

Natural Gas Factsheet

What is natural gas?

Natural gas is made up primarily of methane with trace amounts of other gases. It occurs naturally underground and is extracted through gas wells or in conjunction with crude oil production. For storage purposes it can be stored as compressed natural gas (CNG) or liquid natural gas (LNG). Average natural gas costs are one-third less than gasoline at the pump.

What types of vehicles can use natural gas?

Natural gas vehicles (NGV) are the most advanced alternative fuel technology available commercially. Both light and heavy-duty vehicles can use CNG. According to the Natural Gas Vehicle Coalition, more than 20% of new transit bus orders are for natural gas buses. Some vehicles come already equipped to run either entirely on CNG (dedicated) or on both CNG and gasoline or diesel (bi-fuel). Additionally, many vehicles can be converted to run on CNG. All U.S.-based, full-sized transit bus manufacturers offer CNG buses. Applications include transit and school buses, refuse trucks, light-duty vehicles, vans, passenger cars and taxis. LNG is not suitable for light-duty vehicles but is an ideal fuel for large (class 8) trucks, transit buses, and medium-duty fleet trucks. There are over 150,000 NGVs on the road in the U.S. fueling at 1,500 locations. Over half of these sites are commercially accessible.

How does natural gas perform?

Vehicles running on CNG may have reduced range as compared to similar gasoline model vehicles. This is a limitation of the fuel storage tanks rather than a limitation of the fuel. For example a dedicated CNG Honda Civic GX has an eight-gallon tank and a gasoline powered Civic has an eleven-gallon tank. However, NGVs experience the same fuel economy with CNG as they do with gasoline. Bi-fuel vehicles have a longer range because they have two fuel tanks and can run on gasoline or diesel in addition to CNG. Because methane does not have to vaporize before being burned with oxygen, natural gas can burn cleaner, especially at colder temperatures than gasoline or diesel. LNG is kept at very low temperatures to increase storage capability and therefore provides longer ranges than CNG. Vehicles operating on CNG and LNG have a longer engine life and require less frequent oil change intervals.

What are the benefits of using natural gas?

Burning natural gas results in lower emissions of sulfur dioxide, particulate matter, and 20% less carbon dioxide than gasoline or diesel. It is one of the cleanest burning fuels. Natural gas is non-toxic, non-corrosive, less combustible than most other fuels, and has few associated health risks. CNG is stored under high pressures. The range of flammability and combustion is much narrower with CNG, making it safer than gasoline. The flashpoint for gasoline is 250 degrees whereas the flashpoint for natural gas is 1100 degrees. Natural gas is lighter than air and will dissipate if leaked whereas gasoline will sink and puddle. Dedicated NGVs produce little or no evaporative emissions during fueling and use. In gasoline vehicles, evaporative and fueling emissions account for at least 50% of a vehicle's total hydrocarbon emissions.

Exposure to the levels of suspended fine particulate matter found in many U.S. cities has been shown to increase the risk of respiratory illness and other health problems. Much of the particulate matter in urban areas is due to transportation. Natural gas produces only tiny amounts of particulate matter. Natural gas is abundant, low-cost, and domestically produced.

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Emissions reductions achieved by CNG as compared to petroleum gasoline and petroleum diesel.

Sources: Natural Gas Vehicle Coalition and EPA Office of Transportation and Air Quality

Pollutant	Reduction Compared to Gasoline	Reduction Compared to Petroleum Diesel
Carbon Monoxide	70%	
Nitrogen Oxides	35-60%	87%
Carbon Dioxide	20%	10%
Non-Methane Hydrocarbons	87%	
Lead and Sulfur	100%	100%
Benzene	99%	97%

Where can I get natural gas?

In the Triangle Region there are public CNG stations in Raleigh and Hillsborough. There are also private refueling stations in Raleigh, Garner, Durham and Chapel Hill that can be publicly accessed with prior arrangements. Contact the Clean Cities Coordinator for more information at tcc@tjcog.org or 919-558-9400. Also view the Alternative Fuels Data Center's station locator at www.eere.energy.gov/afdc/infrastructure/locator.html

Resources

Natural Gas Vehicle Coalition
U.S. Department of Energy Alternative Fuels Data Center

www.ngvc.org
www.eere.energy.gov/afdc