



## Executive Summary

2<sup>nd</sup> Quarter - 2011

### Highlights:

1. ROUSH CleanTech has been working with the Propane Education & Research Council (PERC) and Ford Motor Company since 2006 to develop liquid propane autogas fuel systems for a variety of Ford vehicles. These vehicles include: 2007 ½ & 2008 F-150, 2009 & 2010 F-250 & F-350, 2011 and newer F-450 & F-550, 2009 and newer E-150, E-250, E-350 and 2009 and newer E-350, E-450 dual rear-wheel cutaway vans for use in shuttle bus and delivery applications.
2. ROUSH CleanTech propane autogas systems offer the **same** horsepower, torque and towing ratings as their gasoline-powered equivalents. This is a significant development in that previous generation vapor systems compromised these performance categories.
3. Propane autogas significantly **reduces** greenhouse gas emissions (24%), nitrogen oxide emissions (20%) and carbon monoxide emissions (60%) vs. gasoline engine operation.
4. Fleet customers are seeing a significant reduction in operating costs when converting from gasoline to propane autogas. In addition, if a fleet has their own propane autogas fueling station, they can take advantage of a federal tax credit of \$0.50 per gallon of fuel pumped. There are federal tax credits and funding available for the installation of on-site fueling infrastructure as well.
5. More than 90% of the propane used in the United States is produced domestically. Not only does this ensure consistent supply, it also helps **reduce our dependence on foreign oil**.
6. ROUSH CleanTech maintains a 5 year / 60,000 mile limited warranty, and the propane autogas powered vehicles can be serviced by a national network of ROUSH CleanTech service centers using standard Ford diagnostic equipment.
7. The cost of adding propane autogas fueling infrastructure is inexpensive. Many of the over 10,000 propane distributors across the country will install infrastructure for no cost, in return for a fueling contract for your fleet.
8. ROUSH CleanTech fuel systems are in compliance with all CARB, EPA, NHTSA, FMVSS and NFPA safety regulations.
9. There are more than **15 million** vehicles worldwide that are powered by propane autogas, making it the 3<sup>rd</sup> most common engine fuel behind gasoline and diesel.
10. Worldwide use of propane autogas has shown that, based on per capita use, it has one of the **best safety records** of any motor fuel - conventional or alternative. Propane autogas tanks are 20 times more puncture resistant than conventional fuel tanks.

**Products:**

**Ford F-150**  
2007 ½ & 2008 Model Year  
5.4L V8 (3V)



**In-Bed Tank MSRP: \$8,095**

**Details:**

- Available on 4x2 or 4x4
- Compatible with all rear axle offerings
- Works with all cab and bed configurations
- Comes standard with an in-bed tank offering a usable capacity of 46 gallons
- 20 usable gallon toroidal under-bed tank available
- EPA approved
- GVWR: ≤ 8,500 lbs
- Can not be ordered on Lariat, King Ranch or Harley-Davidson packages
- Order Availability: Conversion kits
- Minimum order quantity applies

**Ford F-250 / F-350**  
2009 & 2010 Model Year  
5.4L V8 (3V)



**In-Bed Tank MSRP: \$ 9,995**  
**Under-Bed Tank MSRP: \$ 10,145**

**Details:**

- Available on 4x2 or 4x4
- Compatible with all rear axle offerings
- Available on most cab and bed configurations\*
- Can be ordered with two tank configurations:
  - o In-bed tank offering a useable capacity of 55 gallons
  - o Under-bed tank offering a useable capacity of 23 gallons
- EPA approved
- GVWR: 8,800 lbs – 14,000 lbs
- Order Availability: Conversion kits
- **Available NOW!**

*\* Not available on chassis cab*

**Ford E-150 / E-250 / E-350**  
2009 - Newer Model Year  
5.4L V8 (2V)



**Mid-Ship Tank MSRP: \$10,900**

**Details:**

- Available on all bed and body configurations
- Compatible with all rear-axle configurations
- Mid-Ship tank configuration offering a useable capacity of 25 gallons
- Extended range tank available with 46 usable gallons\*
- EPA approved & CARB\*\* approved
- GVWR: < 10,000 lbs
- Order new vehicles with 'gaseous fuels prep engine' from Ford - order code 91G
- Order Availability: Ford Ship Through, Conversion kits
- **Available NOW!**

**Ford E-350 Cutaway**  
2007, 2008, 2010 - Newer Model Year  
5.4L V8 (2V)



**Rear Aft-Axle Tank MSRP: \$13,900**

**Details:**

- Available on 158" and 176" wheelbases
- Compatible with all rear-axle configurations
- Rear Aft-Axle tank configuration offering a useable capacity of 41 gallons
- EPA approved & CARB\* approved
- GVWR: > 10,000 lbs
- Order new vehicles with 'gaseous fuels prep engine' from Ford – order code 91G
- Order Availability: Ford Ship Through, Conversion kits
- **Available NOW!**

\*2011 – Newer E-350 only  
\*\* 2010 – 2011 model year only

\*2011 model year only

**Ford E-450 Cutaway**  
2009 - Newer Model Year  
6.8L V10 (2V)



**Rear Aft-Axle Tank MSRP: \$13,900**

**Details:**

- Features dual manifold rear aft-axle tanks with usable capacity of 41 gallons
- EPA approved & CARB\* approved
- GVWR: < 14,500 lbs
- Order new vehicles with 'gaseous fuels prep engine' from Ford - order code 91G
- Order Availability: Ford Ship Through, Conversion kits
- **Available NOW!**

**Ford F-450 / F-550**  
2011 - Newer Model Year  
6.8L V10 (3V)



**Under-Floor Tank MSRP: \$16,500**

**Details:**

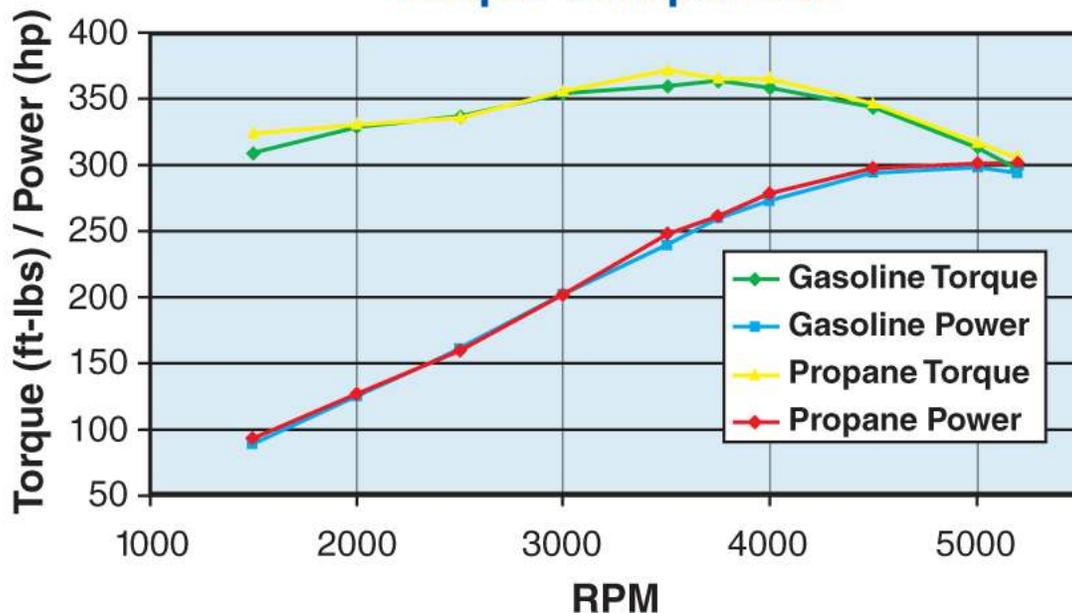
- Up to three tank configurations to be offered
- GVWR: F-450 < 16,500 lbs  
F-550 < 19,500 lbs
- Order new vehicles with 'gaseous fuels prep engine' from Ford - order code 98G
- Order Availability: Ford Ship Through, Conversion kits
- **Available October 2011**

*\*2011 model year only*

## About Propane:

1. Propane autogas is an approved alternative fuel listed in both the Clean Air Act of 1990 and the National Energy Policy Act of 1992 and 2005.
2. Propane is nontoxic and insoluble in water. Because it is released as a gas, it doesn't spill, pool, or leave a residue.
3. Propane is produced domestically - almost 90 percent of it comes from United States production - and it is ready to meet today's energy needs more cleanly and efficiently than any other fuels currently available.
4. Propane autogas exhaust emits 60 percent to 70 percent less smog-producing hydrocarbons than gasoline, according to studies by the Southwest Research Institute. Their research also found that Propane autogas cuts emissions of toxins and carcinogens like benzene and toluene by up to 96 percent, compared to gasoline.
5. Compared to gasoline, propane autogas yields 12 percent less carbon dioxide, 24 percent fewer greenhouse gas emissions, 20 percent less nitrogen oxide, and as much as 60 percent less carbon monoxide.
6. On average, propane autogas costs 30 – 40 percent less per gallon than gasoline.
7. There are nearly 3,000 public propane autogas fueling stations in the U.S. today.
8. In 2010, Turkey and Poland pumped more propane autogas than gasoline.
9. Propane autogas has an octane rating of 105.
10. Propane / air mixture won't ignite until temperatures reach 940° F, as compared to gasoline which ignites at 430 ° F.

## Gasoline/Propane Power and Torque Comparison



### **Safety:**

1. Propane is a liquid under pressure, 100 – 200 psig, but vaporizes immediately upon being released from the cylinder or in the event of a fuel line rupture. It is heavier than air and seeks out lower lying places in a leak situation, while dispersing harmlessly into the atmosphere.
2. In the unlikely case of a vehicle fuel line rupture, there are electronically operated solenoids and excess flow valves that close and immediately stop the release of propane autogas. ROUSH CleanTech has made sure the design of the fuel delivery system meets all NFPA 58 guidelines, ensuring that the fuel doesn't become a factor in any type of accident situation; whether it be a roll-over, side, front, or rear impact collision.
3. The ROUSH CleanTech propane autogas tank is a standard ASME rolled steel construction with stamped end caps, and is one of the strongest parts of the vehicle.
4. ROUSH CleanTech liquid propane autogas powered trucks and vans meet or exceed all Environmental Protection Agency (EPA) and Federal Motor Vehicles Safety Standards (FMVSS).

### **Advantages over Compressed Natural Gas (CNG):**

1. CNG storage tanks need to be more than four times bigger than propane autogas storage tanks in order to go the same distance.
2. CNG storage tanks operate at over 17 times the pressure a propane autogas tank & fuel system requires (3500 psig for CNG vs. 200 psig for propane autogas).
3. CNG conversions cost, on average, 1.75 times more than a propane autogas conversion.
4. CNG storage tanks are heavier, which contribute to:
  - Premature brake wear
  - Less load capacity
  - Reduced plowing capabilities
  - Reduced towing capacity
  - Reduced 4x4 capabilities (if any)
  - Accelerated tire wear
  - Lower fuel economy ratings
5. CNG conversions require specialized diagnostic and service equipment, whereas the ROUSH CleanTech liquid propane autogas conversion works with Ford factory diagnostic equipment.
6. Propane autogas only requires a 7.5 horsepower electric motor for refueling, while CNG dispensers require four-stage compressors which typically operate on 460V, 3 phase electric motors.
7. CNG stations can cost upwards of \$500,000 to install, while propane autogas refueling stations can cost as little as \$20,000... or in some cases free with a propane autogas fueling contract.
8. Propane autogas is not considered to be a greenhouse gas when released directly into the atmosphere like natural gas is.
9. Methane emissions (a volatile greenhouse gas that the U.S. government doesn't regulate) are significantly higher in CNG vehicles than propane autogas powered vehicles.

## **Advantages over Bi-Fuel Systems:**

No bi-fuel system is offered that maintains the factory vehicle warranty or is recognized by OEM manufacturers. The ROUSH CleanTech liquid propane autogas system maintains the 5 year / 60,000 mile limited warranty.

## **Federal Incentives:**

**NOTE: ROUSH CleanTech provides no representations, assurances or guarantees to you regarding federal, state, local and other tax incentives. This Executive Summary does not constitute tax advice. You are strongly advised to consult with your tax advisor regarding the specific federal, state, local, and other tax incentives.**

Various Federal incentives exist to help subsidize the incremental costs of operating on Propane, which make it an even more affordable solution. A few of the most important and helpful programs are listed below. For a complete listing of the opportunities with more detail, please visit:

<http://www.npga.org/i4a/pages/index.cfm?pageid=1186>

### 1. Alternative Fuel Excise Tax Credit

A tax incentive is available for alternative fuel that is sold for use or used as a fuel to operate a motor vehicle. A tax credit in the amount of \$0.50 per gallon is available for the following alternative fuels: compressed natural gas (based on 121 cubic feet), liquefied natural gas, liquefied petroleum gas, P-Series fuel, liquid fuel derived from coal through the Fischer-Tropsch process, and compressed or liquefied gas derived from biomass.

For an entity to be eligible to claim the credit they must be liable for reporting and paying the federal excise tax on the sale or use of the fuel in a motor vehicle. Tax exempt entities such as state and local governments that dispense qualified fuel from an on-site fueling station for use in vehicles qualify for the incentive.

Eligible entities must be registered with the Internal Revenue Service (IRS). The incentive must first be taken as a credit against the entity's alternative fuel tax liability; any excess over this fuel tax liability may be claimed as a direct payment from the IRS. The tax credit is not allowed if an incentive for the same alternative fuel is also determined under the rules for the ethanol or biodiesel tax credits.

For more information, see IRS Publication 510 and IRS Forms 637, 720, 4136, and 8849, which are available via the [IRS](#) Web site.

*Under current law, this incentive expires December 31, 2011. The U.S. Department of Treasury will issue guidance to allow a 180-day period for the submission of a one-time claim for 2010 credits.*

(Reference [H.R.](#) 4853, 2010, Section 704; and 26 [U.S. Code](#) 6426)

#### ***Point of Contact***

Excise Tax Branch  
U.S. Internal Revenue Service Office of Chief Counsel  
Phone: (202) 622-3130  
<http://www.irs.gov/>

### 2. Alternative Fuel Infrastructure Tax Credit

A tax credit is available for the cost of alternative fueling equipment placed into service after December 31, 2005.

Qualified alternative fuels are natural gas, liquefied petroleum gas, hydrogen, electricity, E85, or diesel fuel blends containing a minimum of 20% biodiesel. The credit amount is up to 30% of the cost, not to exceed \$30,000. Equipment placed into service in 2009 and 2010 may receive a credit in the amount of 50% of eligible costs not to exceed \$50,000.

Fueling station owners who install qualified equipment at multiple sites are allowed to use the credit towards each location. Consumers who purchase qualified residential fueling equipment may receive a tax credit of up to \$1,000. The maximum credit amount for hydrogen fueling equipment placed into service before January 1, 2015, is \$200,000.

*Under current law, the credit expires December 31, 2011, for all other eligible fuel types. Unused credits that qualify as general business tax credits, as defined by the Internal Revenue Service (IRS), may be carried backward one year and carried forward 20 years.*

For more information, see IRS Form 8911 and/or Form 3800, which are available via the [IRS](#) Web site. (Reference [H.R.](#) 4853, 2010, Section 711; and 26 [U.S. Code](#) 30C and 38B)

***Point of Contact***

U.S. Internal Revenue Service  
Phone: (800) 829-1040  
<http://www.irs.gov/>

3. Qualified Alternative Fuel Motor Vehicle (QAFMV) Tax Credit  
**EXPIRED on 12/31/2010**

A tax credit was available toward the purchase of QAFMVs, which may be either new, original equipment manufacturer vehicles or vehicles that have been repowered by an aftermarket conversion company to operate on an alternative fuel. *ROUSH CleanTech is working closely with industry representatives and legislative members to reinstate this tax credit in 2011.*

**Additional Resources:**

1. Tax, Grant, and Other Incentives & Laws:

- State Incentives & Laws:
  - [http://www.afdc.energy.gov/afdc/fuels/propane\\_laws.html](http://www.afdc.energy.gov/afdc/fuels/propane_laws.html)
- Federal Incentives & Laws:
  - [http://www.afdc.energy.gov/afdc/fuels/propane\\_laws\\_federal.html](http://www.afdc.energy.gov/afdc/fuels/propane_laws_federal.html)

2. IRS Contacts (For Federal Tax Incentive Questions):

- Terri Harris (616) 365-4601
- Robert Lew (732) 452-8109

3. Propane refueling station locators

- U.S. Department of Energy:
  - [http://www.afdc.energy.gov/afdc/stations/find\\_station.php](http://www.afdc.energy.gov/afdc/stations/find_station.php)
- Ferrellgas:
  - <http://www.ferrellgas.com/Locations/>
- Amerigas:
  - [http://www.amerigas.com/contact/location\\_finder.htm](http://www.amerigas.com/contact/location_finder.htm)
- Heritage Propane:
  - <http://www.heritagepropane.com/retail.asp>