Superior Propane

CONVERTING YOUR FLEET TO AUTO PROPANE

A Complete Guide

OPEN TO DISCOVER

- The benefits of auto propane
- Cost-savings and calculators for popular vehicles
- How to convert your vehicles
- Emissions advantages
- Real-life success stories
- Myths and facts about auto propane

INTRODUCTION TO AUTO PROPANE

What You'll Find in This Guide

Auto propane is the second most widely used and accepted alternative automotive fuel in the world today after ethanol.[1] Thanks to advancements in auto propane technology, the fuel has established itself as a clean, safe and cost-effective choice. Auto propane is extremely popular in many regions of the world, including Korea, Turkey, Russia, Poland, and Italy, which have well-developed auto propane markets. In Canada we continue to see growth and adoption by many industries pursuing the benefits that auto propane has to offer.

In this guidebook, we've collected everything you need to know about converting to auto propane, whether you're considering a single vehicle or an entire fleet. We'll show you what's involved in converting your vehicles, where to do it and how it will help you significantly lower your emissions and save money.

There are many labels for "auto propane"

✓ Autogas

✓ Auto Propane

✓ Propane

✓ Liquefied Petroleum Gas (LPG)

In Canada, we use the term "auto propane"

[1] 2014 Autogas Incentive Policies, World LP Gas Association

THE CLEANER CHOICE: PROPANE'S EMISSIONS ADVANTAGE

By every measure, propane is less harmful to the environment than conventional automotive fuels (gasoline and diesel). Propane is classified by Canada's Clean Fuel Standard (CFS) as a clean fuel — a low carbon, clean-burning energy source that emits virtually no air pollutants, including nitrogen oxide (NO_x), the main cause of smog and a major cause of serious damage to human respiratory health. It also emits less carbon dioxide (CO_2) and other greenhouse gases (GHGs), which are major contributors to climate change. Propane is safely transported and used across Canada every day. In the unlikely event of a propane spill, it causes no harm to soil or groundwater, and instead evaporates as a harmless gas.

By choosing to use propane instead of conventional automotive fuels, you are helping to improve air quality, reduce greenhouse gas emissions and protect the environment.

Compared to Gasoline, Propane Produces	
60%	less[2] CO
21%	less[3] CO_2 (Calculated on a well to wheel basis)
20%	less[4] NO_x
26%	less[5] GHG emissions
81%	less[6] particulate matter

Compared to Diesel, Propane Produces	
32%	less[7] CO_2 (tailpipe emissions)
74%	less[8] NO_x
15%	less[9] GHG emissions
98%	less[10] particulate matter

The combustion of other fuels can produce toxic substances such as benzene, acetaldehyde, formaldehyde, and 1,3-butadiene. A fleet running on propane produces 96% fewer of these substances[11], making auto propane a cleaner choice.

[2] https://media.ford.com/content/fordmedia/fna/us/en/news/2015/05/04/2016-f150-alternative-fuel-leadership.html
[3] NPG, Today's Propane.
[4] NPG, Today's Propane.
[5] CPA, The Propane Advantage.
[6] https://auto-gas.net/why-autogas/autogas-is-clean/
[7] https://sencanada.ca/content/sen/committee/421/ENEV/Briefs/CPA_ENEV_Submission_e.pdf
[8] World LPG Gas Association, Auto-gas.net
[9] CPA, The Propane Advantage.
[10] CPA, The Propane Advantage.
[11] CPA, Auto Propane: A Smart Fuel Solution.

IS AUTO PROPANE RIGHT FOR YOU?

There are many situations in which auto propane is a good fit. If any of the following apply to you, your business will likely benefit by moving to auto propane.

Are you going green?

If your company or municipality is trying to meet sustainability objectives and you're looking for ways to reduce greenhouse gas emissions and particulate matter, converting your gasoline-powered fleet to auto propane will cut emissions significantly. For example, an auto propane vehicle will emit 60% less carbon monoxide,[12] 21% less CO_2[13] (calculated on a well to wheel basis) and 81% less particulate matter[14] than gasoline.

Do you want to lower your fleet fuel costs?

If you have high-mileage vehicles that routinely consume a lot of fuel, auto propane will reduce your fuel costs by up to 50% and can lower your maintenance costs.

Do you want the ability to control fuel cost?

Auto propane prices do not fluctuate as much as gasoline and diesel, which helps you manage your budget and project fuel costs. If you have your own refuelling location, fixed managed pricing is also available to further protect your costs.

Does the nature of your business require long idle times?

Idling vehicles (such as police vehicles, tow trucks and construction vehicles) use fuel and produce more emissions than a vehicle in motion. In some cases, idle time fuel consumption can represent as much as 40% of total fuel costs. Propane is less expensive and a cleaner fuel than gasoline and diesel, so converting an idle-prone fleet greatly reduces both fuel costs and emissions.

Has fuel theft become an issue?

Both gasoline and diesel are increasingly subject to external theft and internal shrinkage. Propane is much less susceptible to pilfering because it's extremely difficult to steal auto propane from a vehicle tank and few employees own personal vehicles that are propane-fuelled.

Does your fleet require long-distance travel?

When you add propane to your existing fleet, you're adding a second fuel tank to each vehicle, and essentially doubling the distance it can travel before refuelling.

[12] Canadian Propane Association, Environmental Benefits of Propane.
[13] NPGA, Today's Propane.
[14] https://auto-gas.net/why-autogas/autogas-is-clean/

Top Ten Reasons to Choose Auto Propane, The #1 Alternative Fuel

Less expensive than gasoline and diesel

Lower volatility of pricing

The fastest ROI of any alternative fuel

Readily accessible in Canada

Clean and environmentally friendly

Reduced maintenance costs

Lower federal carbon tax rates than gasoline or diesel

Any gasoline vehicles can be converted

Modern technology with enhanced safety features

Eliminate fuel shrinkage

CAN YOUR VEHICLE BE CONVERTED?

Any vehicle that runs on gasoline can be converted to propane. Almost all light- and medium-duty vehicles have conversion kits available, and the list of conversion kits is constantly expanding to accommodate new vehicle models.

To ensure your vehicle can be converted, contact Superior Propane or one of our conversion centre partners.

TOTAL COST OF OWNERSHIP

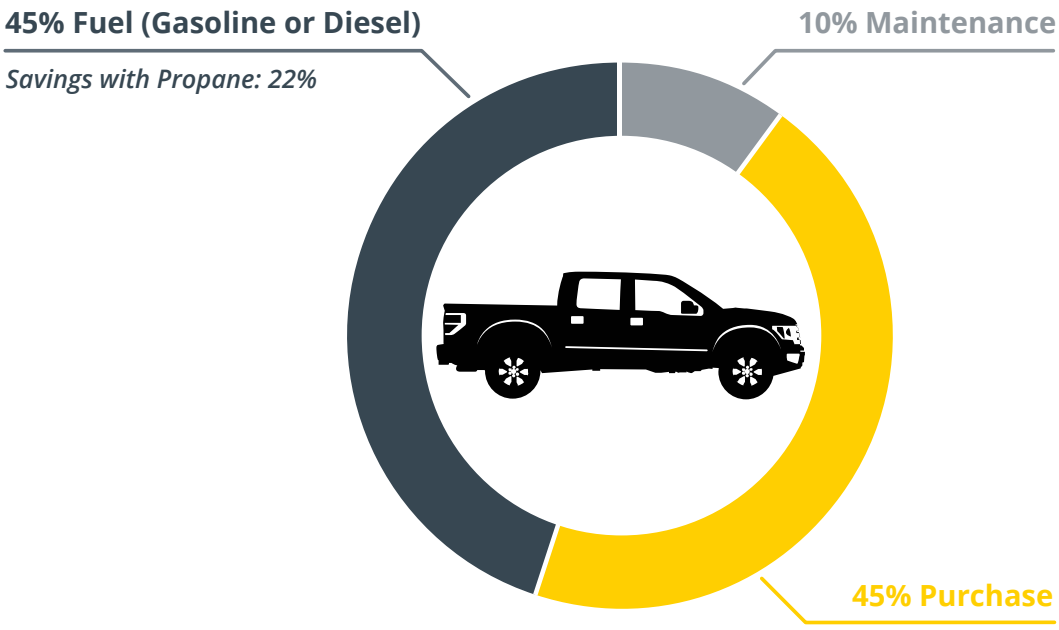
How Much Could You Save by Converting?

Cost reduction is one of the most important reasons to consider converting to auto propane. You may be wondering what kind of a financial commitment is required to convert your fleet, how fast you can recoup your investment and what further savings you can expect during the life of the vehicle.

In this section, we take a close-up look at the total cost of ownership — which includes purchase price of the vehicle, conversion costs, fuel consumed, and reduced maintenance costs — so you get a complete picture of what's involved financially. We also provide calculations for some typical vehicles so you can see how quickly you can see a return on your investment.

TYPICAL COST BREAKDOWN OVER THE LIFE OF A VEHICLE

It's important to consider **lifetime ownership costs** when purchasing a new vehicle. Did you know that the cost of gasoline over the life of the vehicle can be as much as the cost of the vehicle itself?



SAVE ON FUEL BY SWITCHING TO PROPANE

Fuel accounts for as much as 45% of total fleet costs, which means a vehicle running on gasoline can consume an amount equivalent to the purchase price over its lifetime.

Propane is significantly less expensive than either gasoline or diesel. By switching to auto propane, you will drastically reduce your fuel costs. These savings can be redirected into funding the replacement cost of the next vehicle or increasing your bottom line.

FIGURE 1

Comparison of Propane Prices to Gasoline and Diesel

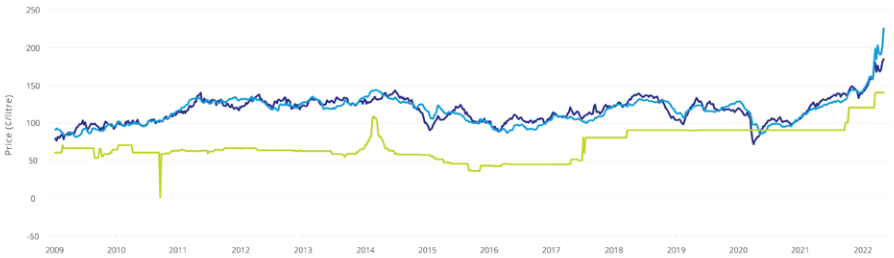
Fuel savings will differ depending on your area.[15]

- Toronto, Ontario has a 50% savings compared to gasoline
- In Vancouver, British Columbia, cardlock users have seen savings of up to $1/L over gasoline
- In Montreal, Quebec there is a 60% savings due to the fact that there is no tax on propane

For the last 15+ years, propane has been consistently less expensive than gasoline and diesel and less prone to price fluctuations.

Toronto

Retail Unleaded, Diesel and Propane Prices from January 01, 2009 to May 04, 2022



Unleaded:	**212.9 ¢/L**
Diesel:	**222.4 ¢/L**
Propane:	**111.2 ¢/L**
SP Fuelling Card:	**92.0 ¢/L**

Prices as of July, 2022

Vancouver

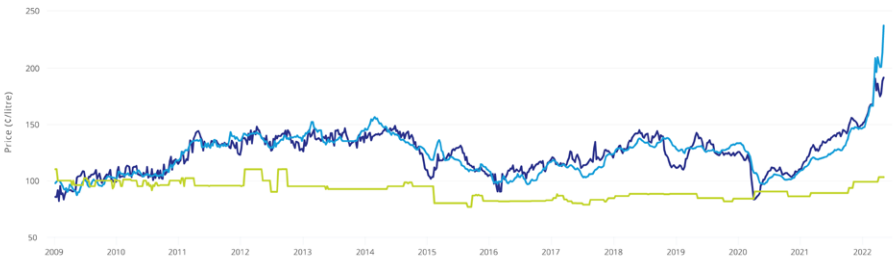
Retail Unleaded, Diesel and Propane Prices from January 01, 2009 to May 04, 2022

Unleaded:	**232.6 ¢/L**
Diesel:	**247.7 ¢/L**
Propane:	**122.9 ¢/L**
SP Fuelling Card:	**102.9 ¢/L**

Prices as of July, 2022

Montreal

Retail Unleaded, Diesel and Propane Prices from January 01, 2009 to May 04, 2022



Unleaded:	**201.9 ¢/L**
Diesel:	**226.6 ¢/L**
Propane:	**102.9 ¢/L**
SP Fuelling Card:	**92.9 ¢/L**

Prices as of July, 2022

[15] https://charting.kalibrate.com/charting/timeline

Due to the abundant availability of propane, this price advantage is expected to continue and the delta is expected to widen with federal carbon taxes slated to increase substantially through to 2030 and likely beyond (see Figure 2: Federal Carbon Tax Increases 2019 to 2030, below). The advantage of propane is that it is a low carbon fuel and is less subject to rising carbon taxes.

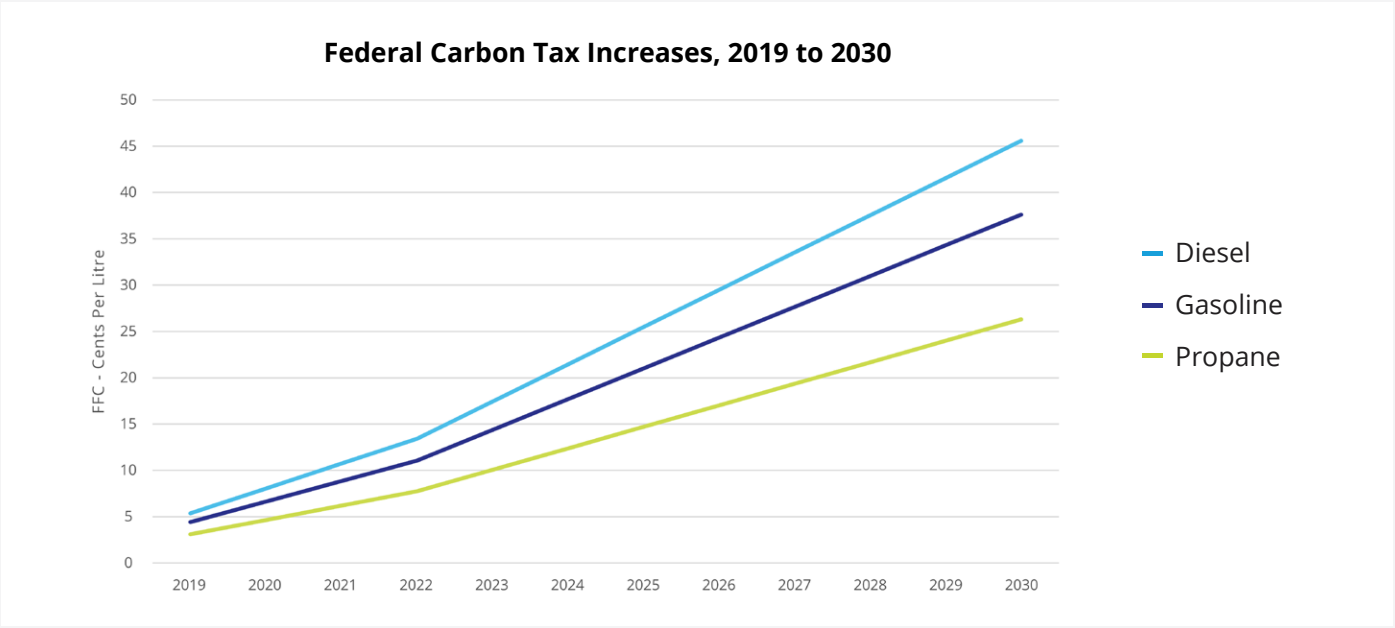
Another advantage of propane is that its commodity price is much more stable than traditional fuels. Gasoline is subject to large fluctuations based on market conditions, with little or no advance warning to the fleet managers, making it difficult to predict pricing and plan budgets. One way to mitigate this risk is by working with your propane supplier to obtain a fixed-rate for propane fuel for your fleet and secure your costs for the year. This also helps fleet managers meet their yearly budgets.

The savings can be significant when calculated over the course of a year — or the lifetime of a vehicle.

FIGURE 2

Propane Can Significantly Reduce Your Tax Exposure

With the high carbon content of gasoline and diesel, the tax on these fuels is increasing over time. Since propane is a lower carbon fuel the carbon tax is less and only gradually increases over time. This table illustrates how the tax levy (per tonne of carbon content) translates into a cost per litre at the pumps. By 2030 you will see a 20 cent carbon tax saving on propane vs diesel and an 11.5 cent carbon tax saving between propane and gasoline.[16] Using an alternative fuel like propane can significantly reduce your tax exposure.



Liquid Fuel	Unit	2019 ($20/t)	2020 ($30/t)	2021 ($40/t)	2022 ($50/t)	2023 ($65/t)	2024 ($80/t)	2025 ($95/t)	2026 ($110/t)	2027 ($125/t)	2028 ($140/t)	2029 ($155/t)	2030 ($170/t)
Diesel	¢/L	5.37	8.05	10.73	13.41	17.43	21.45	25.47	29.49	33.51	37.53	41.55	45.57
Gasoline	¢/L	4.42	6.63	8.84	11.05	14.37	17.69	21.01	24.33	27.65	30.97	34.29	37.61
Propane	¢/L	3.10	4.64	6.19	7.74	10.06	12.38	14.70	17.02	19.34	21.66	23.98	26.30

[16] https://propane.ca/environmental-benefits/

COST TO CONVERT A VEHICLE TO PROPANE

While some vehicles are purchased directly from the manufacturer ready to run on propane, the majority of conversions are done aftermarket (Learn more on page 14).

There are three cost components to a propane conversion: the conversion kit, the tank and the labour. The total cost of conversion varies depending on the vehicle and the type of engine.

There are two main engine types: a Sequential Injection Engine, and a Direct Injection Engine. Here's an example of the cost breakdown to convert vehicles with these different engines.

	Sequential Injection Engine *(example: Chrysler RAM Truck)* 	**Direct Injection Engine** *(example: Ford F-150 or GMC)* 
Conversion Kit	$2,000	$2,800 (includes the cost of an additional computer)
Tank	$2,000	$2,000
Labour	$2,000	$2,000
TYPICAL TOTAL COSTS:	**$6,000**	**$6,800**

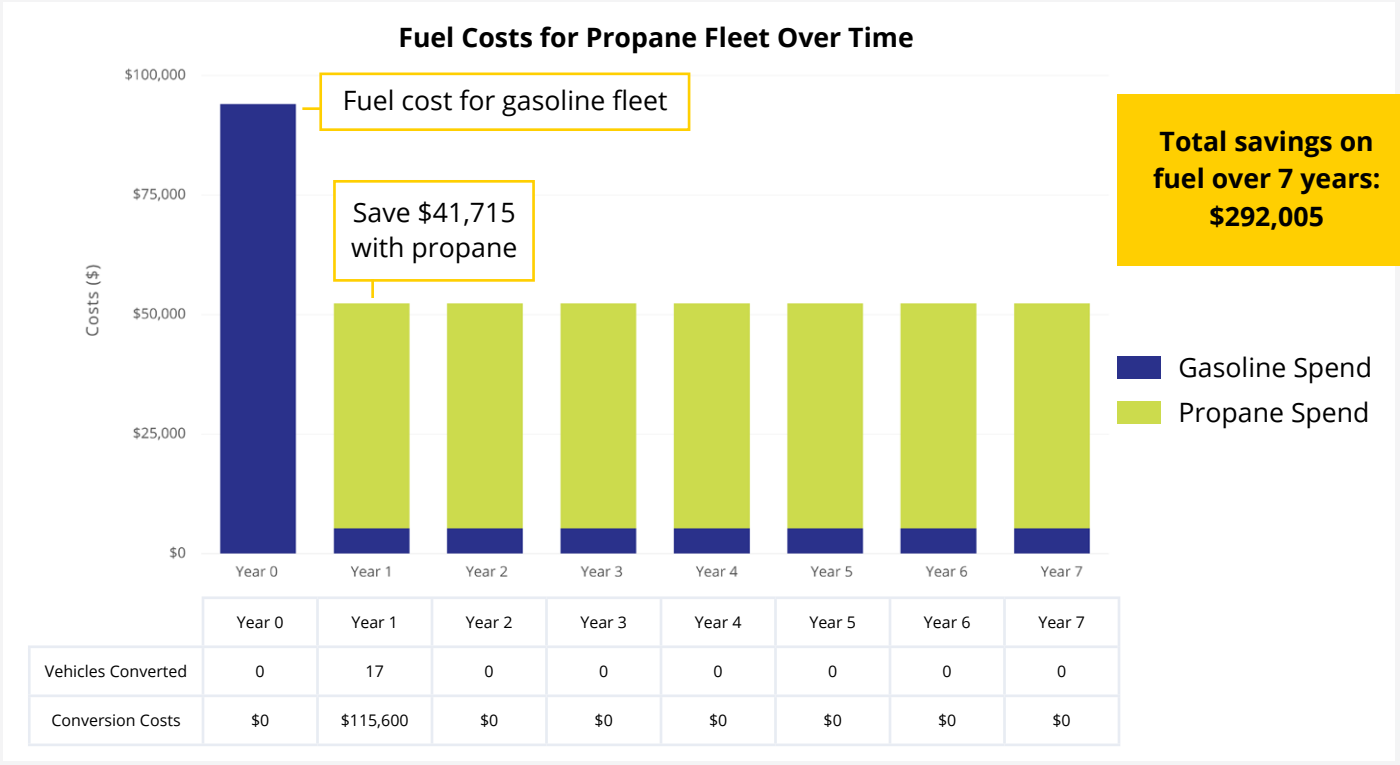
Conversion costs can quickly be recovered with fuel price savings. Factors contributing to the time to see a return on investment include kilometres driven over the year, idling time and the number of years the vehicle is driven. Typically, commercial fleet vehicles converted to propane will see a return on investment within two years or less. See Figure 3 on next page.

Note: Pricing is at date of publication. Pricing may increase or decrease based on vehicle type.

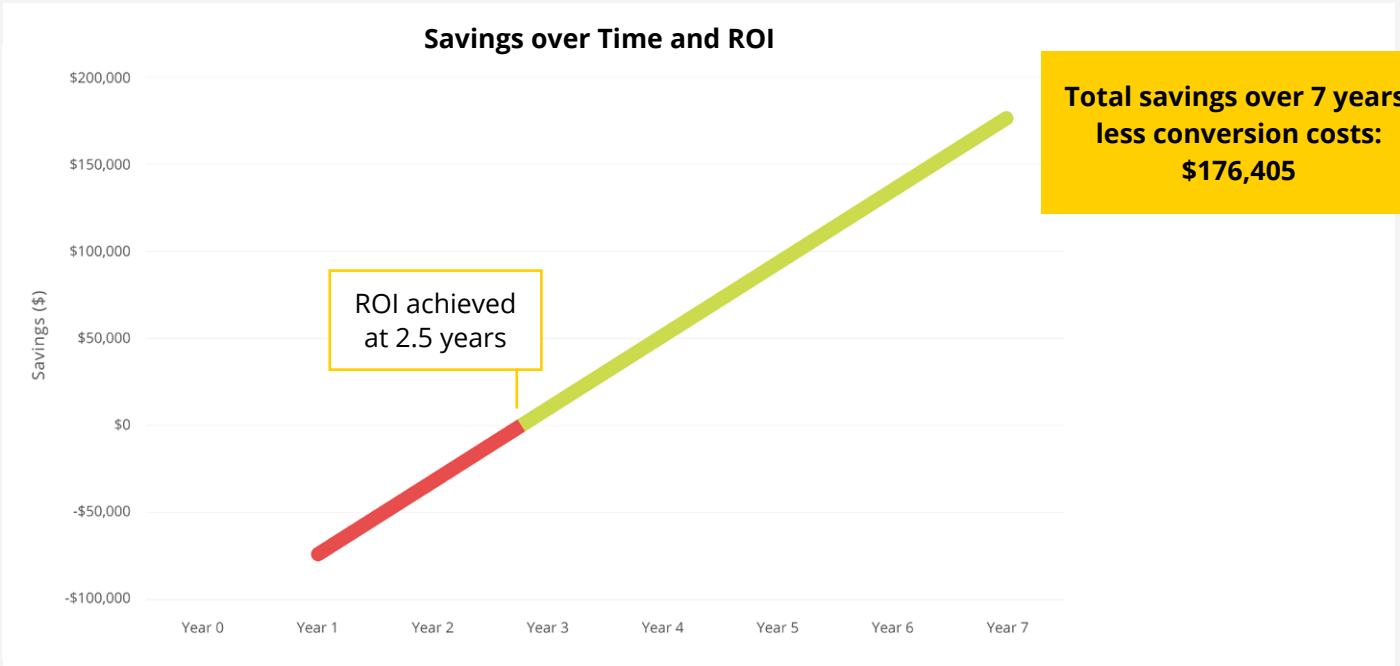
FIGURE 3

ROI for Propane Fleet Versus Gasoline

This chart shows a mid-sized fleet of 17 vehicles that have converted to propane. In this example for comparison purposes, the blue bar represents the gasoline used in its first year. The green bars represent the new fuel cost when converting these vehicles to propane. There is a very small portion of gasoline used at startup of the vehicle. The red/green line shows net savings over time. The point where the line changes from red to green is when the ROI has been achieved — typically this occurs within two years of conversion.



	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Vehicles Converted	0	17	0	0	0	0	0	0
Conversion Costs	$0	$115,600	$0	$0	$0	$0	$0	$0



Find detailed savings calculations for total cost of ownership for a 2022 Ford F-350 XL 6.2L (Direct Injection) and a 2022 Dodge Ram 1500 5.7L HEMI (Sequential Injection) on page 26.

Superior Propane Auto Propane specialists can provide you with a cost savings calculation for the vehicles in your fleet.

Call 1-855-FUEL-221

LOWER YOUR MAINTENANCE COSTS

As propane is a clean-burning fuel, when compared to gasoline or diesel vehicles, maintenance costs tend to be lower. Propane's lower carbon content produces a cleaner exhaust with fewer green house gas (GHG) emissions and particulates. Diesel vehicles require an advanced Diesel Particulate Filtration (DPF) system and Diesel Exhaust Fluid (DEF) to meet EPA (Environmental Protection Agency) standards whereas propane vehicles do not. This means:

No DPF components that could fail and require repairs

Reduced vehicle downtime

A fewer number of filters are needed (diesel uses 5 filters, propane has 1) and filters are typically less expensive

A cleaner burning fuel means fewer oil changes are required.

Less maintenance contributes to less vehicle downtime, for a more productive and cost-effective fleet.

A HOW-TO GUIDE TO CONVERSION — AND BEYOND

Getting to a Propane Fleet

Once you've made the decision to switch to auto propane, the next step is to acquire propane vehicles or convert existing gasoline vehicles to propane. There are three main ways that vehicles can run on auto propane.

1

Propane-Ready Vehicles

These are vehicles purchased from the OEM ready to be converted to propane. Once a conversion kit is added to the vehicle, the vehicle can run on gasoline or propane.

Ford Is A Leader In "Prepped" Vehicles

Ford offers a prepped for propane option on their F and E series commercial vehicles. A prep package includes hardened valves, valve seats, pistons, and piston rings. Contact your Ford dealer for the prep package fee (approximately $350–$400). Converting prepped for propane vehicles designated by the OEM provides full warranty coverage of the vehicle.

Ford's Propane Portfolio

Since 2009, Ford has sold more than 57,000 propane-prepped/Compressed Natural Gas (CNG) vehicles – seven times more than all other major U.S. automakers combined.[17]

Ford sells a propane prep option for eight of its commercial vehicle lines, ranging from Transit Connect to F-750, making it the broadest CNG/propane-capable portfolio of any North American auto manufacturer.

[17] https://media.ford.com/content/fordmedia/fna/us/en/news/2015/05/04/2016-f150-alternative-fuel-leadership.html

2 Mono-Fuel Vehicles

Mono-fuel vehicles arrive from the manufacturer to run solely on propane. During the manufacturing of the vehicle, a propane system is added in place of the gasoline system. The propane system (tank and fuel lines) is engineered into the vehicles. As an example, many school buses are mono-fuel vehicles that run only on propane.

3 Hybrid Propane-Electric Vehicles

A hybrid electric vehicle (HEV) combines a conventional internal combustion engine with an electric propulsion system. The presence of the electric power train helps these vehicles achieve an even better fuel economy than those with a conventional engine. By converting a hybrid vehicle's gasoline engine to a propane engine, it's now an auto propane–electric hybrid. When the internal combustion engine runs on clean burning propane, it's a much more environmentally friendly option. Now you can enjoy the benefits of both worlds; electric and propane.

Did you know?

Blue Bird, IC Bus Manufacturing and Thomas Built Buses, Inc. manufacture mono-fuel propane buses. Today there are over 54,000 of these buses transporting up to 4 million kids to school every day!

HOW AND WHERE TO CONVERT

Conversions can be done in all provinces in Canada at a centre that is licensed by the province and has qualified mechanics. The mechanics at these facilities have gone through ICE-P training from the Canadian Propane Association (CPA) and conversion kit training from the conversion kit manufacturer.

There are many conversion centres across the country. A list of certified propane conversion centres can be found on the Superior Propane website through this link. Alternatively, if you are a municipality or an organization with a large fleet and you have your own shop and mechanics, you can do your own fleet conversions to propane.

Superior Propane's auto propane specialists can help you locate a local conversion centre or aid your facility to become licensed to do conversions and certify your mechanic.[18]

A Word About Warranties

There are three ways to ensure your vehicle is covered:

1. OEM vehicles that arrive from the manufacturer on propane are fully covered under warranty.

2. A "prepped for propane" bi-fuel option offered by a vehicle manufacturer is ready for propane and automatically covered by the vehicle warranty.

3. Adding a propane kit aftermarket does not void your warranty. However, if it is found that the propane conversion is causing issues with the vehicle, then the OEM will not grant warranty coverage on those components. This is covered by the propane kit manufacturer and the installer. Ensure you engage a reputable, certified installer for your conversion.

[18] For large-fleet operators who want to do their own auto propane conversions, the CPA's "Auto Propane Conversion and Inspection – 200-11" course is available.

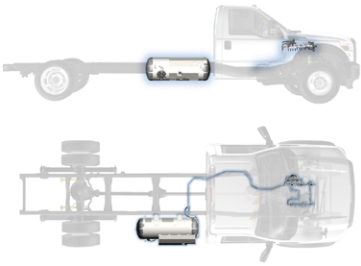
TYPES OF PROPANE TANKS

Propane tanks are now available in many more sizes and shapes for different vehicle types, which means there's a propane tank that will fit any vehicle you wish to convert.

Toroidal tanks (doughnut-shaped) are designed to fit neatly into the spare tire well. In a pick up truck like an F-150, for example, a toroidal tank keeps valuable truck bed space free and typically holds 95 litres of propane. Smaller tanks are also available for cars and minivans. Toroidal tanks are light so they won't hinder performance, and remote fill valves are installed so the tank is easily accessible for refuelling.

Bed mount tanks can be fit onto the back of most makes and model years of small- or full-size pickup trucks. Although they take up about 12 inches of truck space, they can hold approximately 150 to 200 litres of fuel, which is a real benefit to a workhorse vehicle. A direct fill valve is installed on these tanks for easy refuelling.

Side mounted tanks are available for medium-sized trucks and are attached to the chassis of the truck's outer frame. Ford vehicles outfitted with the ROUSH CleanTech or Prins fuel system (including the F-350 to F-750, the F-53 and F-59 with stripped chassis and the E-350 and E-450) have side mounted tanks. The large tanks on these models can hold between 132 and 242 litres. A direct fill valve is installed for easy refuelling.



Centre chassis tanks are typically found on school buses and beverage trucks. They feature two long tanks in the centre of the chassis, with tank size options ranging from 75 to 150 litres (Type A – Short Bus) and 250 to 350 litres (Type C – Traditional School Bus).

All tanks are Transport Canada crash-tested and approved. Tanks are mainly made out of steel and are powder coated for corrosion protection.

Did you know?

Propane tanks are 20x more puncture resistant than gas tanks, most of which are made of plastic.

TRANSFERRING A PROPANE KIT

If your vehicle was converted aftermarket, your propane system can be moved from one vehicle to the next for continued savings.

If the technology of the two vehicles is the same (for example, both are port injection or both are direct injection) and you've taken the steps to care for the tank, you can move it to another vehicle. When transferring to a new vehicle, some minor updates are recommended.

For example:

- ✓ Propane liquid lines should be updated
- ✓ The propane conversion kit will require a software upgrade for the new vehicle
- ✓ Conversion parts, such as the injectors, may need to be replaced based on age

Seek professional advice from a conversion centre or propane-certified mechanic on what's required for your fleet.

There will be labour costs involved in removing the existing kit from the current vehicle and installing to the new vehicle. However, you would save on the price of the tank and a large portion of the kit.

Rather than transferring the kit to a new vehicle, some fleet managers and fleet leasing companies leave the propane system in place and remarket the vehicle as a dual-fuel vehicle, which typically increases its resale value.

A RANGE OF REFUELLING OPTIONS

There are three types of propane refuelling stations, each with unique benefits. The type of refuelling station will depend on some factors: the size of your fleet, the nature of your business and your proximity to refill centres. Here are the key features of each.

	MOST COMMON	CONVENIENCE & FLEET DISCOUNTS	MOST ECONOMICAL FOR LARGER FLEETS
	Propane Dispenser at a Fuel Retailer	**Propane Dispenser from a Superior Cardlock**	**Private Propane Dispenser On-Site**
Location	You can find a local retail station on the Superior Propane website for propane availability	A growing network of cardlock locations across Canada	A propane dispenser is installed at your private facility by Superior Propane under a fuelling agreement
Availability	Open during retail hours	Open 24/7	Refuel at your convenience based on your hours of operation
Payment	Pay at the pump	Charged to your Superior Propane account	Simple bulk billing structure charged in regular intervals to your account based on delivery schedule. You can monitor tank levels and account details online by signing in to mySUPERIOR™
Savings	Fleet pricing may be available, depending on the retailer	Fleet pricing	Lowest fuel pricing
Other Benefits	There are numerous propane refill stations across the country	Consolidated billing, reduce administration time, fuel management. Cardlock statements are mailed or available online on the mySUPERIOR™ portal	Ideal for businesses with 10 or more vehicles. Talk to your local Superior Propane specialist about setting up an on-site refuelling station for your fleet

PROPANE REFUELLING SAFETY AND TRAINING

Auto propane refuelling continues to be extremely safe and is now easier than ever before.

Thanks to improvements in propane technology, the experience of refuelling is similar to gasoline or diesel. For example, today's auto propane tanks are equipped with overflow protection devices. The propane dispenser stops filling the vehicle at the maximum permitted level, which means the tank cannot be accidentally overfilled. Refuelling speed is also similar to gasoline or diesel, with propane stations dispensing 40–50 litres per minute which means drivers spend the same amount of time to refuel. In addition, the newest propane dispensers offer improved fuelling nozzles that virtually eliminate any release of propane gas after the fuelling process, further increasing site safety.

As a result of these improvements, driver training requirements are less stringent than in the past.

All provinces require drivers who fill auto propane tanks at a private dispenser or a cardlock must have an approved record of training (ROT). The Canadian Propane Association (CPA) offers the P.T.I 100-02 course, "Filling Auto Propane Tanks," which is an approved record of training (ROT) course that is valid for three years. The duration of the course is an hour and a half, which can be taken in-person or online and requires practical training from a certified trainer. Certified trainers can be contacted through the CPA directly or Superior Propane. Superior Propane has certified trainers through the CPA and can provide training to fleet and cardlock customers.

With the advancements in propane training requirements in Ontario, driver training for fleets with a private dispenser or cardlock have been simplified and do not require a record of training. The regulations require drivers to take a condensed version of the course that is available online with an annual proof of competency.

SUCCESS STORIES

Auto Propane in Action — How Fleets are Saving Money and Reducing Emissions

MUNICIPAL FLEET

City of New Westminster, B.C.

Beginning in 2013, this bustling British Columbia city decided to convert 60 vehicles in their fleet to propane — including police cars, light- and medium-duty service vehicles (full F series) and street sweepers (diesel/propane blend). They have converted nine different vehicle types, resulting in a reduction of CO_2 emissions by 11% and significant cost savings each year.

Number of Converted Vehicles	GHG Emissions Reductions	Fuel Cost Savings
60	26%	$171,313 / year

PRIVATE FLEET

Trade-Mark Industrial

This family-run business is an industrial, commercial and institutional multi-trade contractor that provides millwrighting, rigging, HVAC, electrical services and more to Southwestern Ontario and surrounding areas. In 2015 they converted 100 of their trucks (nearly one-quarter of their service vehicle fleet) to propane and have continued to convert 25–30 additional vehicles per year. Superior Propane provided a private on-site dispenser for bulk deliveries. Watch video >

Number of Converted Vehicles	GHG Emissions Reductions	Fuel Cost Savings
100	26%	$350,000 / year

AIRPORT SHUTTLE SERVICE

Red Car

An airport shuttle service located in Southwestern Ontario, Red Car, provides passenger pick-up and drop-off at Toronto's busy Pearson International Airport as well as intercity transfers. The fleet of 15 vehicles (passenger cars, transit vans and E450 passenger vans) rack up heavy mileage and idling time, making it a great candidate to save money by converting to propane. In 2018 Red Car converted the fleet. The investment paid for itself within the first year, and the company has enjoyed impressive savings ever since. Watch video >

Number of Converted Vehicles	GHG Emissions Reductions	Fuel Cost Savings
15	26%	$125,000 / year

SCHOOL BUS

Southland Transportation

Southland Transportation, a family-owned business, is leading the pack on the adoption of alternative green fuel for school buses to displace diesel. Southland has the second-largest propane-fuelled school bus fleet in all of Canada. In 2020, they were selected by the Halifax Regional Centre for Education to provide student transportation service for the 2020/2021 school year. In 2021 Southland won the Green Bus Fleet Award presented by School Transportation News and National Renewable Energy Laboratory. To date, they have 856 buses fuelled on propane in Alberta, British Columbia, Nova Scotia and Ontario. Watch video >

Number of Propane Buses	GHG Emissions Reductions	Fuel Cost Savings
856	44%	$3 million / year

Did you know?

Propane school buses dramatically decrease harmful emissions particularly when compared to diesel. Propane school buses provide a 96% reduction in NO_X emissions compared to diesel buses. That means you can operate 96 propane buses for the equivalent NO_X emissions of one diesel bus.[19] Nitrogen oxides (NO_X) are highly damaging emissions that are federally regulated due to their negative impact on human health and the environment.

[19] Source: EPA Emissions (Roush Cleantech).

FAST FACTS ABOUT PROPANE[20]

8 of the 10 largest car manufacturers produce auto propane vehicles

27 million auto propane vehicles are in use around the world

Global consumption has risen

40%

in the last 10 years

You can convert 2 light-duty vehicles to auto propane for the price of converting 1 light-duty vehicle to compressed natural gas (CNG)

Vehicles fuelled by auto propane reduce noise levels by about 50% when compared with diesel models, making it easier for drivers to focus on the road ahead

Auto propane is a nontoxic, non-carcinogenic and non-corrosive fuel classified as a non-contaminant by the EPA

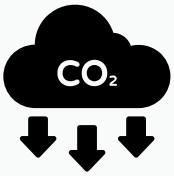
Auto propane is continuously evolving and engines are becoming even more efficient

Propane is the world's

#1

alternative fuel

Auto propane poses no harm to groundwater or soil



Renewable propane, produced from waste, can lower CO_2 by up to

80%

[20] World LPG Association, Auto-gas.net

SEPARATE AUTO PROPANE MYTHS FROM THE FACTS

MYTH

Auto propane vehicles have cold start issues and frequently back-fire.

FACT

These types of situations may have occurred 40 years ago, but thanks to ongoing evolution in technology they are no longer issues. Vehicles today start on gasoline and switch over to propane as soon as they become warm, eliminating any issues of back-fire or cold starting. Furthermore, OEM vehicles like the Blue Bird bus run on liquid propane and there is evidence that they can start without any problems in temperatures as low as -48°C without being plugged in.

MYTH

Propane smells bad.

FACT

Propane is odorless in its original state. A scent of sulphur is added to it so that if a leak does occur it can be quickly detected. Since all auto propane vehicles are sealed systems, you will not be able to smell the propane at any stage of fuelling or operation.

MYTH

Drivers will have less power driving an auto propane vehicle.

FACT

Propane is a very dense fuel with an octane rating of 104 to 112,[21] which is higher than gasoline. Drivers will not experience loss in power or performance driving an auto propane vehicle.

Fun fact: propane vehicles are banned from regular drag racing because of their high torque levels. They have their own class, separate from gasoline vehicles.

MYTH

Propane uses more fuel than gasoline, so you don't save on fuel.

FACT

Propane has a different chemical structure than gasoline, with fewer carbons. As a result, propane requires 10%–15% more fuel than gasoline to travel the same distance. However, with a 50% savings in fuel, you would still enjoy a 35%–40% reduction in fuel cost. These savings will increase as the Federal carbon tax increases on higher carbon fuels. Furthermore, in Canada, gasoline now contains more ethanol than it did in the past, which lowers gasoline's mileage.

MYTH

Our vehicles won't be able to travel as far on propane as they could with gasoline.

FACT

Propane provides excellent range at the lowest cost. In fact, a bi-fuel vehicle, which carries both propane and gasoline onboard, has more fuel to draw from and can travel even further.

[21] National Resources Canada, https://www.nrcan.gc.ca/energy/efficiency/energy-efficiency-transportation-and-alternative-fuels/alternative-fuels/propane/21611

SAVINGS CALCULATOR

2022 Ford F-350 XL

	Gasoline (6.2L PFI V8)	Propane (6.2L PFI V8)	Savings / (Costs)
Capital Costs			
Base Vehicle Purchase Price[1]	$52,379	$52,379	
Propane Conversion Kit - Prins		$6,000	($6,000)
Federal/Provincial Incentive		$0	
Total Capital Savings (or Investment)	**$52,379**	**$58,379**	**($6,000)**
Lifetime Fuel Costs			
Total Vehicle Mileage (km)	350,000	350,000	
Average L/100km[2]	16.80	19.32	
Total Fuel Consumption (litres)	58,800	67,620	
Fuel Price per litre[3]	$1.88	$0.89	
Total Fuel Savings (or Costs)	**$110,544**	**$60,182**	**$50,362**
Lifetime Miscellaneous Costs			
Maintenance Cost per km[4]	$0.048	$0.041	
Total Maintenance Costs	**$16,800**	**$14,280**	**$2,520**
Environmental Impact (Reduction)			**Decrease**
Total Carbon Emissions (kg)[5]	136,500	120,120	16,380

Total Operational Savings	**$52,882**
Net Vehicle Lifetime Savings	**$46,882**
Number of Years to Breakeven	**1.03**

*See Notes and Assumptions related to this calculator on page 28.

SAVINGS CALCULATOR

2022 Dodge Ram 1500

	Gasoline (5.7L HEMI VVT V8 Low Pressure Port Injection)	Propane (5.7L HEMI VVT V8 Low Pressure Port Injection)	Savings / (Costs)
Capital Costs			
Base Vehicle Purchase Price[1]	$61,995	$61,995	
Propane Conversion Kit - Prins		$6,000	($6,000)
Federal/Provincial Incentive		$0	
Total Capital Savings (or Investments)	**$61,995**	**$67,995**	**($6,000)**
Lifetime Fuel Costs			
Total Vehicle Mileage (km)	350,000	350,000	
Average L/100km[2]	13.60	15.64	
Total Fuel Consumption (litres)	47,600	54,740	
Fuel Price per litre[3]	$1.88	$0.89	
Total Fuel Savings (or Costs)	**$89,488**	**$48,719**	**$40,769**
Lifetime Miscellaneous Costs			
Maintenance Cost per km[4]	$0.048	$0.041	
Total Maintenance Costs	**$16,800**	**$14,280**	**$2,520**
Environmental Impact (Reduction)			**Decrease**
Total Carbon Emissions (kg)[5]	110,600	97,328	13,272

Total Operational Savings	**$43,289**
Net Vehicle Lifetime Savings	**$37,289**
Number of Years to Breakeven	**1.27**

*See Notes and Assumptions related to this calculator on page 28.

Notes and Assumptions for Savings Calculators

(1) Base Price for featured vehicles are as per Posted MSRP on Ford.ca and Ram.ca. Fleet discounted prices are not reflected.

(2) KM/L for gasoline and propane vehicles are estimates and can vary depending on driver style, towing/hauling, and city versus highway applications. (We assume a 15% loss in efficiency from a gasoline to propane engine.)

(3) Gasoline and propane prices are based on variable pricing and will change daily depending on the location.

(4) We assume a 15% reduction in maintenance costs by running a vehicle on propane versus gasoline.

(5) CO_2 emissions are taken from the Natural Resources Canada website and are dictated by the engine type and payload package. Propane has been proven to reduce CO_2 emissions by 12% versus gasoline.

** All dual fuel systems assume a 5-10% gasoline usage in order to bring the engine to operating temperature.

** This payback model does not consider the residual value of the tank, regulator/vapourizer, ECU unit and injectors which can be re-used at the end of life of the vehicle.

** This model does not consider the impacts of idle time which depending on engine size can range between 2.2L and 3.0L per hour as per a working study completed by the Argonne National Laboratory and published by the US Dept of Energy on February 23rd, 2015.

How much could your fleet save with auto propane?

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