Case Study:

Rural Transit Agency Switches to Propane Paratransit Buses

Company: Carteret County Area Transportation System (CCATS)
Industry: Transit
Location: Newport, North Carolina
Vehicles: (16) propane autogas paratransit buses; (3) On order
Fueling: Onsite propane autogas fuel station

Challenge:
With a goal to lower its emissions and total operating costs, the transit agency sought an alternative fuel solution for its paratransit shuttles.

By the Numbers:

- 50% reduction in per-gallon fuel costs
- Nearly 100% propane-fueled fleet by 2023
- 84,000 gallons of propane used annually

Carteret County Area Transportation began switching more of its fleet vehicles to propane autogas in 2021 to remedy issues with its dual fuel, diesel and gasoline vehicles. Now, a year later, 80% of its fleet runs on propane.

Research
North Carolina's Carteret County is 100 miles long and encompasses over 506 square land miles. Locally known as CCATS, Carteret County Area Transportation offers curb-to-curb rural transit system transporting citizens to varying locations. CCATS buses travel between 250 to 300 miles daily.

Randy Cantor, transportation and fleet services director, was familiar with the benefits of propane autogas since CCATS had been operating dual fuel (gasoline and propane) vehicles for years. "I decided that with all the frustrations we were experiencing with vehicles that had a dual fuel option, I wanted to try a propane-only choice," Cantor said.

His research through the North Carolina Department of Transportation on state contract offerings led him to ROUSH CleanTech. "I have personally followed Roush racing for years and felt with their relationship with Ford, this would be a quality option," he said.

Propane Infrastructure
CCATS is located in Newport, North Carolina, where few fueling options are available due to its rural settings. “The battery life of electric vehicles does not run long enough and compressed natural gas infrastructure is too expensive or unavailable,” Cantor said. Propane autogas offered CCATS an optimal solution for infrastructure.

In 2017, CCATS installed a propane fueling station on its property using existing infrastructure and state support. The agency is preparing to increase the size of the station for more propane storage capability. Building a propane station costs less than any other transportation energy.

Cost Reductions
Lower propane autogas prices compared to other fuels offered an easy solution to the agency’s desire to spend less on fuel. The current price of gasoline in CCATS’s location is about $4.50 per gallon, compared to $1.90 for propane.

“On average, our state contract price per gallon of propane is about half the price of gasoline. The last fill, we were charged $1.90 per gallon of propane,” Cantor said. The agency currently has a propane fueling contract with Cherry Energies.

“We have been able to purchase another vehicle with the fuel savings,” Cantor said. “The savings has given us the ability to offer more services to more individuals.”

More than 90% of the United States propane supply produced domestically. An additional 7% comes from Canada. Each of CCATS buses use 35 to 40 gallons of fuel daily. By operating on propane, the agency displaces roughly 84,000 gallons of gasoline per year.

Employee Satisfaction
CCATS paratransit buses are expected to travel 25,000 miles per year, with a useful life expectancy of 100,000 miles based on state regulations. “We want to use vehicles that last and provide employee satisfaction,” Cantor said. “One of the reasons I went with Roush was to evaluate a longer life expectancy with a factory-built propane vehicle.”

CCATS’s propane autogas vehicles can achieve a range of up to 350 miles on a single fill-up, limiting the time drivers spend at the pump. Propane engines don’t give up power — vehicles equipped with ROUSH CleanTech’s propane fuel systems retain equivalent horsepower, torque and towing capacity as gas and diesel counterparts — and maintenance service and costs are reduced due to the fuel’s clean operation. According to Cantor, CCATS’ new propane-fueled paratransit buses are performing well and have required much less maintenance than the previous stock of gas and diesel buses. “We have had no issues and we continue to see improvements with efficiencies with usage,” he said.

The agency’s transit operators received hands-on vehicle training on driving, fueling and keeping fuel usage records. “All those who have driven them are very appreciative of the refinement of the vehicle,” Cantor said. “The system utilizes the Ford stock gauges, making it easier for the drivers to stay on top of vehicle needs.”

North Carolina regularly reaches temperatures in the mid-20s. The agency's propane vehicles have no cold-start issues and warm up quickly. Cantor reported that the CCATS drivers like the ease and flexibility of the propane vehicles and the maintenance staff appreciates that there are no issues with the systems.

Environmental Efforts
Vehicles that run on propane autogas emit fewer greenhouse gases, smog-producing hydrocarbons and particulate emissions than conventional fuels. Because of propane's environmental advantages, it is classified as an alternative fuel by the Department of Energy.

Existing incentive programs encourage adoption of propane. For CCATS this has come in the form of a state-contracted fuel rate, saving CCATS money every mile its propane paratransit buses travel the streets of rural North Carolina.

The ROUSH CleanTech Ford E-450 cutaway chassis is the only propane vehicle that has completed Federal Transit Administration's New Model Bus Testing Program (known as "Altoona testing"). By purchasing an Altoona-test vehicle, transit fleet operators can access federal funds that cover 85% of the entire alternative-fuel vehicle cost with a 15% local match.

Cantor found the change to propane vehicles so successful that he has ordered more for 2023. "Any organization considering the switch to propane should just do it even if there are no grants or assistance with purchasing," Cantor said. "The system will still pay for itself in a matter of months." His goal is to continue with propane vehicle purchases. He is so confident in the cost savings that he has suggested to county management to add propane vehicles to other Carteret County fleet vehicles.

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About ROUSH CleanTech: ROUSH CleanTech, an industry leader of advanced clean transportation solutions, is a division of the global engineering company Roush Enterprises. ROUSH CleanTech develops propane autogas technology for medium-duty Ford commercial vehicles and school buses. With more than 37,000 vehicles on the road, the Livonia, Michigan-based company delivers economical, emissions-reducing options for fleets across North America. Learn more at ROUSHcleantech.com or by calling 800.59.ROUSH.

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