

CASE STUDY



Location: Mesa County, AZ
Company: Mesa Public Schools
Study: Propane

Mesa Public Schools is an organization of schools located in south-central Arizona. The district serves approximately 70,000 students annually, and includes several different learning atmospheres for each student. As with most school districts, Mesa has a fleet of school buses that serve as transportation for the schools' students.



Photo courtesy of Mesa Public Schools.

With rising fuel prices, Mesa Public Schools decided to look for an alternative fueling solution for their fleet of buses. Mesa had previously used diesel to fuel all of its buses. Beyond rising fuel prices, Mesa also had to consider changing emissions standards. Both federal and state governments have been increasing the requirements for fuel efficiency for both fleet and non-fleet vehicles.

Decision Points

Mesa wanted to find a fuel that would be less costly than diesel. Also, Mesa wanted to utilize a fuel that helped its fleet adhere to emissions standards. Research was conducted to determine which alternative fuel would be most beneficial, and propane was selected. Mesa notes that propane has been used to fuel buses for over 30 years. Mesa officials contacted officials from other fleets that utilize propane. The officials with these fleets noted that utilizing propane allowed for a longer engine life and presented no maintenance issues.

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Mesa Public Schools had some previous experience with using CNG to fuel their buses. However, this proved to be problematic as the utilization of this fuel returned poor results. Beyond this previous experience, expanding the use of CNG within the bus fleet would have been more expensive than converting to propane fueled buses. A CNG fueling station to fuel the fleet would have been much more expensive than installing a propane station.

Fleet Facts

QUICK FACTS

Fuel Type: Propane

Number of Buses: 27

Total Miles Driven: 14,000 per bus, per year

Estimated Fuel Consumption: 1944 gallons per vehicle, per year

Mesa Public Schools utilizes 519 buses on a regular basis. Out of this, 27 are fueled by propane. All of these vehicles are standard-equipped buses, with some buses being short and some long. On average, each bus travels around 14,000 miles per year. This translates to 7,266,000 miles for the entire fleet and 378,000 miles fueled by propane specifically.

Mesa officials estimate that the entire fleet averages around 7.2 miles per gallon. Standard long wheelbase buses average around 7 miles per gallon when utilizing conventional diesel fuel, so the integration of propane fuel has helped increase the overall fuel economy of the fleet. By implementing more propane fueled buses, Mesa will be able to further increase its average fuel economy.



Photo courtesy of Mesa Public Schools.

Fuel Supply and Infrastructure

Mesa Public Schools utilizes private fueling stations to fuel its propane buses. It currently has two on-site fueling locations. Mesa was able to build a propane fueling station with 18,000 gallons of storage capacity for one fourth the price of a similar CNG fueling station. As mentioned, Mesa had some experience with CNG buses, but propane fuel proved to be less problematic and more cost efficient.

Mesa receives its propane from Ferrell Autogas. At the time of its last station filling, the propane cost the district \$1.22 per gallon.

Costs

As noted, Mesa pays around \$1.22 per gallon of propane. Based on 14,000 miles per year per propane fueled bus, each bus is consuming around \$2,353 worth of fuel per year. Compared to diesel at approximately \$3.50 per gallon, Mesa is saving approximately \$4,453 per bus per year on fuel costs. For the all 27 propane fueled buses, Mesa is saving approximately \$120,231 in fuel annually. However, based on real-world calculations, Mesa officials have determined they are saving \$0.385 per mile with each propane bus in service. Based on 14,000 miles per bus per year, Mesa is realizing an actual savings of \$145,530 annually.

Through the end of 2011, Mesa was receiving a \$0.50 per gallon excise tax credit for all propane purchased. This helped offset some of the costs associated with building the two fueling stations. However, with the expiration of many alternative fuel tax credits at the end of 2011, this particular credit is no longer available.

Maintenance and Satisfaction

To this point in the implementation of propane-fueled buses, Mesa has not experienced any service or maintenance issues with its vehicles. Mesa's fleet manager notes that the implementation of these vehicles has been without incident and all deadlines for implementation have been met ahead of schedule.



Photo courtesy of Mesa Public Schools.

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Mesa has expressed 100% satisfaction with the implementation of propane buses within its fleet. Mesa would like to have an entirely propane-fueled fleet, but budgetary restrictions prevent replacing the entire fleet at one time. Overall, these buses and the fuel savings they offer have exceeded the expectations of Mesa officials.

Summary

Mesa Public School officials have successfully implemented propane-fueled buses into their fleet. This has not only offered a fuel savings for the district, but it has also allowed officials to comply with ever-changing emissions restrictions. The propane-fueled buses utilized by Mesa have been reliable and have required no extraneous maintenance. In the future, Mesa officials would like to implement more propane-fueled buses to maximize their fuel and maintenance savings.