

# Mobile Sources

## *and Rhode Island*

Fact Sheet #6—Alternative Fuels

August 2014

### Alternative Fuels

The depletion of oil resources and the increase of CO<sub>2</sub> emissions associated with traditional combustion engines have sparked interest in the usage of alternative fuel vehicles (AFVs). Switching from (expensive) imported oil to alternative fuels has become reality. Alternatives to gasoline present opportunities for reducing emissions from the transportation sector, decreasing fuel use and GHG emissions, and shifting fuels to domestic rather than foreign sources. Today, numerous gasoline alternatives are in various stages of development. Visit [Alternative Fuel Station Locator](#) to find stations throughout Rhode Island and the United States.

#### BIODIESEL

((B20) B99-B100)

- Biodiesel is an alternative or additive to standard diesel that is made from sources such as new and used vegetable oils and animal fats instead of petroleum.
- Biodiesel can be blended and used in many different concentrations, including B100 (pure biodiesel), B20 (20% biodiesel, 80% petroleum diesel), B5, and B2.

#### E-85

(FLEX-FUEL)

- Compared to conventional gasoline vehicles which use fuel consisting of (90% gasoline and 10% ethanol), E85 (85% ethanol and 15% gasoline) vehicles have lower carbon monoxide and carbon dioxide emissions.

#### ELECTRIC

(EV/PHEV)

- Powered by electricity, vehicles are recharged by plugging into a standard 120 volt socket or [specialized charging station](#).
  - Plug-In Hybrid Electric Vehicles (PHEVs) use a combination of electric motors and internal combustion engines powered either by gasoline or electricity.
  - Battery Electric (BEV's) are powered entirely by electricity and have an electric motor with no gasoline engines. BEV's produce no tailpipe emissions.

#### HYDROGEN

(FUEL CELL (FCV))

- Powered by pressurized hydrogen, which is pumped into the vehicle through a special leak-free connection. Oxygen from the air combines with hydrogen in the fuel cell creating a chemical reaction that produces power for the electric motor



## COMPRESSED NATURAL GAS

((CNG) OR METHANOL)

- Natural Gas is a cleaner alternative if the only other option is petroleum. With CNG, carbon monoxide emissions are reduced by 90-97%, carbon dioxide by 25%, and nitrogen oxide by 35-60%.
  - CNG is a growing fuel source for trucking fleets.
  - Natural gas has potential in fuel cells and as an “advanced fuel” combined with hydrogen.

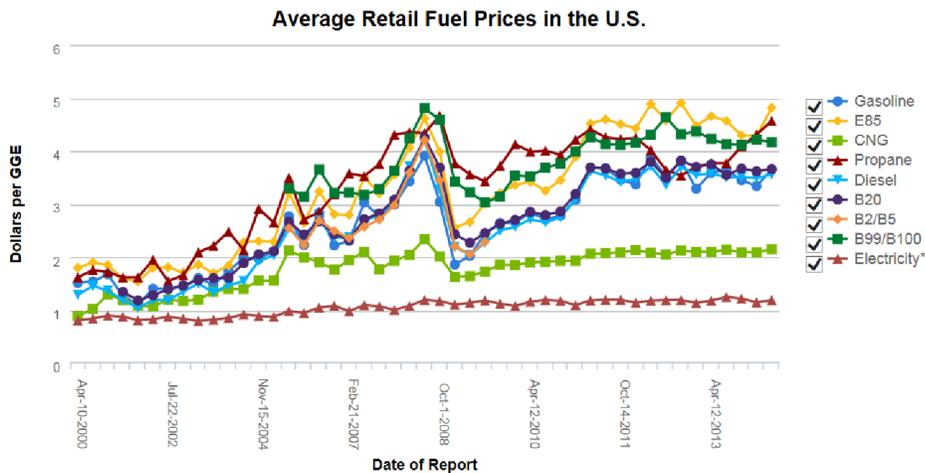
## PROPANE

(LIQUEFIED PETROLEUM GAS) (LPG)

- LPG is a clean-burning fossil fuel that can be used to power internal combustion engines. LPG-fueled vehicles can produce significantly lower amounts of harmful emissions of carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), and nonmethane hydrocarbon (NMHC).
  - Most LPG used in the U.S. comes from domestic sources and is less expensive than gasoline.

## Cost Comparison:

The graphs illustrate the historical prices for alternative fuels relative to gasoline and diesel. As gasoline prices increase, alternative fuels appeal more to vehicle fleet managers and consumers. Like gasoline, alternative fuel prices can fluctuate based on location, time of year, and political climate.



Source: [Clean Cities Alternative Fuel Price Reports](#), April 2014

## Why Switch to Alternative Fuels?

- Boost to state economy — saving money on gas and keeping dollars that would have been spent on imported oil here in Rhode Island.
- Development of a clean & efficient transportation infrastructure for the future.
- Save taxpayer dollars.
- Reduce greenhouse gas emissions & other air pollutants.

**Rhode Island Department of Environmental Management**

235 Promenade St

• Providence RI 02908

• (401) 222- 2808

[www.dem.ri.gov](http://www.dem.ri.gov)