

Contract No. MS10011

12 Heavy Duty CNG Vehicles

Foothill Transit

April 11, 2012

Prepared for the Mobile Source Air Pollution Review Committee (MSRC) under the AB
2766 Discretionary Fund Work Program

Acknowledgements

The Foothill Transit Staff would like to thank the Foothill Transit Board of Directors for their full support as we move to a fleet fully powered by clean fuels. Additionally, Foothill Transit would like to thank the MSRC and the SCAQMD for their partnership in advancing clean fuels in the San Gabriel and Pomona Valleys.

This report was submitted in fulfillment of MS10011 12 Heavy Duty CNG Vehicles under the partial sponsorship of the Mobile Source Air Pollution Reduction Review Committee (MSRC). Work was completed as of 8/17/2010.

Disclaimer

The statement and conclusions in this report are those of Foothill Transit 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 is not to be construed as either an actual or implied endorsement of such products.

Project Description and Work Performed

The Federal Transit Administration (FTA) stipulates that buses purchased with federal funds must remain in service for 12 years or 500,000 miles, whichever comes first. In 2008, Foothill Transit had 40 buses that reached that threshold and an additional 42 that were eligible for retirement within the next two years. These 82 buses comprised the last of the diesel fueled vehicles in the Foothill Transit fleet. As such, Foothill Transit staff sought board direction to purchase 30 new North American Bus Industries (NABI) compressed natural gas (CNG)-fueled buses to incrementally replace the aging diesel coaches.

At the June 2008 board meeting, the Executive Board authorized the Executive Director to issue Request for Proposals (RFP) No. 09-001. Detailed specifications were prepared by staff and the RFP was issued on July 1, 2008. The RFP was advertised in Passenger Transport, an APTA trade newspaper, two local newspapers, the Foothill Transit website, and RFP packages were sent to the major transit coach manufacturers. A pre-proposal conference was held on July 22, 2008 at the Foothill Transit administrative offices where vendors were able to ask questions regarding the RFP. Eight individuals participated in the pre-proposal conference.

Proposals were due at Foothill Transit on Tuesday August 19, 2008. NABI was the sole proposer in response to the RFP. In accordance with Foothill Transit's procurement policies, a price analysis was conducted to determine that the price proposal received from NABI was reasonable. The RFP called for proposals on 41-foot to 45-foot high occupancy vehicles. Staff gathered price comparison data for other NABI bus procurements of similar vehicles. The range of agency procurements for comparison was limited due to Foothill Transit's request for high occupancy vehicles greater than 40-feet in length and the fact that the 42-foot bus proposed is a brand new model.

As such, a contract was awarded to NABI in September 2008. Delivery of the 12 CNG buses took place in mid-2009 and the buses were placed into service in August 2010, operating out of Foothill Transit's Arcadia Operations and Maintenance Facility. A detailed description of the vehicles is provided below.

Vehicle Description

Quantity of this Type of Vehicle to be Purchased	12
Vehicle Manufacturer & Model	North American Bus Industries (NABI), 42 ft. Bus Rapid Transit (BRT)
Model Year	2010
Engine Manufacturer & Model	Cummins ISL G 280
Engine Year	2010
Engine Displacement (Liters)	8.9
Fuel Type	Compressed Natural Gas (CNG)
Horsepower	280
CARB Executive Order Number (if pending, state "PENDING")	A-021-0519
Estimated Annual Mileage per Vehicle	60,000
Estimated Annual Fuel Consumption (Diesel Equivalent Gallons)	17,000 Gasoline Gallon Equivalent (GGE)
Percent of Vehicle Operation within SCAQMD	100%
Estimated Vehicle Life	12 Years, 500,000 + Miles
Purchase Cost of Conventional Diesel Vehicle	\$520,000
Purchase cost of Low-Emission Alternative Fuel Vehicle	\$565,000
Incremental cost for Low-Emission Engine/Fuel System Option	\$45,000
Funding from Other Public Agencies (FTA, CMAQ, SCAQMD, etc.)	FTA Section 5307, 80% Match

Problems Encountered

There are no operational problems to date.

Emissions Benefits

Foothill Transit used the "Travel Matters" emissions website to determine the pounds of CO2 emitted for each fleet mode including diesel and CNG.

<http://www.travelmatters.org/calculator/transit/methodology>

Travel matters calculates “ the emissions for each fleet mode by multiplying the reported quantity of fuel consumed in that mode by the emissions factor for that fuel (lbs. of CO2/gallon) to obtain the pounds of emissions produced for all the fuel consumed by each mode. The emissions factor for each fuel was acquired and compiled from the Department of Energy's Energy Information Administration (EIA) database (www.eia.doe.gov/oiaf/1606/factors.html) and Argonne National Laboratory's Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model (www.transportation.anl.gov/ttrdc/greet).”

Below is a table of emissions factors for each of the major fuel types included in the calculator:

Emissions Factors

Fuel Type	LBS CO2/ Gallon
CNG	23.598
Diesel	27.824

Based on the emissions factors provided above, Foothill Transit concluded that: over the life of the 12 vehicles, each CNG bus that replaced a diesel bus will save 1,475,868 lbs. of CO2. **All 12 buses over a 12 year period will save 17,710,416 lbs. of CO2.** This calculation is based on mile accumulation of 60,000 miles per year, assuming a fleet average of 3.5 mpg for diesel-fueled buses and 4.0 mpg for CNG-fueled buses.

Photographs and Outreach



Foothill Transit F1801, one of the 12 CNG buses purchased with MSRC funds



MSRC decal displayed inside one of the buses purchased with MSRC funds

The picture directly above shows the MSRC decal displayed as an “interior card” inside the bus, per the contract requirements. The interior card measures 11 in high X 28 in wide and will be replaced every 6 months to ensure its integrity is maintained.

Additionally, Foothill Transit notified its staff and Governing Board of Directors of this project via our Executive Director’s Weekly Report. An excerpt from the report is listed below.

“The Mobile Source Air Pollution Reduction Review Committee (MSRC) Clean Transportation Funding Program aims to reduce air pollution from vehicles by funding projects under the AB 2766 Discretionary Fund. In 2010, a final recommendation was made by the MSRC to the SCAQMD Governing Board to contribute funds to Foothill Transit’s purchase of 12 compressed natural gas (CNG) buses, also known as the 1800 series. The board awarded the grant and acknowledged Foothill Transit’s commitment to improving air quality in the South Coast Air Basin by our move toward a fleet that exclusively leverages CNG and electric propulsion technologies. As part of the grant requirements, the 1800 series buses will display an interior card showing the MSRC logo for the life of the vehicle. Now that the buses are in service and the grant requirements are satisfied, Foothill Transit is preparing its final report to the MSRC.”

Summary and Conclusions

As the second largest fixed route public transportation provider in Los Angeles County, Foothill Transit is committed to improving the air quality in the South Coast Air Basin by our move toward a fleet that exclusively leverages CNG and electric propulsion technologies. We aim to have a fully alternative-fueled fleet by 2013.

Foothill Transit is grateful for the opportunity to partner with the MSRC and SCAQMD for the purchase 12 CNG buses offered under the Clean Transportation Funding program.