Case Study:

Propane Transit Buses Help Rural Minnesota Indian Reservation Thrive

Company: White Earth Public Transit
Industry: Transit
Location: White Earth, Minnesota
Vehicles: Six (6) propane Ford E-450s
Fueling: Two (2) 1,000-gallon onsite propane autogas fuel stations

Challenge:
To reduce fuel costs and provide sustainable, reliable public transportation services to residents of Minnesota's largest Indian reservation in one of the most rural and coldest regions in the state.

By the Numbers:

- 60% of fleet runs on propane
- Goal to transition to 100% propane fleet by 2028
- 450 miles covered per propane bus per day

About White Earth Indian Reservation
In northwestern Minnesota, among expansive prairies and enumerable lakes, White Earth Public Transit provides a lifeline to members of the rural 1,093 square-mile White Earth Indian Reservation. The reservation, which is the largest of Minnesota's 11 reservations and sits 225 miles from Minneapolis and 65 miles from Fargo, has a population of about 9,700. Within the reservation, there are 150 miles of rural roads, and road conditions are notoriously unreliable, particularly during Minnesota's harsh winters when snow cover lasts for up to three months each year.

The sparsely populated area and severe weather conditions make access to reliable public transportation critical for residents who need ongoing connection to services, employment, education, health care and retail. Sometimes this requires residents to travel to towns outside of the reservation. White Earth Public Transit provides this important service year-round.

Support for A Propane Transition
As White Earth Public Transit sought alternative fueling options to reduce fuel costs and improve the reliability of services, they began exploring propane autogas as a fuel source.

“We have many propane suppliers in our area, so we did some research on the propane fuel option and thought we would try it,” said Kenneth Bakken, transit manager for White Earth Public Transit. “We tried conversions first.”

The transition to propane through conversions began nine years ago. But after a few months, the converted vehicles began to have maintenance issues, said Bakken. So, the transit agency went all-in on purchasing new propane vehicles through the support of grant programs.

To make the full transition to propane, the agency relied on industry experts to provide resources and support. “We knew that we wanted someone who could provide support once we took a chance on it,” said Bakken. “We found ROUSH CleanTech from our bus vendor, North Central Bus of St. Cloud.”

Through on-the-ground partnerships and customized support and training, ROUSH CleanTech has helped over 100 transit agencies like White Earth Public Transit transition to propane autogas buses. After learning more about how the new, innovative technology powering today’s modern propane vehicles is similar to gasoline engines, the agency determined propane-powered vehicles were an excellent option for their community.

“We liked the autogas technology because we wanted something that would be similar to fuel at a gas station, which makes the drivers more comfortable but safe as well,” said Bakken.

Plus, with a large selection of propane providers in the area, Bakken could be certain the fuel supply would be readily available. More than 90% of the United States propane autogas supply is produced domestically, with an additional 7% from Canada, making it an extremely stable and sustainable operational choice.

Driven by Lower Costs

When Bakken’s team initially set out to learn about alternative fuel options, they were driven by a need to lower fuel costs. With propane buses, White Earth Public Transit achieved that goal, with per-gallon propane prices approximately one dollar less than gasoline. “We don’t run diesel buses anymore because the cost was too high,” said Bakken. “Gas is cheaper (than diesel) but also getting high. Propane is the cheaper option, and we don’t have the fuel repairs like before.”

On average, propane autogas costs about 50% less than diesel and 40% less than gasoline. And, the agency’s transit vehicles can achieve a range of up to 350 miles on a single fueling.

Propane autogas reduces maintenance and repair costs, too. That’s because it removes the complexity and cost of after-treatment measures since it doesn’t require additional fluids or filters; exhaust after-treatment or diesel emissions fluids; particulate trap systems; turbochargers or intercoolers.

Fueling the propane buses is very similar to fueling gasoline buses, which made the transition easier for drivers. Bakken said that, other than some training for drivers, fueling the propane buses feels the same as fueling with gasoline. Bakken also appreciates that propane autogas is part of a closed-loop system, meaning the fuel is never exposed to air and won't spill.

Propane autogas fueling infrastructure costs less than any other transportation energy source — conventional or alternative. Many propane customers elect to install onsite fueling stations, as is the case with White Earth Public Transit. The agency chose to partner with a local school district to share one onsite fueling station in 2018.

The propane vehicles have allowed the agency to better maintain operations year-round because propane vehicles have no cold-start issues and warm up quickly, which means they are saving time and money on equipment and staff throughout Minnesota's harsh winters.

Winning in Winter Weather

Propane's cold-weather performance was a big factor in White Earth Public Transit's decision to operate propane vehicles. Propane is one of the most reliable cold-weather fuels because it stays in its liquid form up to negative 40 degrees Fahrenheit; propane vehicles have no cold-start issues and warm up quickly.

"In the winter, temperatures typically stay below zero for weeks at a time," said Bakken. "We often see temps as low as negative 40 to negative 50 degrees Fahrenheit. But, I find no issues in the winter with propane, and we have been using it for years."

When considering other fuels, propane's winter weather performance stood out against electric. "There's limited infrastructure for electric vehicles in rural areas, and the lithium batteries cannot stand up to our cold climates," said Bakken. "This turned us away from EV and led us to propane."

The transit agency's fueling station is outside, so the buses are fueled in Minnesota's frigid temperatures. Bakken says that, when fueling outdoors in the cold, the only issue the agency has experienced is that the gasket in the nozzle shrinks, which affects sealing capabilities. As part of a safety feature, the shrinkage shuts off the pump and limits the number of buses that can be fueled at one time.

Drivers appreciate the level of comfort and familiarity with the propane vehicles. "With propane, the engines start within 10 seconds and the cabins warm up within 15 minutes," said Bakken. "Drivers drive their propane buses just as if they were a gas bus."

Fleet Goals: 100% Propane by 2028

White Earth Public Transit chose propane autogas for its availability, low cost, clean operations and funding incentives nearly a decade ago, and the agency has had such success with its propane vehicles that it plans to operate a 100% propane fleet by 2028.

Today, the agency operates six propane buses and four gasoline buses. The propane buses are used five days per week, averaging about 450 miles per day. While the region does have some hills, most of the buses' travel is on outdated rural tar roads. Despite the rugged terrain and extreme weather, Bakken said there have been no performance issues with the propane vehicles. "Propane buses perform just as good as gas buses. We have not noticed any change in this area."

Funding for Modern Transportation
In recent years, White Earth Public Transit has secured multiple federal and state grants to support its operations, expand and modernize its bus fleet, and construct a new transit facility. These grants, including those from the Federal Transit Administration (FTA) and MnDOT, have helped the agency secure updated, clean-operating propane buses through their Low or No Emission Vehicle (Low-No) and Carbon Reduction programs.

Since propane is classified as an alternative fuel by the Environmental Protection Agency, there are incentive programs to encourage adoption. The ROUSH CleanTech Ford E-450 cutaway chassis has completed the Federal Transit Administration's (FTA) New Model Bus Testing Program ("Altoona Testing"), which allows a transit fleet operator to access federal funds that cover 80-85% of entire alternative fuel vehicle cost with a 15-20% local match. The ROUSH CleanTech Ford E-450 — the model operated by White Earth Public Transit — meets all federal Buy America standards, making it easier for fleets to be eligible for federal purchasing programs.

In 2025, White Earth Public Transit began construction on a modern 18,000-square-foot transit facility through the support of the FTA and MnDOT funding programs. When complete, the facility will be the largest tribal transit facility in Minnesota. It will include bus maintenance garages, a dispatch office and driver facilities, which will improve the agency's operational efficiency and safety, better meeting the needs of the community.

A Sustainable Future Looks Bright
White Earth Public Transit has a unique responsibility: keep its rural residents connected, healthy and safe while being good stewards of government funds and the environment. Making the transition to propane vehicles has helped the agency do just that. Through access to federal and state grants, the agency has developed and implemented a sustainable strategy for serving the White Earth Indian Reservation while driving down costs and creating cleaner air for the community.

White Earth Public Transit is part of hundreds of transit agencies across North America that have adopted more than 7,000 propane buses.

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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 50,000 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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