

Heavy-Duty Natural Gas Drayage Truck Replacement Program



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Project ID #
ARRAVT045

Overview

Timeline

- Start: January 2010
- Finish: January 2014
- 88% Complete
- 160 natural gas trucks deployed
- Additional natural gas trucks to be deployed by 12/31/12

Budget

- Total Project Funding: \$33,740,000
 - DOE: \$9,408,389
 - \$7,967,550 for trucks
 - \$500,000 education/outreach
 - \$940,839 administrative
 - Cost Share: \$24,331,611

Barriers

- Higher cost of NG vehicle
- Limited experience with NG technology
- Limited infrastructure for re-fueling
- Concerns about maintenance
- Currently only one engine manufacturer (Cummins Westport)
- Difficulty for small fleet owners/operators to secure financing
- Long lead time for manufacturing

Partners

- Project Lead: South Coast Air Quality Management District
- U.S. DOE
- California Energy Commission
- California Air Resources Board
- Ports of Los Angeles and Long Beach
- 5 Clean Cities Coalitions

Project Objectives/Relevance

The Ports of Los Angeles and Long Beach, located adjacent to one another, constitute America's largest Port complex. They also represent the largest source of diesel emissions in the region. Studies have linked the diesel particulate matter emissions from the Ports to very high levels of cancer risks. More than 10,000 heavy-duty diesel trucks visit the Ports each year. Replacement with natural gas vehicles will reduce the consumption of diesel fuel and provide immediate and long-term air quality and public health benefits.

- Increase the use of alternative fuels and reduce U.S. dependence on imported petroleum fuels
- Achieve significant NOx and diesel PM emission reductions
- Reduce toxic air emissions and associated public health risk from diesel fuel combustion
- Reduce greenhouse gas emissions
- Create and preserve jobs to stimulate the economy
- Increase end-user knowledge, experience and acceptance of alternative fuel vehicles
- Provide outreach and training to truck operators and technicians involved in maintaining alternative fuel vehicles



Approach

- Grant funds used to offset the incremental cost of a natural gas truck
- Old diesel truck must be scrapped (permanently removed from service) and replaced with NG vehicle
- Solicit applications by issuing Program Announcements
- Extensive outreach with the help of the Ports, trucking associations, natural gas engine manufacturers, and truck dealerships
- Foreign language support services
- One-on-one meetings with applicants
- Orientation and contract workshops
- Meetings with financial institutions:
 - Clarify program requirements
 - Assist individual owner/operators in obtaining financing



Technical Accomplishments and Progress

Past Accomplishments:

- Issued solicitation for applications from truck owners/operators (July 2009 and February 2010)
- Held workshops to assist individuals (one-on-one) with completing the application
- Evaluated hundreds of applications
- Inspected trucks to verify they meet program requirements
- Natural Gas Truck Deployments in CY2010:



	Emission Reductions (tons/yr)	
	NOx	PM
120 LNG Trucks *	100	4.8

* These vehicles represent a subset of the 559 natural gas trucks funded under AQMD's Heavy-Duty Diesel Truck Replacement Program.

Source: California Air Resources Board, Proposition 1B Calculator, March 2011.

Technical Accomplishments and Progress

New Accomplishments:

- Issued 3rd solicitation (September 2011)
- Held workshops and evaluated more than 100 applications
- Completed quarterly performance monitoring for NG trucks already deployed
- Coordinated outreach efforts with 5 Clean Cities Coalitions:
 - Completed 6 additional events in CY2011
- DOE grant budgeted for 180 NG trucks
 - As of February 2012, 160 NG trucks have been funded and are on the road
- Due to the successful leveraging of grant funding by AQMD, additional natural gas trucks will be deployed
- Total number of natural gas trucks by 12/31/12: 219



Technical Accomplishments and Progress (Continued)

- ✓ Through a successful partnership with DOE and other funding partners, AQMD will exceed the 180 NG vehicles planned and achieve additional air quality, public health and job benefits in the region
- ✓ The project will reduce the consumption of diesel fuel by retiring “in-use” diesel trucks and replacing them with natural gas vehicles
- ✓ Emission reductions will occur over the useful life of each LNG truck, which is estimated at ≥ 15 years
- ✓ The project will also result in at least a 25% reduction in greenhouse gas emissions
- ✓ This project will preserve/create jobs related to manufacturing, natural gas refueling, maintenance and operation of the NG vehicles
- ✓ Based on 219 LNG trucks planned, it is estimated there will be about 68 jobs created or retained

Collaborations/Partnerships

- AQMD is serving as the “prime” for this project
- Funding partners include:
 - U.S. Department of Energy, Clean Cities Program
 - California Energy Commission
 - California Air Resources Board
 - Port of Los Angeles and Port of Long Beach
- Extensive outreach involving the following partners:
 - Natural gas engine/truck manufacturers
 - Truck dealerships
 - Ports Clean Truck Center
 - Trucking Associations
 - 5 Clean Cities Coalitions



Future Work

- Monitor schedule of deployment for remaining NG trucks
 - All expected to be operational by 12/31/12
- Performance Monitoring:
 - Continue to collect quarterly operational data (e.g., mileage and fuel use)
 - Assist truck owners/operators
 - Conduct random inspections/audits
 - Work closely with the Ports to verify the total number of annual port visits by each truck
 - Each drayage truck is equipped with a radio frequency identification (RFID) tag that is used to record each time a truck enters or leaves the Ports
- Continue education/outreach efforts
 - 3 additional events planned for 2012



Summary – LNG Drayage Truck Project

- Relevance: The program was designed to achieve the following objectives:
 - Increase use of alternative fuels
 - Reduce the consumption of diesel fuel
 - Significant reductions in diesel air pollution
 - Create/preserve jobs to stimulate the economy
 - Provide outreach and training
 - Increase end-user experience with alternative fuel vehicles

Summary – LNG Drayage Truck Project

- Approach: Provide a financial incentive to fleet owners/operators to replace an older, heavy-duty diesel truck with a new natural gas vehicle.
 - Grant funds are used to help offset the higher cost of a new NG vehicle
 - Extensive outreach is needed to inform truck owner/operators, manufacturers, dealers, financial institutions, and other stakeholders of funding availability and program requirements
 - Close coordination with engine/truck manufacturers and dealers to ensure NG vehicles will be properly maintained
 - Close coordination with truck manufacturers to ensure NG vehicles will be delivered on-time
 - Monitor performance of NG vehicles quarterly and conduct random inspections

Summary – LNG Drayage Truck Project

- Technical Accomplishments (DOE Portion Only):

Calendar Year	No. of NG Trucks	Emissions Reductions (tons/yr)	
		NOx	PM
CY2010	120	100	4.8
CY2011	29	22	1.4
CY2012 (Planned)	70	76	3.0
Total	219	198	9.2

- Results:
 - Increased use of alternative fuels (reduced consumption of diesel fuel)
 - Significant reductions in NOx and diesel PM emissions
 - Reduced air toxic emissions and associated public health risk
 - Reduced GHG emissions
 - Preserved/created jobs related to manufacturing, natural gas refueling, maintenance and operation of the natural gas vehicles

Summary – LNG Drayage Truck Project

- Collaborations
 - Close coordination and collaboration with funding partners, including:
 - U.S. DOE, Clean Cities Program
 - California Energy Commission
 - California Air Resources Board
 - Port of Los Angeles and Port of Long Beach
 - 5 Clean Cities Coalitions
- AQMD is using a combination of grant funds to leverage sufficient funds to offset the higher cost of natural gas vehicles
- This program has resulted in a high demand for the grant funds
- Only the most cost-effective projects are funded
- Each funding source has specific requirements and AQMD is maximizing the use of these funds to deploy as many NG vehicles possible given the available funds