CALIFORNIA AIR RESOURCES BOARD FACT SHEET

ON SULFUR AND LOW AROMATIC HYDROCARBON DIESEL FUEL REGULATIONS

1. Why does California need the diesel fuel regulations?

The diesel fuel regulations are part of the ARB's overall strategy for reducing emissions from motor vehicles. Reformulating diesel fuel is one of the few options available to the ARB for reducing emissions from the existing vehicle fleet.

As a long-term strategy to achieve cleaner air, these regulations will reduce emissions from diesel-fueled motor vehicles substantially. Air pollutants emitted from diesel fuel include oxides of nitrogen (NOx), a component of smog, sulfur dioxide (SO2), and particulate matter, especially fine-particle matter (PM10). In addition, diesel exhaust contains a number of substances which are known human carcinogens.

Emissions from the combustion of diesel fuel contribute to a wide variety of air quality problems including: ozone (smog), PM10, acid deposition, toxic air contaminants, and soiling. These air quality problems have significant adverse impacts on human health, yields of agricultural crops, and visibility.

2. What do the regulations require?

The regulations limit the sulfur and aromatic hydrocarbon content of diesel fuel. The sulfur content is limited to 500 ppm by weight, and the aromatic hydrocarbon content is limited to 10 percent by volume for refiners; small refiners are limited to 20 percent by volume. In addition, the regulations include a provision that allows refiners to use alternative formulations if the alternative formulations provide equivalent environmental benefits.

3. What process did the ARB use to develop the diesel fuel regulations?

The Board adopted the regulation at a formal public hearing in 1988. Prior to adoption, the staff held numerous meetings and workshops with full public participation. At the 1988 hearing, the Board considered the staff's analysis of the economic impact of reformulated diesel fuel and heard testimony from many parties concerning the potential impact of the regulations. Based on its analysis at that time, the Board concluded that the air quality benefits justified the expected increased cost of diesel fuel.

4. What is the current economic impact of the regulations on California?

The staff has recently re-analyzed the projections of the price increase for producing cleaner diesel fuel. We estimate that the state regulations will cost less than six cents a gallon above the current cost of diesel fuel, 50 percent less than the estimate available to the Board at the time it adopted the regulation. The reduction in cost is due primarily to refiners using the alternative diesel fuel formulation compliance option provided by the ARB. We have been working very closely with industry to reduce the costs of the regulations while maintaining the air quality benefits.

5. How does the cost-effectiveness of the regulations compare with other ARB regulations?

The diesel fuel regulations are very cost effective, ranging from $1.50 to $3.00 per pound of pollutant reduced. This and many other control measures for NOx and directly emitted PM10 are far more costly. In fact, control measures can be as high as $15.00 per pound of pollutant reduced. If the emission reductions of the regulations were not obtained, then the ARB and districts would need to adopt even more costly regulations to control other sources.

6. What are the air quality benefits of the diesel fuel regulations?

The regulations will significantly reduce PM10 emissions from diesel fuel by approximately 20 tons per day, a 25 percent reduction. Emissions of NOx will be reduced by over 70 tons per day, a seven percent reduction. Emissions of SO2 will be reduced by 80 tons per day, a 82 percent reduction.

The diesel fuel regulation will also improve engine performance in two significant ways. First, the reductions in sulfur will reduce engine wear. Second, the limit on aromatic hydrocarbons will increase the cetane number of the fuel, improving ignition quality. Thus, some of the increased cost of the fuel will be recovered by users in terms of lower maintenance and improved performance.

In addition, the regulations will reduce the public's exposure to diesel-fuel toxic air contaminants significantly. We expect the benefits will be at least as significant as the benefits from other major motor vehicle programs such as the low-emission vehicle/clean fuels program or the Phase 2 reformulated gasoline program.

7. How do the federal diesel fuel regulations affect California?

The federal Environmental Protection Agency has adopted diesel fuel regulations that go into effect on October 1, 1993, the same day as the state regulations. Even if the state had no requirements, the federal diesel fuel regulations require improvements in fuel quality that are expected to increase the cost of diesel fuel by two to five cents a gallon. In comparing the state to the federal cost, we expect an incremental cost differential in California of about one to four cents a gallon.

Both state and federal regulations will reduce SO2 emissions; however, the state regulations will also significantly reduce toxic air contaminants, NOx and PM10 emissions.