

*The replacement of aging diesel trucks through the Gateway Cities Fleet Modernization Program has resulted in emissions reductions of 193 tons of nitrogen oxides and 43 tons of particulate matter annually in the South Coast Air Basin. The newer trucks also result in fuel savings for drivers.*

## Introduction

Fleet scrappage and modernization programs pay owners of older heavily polluting trucks to purchase newer, lower-emitting vehicles. Drayage fleets that serve U.S. ports and border facilities frequently use pre-1987 trucks that predate modern emissions control systems. These older trucks, which can remain in operation for decades, are a primary target of truck scrappage programs. The scrappage and replacement of pre-1987 diesel trucks with model year 1999 or newer trucks can result in up to 50 percent less NO<sub>x</sub> and 90 percent less PM being emitted. These replacement trucks can also reduce fuel consumption and greenhouse gas emissions associated with port facilities.

## Health Impacts

According to the MATES II Study by the South Coast Air Quality Management District, 70 percent of cancer-linked air toxics in California's South Coast Air Basin (SCAB) are the result of diesel emissions. The 27 cities that make up the Gateway Cities Council of Governments (GCCOG) are located in and around essential commerce centers, which rely heavily on diesel engines of all kinds to drive the area's economy. This subjects people living in and around the Gateway Cities to high levels of the harmful pollutants and air toxics found in diesel exhaust. In 2002, the GCCOG initiated its Clean Air Program to address the challenges posed by diesel truck emissions at regional port facilities and throughout SCAB. Of particular concern is the large fleet of pre-1987 heavy diesel vehicles in use. It is estimated that within the SCAB there are approximately 10,000 model year 1965 – 1987 heavy-duty trucks in operation. These vehicles severely impact air quality and human health, especially in areas of concentrated

diesel engine operation such as intermodal freight facilities and port terminals.

## Program Description

The Gateway Cities Diesel Fleet Modernization Program established a target of replacing 3,000 existing heavy-duty trucks, or about one-third of the pre-1987 truck fleet in the greater Los Angeles area. Under the program, these pre-1987 HDVs are retired and replaced with 1999 and newer model years.

Some of the replacement trucks are then retrofitted with diesel oxidation catalysts (DOCs), and other PM and NO<sub>x</sub> control devices to further reduce emissions. Under the Fleet Modernization Program, it is estimated that each replacement reduces on average 0.55 tons per year of NO<sub>x</sub> and 0.12 tons per year of PM. These estimates do not include any additional benefits resulting from retrofitting replacement vehicles with DOCs and NO<sub>x</sub> or PM control devices.

Since the fleet modernization program's start in September 2002, more than 350 trucks have been replaced, at a cost of approximately \$8 million. Of these, 230 awards were made under a special effort funded by the Port of Los Angeles (POLA) that focuses exclusively on truckers who frequently travel to and from POLA facilities. Based on best available estimates, over 5 years of program involvement, the 350 replaced vehicles can be expected to reduce emissions by approximately 193 tons per year of NO<sub>x</sub> and 42 tons per year of PM.

The Gateway Cities program provides an average grant award of \$25,000 toward the purchase of a 1999 or newer replacement vehicle. Awardees average about 45,000 miles per year of driving, of which 85 percent must be within SCAB boundaries. Typically, awardees

### Program

finance the remaining cost of the replacement truck (about \$7,000-\$10,000). At least some of this investment can be recouped through fuel savings that accrue through the use of a newer, more reliable and fuel efficient truck. For the Fleet Modernization Program, on average, the cost effectiveness for each five-year project is less than \$9,000 per ton of NO<sub>x</sub> reduced.

### Program Funding

A total of \$20,634,400 in funding has been allocated to date for the Fleet Modernization Program. By far the largest amount of funding comes from the Port of Los Angeles. In June 2005, the Los Angeles Board of Harbor Commissioners voted to approve a Memorandum of Understanding that added an additional \$4.7 million in funding to the fleet modernization program, augmenting POLA's original \$10 million allocation. The specific funding contributions of all four program sponsors are shown below:

- \$14,740,000 from the Port of Los Angeles (exclusively dedicated to trucks that haul to and from the Port of Los Angeles)
- \$2,144,400 U.S. Environmental Protection Agency
- \$1,000,000 California Air Resources Board (CARB)
- \$2,750,000 in funds from the Mobile Source Air Pollution Reduction Review Committee (MSRC), which is administered through the South Coast Air Quality Management District

### Off-Road Program

In a second part of the Gateway Cities Clean Air Program, the Port of Long Beach (POLB) has taken a leadership role by facilitating efforts to install new emissions reduction technology on nonroad HDVs operated within POLB boundaries. This Diesel Emissions Reduction Program (DERP) introduces "clean diesel technology" to port terminal operators by

retrofitting their HDVs with DOCs. These DOCs replace standard mufflers on heavy-duty equipment and can provide cost-effective emissions reductions. On nearly 200 nonroad HDVs, POLB tenants are using a California Air Resources Board (CARB) verified DOC and emulsified diesel fuel (a diesel-water blend) combination that provides a 50 percent reduction in diesel particulate matter emissions and a 20 percent reduction in NO<sub>x</sub> emissions. On 445 nonroad HDVs, POLB tenants are using a CARB-verified DOC combined with a crankcase emissions filtration system that reduces diesel particulate emissions by 25 percent (actual reductions are believed to be higher). Under POLB's full DERP effort, 638 nonroad HDVs have been retrofitted with clean-diesel technology resulting in annual reductions of 14.7 tons of diesel particulate matter emissions and 42.8 tons of NO<sub>x</sub> emissions.

The Port of Long Beach Diesel Reduction Program has received \$2,075,000 in funding, of which \$1,000,000 was a grant from CARB, \$1,000,000 was a match from the Port of Long Beach, and \$75,000 was from the EPA (through SCAQMD).

### Conclusion

Nearly every major urban area and port in America has air quality that is severely impacted by a "legacy fleet" of older heavy-duty diesel vehicles. This program can be a model for other cities to follow. The cost effectiveness of the program makes it an attractive and voluntary option for these urban areas and port facilities to reduce emissions and improve air quality.

### Contact Information

The Gateway Cities Clean Air program provides information on its Fleet Modernization Program including program guidelines, emissions calculation tools and dealer information online at:

[www.gatewaycog.org/cleanairprogram/overview/overview.html](http://www.gatewaycog.org/cleanairprogram/overview/overview.html)

For more information please contact the Gateway Cities Clean Air Program at (800) 800-4414.