

CASE STUDY



Location: Las Vegas, NV
Company: Yellow-Checker-Star (YCS)
Transportation
Study: Propane

YCS Transportation, located in Las Vegas, Nevada includes Nevada Yellow Cab Corporation, Nevada Checker Cab Corporation, and Nevada Star Cab Corporation. YCS is currently the largest propane (LPG) fleet operating in the U.S. with a taxi cab fleet of nearly 800 vehicles. The Ford Crown Victoria is the primary vehicle used in the fleet, which has been converted from conventional gasoline to propane. The company is in the process of converting 150 Ford Escapes for deployment in July 2012.

Decision Points

When Nevada Checker Cab merged with what is now YCS Transportation, the company inherited several compressed natural gas (CNG) vehicles. These were converted to run on propane by YCS because the time for filling, the driving range, and the space required for a CNG tank was a significant disadvantage. "It would take 30 minutes to fill a CNG tank and the cab could not operate for a whole shift," said Gene Auffert, chief executive officer for YCS Transportation. While the fill time and driving range has improved for CNG, Auffert believes propane is the better fuel choice to reduce the company's carbon footprint while maximizing profit through cost savings.

Other cost savings comes from federal tax credits and incentives. YCS Transportation receives a \$0.50 per gallon rebate incentive by taking advantage of the federal Alternative Fuel Excise Tax Credit, and the Aftermarket Alternative Fuel Vehicles (AFV) Conversion incentive that provides a tax credit equal to half of the conversion cost up to \$5,000, which "slightly exceeds our [conversion] cost," Auffert said. It should be noted that this tax incentive has expired.

Tests conducted by the U.S. Environmental Protection Agency (EPA) show that propane-fueled vehicles produce 30% less carbon monoxide (CO) and about 80% of the particulate matter compared to their gasoline counterparts. Source: AFDC.

Fleet Facts

In total, the YCS fleet logs 50 million miles and uses five million gallons of propane per year. Each vehicle is equipped with a tank large enough to operate for an entire shift without needing to fuel. Using a dedicated propane system, unlike a bi-fuel system, vehicles run solely on propane and do not use any conventional gasoline to power the internal combustion engine (ICE). This type of conversion requires the conventional fuel tank to be removed and replaced with the propane tank and the vehicle's wiring and fuel system is modified to use propane, Auffert said.

Propane Case Study



YCS propane storage tanks in the foreground are located adjacent to the fueling station seen in the background. Photo courtesy of YCS Transportation.

Fuel Supply and Infrastructure

While there are more than 50 public LPG fueling stations in Nevada, the company has two 60,000 gallon LPG storage tanks connected to a fueling station that can fuel up to eight vehicles at a time. Fueling is completed quickly and easily using the in-house fueling station and takes only three to four minutes to fill up.

For a large fleet, it is more efficient to have trained fueling technicians fill the tanks. Drivers pull into the filling station and leave the area while the vehicle is filled. This also provides an added measure of safety for the drivers and decreased liability for the company.

Costs Considerations

With a large fleet like YCS Transportation, tracking specific savings for each vehicle and for the entire fleet is difficult because of the high volume of vehicles operated by the company. The wholesale cost of propane fluctuates with the price of petroleum and seasonal use for household heating. However, it is generally less than conventional fuel. "The largest savings is created by the cleaner burning fuel that definitely extends engine life," Auffert said. Oil changes are only needed every 10,000 miles.

QUICK FACTS

Fuel Type: Propane (LPG)

Vehicles: 650 Ford Crown Victorias

Annual Miles: 50 million

Annual Fuel Consumption:
5 million gallons

Time to Fuel:
3 - 4 minutes

Miles Between Scheduled Maintenance: 10,000

Also, like conventionally fueled high-mileage vehicles, engine and transmission wear-and-tear are expected and vehicles are replaced every five years. Like most alternative fuel vehicles, each converted vehicle must meet EPA certification standards. Of YCS's 1,800 employees, one is dedicated to overseeing annual EPA testing requirements, and another 100 work to convert and maintain the YCS fleet.

Maintenance and Satisfaction

LPG vehicle safety and performance is comparable or better than conventionally fueled vehicles. In the nearly two decades that YCS has been operating propane-fueled vehicles, no propane fires have been caused by vehicle accidents.

Vehicle performance of LPG vehicles (acceleration and cruising power) is identical or better than conventional fuel vehicles. "We are extremely satisfied with the performance level of using propane and the associated cost savings that are generated," Auffert said. "As for customer satisfaction, at least 98% of them do not know that they have been riding in a vehicle fueled by propane." The only noticeable difference is in starting the vehicle. The engine will turn over for several seconds longer than a conventional vehicle before starting. This is normal in propane conversion vehicles that require time for propane vaporization.



YCS transportation fueling station. Photo courtesy of YCS Transportation.

Summary

Starting up an LPG fleet or converting an existing fleet can be pricey, but for fleets operating in a local area and employing in-house fueling, propane is a good, safe alternative that decreases greenhouse gases while maintaining a strong profit. YCS Transportation's experience shows that large fleets of 400-500 vehicles can benefit from using propane. "It's a viable option and [is] much cheaper," Auffert said. Looking forward, he thinks that over-the-road truck fleets would be a good fit for propane once public infrastructure is available on a large scale nationally.