

FLORIDA PUBLIC UTILITIES



NATURAL GAS : *energy for life*



Natural Gas as a Transportation Fuel

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What, Where & Why Natural Gas?



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- Natural gas (NG); colorless, shapeless, and odorless mixture of hydrocarbons-predominantly methane (CH_4)
- NG from wells or crude oil production. 1/4 of the US energy -1% goes toward transportation. US has a vast NG distribution delivery to 48 states.
- America has 2,074 Tcf (trillion cubic feet) of NG stored for 100-200 year supply.
- NG an excellent alternative source for transportation fuel compared to gasoline. Lighter than air. Disperses quickly into the atmosphere upon release. Gasoline spills out and spread fumes on the ground.
- NG is safer than Gasoline as its ignition temp= 1080°F vs. Gasoline = 495°F .
- Term CNG=Compressed Natural Gas; NG compressed through mechanical means into containers @ 3600 PSI.
- Term LNG=Liquefied Natural Gas; NG super cooled to -260°F as a liquid state into insulated containers.
- Term GGEs= gas-gallon-equivalents of energy /volume NG (125 Cubic Feet)
- Term DGEs= diesel-gallon-equivalents of energy /volume NG (139 Cubic Feet)

Source: NaturalGas.org / CleanNG



History, Trends & Benefits of NG as Transportation Fuel



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- NG was first used as a transportation fuel for Natural Gas Vehicles (NGVs) in Italy in the 1930s after World War II.
- 14.8 million NGV vehicles on global roads today. Most are from Iran, Pakistan and Argentina
- The U.S. has 120,000+ NGVs – with growth rate over 4% per year.
- 97% of our NG is produced here in North America.
- One US NG gallon = One less gallon of foreign oil the US spends billions \$\$ every week.
- Every 1% increase in natural gas production can create 35,000 jobs
- For every new NG fueling station for NGVs creates 45 new jobs within a 5-mile radius.



Source: CleanNG



CNG as Transportation Fuel in Florida



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- Florida has 30+ CNG fueling stations with a majority for private use.
- As public CNG stations become more readily available Florida everyone will move to NGVs.
- Fleets with CNG fueling have significantly reduction in fuel operating cost over petroleum. The more miles their fleet drives, the greater the savings.
- Maintenance savings with NGVs due to the characteristics that NG burns cleaner than diesel.
- CNG trend has OEM market production NGVs and conversions. 50+ manufacturers producing 150 models of light, medium and heavy-duty NGVs.
- Fleet central fueling facilities are more applicable to slow fill stations. NGVs parked over night making them ideal, and less costly to install, such as waste and refuse fleets.
- Servicing of NGVs can be done through fleet mechanics certifications to support both vehicles & infrastructure since NGVs use similar engines and body designs.



Benefits and future of NG Transportation Fuel in Florida



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- CNG is much cheaper than gasoline or diesel, as much as 50-80 %.
- NGV Private and Fleet owners will experience the greatest savings.
- Waste Management Refuse will over the next 5 years move to NGVs at a cost of \$30,000 extra per truck. For this conversion their savings per vehicle, per year will be \$27,000 in fuel costs compared to diesel.
- UPS announced putting 100,000 NGV dedicated trucks in service in the coming years nationwide
- NGVs emit 25% less CO₂ than traditional gasoline or diesel engines.
- NGVs also make it much easier to meet stringent EPA standards.
- Fueling an NGV at a public station is easy and just as fast to fill-up.
- Plug, Fill and Go with NGV!





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CNG in Florida

Trillium CNG & Dillon Transport –Tampa Port Public Station



Nopetro & Leon County Schools – Tallahassee Public Station





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NGV Storage Cylinders




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NGV Cylinders Transport



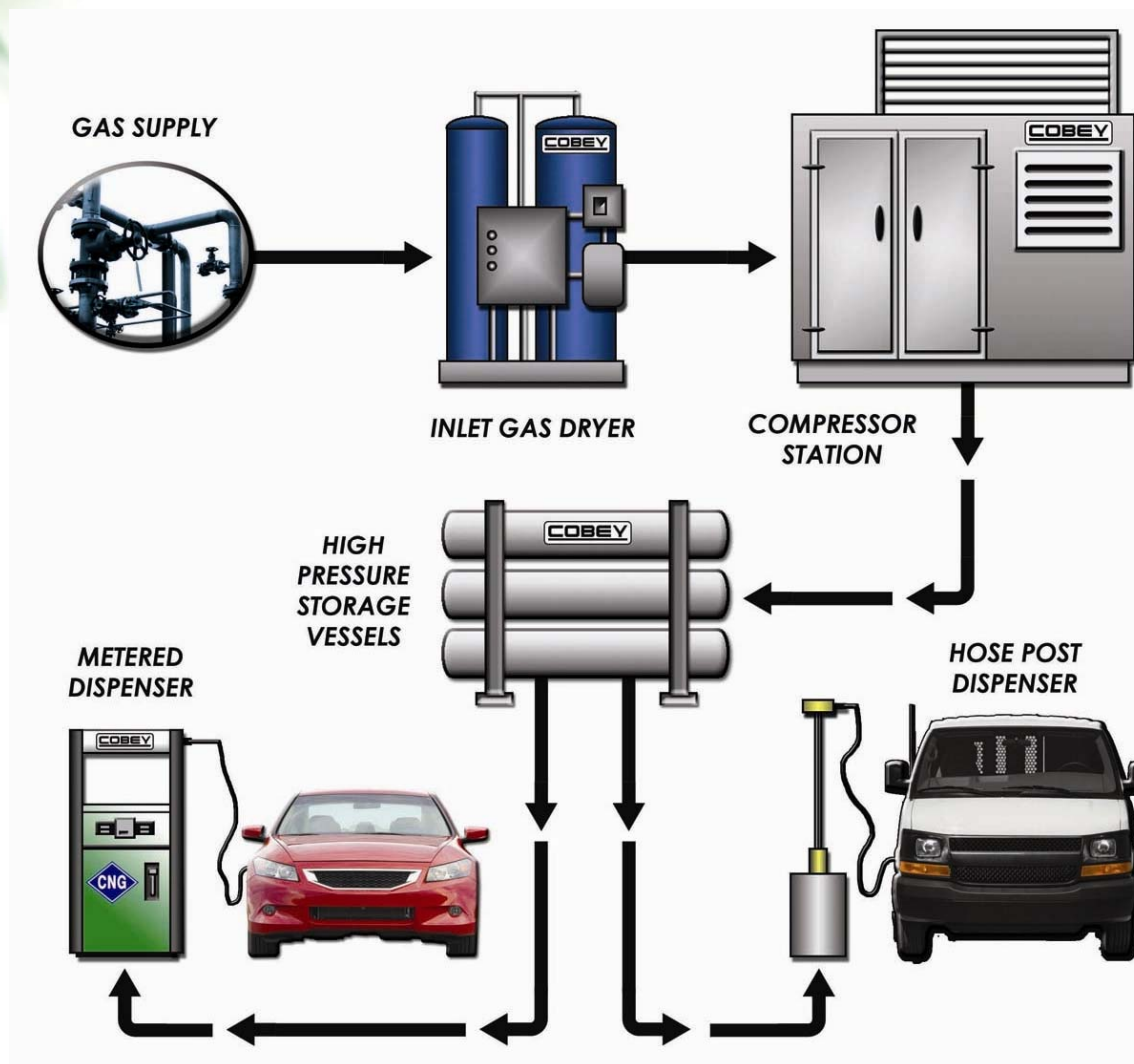

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CNG Station Components





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CNG Station Components




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Fueling Options



Fast-Fill Dispenser



Time-Fill Posts





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NGV Today



LIC
S

Time Fill CNG refueling of refuse trucks in Livermore, CA.





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Feel The
with Natural Gas



Questions
&
Answers?

