



# AIR POLLUTION

## Meeting Future Electricity Demand Will Increase Emissions of Some Harmful Substances

Highlights of [GAO-03-49](#), a report to the Chairmen of the Senate Committee on Environment and Public Works and its Subcommittee on Clean Air, Wetlands, and Climate Change

### Why GAO Did This Study

Electric power plants burn fuels that can produce harmful emissions, such as carbon dioxide, mercury, nitrogen oxides, and sulfur dioxide, which can pose human health and environmental risks. To assess the potential risks of meeting future electricity demand, congressional committees asked GAO to (1) report on the Energy Information

Administration's (EIA's) national and regional projections of such emissions by 2020, and (2) determine how the projections would change using alternative assumptions about future economic growth and other factors that advisers in these fields recommended. GAO also assessed the potential effects of future electricity demand on water demand and supply.

### What GAO Recommends

GAO recommends that the Administrator, EIA, work with EPA and states to ensure that EIA incorporates into its modeling of electricity generation and emissions the most current information on regulatory limits for certain emissions, such as nitrogen oxides.

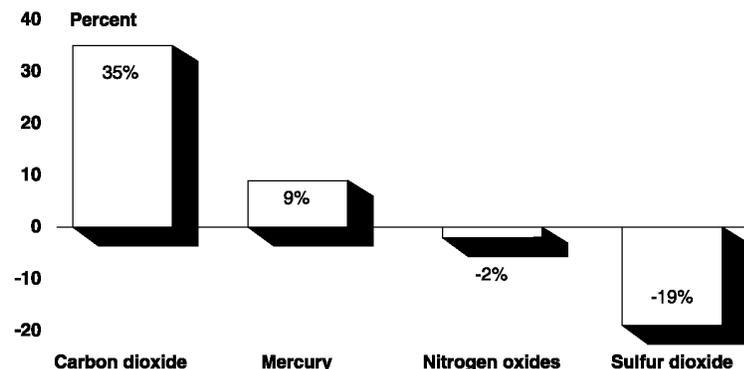
### What GAO Found

EIA forecasts that as electricity generation increases 42 percent by 2020, power plants' annual carbon dioxide and mercury emissions will rise nationwide by about 800 million tons and 4 tons, respectively. At the same time, EIA expects plants' annual emissions of nitrogen oxides and sulfur dioxide to decrease nationwide by about 100 thousand tons and about 2 million tons, respectively. Regionally, EIA forecasts that emissions of nitrogen oxides and sulfur dioxide will increase in some areas of the country; mercury will also increase in some areas, while carbon dioxide will increase in all areas.

EIA also estimated emissions from three additional scenarios, using different assumptions based on recommendations from advisers GAO consulted. Like EIA's original forecast, the scenarios showed an increase nationwide in power plants' annual carbon dioxide and mercury emissions and a decrease in emissions of nitrogen oxides and sulfur dioxide between 2000 and 2020, although at different rates than EIA's projections. However, the scenarios also showed that, regionally, emissions of nitrogen oxides and sulfur dioxide could rise in some areas. Separately, GAO found that EIA had not used the most current data on certain emissions limits in its model, although this had a limited impact on the forecasts.

GAO estimates that power plants will use between 3 percent less and 17 percent more water by 2020, although they will use less water for each unit of electricity produced than they currently do, primarily because of new technologies that require less water. The total increase in water use is not likely to create shortages, but it could affect companies' decisions about where to locate new plants and what type to build.

EIA's Projected Changes in Harmful Air Emissions from Power Plants by 2020



Source: GAO analysis of EIA data.

EIA forecasts nationwide increases in power plants' carbon dioxide and mercury emissions and decreases in their emissions of nitrogen oxides and sulfur dioxide by 2020.

[www.gao.gov/cgi-bin/getrpt?GAO-03-49](http://www.gao.gov/cgi-bin/getrpt?GAO-03-49)

To view the full report, including the scope and methodology, click on the link above. For more information, contact John B. Stephenson at (202) 512-6225 or [stephensonj@gao.gov](mailto:stephensonj@gao.gov).