

# Propane Powers Zion National Park's Shuttle Bus Service

Established in 1919, the 229 square miles (593.1 km) of Zion National Park is home to native wildlife such as mule deer, golden eagles and mountain lions. Located at the junction of the Colorado Plateau, Great Basin and Mojave Desert provinces, the Park's unique geography and the variety of life zones make it an ideal sanctuary for unusual plant and animal diversity.

Over the years, the Park's spectacular landscape and wilderness have attracted an increasing number of visitors—resulting in traffic congestion, frustrated visitors, and damage to vegetation caused by illegal parking along roadsides. Also, the noise and emissions generated by visitors' automobiles created an imbalance in the Park's ecosystem-- causing displacement of the Park's wildlife.

#### Zion National Park Fleet Facts

Fleet Type: National Parks Fleet  
 Fuels: Propane  
 Fleet Size: 30  
 LPG-fueled: 100%



In 1999, in an effort to lessen traffic congestion, reduce noise and improve air quality, the Park managers began the radical step of restricting personal vehicle use and commercial tour bus business in the busiest section of the park in favor of a mandatory free shuttle bus system. Working with a consultant, the Park evaluated the performance benefits of several motor fuels and decided that a propane-powered shuttle bus fleet was the best solution to eliminate traffic

and parking problems, protect vegetation, improve air quality, reduce noise and restore tranquility to Zion Canyon.

The propane-powered shuttle fleet, maintained and operated by Parks Transportation, Inc., started its operation on Memorial Day, 2000, and operates throughout the peak tourism months of April through October.

### **Fleet Composition**

Zion National Park operates 30 National Park Service owned propane-powered shuttle buses and 21 accompanying trailers. In its first year of operation, the 30-foot Eldorado shuttle buses carried more than 1.5 million passengers. A recent estimation shows that 75 percent of the Park's annual 2.5 million visitors catch a ride on a propane-powered Zion Canyon shuttle service. The Park hopes to retire the fleet buses within the next 12-15 years and replace them with new models of dedicated propane shuttle buses.

### **Fleet Performance**

The shuttle loop stops at eight locations in the Park and six locations in the town of Springdale, Utah, throughout the day. In order to accommodate the high volume of visitors to the Park, the buses operate as often as every six minutes—resulting in an average daily usage of approximately 2,523 miles per bus. The Park, through local propane marketer, Turner Gas, procures and uses high quality propane which results in less internal maintenance of the engine and fuel system. And, the low cost of propane motor fuel aids in controlling the operating expenses. Also, the long life span of the shuttle buses – approximately 350,000 miles per bus – helps control the capital investments.

According to Ron Terry, the Park's information officer, an analysis of the returns on investment with regards to purchasing dedicated propane shuttle buses versus up-fitting conventional buses illustrated that the former delivered higher returns. Although the dedicated propane buses cost more than conventional shuttle buses, Ron said, "The shuttles have contributed significantly to preserving park resources while providing a greatly improved visitor experience. In addition to demonstrating our commitment to alternative fuels and the environment, the quiet propane-powered shuttle buses have allowed the natural sounds of the park to be heard and enjoyed by visitors once again. As an added bonus, the reduction in noise and traffic has resulted in the return of wildlife to the canyon in greater numbers."

### **Refueling & Infrastructure**

On an average, the Park's fleet vehicles consume approximately 780 gallons of propane per day. All shuttle buses are refueled on-site from a single fueling and maintenance facility. In

#### **Advantages of Using Propane As a Fleet Fuel**

**Range:** Superior to Methanol, Ethanol, and CNG. A 25-gallon propane tank, as motor fuel, will last longer than any other alternative motor fuel.

**Miles Per Gallon:** Propane delivers up to 90 percent of gasoline's MPG, compared to Methanol's to 54 percent MPG and Ethanol's 70 percent MPG.

**Cost:** Propane costs less than gasoline and may be the lowest priced alternative fuel for fleet use.

**Availability:** In addition to several private fleet-refueling stations, there are approximately 1,400 public refueling stations for propane in Utah. Also, many major truck stops sell propane motor fuel.

**Safety:** Propane is considered to be a safe motor fuel by the Federal government. Propane tanks are 20 times as puncture-resistant as gasoline tanks. Of all the alternative motor fuels, propane has the lowest flammability range—making it a safe motor fuel.

**Emissions:** A recent EPA test of a propane-fueled Ford V8 showed net hydrocarbon emissions 73 percent cleaner than the acceptable standard. NoX emissions were down 57 percent, and CO emissions were 93 percent better than the federal standard.

**Infrastructure:** Propane is already produced commercially in natural gas and oil refineries in the country and across the globe. No new technology or capital investment for such technology is required.

order to ensure the quality of the motor fuel, the Park purchases all its propane motor fuel in bulk from Turner Gas. And since the high quality of fuel used by the Park is readily available, the Park does not store large quantities of propane motor fuel on-site.

### **Training & Maintenance**

In order to maintain and repair its fleet vehicles, the Park incurred a one-time cost to construct the maintenance and refueling facility on-site. The maintenance crew received on-site training on engine problem diagnosis, trouble shooting and general repairs. In addition, shuttle bus operators and maintenance personnel received on-site training on the use and operation of engine control components.

The Park's trained personnel undertake maintenance and repair of fleet vehicles on-site. Cummins repair technicians visit the facility whenever the repairs required are beyond the expertise of the Park's maintenance crew.

### **Emission Control and Noise Reduction Bring Back Natural Soundscape**

Ron attributes emissions control and environmental conservation as the top most reasons for selecting propane-powered shuttle buses. He added, "The shuttle buses have had a significant impact on the narrow confines of Upper Zion Canyon, eliminating up to 5,000 vehicles per day and their resulting emissions. The propane shuttle buses are quieter than conventional buses—bringing back the natural soundscape to the Zion Canyon Scenic Drive. The purchase of these propane-powered shuttle buses has clearly demonstrated our commitment to a cleaner environment."

**For more information about propane fleet vehicles, visit [www.propanevehicle.org](http://www.propanevehicle.org) or contact:**

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