

Benfield Sanitation Services – CNG Truck Replacement

Case Study Follow-up visit on 8-21-14

NC DENR, Division of Air Quality



Just having returned from a morning route, the compressed natural gas front loader garbage truck is attached to its fueling post. Early each morning, the truck will automatically complete its refueling.

Company Overview

Benfield Sanitation Services of Statesville, NC was founded in 1958 by James Benfield and has since grown to more than 50 employees with operations in 10 counties and 38 cities. Benfield Sanitation Services (BSS) offers multiple solutions to meet individual, business or municipal waste and/or recyclable disposal needs, from front loader dumpsters to large commercial compactors and roll-off containers. Their “Go Green, Go Clean” initiative has led to many positive changes within the company and surrounding community.

The Front Loaders

BSS owns and operates a fleet of 24 collection vehicles plus various company service vehicles. Front loaders, in particular, generally service commercial and industrial businesses by securing waste containers (via automated forks with which the driver carefully aligns with the sleeves on the waste container), lifting them up and over the front of the truck, and then emptying their waste or recyclable material into the vehicle's hopper. BSS front loaders average 62 gallons of diesel fuel per day and each one operates five days a week.

Implementation

In 2012, BSS was awarded a Diesel Emission Reduction Grant (DERG) that provided funds toward replacing a 1998 Mack running an EM7 300 (8Y016), 300 horsepower diesel engine with a 2013 Mack running a 9.0 Liter, 320 horsepower Cummins Westport ISL G 320 Compressed Natural Gas (CNG) engine. This grant project was part of a larger plan to replace five trucks at once and build a CNG fueling station on the BSS site. The CNG truck replacements have led to the following improvements and benefits:

- Initial results showed a fuel cost saving of nearly 55 percent, or the equivalent to \$1.99 per gallon of diesel fuel.
- A calculated decrease (factoring fuel, maintenance and electricity) from spending \$1.05 per mile with diesel to spending \$0.51 per mile with compressed natural gas.
- CNG engines run quieter than diesel, thus noise levels from BSS has decreased in towns and neighborhoods.
- Reduces the need for foreign oil.
- The replacement truck is more reliable and possesses newer technology, so drivers have more confidence in its abilities and dependability. Plus, it has been noted that they also enjoy how much quieter the CNG truck is.
- With CNG burning cleaner, the time between oil changes has increased and engine maintenance has decreased.
- BSS earned a Region of Excellence Award from the Centralina Council of Governments in the Clean Cities category for their innovation and creativity, commitment to goals, contributions to regionalism, program successes and sustainable benefits, and engagement of community members in part from the grant-funded CNG trucks.
- BSS mechanics can do all CNG-related maintenance and repairs in house (instead of servicing out) after being properly educated and trained by the CNG station technicians.
- BSS had CNG piped into their facility, making less expensive fuel available for use by its neighbors.

N.C. Division of Air Quality

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Adjustments and Conclusion

BSS did not encounter any major problems related to the grant process. However, they did experience a two-month delay in receiving the trucks due to the high demand for CNG tanks. Despite the inconvenience, BSS would highly recommend this type of project to similar companies and organizations.

BSS has replaced four more of their front loader garbage trucks since the project was completed (including models with larger 12.0 Liter engines), and their goal is to eventually have all of their remaining diesel trucks replaced with trucks that run on CNG in the next five years. The CNG station included 25 slow-fill posts at the time of installation, but the station's system and the BSS facility are both large enough to where BSS can expand for up to 40 fill posts. Danny Lippard, Jr. (Operations Manager for Commercial Front Loaders) is confident that the trend for all garbage hauler companies to move to CNG will remain popular and continue to be beneficial to companies, communities and the environment.



The fill posts were installed to optimize and minimize the space(s) they occupy. Up to 40 posts can be installed on the grounds.



The newly-installed pipe lines that supply compressed natural gas to BSS were gladly received by the local community, who now have access to low-cost CNG as well.

“Our initial results from the first 14 days of operation with the new CNG trucks showed a fuel cost savings of nearly 55 percent, which is the equivalent to \$1.99 per gallon of diesel fuel.”

- Danny Lippard, Jr., Operations Manager for Commercial Front Loaders

Emission Reductions

Nitrogen Oxides (tons/yr)	Fine Particulate Matter (tons/yr)	Carbon Monoxide (tons/yr)
3.0618	0.1056	0.8910

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