The National Park Service
Fact Sheet

Alternative Transportation Program
Washington, DC 20240
(202) 513-7021

Alternative Fuels in National Park Units

2003

Alternative Fuels are clean-burning fuels that can power motor vehicles, buses, boats, and trams. Alternative fuel vehicles tend to be more efficient than gasoline or diesel vehicles, and they emit nearly 90 percent fewer toxins and ozone-forming hydrocarbons.

Alternative fuels are already powering heavy-duty trucks, garbage packers, dump trucks, snowplows, buses, delivery vans, taxis, and passenger cars used by federal government agencies.

The first NPS alternative fuel vehicle was a compressed natural gas-powered trash packer, which has been used by National Capital Parks Central in Washington, DC, since 1997. It proved so successful that National Capital Parks Central began replacing some of their vehicles with alternative-fuel models.

FOR MORE INFORMATION...

NPS Alternative Transportation Program:
http://www.nps.gov/transportation/alt/index.htm

WHY ALTERNATIVE FUELS ARE USED IN OUR NATIONAL PARK UNITS

As visitation to units of the National Park Service (NPS) continues to increase, many park visitors are finding traffic congestion, haze, and noise. To help improve air quality, decrease noise, preserve natural resources, and enhance the visitor experience, NPS is using alternative fuels to power park vehicles and alternative transportation systems (ATS) at many NPS units. Alternative fuels are cleaner burning and more efficient than gasoline and diesel. Operating park vehicles, including shuttle buses, trams, snowmobiles, and boats, with ethanol, propane, electricity, or biodiesel helps to improve air quality, decrease noise pollution, and increase the distance visitors can see at scenic vistas.

EXAMPLES OF ALTERNATIVE FUELS

Alternative fuels come in many forms and can be used in a variety of vehicles, including trucks, buses, boats, and trams.

- *Natural Gas* – In either a compressed (CNG) or liquefied (LNG) state, natural gas is clean burning and produces significantly fewer harmful emissions than gasoline.
- *Propane* – Propane is a by-product of natural gas processing and crude oil refining.
- *Ethanol* – Ethanol is an alcohol-based fuel produced by fermenting and distilling corn, barley, wheat, wood, and grasses.
- *Methanol* – Derived from the fermenting and distilling of wood into alcohol, methanol can be combined with gasoline to power engines or used to provide hydrogen to power fuel-cell vehicles.
- *Electricity* – Electricity can fuel vehicles through rechargeable batteries or through fuel cells that produce an electric current by combining hydrogen and oxygen.
- *Biodiesel* – Renewable and non-toxic, biodiesel is made from recycled vegetable oils or restaurant greases. Current diesel engines can run on blends of 20 percent biodiesel/80 percent petroleum diesel without needing costly modifications or retrofits. Modified engines can run on 100 percent biodiesel.

ENVIRONMENTAL AND ECONOMIC BENEFITS

The benefits of alternative fuels are many.

Environmental

Parks are threatened by air pollution from the exhaust of motor vehicles. Over 90 parks are located in non-attainment areas, which are areas that do not meet the Clean Air Act standards for ozone. In addition to ozone, other pollutants such as carbon monoxide (CO), volatile organic carbons (VOC), nitrogen oxides, and sulfur dioxides (SO_x) are dangerous not only to the health of park visitors, but to wildlife, plants, lakes, streams, and soils. Air pollution can also cause haze, which may impair scenic vistas. On a clear day in Acadia National Park in Maine, visitors can see for about 200 miles. But haze in the summer can reduce that view to 30 miles or less.

This refuse hauler, powered by CNG, is part of a US Department of Energy demonstration program at National Capital Parks Central in Washington, DC.

Alternative fuels are more environmentally friendly than traditional gasoline and diesel. Many, such as biodiesel, are biodegradable, non-toxic, and renewable. Renewable fuels replenish themselves naturally and aren't likely to run out. Alternative-fuel vehicles produce fewer emissions of CO, VOC, SO_x, and particulate matter. As a result, vehicles powered by alternative fuels contribute less to ground-level ozone problems, global climate change, and acid rain, and produce fewer unpleasant odors and smoke. In addition to burning cleaner than gasoline or diesel, alternative fuels tend to burn quieter, which helps to reduce noise levels in parks.

Economic

Since biodiesel fuels come from corn oil and other cooking oils, using them helps to support U.S. farmers. For example, rapeseed oil can be made from resources in Montana and Idaho. What's more, since alternative fuels can be found in the U.S., using them helps to reduce our nation's dependence on imported fossil fuels.

ALTERNATIVE FUELS AND OUR NATIONAL PARK UNITS

ALTERNATIVE FUELS HELP PROTECT OUR PARKS

Many national park units are using alternative-fuel vehicles and technologies to improve air quality, reduce noise, and educate visitors about the environmental issues our parks face.

EXAMPLES OF ALTERNATIVE FUELS IN USE

Electric Vehicles

At Grand Canyon National Park, visitors can ride electric buses to park attractions. In 2001, along with park buses fueled by compressed natural gas and liquefied natural gas, these buses had approximately 4.5 million boardings. Electric buses and trams are also used at Gateway National Recreation Area in New York, Cumberland Island National Seashore in Georgia, and Lyndon B. Johnson National Historic Park in Texas.

Grand Canyon currently runs 22 buses that shuttle visitors to park attractions.

Ethanol-Powered Snowmobiles

In 1998, Yellowstone National Park, which is located in parts of Idaho, Montana, and Wyoming, began fueling all of its park snowmobiles with a 10 percent ethanol/90 percent diesel fuel mix called E10. Using E10 reduces toxicity, smoke, unpleasant odors, and emissions of hydrocarbons, carbon monoxide, particulate matter, and pollutants that cause smog. As a result, Yellowstone requires that E10 be used in all of its gasoline-powered park vehicles. Yellowstone's use of alternative fuels is part of its "Greening the Environment" program, which looks at making all facets of the park, including transportation, cleaning products, laundry, and facility maintenance, more environmentally sustainable.

Propane-Powered Shuttle Buses

Zion National Park in Utah uses a shuttle bus system to take visitors to both stops in the nearby community of Springdale and to park attractions. During the peak visitation months of April through October, personal vehicle use is restricted in the most visited area of the park, Zion Canyon. The shuttle bus system has reduced noise near park roadways by 9.6 decibels, which is the same reduction that would result from building a 12- to 15-foot-tall noise barrier along the road. Thanks to this increased quiet, Zion park staff report that visitors are now able to hear rushing streams and can even, occasionally, spot cougars.

In 2000, the 30 propane shuttle buses at Zion National Park eliminated 42,000 vehicle trips and allowed visitors to get out and enjoy the park instead of searching for a parking space.

Natural Gas Vehicles

Many units of the NPS system use compressed natural gas (CNG), which is gas that has been pressurized so that upon its release it creates energy, or liquefied natural gas (LNG) to power a variety of vehicles. Grand Canyon National Park in Arizona uses both CNG and LNG to fuel some of its shuttle buses, while the George Washington Memorial Parkway in Virginia operates several maintenance trucks powered by CNG.

Channel Islands's 58-foot boat *Sea Ranger II* is a "green" vehicle, complete with biodiesel-compatible engines, non-toxic hull paint, a sustainably grown teak interior, recycled flooring, and components that rely on vegetable-based hydraulic and lubricating fluids.

Water Vehicles Fueled by Biodiesel

In 2000, Hawaii Volcanoes National Park launched a three-year demonstration program to fuel all of its land and water vehicles with biodiesel. The first park to use only biodiesel to power its entire fleet, Hawaii Volcanoes was one of 32 park areas selected to receive U.S. Department of Energy funding to promote the development and use of alternative fuels.

Channel Islands National Park in California uses biodiesel to power its entire fleet of water vehicles, including its research and crew boats. Park staff use the boats daily to transport supplies and staff and to monitor park resources – including 145 types of plants and animals that are found only in the park. Channel Islands is now working to have all the generators, vehicles, and equipment located on one of the park's islands powered by biodiesel by the end of 2003.