

# ***TRANSPORTATION ALTERNATIVES! FLEET MANAGEMENT AND ECO-FRIENDLY COMMUTING***

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# *Natural Gas Basics*



## *Ten “Fun Facts” About Compressed Natural Gas and Natural Gas Vehicles!*



# What is compressed natural gas (CNG), when used as a vehicle fuel?

**Fact:** *It is the same natural gas used in our homes, offices and industrial plants. It is compressed to a pressure of 3,600 pounds per square inch (PSI).*



Typical  
compressor  
for large  
fleet or  
public  
station.

# Why does compressed natural gas (CNG) need to be at this pressure for use in a vehicle?



***Fact:** The “Energy Density” is lower than gasoline or diesel fuel, so in order to store the equivalent amount of fuel on the vehicle, we need to compress the gas to a higher pressure.*



# What are some of the advantages of using CNG as a vehicle fuel?



**Fact:** CNG is a clean fuel, emitting 20-25% less CO<sub>2</sub> than diesel vehicles and 75% less nitrogen oxide (NO<sub>x</sub>).

**Price Stability** - Natural gas is not subject to the volatile price swings of crude oil, which directly influence gasoline and diesel.

**Energy Security** - The USA is home to some of the largest proven natural gas reserves in the world. Less reliance on foreign oil is a good thing.

# How does the cost of CNG compare to gasoline or diesel fuel?

**Fact:** *The basic cost for the natural gas itself, before adding in the cost of the compressors, the electricity cost to run the compressor, and the equipment maintenance costs, are about:*



NOTE: Retail CNG stations in Western New York are selling CNG for \$1.49 to \$2.19 /GGE.

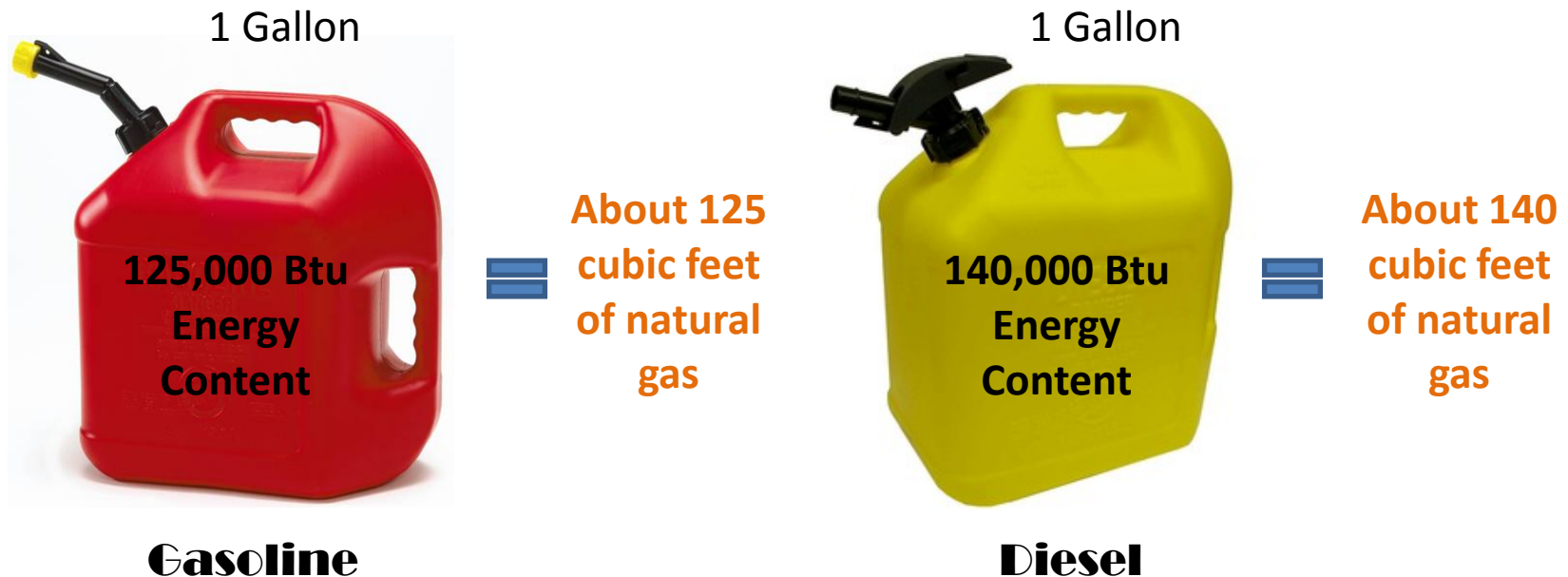
\$ .40 to \$ .60 per gasoline gallon equivalent (GGE)

\$ .44 to \$ .67 per diesel gallon equivalent (DGE)



# Why is the cost of the diesel gallon equivalent (DGE) higher than the gasoline gallon equivalent (GGE)?

**Fact:** Diesel fuel has a higher energy content, therefore, it takes more CNG to make a diesel gallon equivalent (DGE).



# What other costs need to be considered to get a true “all-in cost” when comparing CNG to gasoline or diesel fuel?

*Fact: If building your own CNG fuel station, the following costs need to be added to the basic cost of natural gas:*

❖ **Compression** – *Electric motor Kwh and Kw demand charges.*







❖ **Station Maintenance** – Normal preventive maintenance, scheduled replacement of parts, compressor rebuilds.

❖ **Capital/Equipment Amortization** – Actual cost of equipment or cost of capital factored into each gasoline gallon equivalent (GGE) or diesel gallon equivalent (DGE) over the life of the equipment.

# How does the natural gas vehicle fuel mileage compare to gasoline or diesel powered vehicles?

**Fact:** *In general, a natural gas vehicle (NGV) will get the same or similar fuel mileage as a gasoline vehicle.*

*There will be roughly a 10-15% reduction in NGV fuel mileage compared to a diesel vehicle. This is due to the efficiency of the diesel combustion cycle, which operates at a higher compression ratio than natural gas vehicles.*

# What are the three types of Natural Gas Vehicles?

*A dedicated natural gas vehicle runs on only natural gas.*





A *bi-fuel* vehicle can run on either gasoline or CNG.



*A dual fuel vehicle runs on natural gas and diesel fuel simultaneously.*



# Are there any current incentives available for CNG projects or vehicles?

**TAX INCENTIVES**



**Fact:** Yes.

- ❖ **Alternative Fuel Infrastructure Tax Credit** – Fueling equipment for compressed natural gas, installed between 01-01-2015 and 12-31-2016 is eligible for a tax credit of 30% of the cost, not to exceed \$30,000.
- ❖ **Alternative Fuel Tax Exemption and Rate Reduction** – E85, compressed natural gas and hydrogen fuel that is used exclusively to operate a motor vehicle engine is exempt from New York State sales and use taxes.



❖ **Alternative Fuel Excise Tax Credit (through 12-31-2016)** – 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 \$.50 per gallon is available for the following alternative fuels: CNG, liquefied natural gas (LNG), liquefied hydrogen...

❖ **National Fuel's Natural Gas Vehicle Pilot Program** – The program is designed to improve the customer's NGV project economics, through a one-time cost buydown (grant).





If I want to learn more about NGV's, including a custom assessment of my fleet's economics, who should I contact?



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# Who is using NGV's in Western New York?

Triad Recycling and Energy Corporation

Modern Disposal

Waste Management

Guard Contracting

Innovative Logistics

Swift River Associates

Tops Markets

O and K Truck Repair

National Fuel

Sieck Wholesale Florist

Speed Global Services

Pariso Trucking

Try-It Distributing

Niagara Metals