

Propane Powers LADOT's DASH Bus Service

With nearly 400 vehicles that move more than 23 million passengers annually, Los Angeles Department of Transportation (LADOT) is the second largest transit fleet operator in the region. LADOT's fleet vehicles are used to operate DASH, Commuter Express and CityRide services.

LADOT is no stranger to alternative fuels such as propane. In fact, when the DASH system evolved from a reorganization of the city's bus system in 1980, LADOT had propane-fueled fleet vehicles in operation. Having experienced the benefits of using propane, the agency decided to convert to and purchase more propane-fueled buses for its DASH fleet. Today, the entire DASH fleet is powered by propane.

LADOT Fleet Facts

Fleet Type: Public transit
Fuels: Propane, electric, hybrid-electric, and diesel
Fleet Size: Almost 400 buses
LPG-fueled: 51%



DASH buses operate in the downtown LA area and throughout 27 communities in the City. They provide over 20 million passengers with an easy, convenient and environmentally friendly option to travel.

Fleet Composition

LADOT operates more than 150 El Dorado buses – DASH's workhorses – that are powered by propane. The low-floor, EZ Rider, 30-foot DASH buses have 30,000-lb or 28,000-lb gw and are powered by Cummins 5.9-liter, 195-hp engines while Sleeper tanks hold the fuel.

LADOT also has a history of successfully maintaining and utilizing propane fleet vehicles. A portion of LADOT's para-transit fleet that was up-fitted to propane in 1985 and 1994 is still in operation and being used for the CityRide service.

Superior performance with unbeatable value

The DASH buses consume approximately 150 gallons of propane per day per vehicle. Average fuel economy is approximately 2-2.5 miles per gallon. This is due in large part to the service characteristics-- heavily loaded buses that run all day at an average speed of 10 miles per hour. Some of the buses have been in operation for over 300,000 miles and are still actively transporting passengers everyday.

Pleased with the performance of the propane-fueled DASH buses, David Rzepinski, LADOT's director of transit operations, says, "We want the residents of, and visitors to Los Angeles to enjoy the benefits of our environmentally-conscience, reliable public transit system. The performance benefits, low emissions, and lower cost of propane motor fuel help us deliver valuable, consistent, service to our customers in a cost-effective manner."

Refueling & Infrastructure

LADOT did not have to incur significant additional costs when it decided to invest in propane-fueled fleet vehicles as it competitively contracts its DASH services to private contractors, each with its own operating, maintenance and fueling infrastructure on-site. As a result, the transit facilities (9 yards in total) that LADOT's buses operate from are either leased or owned by the contractor. Accordingly, the contractors assume all costs related to refueling and infrastructure. Subsequently, the contractors combine the cost of propane fuel and infrastructure, the cost to operate and maintain the DASH services, and provide LADOT with a single hourly rate. Says David, "Our previous CNG fueling and operating experience proved to be more costly and the vehicles had more reliability issues than the current propane fleet."

Depending on the fuel consumption of each vehicle, fuel is delivered to the refueling sites at least once a day. Almost all of the buses are operated from early morning to late in the evening without needing a fuel stop. Trained personnel re-fuel the buses with propane after the completion of revenue service in the evening.

Training & Maintenance

With the exception of major repairs and engine overhauls, the maintenance needs are taken care of on-site. The down time for vehicles repaired off-site varies depending on parts

Advantages of Using Propane As a Fleet Fuel

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

Miles Per Gallon: Delivers up to 90 percent of gasoline's MPG, and exceeds the MPG of any other liquid or gaseous alternative fuels.

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

Availability: In addition to several hundred private fleet-refueling stations, there are approximately 800 public refueling stations for propane in California. Many major truck stops sell propane motor fuel. Modern, 24-hour stations are also being installed.

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: Propane is inherently cleaner than gasoline and can meet or exceed those emission levels from other alternative fuels. Propane can easily meet or exceed current and future emission standards.

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.

availability. It takes approximately 1-2 weeks down time for major engine repairs performed by Cummins or an authorized Cummins dealer.

LADOT maintenance personnel assigned to monitor contractors' services receive training from the US DOT on alternative fuel and fuel system safety evaluations, as well as training from the South Coast Air Quality Management District (AQMD) and California Air Resource Board (CARB) on clean air technologies. LADOT's contractors, as required by the contract, train their maintenance personnel similarly. Contractors work closely with vendors such as Cummins, Thermo King and Amerax to provide on-site training to their maintenance personnel about the latest updates. LADOT holds a monthly meeting with all the service contractors, DASH vehicle manufacturer El Dorado National, and representatives from the manufacturers of each of the major vehicle components (brakes, suspension, air conditioning, engines, fire suppression/methane detection systems, etc) to ensure that all parties are aware of any changes/issues relating to the performance of the DASH vehicles.

Contractors' maintenance personnel are also trained to use Cummins "Insight" software for fleet vehicles' powertrain diagnostics.

Exceptional value, greater return on investment

The non-availability of a larger, heavy-duty propane engine has resulted in more maintenance activities needed for the propane fleet than for the diesel and gasoline powered vehicles, as the DASH fleet buses use Cummins 5.9 engines, which are slightly underpowered for the vehicle application. Despite the fact that a larger, heavy-duty dedicated propane engine is currently unavailable in the market, LADOT is resolute in its decision to use propane motor fuel. Says David, "Our decision to use propane motor fuel for our DASH fleet was independent of, and occurred before the current state clean fuel mandates. The benefits of propane fuel outweigh the disadvantages; higher fuel efficiencies, greater performance benefits, low fuel and infrastructure costs, and most importantly, low emissions make propane the ideal fuel choice for Los Angeles."

Over the past several years, LADOT has solicited and encouraged several engine manufacturers, including Cummins, John Deere, Detroit Diesel and DAF/Pacaar, to determine whether they would be interested in partnering with the agency to develop and provide a larger displacement, higher horsepower propane engine for use in its commuter bus program. Also, LADOT has actively sought research and development funds to purchase larger, heavy-duty dedicated propane engines when they are ready for commercial scale production.

For more information about propane fleet vehicles, visit www.propanevehicle.org or contact:

Brian Feehan
Managing Director, Engine Fuel Programs
Propane Education & Research Council
Phone: 202-452-8975
Email: brian.feehan@propanecouncil.org