

FACTS ABOUT

Emissions and Health Benefits of Regulation for In-Use Off-Road Diesel Vehicles

What are the expected emission benefits of the regulation?

The regulation is expected to achieve the 2020 goal of reducing diesel particulate matter (PM) 85 percent from the 2000 baseline levels set forth in the Air Resources Board’s Diesel Risk Reduction Plan. Even in the absence of the regulation, emissions of oxides of nitrogen (NOx) and PM are both projected to drop from now through 2020. The regulation will accelerate this trend and further reduce these emissions. In total, 187,000 tons of NOx emissions and 33,000 tons of PM emissions will be eliminated between 2009 and 2030. Figures 1 and 2 below illustrate the difference in emission levels with and without the regulation.

Figure 1
Statewide PM emissions inventory in tons per day (TPD)

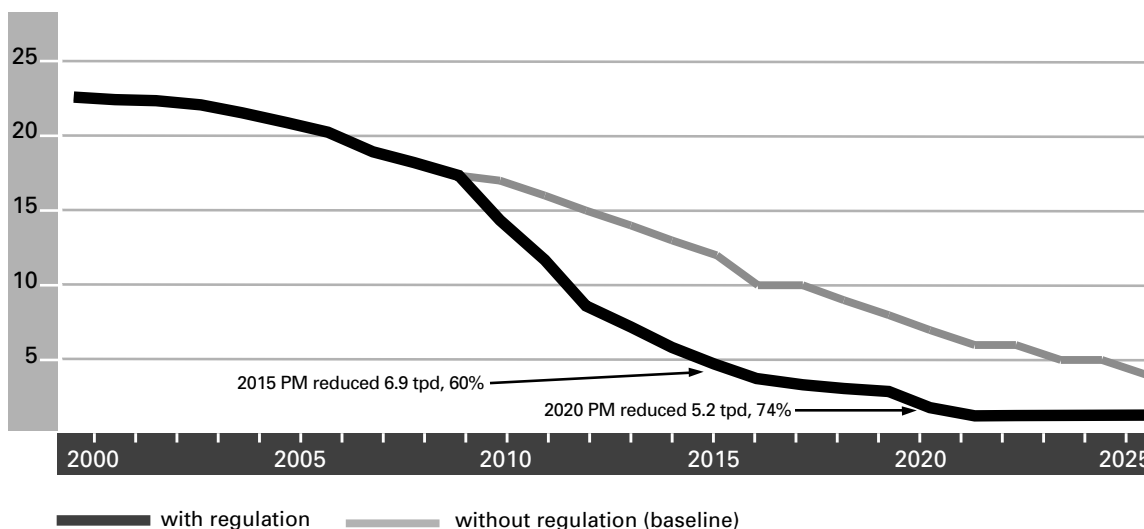
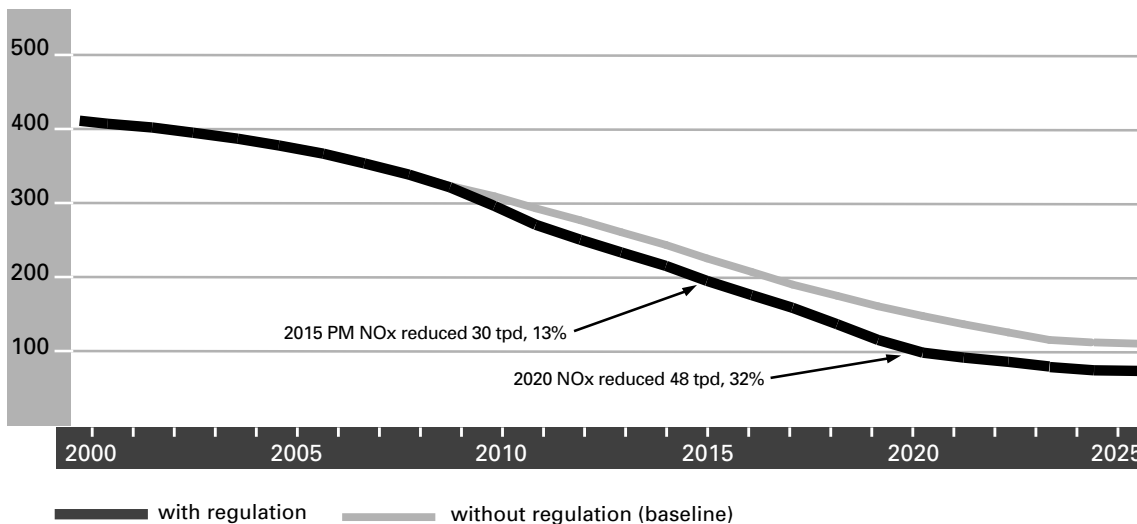


Figure 2
Statewide NOx emissions inventory in tons per day (TPD)



What health benefits will the regulation achieve?

The emission reductions due to this regulation will result in lower ambient PM levels and reductions in exposure to diesel PM. Staff estimates that approximately 4,000 premature deaths statewide will be avoided by the year 2030 from the implementation of the regulation¹. Estimates of other health effects avoided statewide include:

- 840 hospital admissions due to respiratory causes
- 1,600 hospital admissions due to cardiovascular causes
- 110,000 cases of asthma-related and other lower respiratory symptoms
- 9,200 cases of acute bronchitis
- 680,000 work loss days
- 3,900,000 minor restricted activity days

These health benefits will in turn result in economic benefits due to savings from avoided deaths and in health care costs. Staff estimates the economic benefits to be between \$18 and \$26 billion, depending on the discount rate used.

How can we put the expected health benefits in context?

Over its course, the regulation is expected to prevent about 4,000 deaths, which is roughly the equivalent of saving all the people killed by car accidents in California in a year or all the people killed by secondhand smoke in California in a year. Secondhand smoke is estimated to cause to 4,021 premature deaths per year in California (ARB, 2006), while motor vehicle accidents killed 4,329 people in California in 2005 (National Center for Statistics and Analysis, 2005).

How were the health benefits estimated?

Staff utilized three sets of data to determine the estimated health benefits. The first set of data had air-basin specific estimates of emissions of directly emitted diesel PM and NO_x, which leads to the formation in the atmosphere of nitrate particles. Staff also had estimates of the ambient particulate matter concentrations in each air basin. Finally, there were epidemiological studies linking ambient levels of particulate matter to various health effects, including premature death. Using these three data sets, staff developed relationships between tons of emission reductions, the corresponding expected decrease in ambient particulate matter levels, and finally, the expected avoided health impacts.

For additional information

Please contact ARB's diesel hotline at (866) 6DIESEL (634-3735). You may also obtain this document in an alternative format by contacting ARB at: (916) 322-4505 (voice); (916) 324-9531 (TDD, Sacramento area only); or (800) 700-8326 (TDD, outside Sacramento). TTY/TDD/Speech-to-Speech users may dial 711 for the California Relay Service.

NOTES

¹ Emissions from vehicles covered by the regulation currently cause about 1,100 deaths per year, but this annual impact is dropping over time as the fleet normally turns over to newer, cleaner vehicles.