

FINAL REPORT

Natural Gas Infrastructure Expansion Upgrade Project (Contract # MS18106)

**Prepared for the Mobile Source Air Pollution Reduction Review
Committee under the AB 2766 Discretionary Work Program**



Prepared by R. F. Dickson Co., Inc.



March 18, 2020

Acknowledgements

R. F. Dickson Co., Inc. would like to thank its funding agency partners, the Mobile Source Air Pollution Reduction Review Committee and the South Coast Air Quality Management District (Moyer Program) as well as our dedicated team of contractors and vendors that helped bring this station upgrade online in record time.

This report was submitted in fulfillment of Contract # MS18106 and the Natural Gas Infrastructure Expansion Upgrade Project by R.F. Dickson Co., Inc. under the partial sponsorship of the Mobile Source Air Pollution Reduction Review Committee (MSRC). Work was completed as of December 18, 2019.

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 (South Coast AQMD). 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 & Work Performed

R. F. Dickson Co., Inc. dba California Clean Fuels (CCF) has operated its 24/7 public access compressed natural gas (CNG) fueling station for the past 18 years, serving R. F. Dickson, Co. Inc. street sweeping fleet as well as Bellflower Unified School District's (BUSD) CNG school buses as the station's anchor fleets. Our major customers include four additional school districts, as well as CalTrans, County of Los Angeles Public Works, Kraft Foods (Mondelez), CR&R Disposal, Athens Disposal, CalMet Disposal and Universal Waste Systems. In addition, CCF fuels a growing customer base of trucks serving the San Pedro Bay Ports. The CCF station is strategically located at 15330 Woodruff Avenue in Bellflower California, near the 91, 5, 605, 710 and 105 freeways, on Bellflower Unified School District property. The station is operating at this site under a long-term lease with BUSD that is current through 2028, with an option for another 10 years.

With funding support from the MSRC and South Coast AQMD, CCF recently completed an expansion that provides a significant improvement in CCF's ability to serve increasing numbers of heavy-duty fleet vehicles that travel nearby transportation corridors, including increasing visits from trucks serving the ports. The station was officially commissioned on December 18, 2019. In addition, on March 30, 2018, CCF entered into a five-year agreement, with an option to extend for an additional five years with U.S. Gain for a partnership that will ensure that 100% renewable natural gas (RNG) is being dispensed at this station. The project provides a significant increase in RNG fuel consumption for a relatively small public funding investment.

The project was designed to ensure that the station is better able to accommodate fueling of Class 8 trucks, such as those that will fuel at the station as a result of the evolving partnership with U.S. Gain to guide new and existing local and national Class 8 truck fleet customers to the station. Class 8 trucks require between 100 and 160 GGE per fill, and the expansion was designed to ensure that peak demands (early morning and late afternoon) are met as fleets begin and end their shifts. Meeting these peak fueling requirements is accomplished with both the project's increased compression capability and increased storage capacity. This allows faster recovery in between fills to replenish the storage cascade.

The overall goals of this project are to serve existing CNG fleets and provide faster service for expanding fleets serving the greater southern California region, to reduce additional greenhouse gas and criteria pollutant emissions, and to increase the displacement of petroleum-derived fuels with renewable natural gas.

The project vehicles fueled by this station operate in residential, business and recreational areas, near schools and parks, and throughout several diverse communities, spanning the entire southern California region. This diversity is important considering continued concerns regarding the adverse health impacts, especially with respect to toxic emissions, from diesel engines as they operate throughout disadvantaged and low-income communities of southern California.

Technical Specification

As background, the original retail interface consists of two dual hose fast fill dispensers, available 24/7 with full public access, as well as a time fill system that provides fuel to BUSD's fleet of 31 CNG buses; no change to this retail interface was included as part of this project.

Below are the technical specifications for this station expansion project. Note that details on component manufacturers, model numbers, etc. are specified on the supporting invoice and payment documentation.

- Replace existing 280 scfm compressor with a 664 scfm compressor with control systems
- Install Motor Starter Panel
- Install Remote Monitoring System
- Install Priority/Time Fill Panel
- Install twin tower 1,400 scfm regenerative dryer
- Install four (4) new 12,200 scf each storage vessels, for a total of 195,200 scf of additional storage
- Install camera system to monitor fueling and compression equipment
- Install two (2) new time fill posts and hoses

It should also be noted that the station design has some built-in redundancy. Replacement with the larger 664 scfm compressor greatly enhances the station's ability to maintain its service if one of the compressors experiences a failure. This is critically important for R. F. Dickson Co., Inc. to maintain its customer commitments to sweep streets throughout the greater southern California region.

Station Power and Fuel Availability

This station already has plenty of power coming to the station, since CCF upgraded its transformer with Southern California Edison (SCE) in 2016 with the hope that future customer growth as well as an interest in electric school bus charging capability could be accommodated without further SCE involvement.

As noted earlier, CCF recently committed to supply 100% renewable natural gas at this station. This commitment was finalized on March 30, 2018 with U.S. Gain, a national supplier of RNG.

Attachment A provides documentation of our electric power and natural gas fuel purchases. The contract for RNG with U.S. Gain was submitted to MSRC under separate cover.

Problems Encountered

This project was completed without major technical problems. Since commissioning, there has been one minor software programming issue, which was fully resolved in early March 2020. An issue worth noting for the implementation of future programs is the high cost to the contractor to borrow project funds. To date, the cost to this project in interest fees has reached \$11,528.75 (and growing), and as such, we deeply appreciate efforts to review and process our invoice request in order that we may receive reimbursement as soon as possible.

Emissions Benefits

While the exact emission reduction benefits of increased throughput at an RNG station are difficult to quantify without the mileage and fuel consumption of each customer vehicle, it is possible to qualitatively discuss the criteria air pollutant and greenhouse gas emission reductions that are achieved from the increased use of RNG to fuel medium- and heavy-duty vehicles.

Natural gas trucks equipped with the low-NOx engine technology that is certified to the optional low-NOx standard of 0.02 grams per brake horsepower-hour provide cost-effective NOx reduction compared to zero-emission technology. This low-NOx engine is 90% cleaner than the comparable engine that meets today's NOx standard of 0.2 grams per brake horsepower-hour.

Our source for RNG includes a provider that has an approved carbon intensity (CI) at the default landfill gas level of ~46 gCO₂e/MJ, 40% below the CI of compressed natural gas, which is ~79 gCO₂e/MJ. We are working with our supplier to establish even lower CI gas for our station.

Training Update

This MSRC contract also includes up to \$15,000 to support training for our team. To date, we have sent two of our team through a series of training classes. We also plan to train additional staff and once all training is complete, I will submit this final invoice.

Photographs & Outreach

R.F. Dickson Co. Inc. provided a detailed outreach plan to the MSRC Contract Manager on March 5, 2020. This plan was accepted, and we have begun to implement the plan. Highlights from the plan include outreach at five upcoming Earth Day events, updating natural gas station mapping programs, develop and distribute a press release and other outreach activities. Photos of the station are provided below for documentation purposes:







Summary & Conclusions

We look forward to final project closeout and ongoing annual reporting that documents the throughput growth at the station as natural gas fleets continue to expand throughout the South Coast Air Basin. This station expansion project was implemented on an accelerated schedule with a team that had worked together on earlier iterations of this station and the resulting station is meeting design expectations. Below is a summary of the funding sources for this project.

Project Budget Overview

This station was co-funded by this MSRC grant program as well as a grant from the South Coast Air Quality Management District's Year 20 Carl Moyer Program. The following table summarizes the funding sources for this project. This table is provided to document that match funding requirements were fully met under our contract requirements. As shown below, to date we have expended \$11,528.75 in funding to cover interest loan payments. R.F. Dickson, Co., Inc. deeply appreciates prompt review and processing of our contract payment in order to mitigate the ongoing interest accrual (daily, at a rate of \$2,500 per month).

Funding Source	Amount
MSRC	\$250,000.00
SCAQMD CMP	\$548,492.00
R.F. Dickson Co., Inc. (Eligible Cost Share)	\$25,057.92
Total Eligible Project Cost	\$823,549.92
Loan Interest Payments (to date)	\$11,528.75
Total Actual Project Cost	\$835,078.67

*Interest accruing at the rate of \$2,500 per month.



Thank you to the MSRC for its funding support for this newly expanded RNG station!