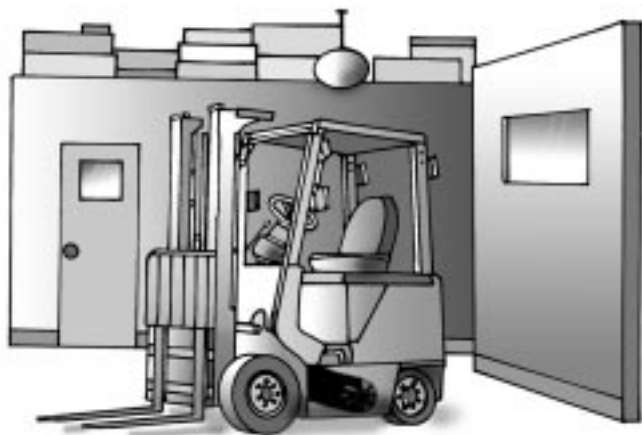

ALTERNATIVE FUELS and VEHICLES

Propane Fueled Vehicles

Liquefied petroleum gas (LPG) consists mainly of propane, propylene, butane, and butylene in various mixtures. However, for all fuels in the United States, the mixture is mainly propane. Liquefied petroleum gas is a by-product from two sources: natural gas processing and crude oil refining. Most of the LPG used in the United States is produced domestically.



Because a propane fueled vehicle does not produce toxic emissions, it is safe to operate in an enclosed building.

More than 350,000 vehicles, mostly in fleets, are traveling the nation's highways under propane power. Propane is powering taxis in Las Vegas; school buses in Kansas City and Portland, Oregon; sheriff and police cars in other communities; and in dozens of commercial fleets around the U.S. Propane is used in both light- and medium-duty vehicles, and has been used as a transportation fuel around the world for more than 60 years.

Like natural gas, propane-powered vehicles have less carbon build-up compared to gasoline and diesel-powered vehicles. According to the National Propane Gas Association, spark plugs in a propane vehicle last from 80,000 to 100,000 miles and propane engines can last two to three times longer than gasoline or diesel engines.

Ethanol Fueled Vehicles

Ethanol (ethyl alcohol, grain alcohol) is a clear, colorless liquid with a characteristic, agreeable odor. Ethanol is an alcohol fuel produced from starches or sugars or from grain, corn or other agricultural waste. Ethanol made from cellulosic biomass materials rather than traditional feedstocks is called bioethanol.

The Clean Air Act Amendments of 1990 mandated the sale of oxygenated fuels in areas with unhealthy levels of carbon monoxide. Since then, there has been strong demand for ethanol as an oxygenate blended with gasoline.

Ethanol reduces our dependence on foreign oil, reduces air pollution, and it is a renewable fuel.

Electric Vehicles

Electricity is unique among the alternative fuels in that mechanical power is derived directly from it, whereas the other alternative fuels release stored chemical energy through combustion to provide mechanical power. Electricity used to power vehicles is commonly provided by batteries, but fuel cells are also being developed. A large number of various types of batteries are being tested for use in electric vehicles (EVs.)



Electric vehicles are best suited to city/neighborhood driving of distances less than 50 miles between charges. An on board charger connects to 120-, 208-, or 240-volt outlet.

Electricity fueling costs are quite reasonable, especially if off-peak rates are used. Electricity costs vary across the country depending on location, type of generation, and time of use.

No tailpipe emissions is the number one benefit of owning an electric vehicle—you are not polluting the environment. Although, some people argue that there are some emissions that can be attributed to EVs—the emissions that are generated in the electricity-production process at the power plants.

The economies of using electric vehicles once the relatively high initial capital cost is made, comes with the lower "fuel" and maintenance costs. The cost of an equivalent amount of fuel for electric vehicles is pennies per mile. Also, maintenance for EVs is less—they have fewer moving parts to service and replace.