ECO FLEET™ NATURAL GAS

- Natural Gas Overview
- Advantages & Disadvantages
- Comparison vs. Diesel
- Tractor Specifications
- FAQ'S

ECO FLEET™ CNG vs. LNG

- **What is CNG?** Compressed Natural Gas. The gas is brought directly from the ground through a pipeline up to the fueling station.
- **What is LNG?** Liquid Natural Gas. The gas is cooled and then able to be transported by truck to fueling stations throughout the country.

GLOSSARY OF TERMS

- LNG: Liquefied Natural Gas
- CNG: Compressed Natural Gas
- BTU: British Thermal Unit: The amount of heat needed to heat one pound of water 1 degree.

- BTU Conversion:
- 1 Gallon of Diesel = 131,000* BTU's
- 1 Gallon of Gasoline = 124,238 BTU's
- 1 Cubic FT of Natural Gas = 1,025 BTU's

- DGE: Diesel Gallon Equivalent
- 135 cubic feet of natural gas = 1 Gallon of Diesel

*Source: US Dept of Energy

ECO FLEET™ CNG

CNG ADVANTAGES

- **Good for the bottom line**
  - Costs is around $2.00 less then the cost of a gallon of diesel
- **Good for the environment**
  - 25% less greenhouse gas emissions than diesel. Become part of the 'Green initiative' for your transportation department
- **Good for the community**
  - Quieter engines and cleaner running than diesel
- **Good for America**
  - 85% of natural gas is produced in the USA

CNG DISADVANTAGES

- **Tractor cost is higher**
  - Approximately $37,000 more than a comparable diesel tractor
- **Limited CNG fuel availability**
  - Depends on the operating area of the tractor
- **Limited range in standard configuration**
  - Additional fuel storage tanks can be added at an additional cost and added weight
- **Reduced fuel mileage**
  - CNG tractors operate at an average 5.7 mpg (diesel equivalent), diesel tractors average 6.5–7.0 mpg
- **Tank Fill**
  - Due to temperature and other factors, maximizing tank fill can be in question

ECO FLEET™

LNG

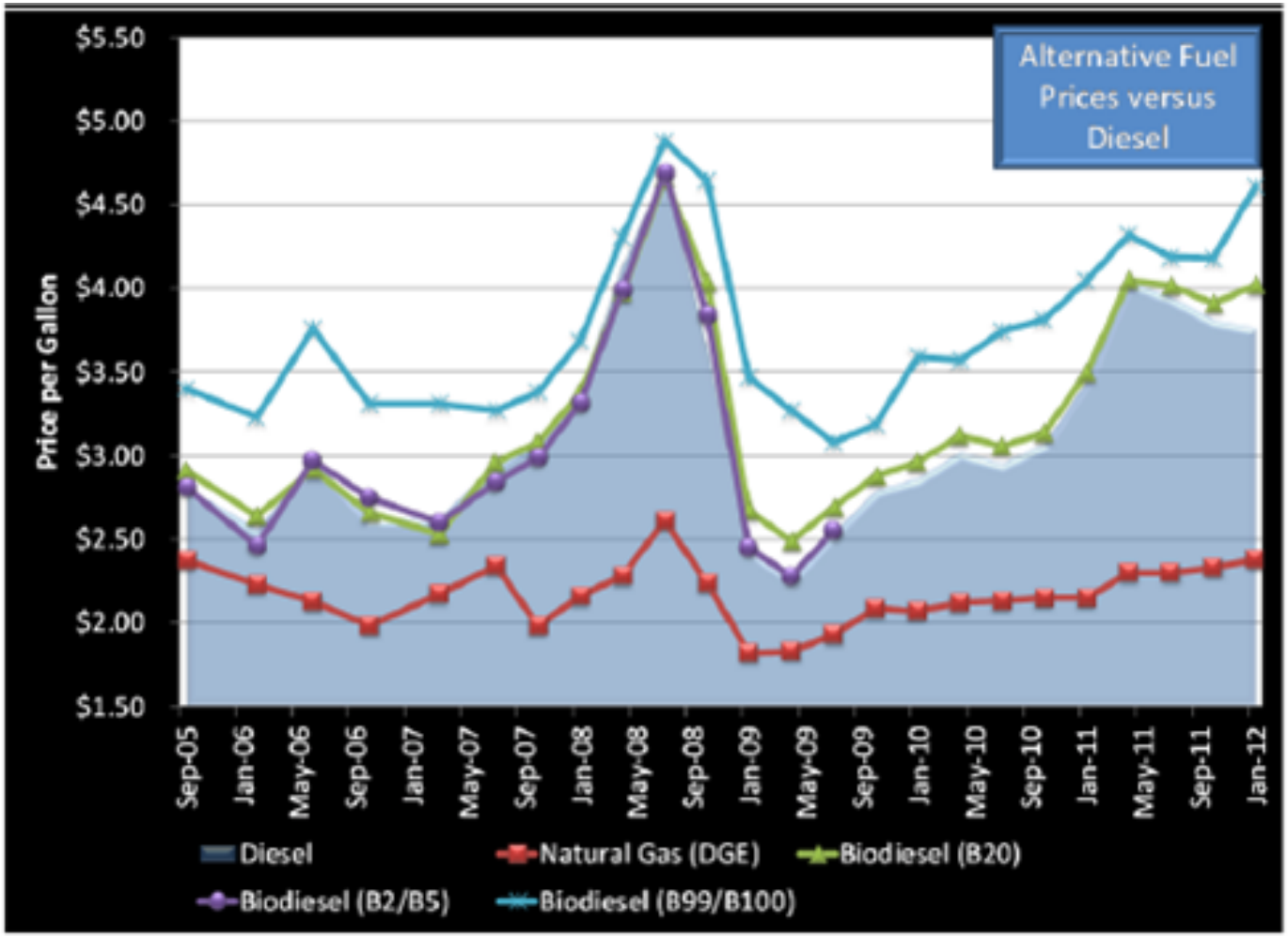
LNG ADVANTAGES

- LNG takes up less space then CNG in the high pressure tanks
- LNG fill station can be placed anywhere, does not have to be along a pipeline.
- Because it is a clean fuel, it contributes to improved air quality.
- Reduces carbon emissions.
- Ensure max fill capacity

LNG DISADVANTAGES

- Has to be stored cold (-260 degree F) to preserve components, if temperature drops LNG will evaporate and be wasted.
- Higher cost, due to conversion from natural state and the transportation.
- Addition training for drivers
- More expensive then CNG

ECO FLEET™ FUEL COST



*Source: http://www.afdc.energy.gov/afdc/price_report.html

Natural Gas vs. Diesel Comparison

	New Diesel Tractor	New Natural Gas Tractor
Tractor Price	$108,000.00	$145,000.00
Useful Equipment Life (avg. 100,000 miles/year)	10 Years	5 Years
Annual Maintenance Costs	$0.04 /mile	Est ~ $0.06 /mile
Fuel Cost Per Gallon*	$4.10	$1.90 - $2.35 depending on market of operation
MPG*	6.00	Est. ~ 5.7 (TBD)
Tractor Fuel Capacity*	240	75
Mileage Range Before Fill	1,440	250-260
Commitment From Shipper	None	3-5 Years with volume/capacity commitments

* Per gallon of diesel or natural gas equivalent

ECO FLEET™ CNG Tractor

The Freightliner M2 112 is a heavy-duty Class 8 tractor that operates on CNG.

Engine: Cummins Westport Inc. - ISL G 250 - 320 hp
Power Source: Internal combustion engine
Fuel Type: CNG
Fuel Configuration: Dedicated fuel
Fuel Emissions Certifications: EPA 2010, CARB 2010
Displacement: 8.9 liters
Description: The 8.9L ISL G (250-320 hp) combines Cummins Exhaust gas recirculation technology with stoichiometric spark ignited combustion, and a simple maintenance-free Three-Way Catalyst to meet the 2010 EPA emission standards.

Cummins Natural Gas Engines

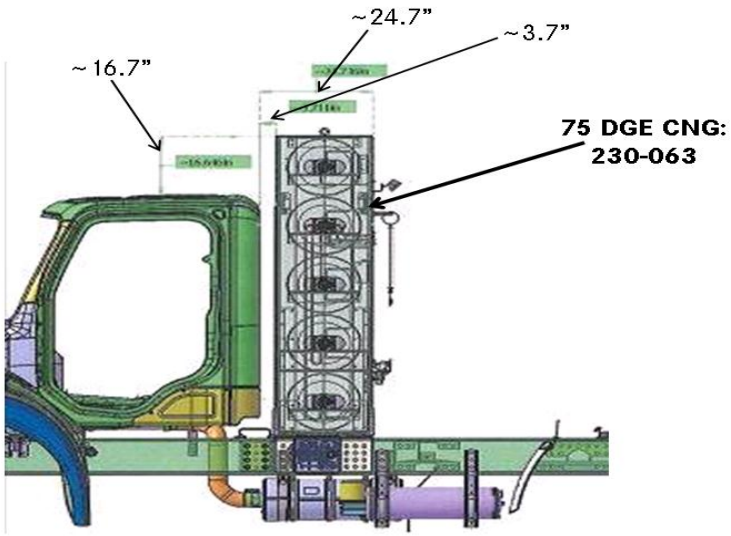
ECO FLEET™ CNG Tractor

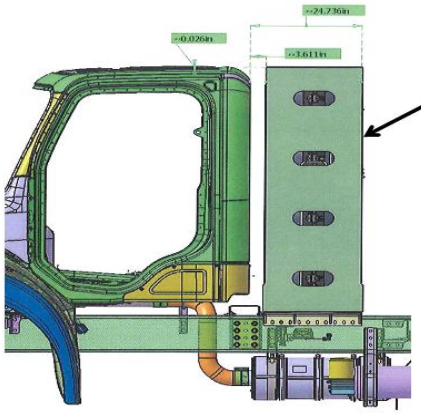
DAIMLER

FREIGHTLINER NATURAL GAS TECHNOLOGY

CNG Fuel Tanks

Factory Installed 60 and 75 Gallon CNG Tanks





Freightliner is the only “turnkey” NG OEM - all components factory installed & warranted!

ECO FLEET™ LNG Tractor

Derrick Milligan wears required safety equipment, including face shield and gloves while refueling an LNG-fueled tractor.

Encana Natural Gas Inc provided a portable LNG refueling system at its Red River natural gas fueling station in Louisiana to serve the Heckmann Water Resources fleet.

*Source: http://bulktransporter.com/photo_galleries/heckmann/index4.html

ECO FLEET™ Questions

- **The benefits:**
  - Fuel savings. If you look at the current fuel environment CNG could potentially save $.05-$.20/gallon.
  - The range is high due to the uncertainty of operating costs.
- **The payback time period?**
  - Assuming a dedicated truck runs 100,000 miles per year. You can figure we will save somewhere between $5000-$20,000 per truck per year in fuel costs. These numbers take into account problems and unexpected repairs. Therefore it is safe to say that these trucks could pay for themselves in 2-5 years in fuel savings alone. The one variable that cannot be overlooked is the residual value of the trucks after 5 years. What will that amount be? TBD but it should be similar. The expected lifespan of the truck is somewhere between 8-10 years.