

# Benefits and Costs of the Clean Air Act Amendments of 1990

The benefits of the Clean Air Act (CAA) Amendments of 1990 reach approximately \$2.0 trillion in 2020.

Emissions control programs that reduce air pollution from smokestacks and tailpipes provide enormous air quality and health benefits today, and the benefits will grow over time as programs take their full effect. These benefits will be achieved as a result of CAA Amendment-related programs and regulatory compliance actions costing an estimated \$65 billion in 2020.

In 2020, the CAA Amendments will prevent over 230,000 early deaths.

A few minor costs and a wide array of potentially major benefits cannot be measured using current science and economics. Of the benefits which can be measured, the most important is from:

1. reducing risks of **early death associated with exposure to ambient fine particle pollution**, accounting for about 85 percent of total estimated benefits.

The remaining measured benefits include several categories of human health and environmental improvement;

2. reducing risks of **premature mortality associated with ozone exposure**;
3. reducing **illnesses such as acute myocardial infarction and chronic bronchitis**; and
4. protecting the **health of ecosystems and other improvements which enhance quality of life**, such as improved agricultural yields and better visibility conditions.

The 1990 Clean Air Act Amendments prevent:

	Year 2010 (cases)	Year 2020 (cases)
Adult Mortality - particles	160,000	230,000
Infant Mortality - particles	230	280
Mortality - ozone	4,300	7,100
Chronic Bronchitis	54,000	75,000
Acute Myocardial Infarction	130,000	200,000
Asthma Exacerbation	1,700,000	2,400,000
Emergency Room Visits	86,000	120,000
School Loss Days	3,200,000	5,400,000
Lost Work Days	13,000,000	17,000,000

*This chart shows the health benefits of the Clean Air Act programs that reduce levels of fine particles and Ozone.*

CAA Amendments benefits exceed costs by a factor of more than 30 to one.

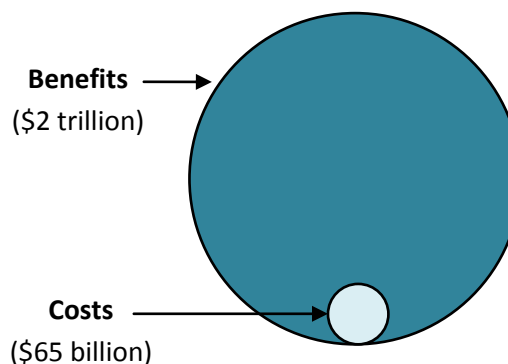
The very wide margin between estimated benefits and costs, and the results of EPA's uncertainty analysis, suggest that it is extremely unlikely that the benefits of the CAA Amendments over the 1990 to 2020 period could be less than its costs. Our **central benefits estimate exceeds costs by a factor of more than 30 to one**, and the high benefits estimate exceeds costs by 90 times. Even the low benefits estimate exceeds costs by about three to one.

## Background:

- *The 1990 CAA Amendments requires the U.S. Environmental Protection Agency to develop periodic studies that estimate the benefits and costs of the Clean Air Act.* The main goal of these reports is to provide Congress and the public with comprehensive, up-to-date, peer-reviewed information on the Clean Air Act's social benefits and costs, including improvements in human health, welfare, and ecological resources, as well as the impact of the Act's provisions on the US economy.
- *The CAA Amendments of 1990 built on the significant progress made in improving the nation's air quality through the Clean Air Act of 1970 and its 1977 amendments.* The 1990 amendments built off the existing structure of the original Clean Air Act, but went beyond those requirements to tighten and clarify implementation goals and timing, increase the stringency of some federal requirements, revamp the hazardous air pollutant regulatory program, refine and streamline permitting requirements, and introduce new programs for the control of acid rain and stratospheric ozone depletion. The main purpose of this report is to document the costs and benefits of the 1990 CAA provisions incremental to those costs and benefits achieved from implementing the original 1970 Clean Air Act and the 1977 amendments.

## Conclusions:

1. **The direct benefits of the 1990 Clean Air Act Amendments and associated programs significantly exceed their direct costs, which means economic welfare and quality of life for Americans were improved by passage of the 1990 Amendments.** The wide margin by which benefits exceed costs combined with extensive uncertainty analysis suggest it is very unlikely this result would be reversed using any reasonable alternative assumptions or methods.



- **The economy as a whole is also stronger with 1990 Clean Air Act Amendment programs as cleaner air leads to better health and productivity for American workers and less money spent on health care to treat air pollution-related health problems.** Economy-wide modeling shows that long-term economic growth is greater and American household economic welfare is improved because benefits such as fewer sick days and lower medical costs more than offset the economy-wide cost of investing in air pollution control.

## Additional Information:

- View the website at <http://www.epa.gov/oar/sect812/prospective2.html>