

ALTERNATIVE FUELS

Program Overview 2016



**THE ZERO COMPROMISE
ALTERNATIVE FUEL SOLUTION**



Together we put the **customer** first.



Together we make a **quality** product.



Together we live by **process**.



Together we practice **environmental** responsibility.

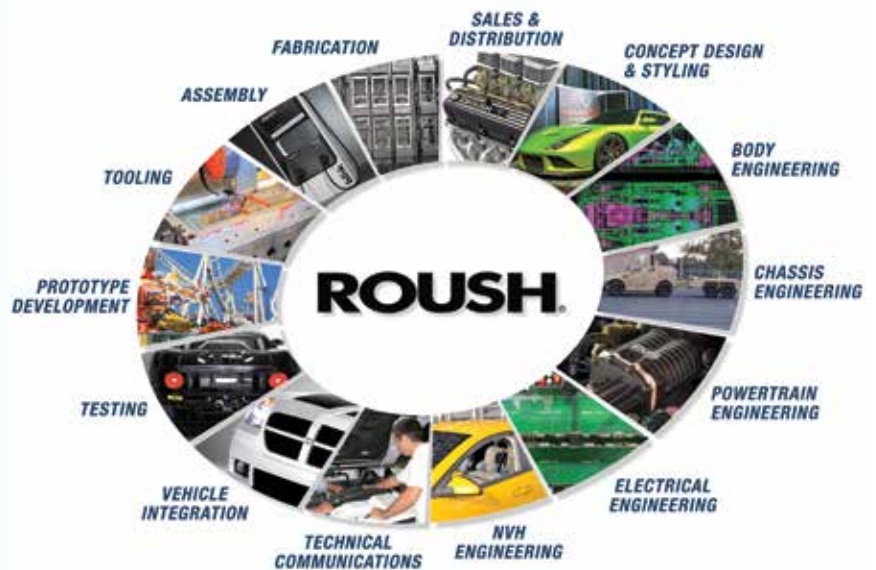


Together we are **innovative**.

Together we **succeed.**

CORPORATE OVERVIEW

SINCE 1976, Roush Enterprises has delivered OEM-level engineering, prototyping, testing, manufacturing and assembly services for companies around the globe. Employing more than 4,000 people worldwide, Roush Enterprises offers services for a multitude of industries—motorsports, military, medical, entertainment and performance vehicles.



ROUSH CleanTech is a Ford QVM developer and installer of dedicated propane autogas fuel systems.

Organizations with QVM status from Ford create the engine calibration, complete the on-dynamometer calibration testing, comply with all Ford engineering requirements, and develop a vehicle component package.

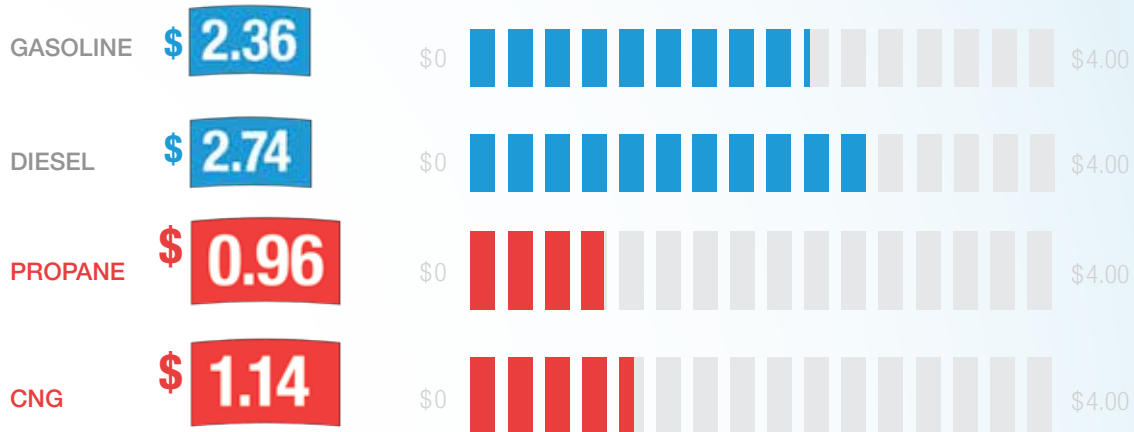
COST SAVINGS

Reduce:

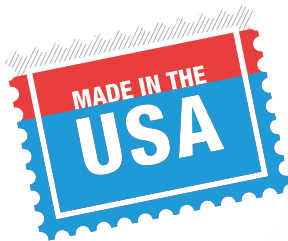
✓ Fuel Costs

✓ Maintenance Costs

✓ Total Operating Costs



Reduce Dependence on Foreign Oil



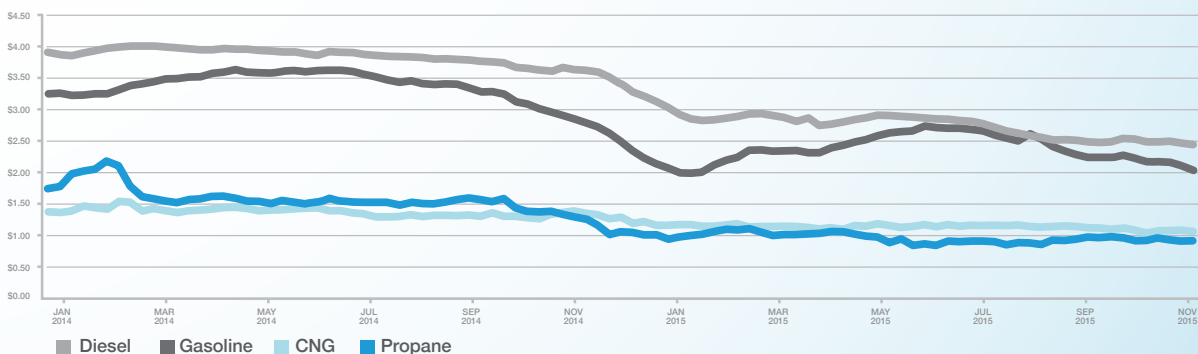
Propane is
**DOMESTICALLY
PRODUCED**

90% comes from the U.S.

...of that, almost...

75% comes from natural gas production

Wholesale Price Comparison



PRODUCT OVERVIEW

Ford F-250 / F-350 Pickup Truck 2012-2016 6.2L V8



* Under-bed tank requires 8' bed and cannot be installed on chassis cab.

Applications

4x4 or 4x2
All rear axle configurations
All bed configurations* (including chassis cab)
All body configurations

Tech Specs

EPA approved
GVWR: 8,500 – 14,000 lbs.
Requires "98F" gaseous fuels prep

Fuel Capacity

In-bed tank: 38 gal. usable
Under-bed tank: 21 gal. usable*

Pricing

In-bed tank: \$10,495
Under-bed tank: \$11,450

Ford E-450 DRW Cutaway and Stripped Chassis 2012-2016 6.8L V10



Extended warranty available through
Green Alternative Systems

Applications

158" / 176" wheelbase
186" / 190" / 208" stretched chassis
6-speed automatic transmission

Tech Specs

EPA & CARB approved
GVWR: <14,500 lbs.
Requires "91G" gaseous fuels prep

Fuel Capacity

Aft-axle tank: 41 gal. usable
Extended range tank: 64 gal. usable

Pricing

Aft-axle tank (158" / 176" WB): \$15,900
Aft-axle tank (186"+ WB): \$16,100
Extended range tank: \$18,600

Ford F-450 / F-550 Chassis Cab 2012-2016 6.8L V10



Coming Soon: 2017MY with new transmission

Applications

4x4 or 4x2
All bed configurations
All body configurations
All axle configurations

Tech Specs

EPA & CARB approved
GVWR: 16,500 – 19,500 lbs.
Requires "98G" gaseous fuels prep

Fuel Capacity

Single saddle tank: 50 gal. usable

Pricing

Single saddle tank: \$15,900

Ford F-650 / F-750 Chassis Cab

2013-2016 6.8L V10



Applications

All cab configurations
All wheelbase configurations
6-speed automatic transmission

Tech Specs

EPA & CARB approved
GVWR: <30,000 lbs.
Requires 99D gaseous fuels prep and frame punch holes.
Contact ROUSH CleanTech for VSO code.

Fuel Capacity

Dual short tanks (clean CA): 45 total gal. usable
Dual long tanks (non-clean CA): 83 total gal. usable
Single long tank: 47 gal. usable

Pricing

Dual short tanks (clean CA): \$21,900
Dual long tanks (non-clean CA): \$22,500
Single long tank: \$15,900

Ford F-53 / F-59 Stripped Chassis

2013-2016 6.8L V10



Applications

All wheelbase configurations
All rear-axle configurations
6-speed automatic transmission

Tech Specs

EPA & CARB approved
F-53 GVWR: <26,000 lbs.
F-59 GVWR: <22,000 lbs.
Requires "98G" gaseous fuels prep

Fuel Capacity

Single saddle tank: 45 gal. usable

Pricing

Single saddle tank: \$15,900

Ford E-150 / E-250 / E-350 Van & Wagon

2012-2014 5.4L V8



Applications

Extended or regular
Cargo van, club wagon
All rear-axle configurations
4-speed automatic transmission

Tech Specs

EPA & CARB approved
GVWR: <10,000 lbs.
Requires "91G" gaseous fuels prep

Fuel Capacity

Mid-ship tank: 25 gal. usable

Pricing

Mid-ship tank: Contact Us

SCHOOL BUS PRODUCT OVERVIEW



BLUE BIRD
®

Blue Bird Vision 2017 6.8L V10



Also available to run on compressed natural gas (CNG).

Applications

Blue Bird Vision
Blue Bird MFSAB / activity bus

Tech Specs

EPA & CARB approved
GVWR: 33,000 lbs.
Up to 77 passengers

Fuel Capacity

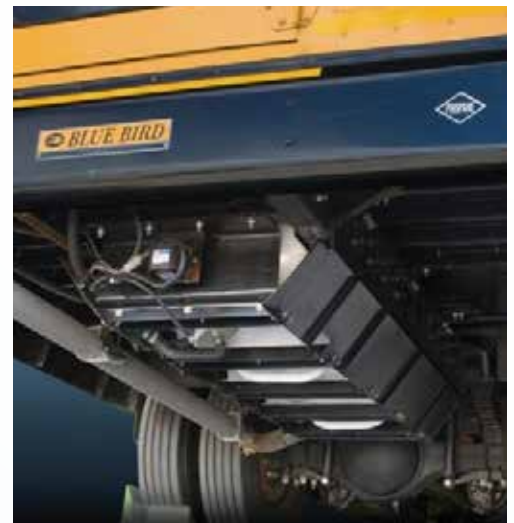
Short tank: 47 gal. usable
Standard tank: 67 gal. usable
Extended tank: 93 gal. usable

Wheelbase

169" / 189" / 217" / 238" / 252" / 273" / 280"

Pricing

Contact your local Blue Bird dealer:
blue-bird.com/find-a-dealer





“The fuel savings offset the small premium in price in less than 2 years. We estimate saving over \$1,000 per school day running 86 propane autogas buses. We’re looking to transition our entire fleet to propane.”

Peter Crossan

Fleet and Compliance Manager
Boston Public Schools

Micro Bird G5 2016 6.8L V10



Applications

Micro Bird G5 school bus
Micro Bird G5 commercial bus
5-speed automatic transmission

Tech Specs

EPA & CARB approved
GVWR: 14,500 lbs.
Up to 30 passengers

Fuel Capacity

Aft-axle tank: 41 gal. usable

Wheelbase

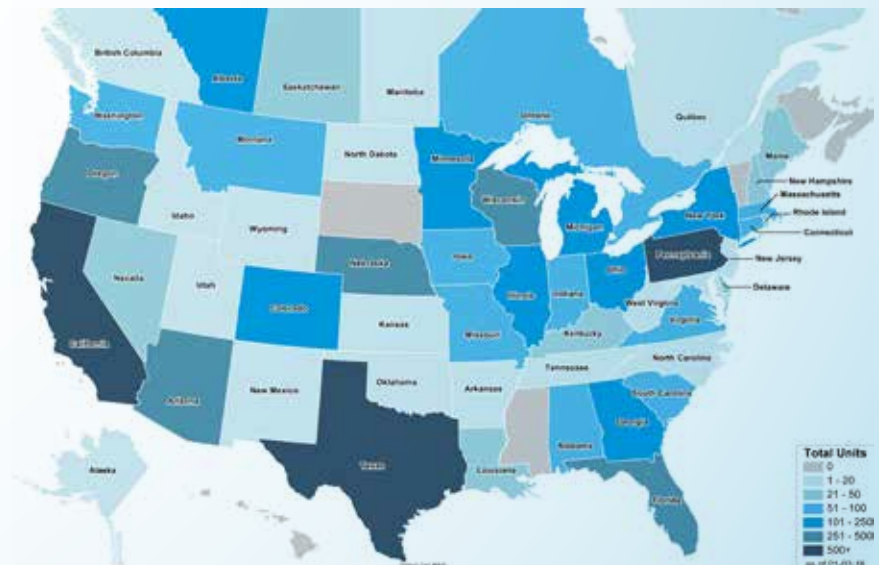
158" / 176" / 186" / 190"

Pricing

Contact your local Blue Bird dealer:
blue-bird.com/find-a-dealer

PROPANE SCHOOL BUSES ACROSS NORTH AMERICA

- Over 6,500 propane buses in North America
- More than 500 school districts operating propane buses



LIQUID PROPANE AUTOGAS

Fuel System Technology

The ROUSH CleanTech liquid propane autogas fuel system seamlessly integrates into the vehicle. Fuel lines follow the OEM routing and the fuel tank generally replaces the standard gasoline tank location. The system delivers propane autogas to the engine in liquid form, ensuring zero compromise in vehicle performance.

FUEL RAIL

Our signature blue anodized aluminum fuel rails operate under the varying temperatures of liquid propane autogas.

FRPCM

The fuel rail pressure control module improves vehicle start-up times, lowers start-up emissions and provides consistent power.

FUEL TANK

The fuel tank meets ASME certification standards. It's built 20 times more puncture-resistant than gasoline tanks and is made in the U.S.

FUEL FILL

The design of the industry-standard valve allows for safe passage of liquid propane autogas into the vehicle. It also includes a check valve to prevent fuel leaks.

FUEL LINES

Made of high-durability stainless steel to handle varying temperatures and pressures and designed to route through the factory line locations.

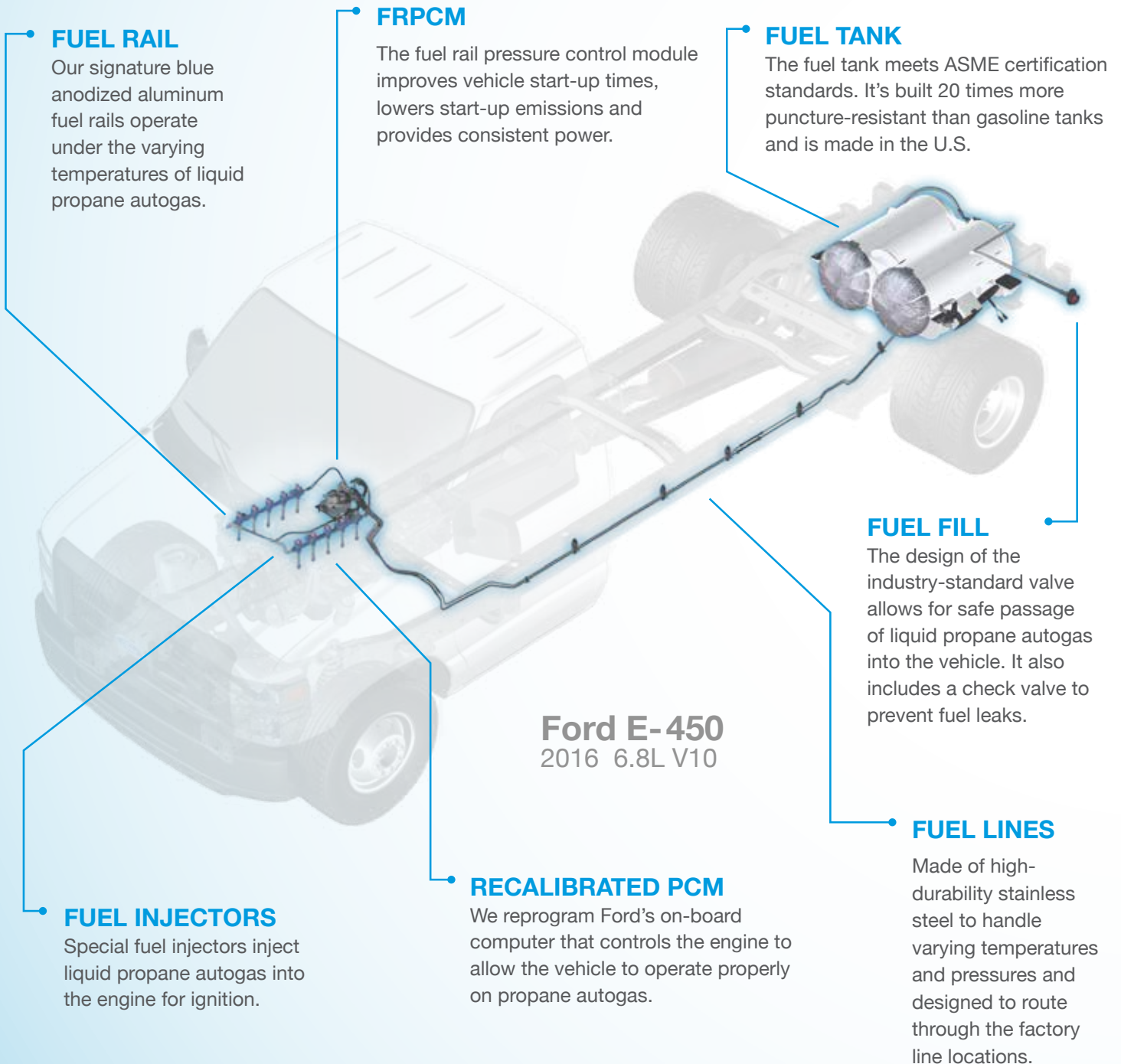
FUEL INJECTORS

Special fuel injectors inject liquid propane autogas into the engine for ignition.

RECALIBRATED PCM

We reprogram Ford's on-board computer that controls the engine to allow the vehicle to operate properly on propane autogas.

Ford E-450
2016 6.8L V10



SERVICE NETWORK

FIELD SERVICE & OPERATIONS TEAM PROVIDES:

- Training and education to customers on propane autogas vehicles, maintenance and service requirements.
- Robust service and warranty support program
- Web-based training
- Technician training videos
- Issue resolution and technical support
- Efficient web-based claims process

WARRANTY COVERAGE:

- Ford factory powertrain warranty maintained
- Pre-titled vehicles: 5 year / 60,000 mile limited warranty
- Ford F-650 / F-750: 5 year / 100,000 mile limited warranty
- Post-titled vehicles: 12 month / 12,000 mile limited warranty
- Warranty conforms to both EPA and CARB regulations

MORE WARRANTY AND SERVICE INFORMATION:

 **CALL:** Toll-free technical hotline at 800.59.ROUSH

 **VISIT:** ROUSHcleantech.com/Service



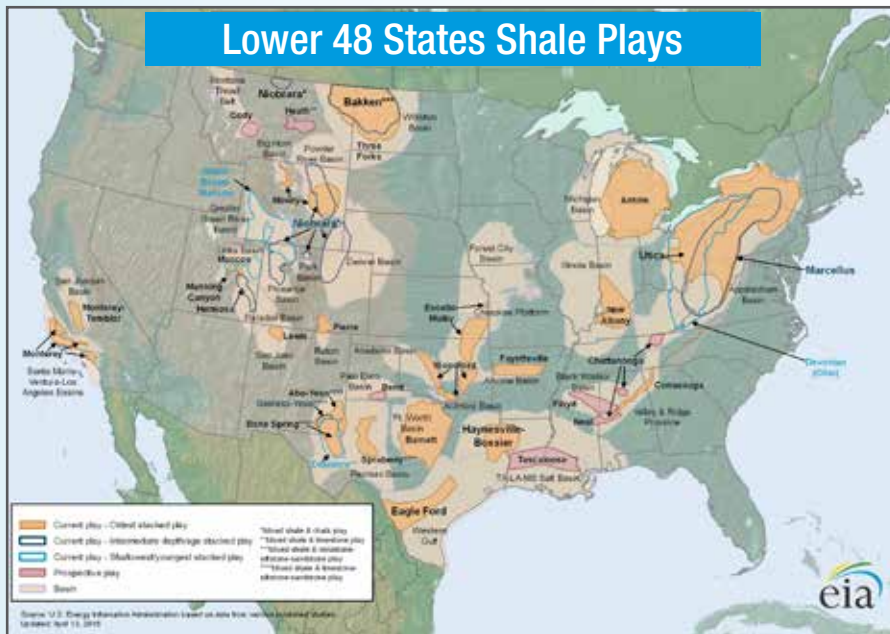
ROUSH CleanTech offers an expanding service network with more than 400 locations across the country.

CERTIFICATION AND COMPLIANCE

| EPA | CARB | FMVSS | NHTSA | NFPA-58 |
|-----|------|-------|-------|---------|
| Yes | Yes | Yes | Yes | Yes |

PROPANE OVERVIEW

Propane, discovered in 1910 by chemist Dr. Walter Snelling, is a by-product of natural gas processing and petroleum refining. About 90 percent of propane consumed in the United States is **domestically produced**, and an additional 7 percent comes from Canada. Propane autogas is a safe, domestically produced engine fuel with a robust infrastructure and financial efficiencies. Transportation managers choose propane autogas to fuel their organization's vehicles because of economics, energy security and environmental factors.



This map shows the vast deposits of shale available for use in the United States for natural gas and propane processing.

Propane Safety

- + Fuel tanks are 20 times more puncture resistant than gasoline tanks.
- + Propane operating pressure ~ 200 psi.
- + Propane temperature -44°F.
- + Propane autogas poses no harm to groundwater, surface water or soil.
- + Propane autogas is a nontoxic, non-carcinogenic and non-corrosive fuel.



Please visit **Propane.com** for additional information.

FUELING INFRASTRUCTURE

READILY AVAILABLE

Propane autogas is the third most common engine fuel in the U.S. and the world. With a national infrastructure already in place, finding publicly accessible fueling is easy. ROUSH CleanTech can help.

EASY TO USE

Refueling a propane autogas powered vehicle is just like refueling with gasoline or diesel, with one exception. The refueling process is “closed,” meaning a seal is made between the refueling nozzle and the vehicle’s fuel-fill port. That means no more fuel spills, which is a significant source of groundwater pollution with other transportation fuels.

INEXPENSIVE TO INSTALL

Propane autogas refueling is less expensive than other refueling systems, giving you the flexibility to refuel right at your place of business. Many propane marketers will install infrastructure at little- to no-cost to you.

ACCESSIBLE SPACE

Refueling tanks can be installed in a variety of shapes and sizes, depending on space and volume needs.



“ Switching to propane autogas provided an ideal opportunity to drive down operational costs.”

Paul Strobis

Paratransit Manager
Broward County Transit

Propane Emissions

Octane Rating
of
105

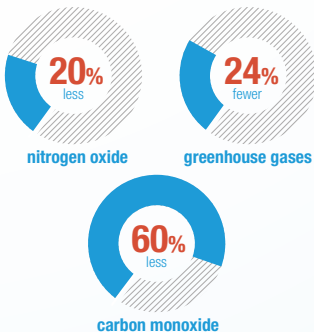


Nontoxic and
insoluble in water

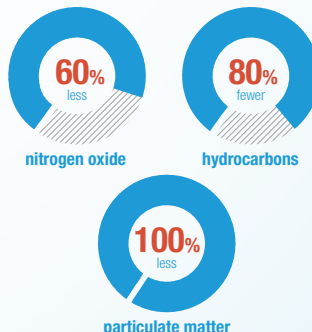


Released as a gas,
so it doesn't spill,
pool or leave a residue

Propane Autogas vs. Gasoline¹



Propane Autogas vs. Diesel



¹: Propane Education and Research Council

SAVINGS CALCULATOR 2016 Ford F-650 / F-750

| Capital Costs | Diesel (6.7L V8) | Propane (6.8L V10) | Savings (Costs) |
|--|------------------|--------------------|------------------|
| Base Ford Vehicle Purchase Price | \$60,830 | \$53,660 | |
| ROUSH Propane Conversion | \$0.00 | \$15,900 | |
| State or Federal Incentive | \$0.00 | \$0.00 | |
| Total Capital Savings (or Investment) | \$60,830 | \$69,560 | (\$8,730) |
| Operating Costs | Diesel (6.7L V8) | Propane (6.8L V10) | Savings (Costs) |
| Total Vehicle Life (miles) | 200,000 | 200,000 | |
| Average Miles Per Gallon ¹ | 6.54 | 4.25 | |
| Gallons of Fuel Over Lifetime | 30,581 | 47,047 | |
| Fuel Price (per gallon) ² | \$2.36 | \$0.96 | |
| Fuel Tax Credit / Gallon | \$0.00 | \$0.36 | |
| Adjusted Fuel Price / Gallon | \$2.36 | \$0.60 | |
| Total Fuel Savings (or Costs) | \$72,171 | \$28,228 | \$43,942 |
| Miscellaneous | Diesel (6.7L V8) | Propane (6.8L V10) | Savings (Costs) |
| Maintenance Rate (per mile) ³ | \$0.030 | \$0.015 | |
| Maintenance Costs | \$6,000 | \$3,000 | |
| Fuel Loss From Pilferage / Theft | \$0.00 | \$0.00 | |
| Total Misc. Savings (or Costs) | \$6,000 | \$3,000 | \$3,000 |

Gross Vehicle Lifetime Savings (Loss) **\$46,942**

Net Vehicle Lifetime Savings (Loss) **\$38,212**

Assumptions:

Gaseous fuels prep package from Ford = \$315.

Propane Conversion price is listed at MSRP. Volume discounts are available.

Diesel price captured and averaged from fuelgaugereport.com, eia.gov, and gasbuddy.com.

1 = MPG ratings for diesel and propane vehicles are estimates. Variations in MPG should be expected when operating a vehicle that is towing, hauling, or being driven in various city / hwy applications.

2 = Propane fuel price is an estimate based on your fleet size, not a quoted price, and is subject to change.

3 = A 50% reduction in maintenance costs by running a vehicle on propane, compared to diesel. A factor the Texas Railroad Commission uses in their calculations when considering an alternative fuel conversion.

How many years will the vehicle be used?

4

Number of years to break even:

0.7

Download our free savings calculator app to learn how much you can **lower your emissions and operating costs** by switching to propane autogas.



“Propane autogas is a smart choice for reducing fuel and maintenance costs while providing cleaner air for the community.”

Bill Ardis

Fleet Manager

Nestle Waters North America



800.59.ROUSH

ROUSHcleantech.com