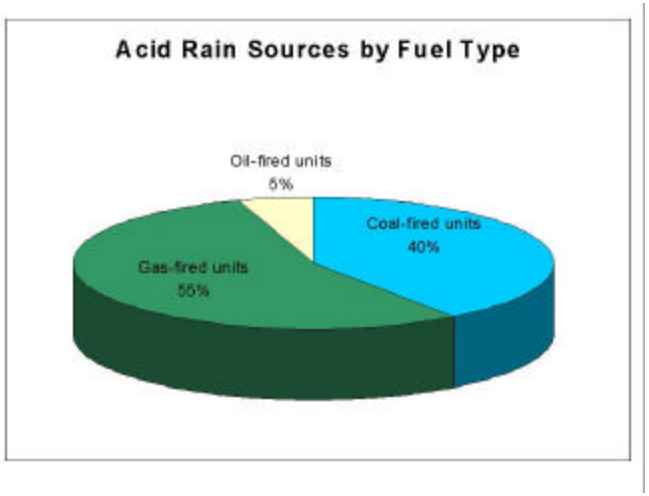
# Affected Sources

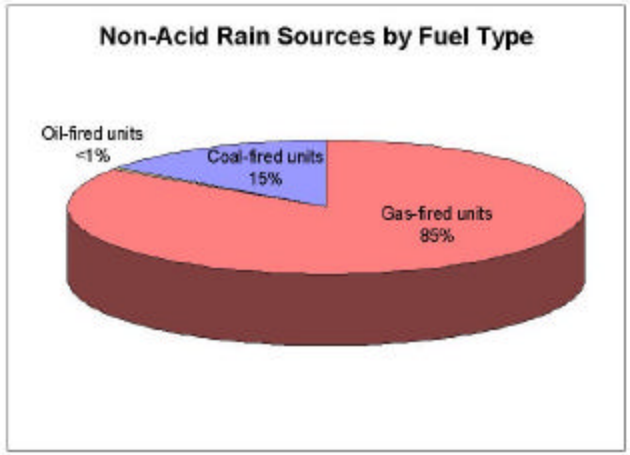
- Sources covered under the Clear Skies Act would include the 2,792 Acid Rain Program electric generating units.
- As many as 400 additional electric generating units, currently not in the Acid Rain Program, may be covered by the Clear Skies Act.
  - This number is based on units in the IPM analysis, which includes all electric generating units with firm sales contracts to the electric grid
  - This number likely over-estimates the number of units, since cogeneration units that sell less than one-third of their generation are excluded.

**Gas-fired sources represent the largest percentage of Acid Rain units. In 2000, Acid Rain sources emitted about 11.2 million tons of $SO_2$ and 5.11 million tons of NOx.**




Source: EPA 2000 Scorecard

**The majority of non-Acid Rain units are gas-fired. In 2000, these non-Acid Rain sources emitted about 90,000 tons of $SO_2$ and 160,000 tons of NOx.**




Source: NEEDS 2000 database

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# The Clear Skies Sulfur Dioxide ($SO_2$) Program

- **Under Title IV of the CAA, $SO_2$ emissions from the electric power sector are reduced about 50% from a 1980 emissions level of 17.5 million tons to 8.95 million tons in 2010.**
- **The Clear Skies Act establishes a new 4.5 million ton $SO_2$ cap in 2010 and then lowers the cap to 3.0 million tons in 2018.**
  - Clear Skies maintains the annual, national trading program established under Title IV.
  - Existing $SO_2$ allowances dated 2010 and later removed from accounts and replaced with a proportionately smaller amount of Clear Skies allowances.
  - $SO_2$ allowance allocations gradually replaced by auction over 52 years.
  - The Western Regional Air Partnership's (WRAP) 2018 $SO_2$ emissions milestone for power generators in 9 States would be honored through a backstop cap-and-trade program.

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# The Clear Skies $SO_2$ Program

- **Why a national program?**
  - **The human health and environmental effects to which $SO_2$ emissions contribute are of national concern. Emissions of $SO_2$:**
    - Contribute to fine particulate ($PM_{2.5}$), which in aggregate is associated with premature mortality, chronic bronchitis, respiratory and cardiovascular related hospital admissions, and asthma attacks.
    - Cause $PM_{2.5}$ NAAQS non-attainment, regional haze, and acid rain.
  - **Atmospheric transport of emissions can pose problems in neighboring States.**
  - **Most of the plants that would be subject to the Clear Skies Act are currently participants in the national Acid Rain $SO_2$ Program.**
    - Building off the existing $SO_2$ trading program minimizes disruption of the existing allowance market and ensures lower costs for power companies and customers.
    - Current banked allowances would retain their value and sources would continue to have an incentive to reduce their emissions early.

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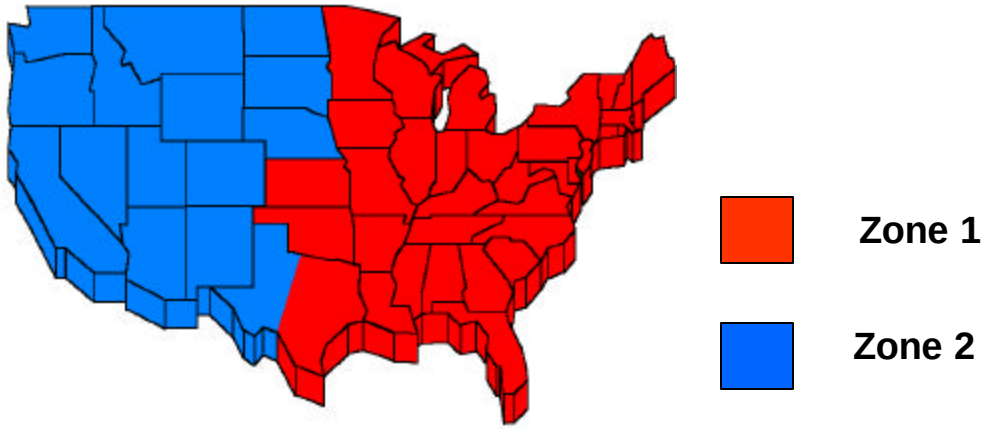
# The Clear Skies Nitrogen Oxides (NOx) Program

- **The Clear Skies Act has two trading zones for NOx.**




| NOx Caps Under The Clear Skies Initiative | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000 Emissions | | | 2008 Caps | | | 2018 Caps | | |
| | Total | Zone 1 | Zone 2 | Total | Zone 1 | Zone 2 | Total | Zone 1 | Zone 2 |
| Caps | **5.1 million tons** | 4.35 million tons | 750,000 tons | **2.1 million tons** | 1.582 million tons | 538,000 tons | **1.7 million tons** | 1.162 million tons | 538,000 tons |
| (effective emissions rate) | **(0.40 lb/mmBtu)** | (0.41 lb/mmbtu) | (0.33 lb/mmBtu) | **(0.16 lb/mmBtu)** | (0.15 lb/mmBtu) | (0.24 lb/mmBtu) | **(0.13 lb/mmBtu)** | (0.11 lb/mmBtu) | (0.24 lb/mmBtu) |

**Note**: Values for 2000 represent actual emission levels, rather than the caps.

- Significant NOx reductions are required in the East to protect human health and address serious environmental issues. Less stringent reductions are required in the West, and are primarily aimed at maintaining good visibility. Therefore, the Clear Skies Act creates two trading zones. There would be no trading between the two zones to ensure that the different air quality goals can be met.

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# The Clear Skies NOx Program

- **The Zone boundaries are established based on the nature, magnitude, and source of environmental concerns.**
- **All the States in Zone 1 either have ozone/$PM_{2.5}$ non-attainment concerns or contain sources that contribute to other States' ozone/ $PM_{2.5}$ nonattainment.**
- **Zone 2 includes:**
  - **States participating in the WRAP process:** Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming.
  - **Nebraska:** Nebraska does not appear to contribute to ozone or $PM_{2.5}$ non-attainment areas.
  - **The Western portion of Texas:** Texas was divided between Zone 1 and Zone 2 to reflect the State's Air Quality regulations and Electricity Industry Restructuring Legislation.
- **As with $SO_2$, during the first phase the EPA Administrator will review new scientific, technology, and cost information; if necessary, EPA can recommend that Congress adjust the Phase II NOx cap.**

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# The Clear Skies Mercury Program

- **Mercury deposition is a nationwide issue:**
  - Currently 42 States have fish advisories.
  - The emissions reductions may allow States to redesignate local water bodies as safe.
- **Power generation is the largest remaining man-made source of mercury emissions in the U.S. (approximately 37% of total).**
  - In 1999, coal-fired power generators emitted 48 tons of mercury. The Clear Skies Act will cut mercury emissions from coal-fired power generators by 69% when fully implemented.
- **The Clear Skies Act establishes a national, annual cap of 26 tons in 2010, and then lowers the cap to 15 tons in 2018.**
  - Under Clear Skies, the primary reductions in mercury emissions will be in the ionic form, the form of mercury that is prone to deposit close to its source.
  - During the first phase, the EPA Administrator will review new scientific, technology, and cost information; if necessary, EPA can recommend that Congress adjust the Phase II mercury target.
  - As is the case currently, States can require facility-specific reductions to address local concerns.

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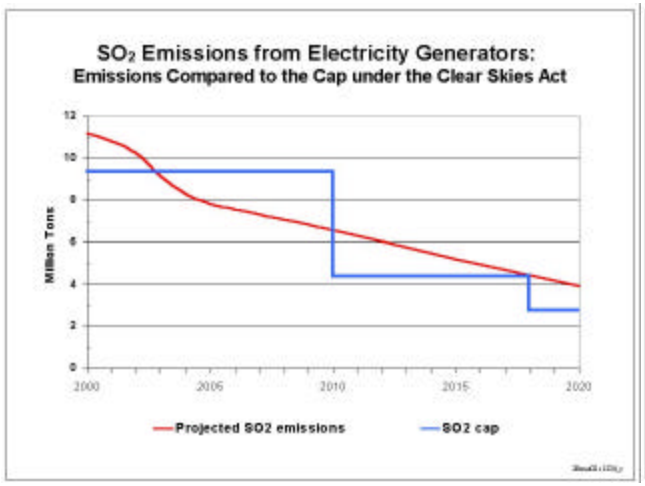
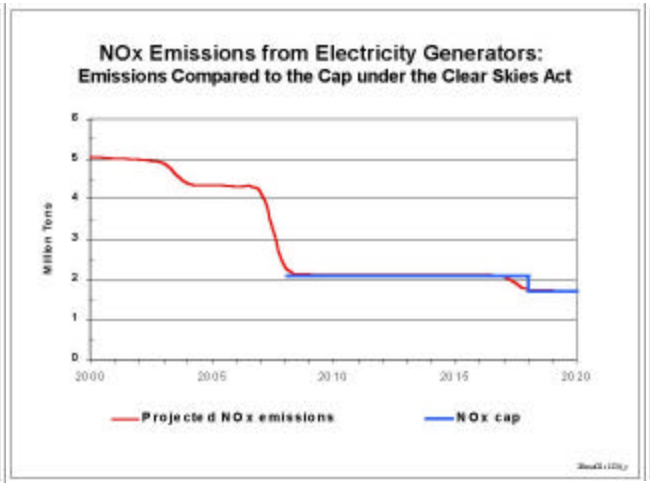
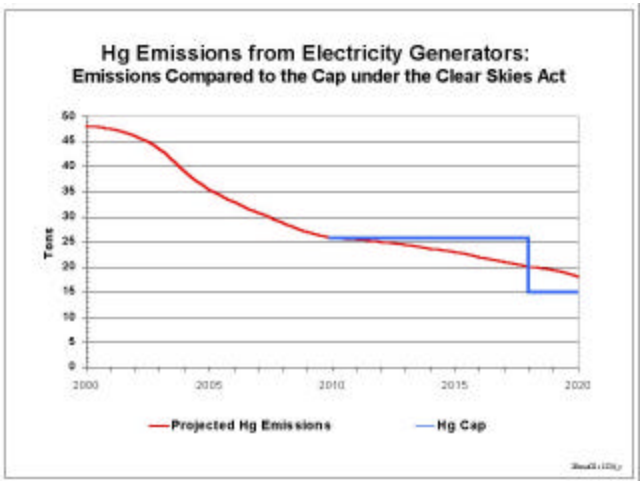
# Projected Emissions from Electric Generating Units

- The Clear Skies Act will result in significant over-compliance in the early years, particularly for $SO_2$, because sources are allowed to bank excess emissions reductions and use them later. The use of these banked allowances for compliance in the later years of the program (e.g., 2020) results in $SO_2$ and mercury emissions initially above the second phase cap, gradually declining to the cap level.




**Note**: Projected emissions data for $SO_2$, NOx and mercury are from IPM.

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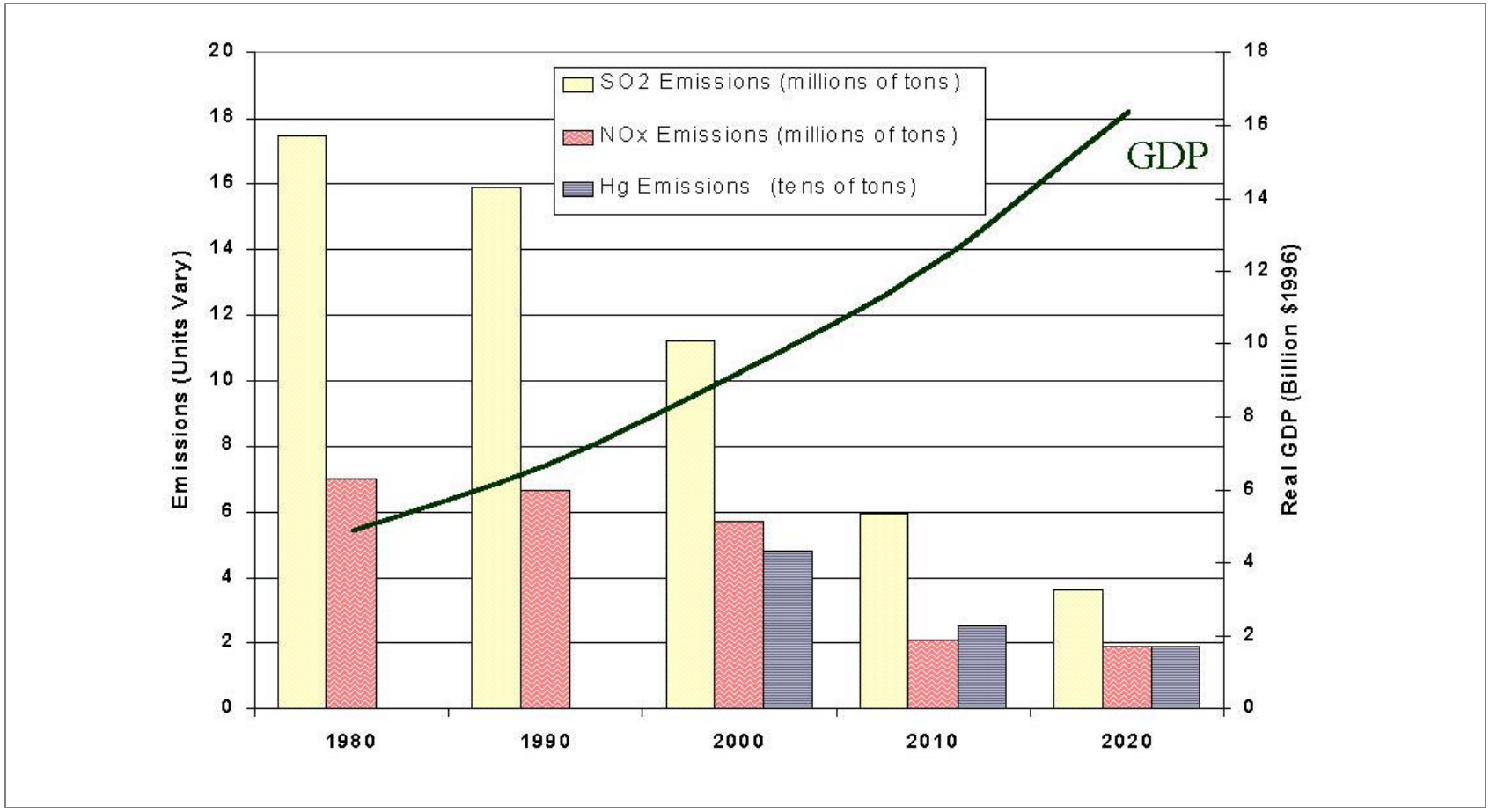
# Economic Growth and Environmental Improvement




Sources: 1980 - 1999 emissions data are from the National Air Pollutant Emissions Trend Report (EPA, March 2000). Projections for $SO_2$, NOx and mercury are derived from the Integrated Planning Model (IPM). GDP data for 1980, 1990 and 2000 is from the Bureau of Economic Analysis, U.S. Department of Commerce. The GDP projection for 2010 is from OMB's Analytical Perspectives Report for 2003, Table 2-1. The 2010 to 2020 projection follows EIA's assumptions in AEO 2001 of 3% growth per year.