

FINAL REPORT
MSRC CLEAN TRANSPORTATION FUNDING
CONTRACT NO. ML11032

Modification of Vehicle Maintenance and Repair Facility to Accommodate Maintenance of Gaseous-Fueled Vehicles, Expansion of Existing CNG Station, and the Purchase of a Natural Gas Heavy-Duty Vehicle

City of Gardena



October 29, 2018

**Prepared for the Mobile Source Air Pollution Review Committee (MSRC)
under the AB2766 Discretionary Fund Work Program**

ACKNOWLEDGEMENTS

The City of Gardena wishes to acknowledge the Mobile Source Reduction Review Committee for its funding and program support and guidance.

This report was submitted in fulfillment of MSRC Contract #ML11032 for the project entitled “Modification of Vehicle Maintenance and Repair Facility to Accommodate Maintenance of Gaseous-Fueled Vehicles, Expansion of Existing CNG Station, and the Purchase of a Natural Gas Heavy-Duty Vehicle” by the City of Gardena under the partial sponsorship of the Mobile Source Air Pollution Reduction Review Committee (MSRC). The projects were all completed by November 2, 2016.

DISCLAIMER

The statement and conclusions in this report are those of the contractor and not necessarily those of the Mobile Source Air Pollution Reduction Review Committee (MSRC) or the South Coast Air Quality Management District (SCAQMD). The mention of commercial products, their sources or their uses in connection with material reported herein is not to be construed as either an actual or implied endorsement of such products.

PROJECT DESCRIPTION & WORK PERFORMED

The Mobile Source Air Pollution Reduction Review Committee (MSRC) approved grant funding support to the City of Gardena for the Modification of Vehicle Maintenance and Repair Facility to Accommodate Maintenance of Gaseous-Fueled Vehicles (\$50,000), Expansion of Existing CNG Station (\$22,500), and the Purchase of a Natural Gas Heavy-Duty Vehicle (\$30,000).

- **Expansion of Existing CNG Station**

This project encompassed the design, construction, and operation of a private compressed natural gas (CNG) fueling station with dispensing capacity of one (20) gasoline gallon equivalents (GGE) per minute per hose. This station includes one 30 horsepower, one 40 cubic feet per minute (scfm). The expansion of the existing CNG station replaced the current Fuelmaker CNG station with a Bauer C22.0 (3,600 psi). The Bauer C22.0 is a time fill, (slow-fill), stand-alone fueling system that has no high pressure CNG storage tanks associated with the system. The new dispenser has two CNG fuel hoses, each located on the side of the Bauer dispenser which enables two vehicles to be fueled at the same time. The new dispenser is able to support the growing CNG fleet. The installation was completed and placed into operation on November 2, 2016.

- **Purchase of a Natural Gas Heavy-Duty Vehicle**

Funding was used to purchase a TYMCO, Compressed Natural Gas (CNG) Model 600 Street Sweeper. The street sweeper replaced a 1991 street sweeper, which had reached the end of its useful life. The CNG sweeper meets Air Resources Board (ARB) and Air Quality Management District (AQMD) requirements for both PM-10 particulate matter and alternative fuels. The sweeper was delivered in September 2015 and put into service November 2015.

Emission Reductions from an Individual Street Sweeper (pounds/vehicle/year)

Sweeper Type	NOx	PM
Dual-Engine Alternative-Fuel Sweeper	468 (year 2003-2006) 265 (year 2007 +)	33

www.aqmd.gov/docs/default-source/rule-book/support-documents/rule-1186_1/staff-report-rule-1186-1.pdf?sfvrsn=2

- **Modification of Vehicle Maintenance and Repair Facility to Accommodate Maintenance of Gaseous-Fueled Vehicles Expansion of Existing CNG Station**

The modification of the Vehicle Maintenance and Repair facility allowed for the repair of alternative fuel vehicles and equipment to take place within the facility in compliance with Local and State regulations. The modification included the installation of a Beacon 200 Gas Monitor along with sensors, all the ventilation components required and an exhaust fan. Modifications to the electrical system were performed in conjunction with the ventilation system upgrade. The gas monitor is a combustible gas detection system used to alert staff if there is any gas detected within the repair facility. The system has the ability to detect the following gases:

Ammonia (NH ₃)	0 - 75.0 ppm
Arsine (AsH ₃)	0 - 0.20 ppm
Boron Trichloride (BCL ₃)	0 - 15.0 ppm
Carbon Dioxide (CO ₂)	0 - 1.0 %
Carbon Monoxide (CO)	0 - 300 ppm
Chlorine (Cl ₂)	0 - 3.0 ppm
Chlorine Dioxide (ClO ₂)	0 - 1.00 ppm
Chlorine Trifluoride (ClF ₃)	0 - 1.00 ppm
Combustibles	0 -100% LEL
Diborane (B ₂ H ₆)	0 - 30.0 ppm
Fluorine (F ₂)	0 - 6.0 ppm
Hydrogen (H ₂)	0 - 2000 ppm
Hydrogen Chloride (HCl)	0 - 15.0 ppm
Hydrogen Fluoride (HF)	0 - 9.0 ppm
Hydrogen Sulfide (H ₂ S)	0 -100.0 ppm
Nitric Oxide (NO)	0 -100.0 ppm
Nitrogen Dioxide (NO ₂)	0 - 15.0 ppm
Nitrogen Trifluoride (NF ₃)	0 - 30.0 ppm
Oxygen (O ₂)	0 - 25.0 %
Ozone (O ₃)	0 - 1.0 ppm
Phosphine (PH ₃)	0 - 1.0 ppm
Silane (SiH ₄)	0 - 15.0 ppm
Sulfur Dioxide (SO ₂)	0 - 30.0 ppm
TEOS (Si(OC ₂ H ₅) ₄)	0 -15/30 ppm

SUMMARY AND CONCLUSION

The funding received from MSRC allows the City of Gardena to continue to move in the direction of a clean air initiative. The City of Gardena envisions a clean air fleet in the future and is putting in place components to assist with that vision. The MSRC funding allowed for the Bauer C22.0 to be installed which has the capacity to support an additional 2 hoses allowing up to 4 vehicles to fuel simultaneously in the future. The facility modification also allows current and future alternative fuel fleet to be serviced in our yard. Due to the funding provided by MSRC the City of Gardena will continue to significantly reduce emissions from our Public Works operations and continue fulfilling its commitment to improving air quality.



Figure 1. Beacon Gas Monitor (Maintenance Facility Modification)



Figure 2. Ventilation System



Figure 3. Ventilation System



Figure 4. CNG Charging Station



Figure 5. TYMCO CNG Model 600 Street Sweeper



Figure 6. TYMCO CNG Street Sweeper on display at Heritage Festival

PUBLIC OUTREACH COMPONENT

Attached are photographs of the finished projects. The TYMCO Street Sweeper was placed on display at various City functions. The sweeper was entered into the Martin Luther King, Jr. Parade, Cinco de Mayo Parade and placed on display at the Annual Heritage Festival for all of the City of Gardena residents to see. During Public Works Week attendees to the event were given a tour and brief narrative of the upgrades to the Maintenance Facility Modification and the new installation of the CNG Station.



Figure 7. CNG TYMCO Street Sweeper on display at Public Works Week