



CITY OF KINGSPORT COUNTS ON PROPANE

A PROPANE AUTOGAS CASE STUDY

Kingsport, Tennessee, with a population of just more than 50,000, is a city committed to sustainability. It routinely encourages citizens to join in citywide environmental-focused efforts that include curbside recycling and building more accessible bike and walk trails.

Starting around 2008, Steve Hightower, Kingsport's fleet maintenance manager, was asked to make the city's fleets greener — and to cut costs at the same time. Hightower found a solution to that equation in propane autogas. Bi-fuel vehicles, that can run on either gasoline or propane, were introduced to the city's police fleet three years later in 2011, and after initial success in the police department, the city has since converted approximately 10 percent of its equipment across multiple departments to propane.

JUSTIFYING THE SWITCH WITH COST SAVINGS

The Kingsport Police Department first tested incorporating propane autogas vehicles into its fleet by converting two cruisers to bi-fuel in 2011. Along with using propane autogas, bi-fuel vehicles can also run on gasoline with the flip of a

switch, convenient for further travel or long days when a trip to refuel at the station isn't possible. With high gas prices at the time, the fuel savings incurred with propane autogas, which is typically less expensive per gallon than conventional fuels, were quickly noticed by city officials.

The lower fuel costs and reduced maintenance requirements added up to a lower total cost-of-ownership for the bi-fuel cruisers compared to Kingsport's gasoline-fueled counterparts. Being able to show the city's decision makers the lower total cost-of-ownership offered by the bi-fuel vehicles played a big factor in convincing the city to commit funds to convert more vehicles.

"The argument for more propane autogas vehicles had to start with quantifiable savings," Hightower said. "Fortunately, it was an easy story to tell."

COMPANY

City of Kingsport, Tennessee

CHALLENGE & SOLUTION

As part of a city-wide move to increase sustainability and energy efficiency efforts, Kingsport's fleet management staff began considering different alternative fuels for the city's vehicles. Propane's versatility across various applications has allowed the city to add 83 bi-fuel police vehicles, heavy-duty propane autogas trucks, propane commercial mowers, and propane forklifts to the fleet.

RESULT

- Early adoption of propane in the city's police department in 2011 has led to nearly 10 percent of all city equipment being converted to propane.
- By the end of 2016, 90 vehicles across the city's fleet, including police cruisers, will be dedicated propane or bi-fuel.
- Grants and alternative fuel tax credits help the city keep conversion and fueling costs low.

That story included Hightower's research of a few other alternative fuel options — electric and natural gas — although neither could match propane autogas' ability to deliver desired performance and a low total cost-of-ownership. Electric didn't meet the performance needs for the majority of the police department, while costs for CNG infrastructure were exorbitant and did not provide the life expectancy when compared to propane infrastructure.

INFRASTRUCTURE, REFUELING ASSISTANCE

To prepare for the propane autogas police fleet, the city purchased and installed a propane autogas refueling station, which included a 1,000 gallon propane tank. Kingsport later installed an additional 2,000 gallon tank to meet the needs of the city's growing propane fleet.

The city also qualified for fuel equipment and infrastructure grants which lowered their initial capital costs. East Tennessee Clean Fuels, for example, helped connect Hightower to a regional grant and the city received subsequent dollars from organizations including the Tennessee Propane Education & Research Council as it transitioned to propane autogas vehicles.

With the refueling infrastructure in place, the city's local propane retailer has scheduled bi-weekly refueling of the fuel storage tanks. Working with its propane partner helped Kingsport receive the lowest cost per gallon of propane autogas, too. In 2015-2016, when gas prices were at their lowest, propane was still the least expensive option. A gallon of propane cost the city about \$0.75 per gallon after a federal alternative fuels

rebate, compared to \$1.28 per gallon of gasoline, Hightower said.



"[The cost of] propane is relatively stable compared to gasoline," he said.

At that price per gallon, and depending on the model of the vehicle, Hightower says initial investment is recouped once the vehicles log between 45,000 to 65,000 miles, well within the life of the vehicle.

POSITIVE PERFORMANCE REVIEWS

The Kingsport Police Department currently operates 39 cruisers and seven light-duty SUVs on propane bi-fuel systems. Hightower said he now has police officers asking him for more propane autogas vehicles, and they're looking to add new bi-fuel Dodge Chargers to the fleet.

"If you could convince police officers to use propane, they could convince anybody," Hightower says. "And I've found that to be true."

Lieutenant Tim Crawford said most of the department enjoys the propane autogas vehicles because they have a much smoother acceleration and the vehicles idle better. Their performance definitely increases as soon as the vehicle is flipped from gasoline to propane autogas, he says. Plus the bi-fuel fuel systems eliminate "range anxiety" for the officers, because they are able to refuel with gasoline if they're not near their home base when refueling is needed.

Crawford says people will often ask about the vehicles, intrigued by the "Propane" sticker on the cars. Officers are happy to tell them about how reduced emissions benefit the environment and that reduced costs on fuel and maintenance help the city to be better stewards of its citizens' taxes.

PROPANE EXPANDS BEYOND POLICE USE

After the successful deployment of propane in the police department, Kingsport officials found uses for propane across the city. Over a dozen departments use bi-fuel and dedicated propane autogas vehicles, including vehicles used to haul equipment for water, sewer, streets and sanitation. The Grounds and Maintenance Department uses light-duty bi-fuel trucks as well as a fleet of six dedicated propane commercial mowers to maintain hundreds of acres of parks, sports turf, and landscaping. Four forklifts also run on propane in the city's storage facilities.

Hightower now speaks to other municipalities about adding propane vehicles to their fleets. He recommends cultivating relationships between vehicle vendors, conversion suppliers, and propane retailers early in the process to get the right equipment for a city's needs.



FOR MORE INFORMATION

To learn more about propane autogas, visit propane.com/on-road-fleets.

Propane Education & Research Council / 1140 Connecticut Ave. NW, Suite 1075 / Washington, DC 20036
P 202-452-8975 / F 202-452-9054 / propanecouncil.org

The Propane Education & Research Council was authorized by the U.S. Congress with the passage of Public Law 104-284, the Propane Education and Research Act (PERA), signed into law on October 11, 1996. The mission of the Propane Education & Research Council is to promote the safe, efficient use of odorized propane gas as a preferred energy source.