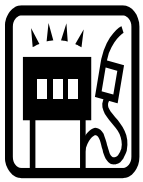

Alternative Fuels - Introduction

Reducing air quality impacts from diesel buses through the use of biodiesel, low sulfur diesel, and other alternative fuels

What are Alternative Fuels?
Alternative fuels are power sources that take the place of traditional petroleum gasoline or diesel fuel.

What Alternative Fuels are Available?
Biodiesel: Biodiesel is a mixture of diesel fuel with soybean or vegetable oil-based products. A standard diesel engine is capable of operating on biodiesel mixtures of up to 100% without any physical modifications, but B20 (20% biodiesel and 80% petrodiesel) is the most common blend with capability to burn efficiently in cold weather. Biodiesel has been shown to reduce fine particulate emissions by 10% to 15%, and also may reduce the toxicity of diesel emissions. The Idaho Energy Division's B20 program has helped fleets throughout the state convert to this fuel and has established public pumps throughout southern Idaho.

Compressed Natural Gas (CNG)/Liquefied Natural Gas (LNG): Natural gas is commonly used to heat and cool homes and businesses. It is also used to fuel vehicles, becoming more popular for its clean-burning process. CNG vehicles may run exclusively on natural gas or on both natural gas and gasoline. One of every five transit buses nationwide operates on CNG. LNG results when natural gas is cooled to 260 degrees below zero. Both alternative fuels significantly reduce carbon monoxide, nitrogen oxide, and carcinogenic air pollutants.

Ultra-Low Sulfur Diesel (ULSD): ULSD can be used in any diesel vehicle. It has significantly less sulfur content, which results in reductions of up to 10% fine particulate matter (PM). ULSD is even more effective when combined with a retrofitted after treatment technology such as a PM filter. DEQ is working to make this alternative fuel option available to Idaho consumers.

Emulsified Diesel: Emulsified diesel is a blended mixture of diesel fuel, water, and other additives. Case studies suggest that emulsified diesel can reduce emissions of smog-causing nitrogen oxides by about 10% to 20% and particulate matter by about 50% to 60%.
It can be used in any diesel engine, although the addition of water reduces the energy content of the fuel, so some reduction in power and fuel economy may be expected. Emulsified fuel will stay mixed for a fairly long time, although the water can settle out of the fuel and adversely impact effectiveness if the vehicle is dormant for an extended period of time. Therefore, schools may want to phase out the use of the fuel toward the end of the school year and reintroduce it in the fall.

What Your School Can Do
- ❑ Use alternative fuels in school bus fleets. Some alternative fuels such as B20 can be used in existing vehicles with no retrofits or new technology.
- ❑ Purchase alternatively fueled vehicles. Consider vehicles fueled by Compressed Natural Gas (CNG) or Liquid Natural Gas (LNG).
- ❑ Share your experience. If your school already runs on alternative fuel, share your success and/or concerns with other schools or school districts.

Included in this Toolkit/CD-ROM
- Information on the Idaho B20 program.
- Resource list for further information on alternative fuels.
- Summary chart of clean fuel/technology options for school buses.