Clean Cities Learning Program

UNDERSTANDING FLEETS AND ALTERNATIVE FUELS

There can be challenges to starting a green fleet, or converting an existing fleet to the use of alternative fuels. According to some industry experts, a successful plan to reduce fuel consumption and carbon emissions requires a long-term vision, incremental change, support from top management, and flexibility to make changes along the way.

There are compelling reasons *why* fleets should be green and deliberate steps on *how* to implement alternative fuels.

Why Use Green Fleets?

- **Reduce operating costs** by improving efficiency, reducing life cycle costs, and reducing vulnerability to volatile fuel prices.
- **Reduce greenhouse gas emissions** by implementing the use of natural gas in vehicles, which are the primary source of greenhouse gases and urban air pollution.
- **Improve corporate image** by branding business strategies and appealing to public concerns about energy conservation and ecological sensibilities.

How to Implement Green Fleets

- **Get buy-in** from all management and staff levels, and be sure to communicate information about the benefits, goals, and targets frequently.
- **Create long-term objectives** and tangible goals based on best practices in the industry (such as baselines, benchmarks, and progress reports).
- **Avoid setting reduction goals in absolute numbers** for growing fleets or fleets just starting because absolute goals can impede growth.
- **Anticipate obstacles**, such as driver resistance, lag time between original equipment manufacturers' technology and market availability, and slower return on investment.
- **Move slowly** and implement change over time.
- **Improve vehicle use** with selection analysis and education of drivers.
- **Track and report progress** and share successes with employees, shareholders, and the public.

Clean Cities
U.S. Department of Energy

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Natural Gas Basics

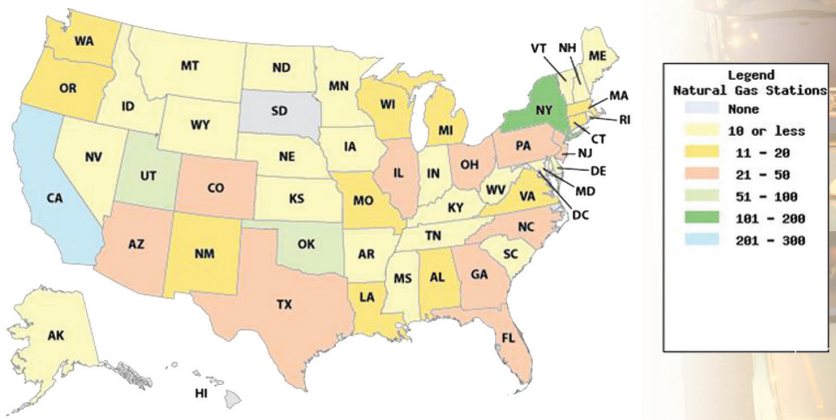
Like coal and oil, natural gas is a fossil fuel. Unlike other fossil fuels, natural gas is a clean-burning fuel and emits lower levels of harmful byproducts into the air. Natural gas is the product of organic matter (plants and animals) that have decomposed without the presence of oxygen. Natural gas may also be manmade out of organic waste materials. This renewable form of natural gas is commonly referred to as biogas. Swamps, marshes, landfills, sewers, and even agricultural manure are sources where biogas may be harvested because of the volume of decaying organic matter in these areas.

Did You Know?

Check out the following link to see what incentives are available for natural gas, both LNG and CNG.

http://www.afdc.energy.gov/afdc/laws/matrix/tech

- **87% of U.S. natural gas is domestically produced**
  - Cleaner burning fossil fuel
  - Can also be harvested renewably from landfills as biogas
- **Two main fuel storage systems for natural gas**
  - Compressed natural gas (CNG) – Tank pressures of 3000-3600 psi
  - Liquefied natural gas (LNG) – Cryogenic liquid, lower pressure (230 psi)
- **Over 1000 stations nationwide**
  - At home or private onsite fueling options are also available



Natural gas fueling stations. Source: AFDC.

Incentives

Despite the fluctuating economy and budget woes, there are a record number of grants and incentives for funding alternative fuel vehicles that have been made available. For example, in 2009 the U.S. Department of Energy (DOE) made nearly $300 million of American Reinvestment and Recovery Act (ARRA) funding available through the Clean Cities program. This single grant funding opportunity is responsible for putting more than 9,000 alternative fuel and energy efficient vehicles on the road and establishing an additional 542 fueling stations across the country.

Natural Gas Availability

Today, there are 300,000 miles of natural gas pipelines, thousands of interconnection points, and hundreds of storage facilities throughout the nation. Most fueling stations are CNG because fleets using LNG vehicles typically have a dedicated fueling infrastructure. All but two states have at least one private or public CNG fueling station.

Fuel	Area	2012 Cost	2009 Cost
Diesel ($ per gallon)	National Average	$3.86	$2.19
Gasoline ($ per gallon)	National Average	$3.37	$1.86
CNG ($ per GGE)	National Average	$2.13	$1.63

Fuel type cost comparison, 2009-2012. Source: AFDC.

Natural Gas Cost

Natural gas is a less costly alternative when compared to conventional gasoline. According to the National Renewable Energy Laboratory (NREL), the gasoline gallon equivalent (GGE) of CNG is considerably less than diesel fuel and gasoline. The difference in price is due primarily to the production of the fuel. Nearly 87% of natural gas is produced domestically, while conventional gasoline is dependent on foreign oil and is affected more by fluctuations in oil prices. Research shows the cost of diesel fuel is projected to increase at a linear rate of 5.6% per year, compared to a projected increase in natural gas of 1.6% per year.

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