

Fuel Cell Bus Takes a Starring Role in the BurbankBus Fleet

As part of its commitment to clean vehicle technologies, the City of Burbank tests a fuel cell bus in its mass transit system.

BurbankBus, which provides transit services in and around the City of Burbank, California, has four fixed-route transit lines operating during morning and evening peak rush-hour periods. These routes primarily transport commuters between major transit hubs and the city’s employment centers.

Commuters traveling into the area arrive at one of the city’s two Metrolink rail stations or at LA Metro’s North Hollywood station, where the Red and Orange Lines terminate. BurbankBus service connects these stations with the Media District, downtown, and Golden State areas. Ridership has grown substantially since the fleet converted to a fixed-route service in 2005, and a total of 478,000 riders per year are expected by the fall of 2010.

The City of Burbank has been proactive in implementing clean technologies across its operations. The BurbankBus fixed-route fleet consists of 17



BurbankBus’ clean fuel fleet now includes a zero-emission hydrogen-fueled bus.

compressed natural gas (CNG) buses. This fleet has been running on 100% CNG for about two years. The city’s trash trucks are also run on CNG, and its light-duty vehicle fleet includes battery electrics, hybrid electrics, and several hydrogen-fueled Toyota Prius automobiles.

In 2006, the city announced the start of a zero-emission bus demonstration project funded primarily through a grant from the California Air Resources Board (CARB). The city has partnered with Proterra, a Colorado-based bus manufacturer, to bring its first fuel cell bus to the area. The bus design features a battery-dominant plug-in hybrid configuration consisting of batteries and fuel cells; the design was developed under the Federal Transit Administration’s National Fuel Cell Bus Program. Placing its second fuel cell bus in Burbank gives Proterra a West Coast test market for the technology; its first bus is operating in Columbia, South Carolina.

Proterra’s fuel cell bus design features a 35-foot, lightweight composite body that seats a similar number of passengers as a 40-foot conventional bus. The hybrid system in the bus is an electric drive. A lithium titanate battery pack provides primary power to the motor; supplemental charging is provided by two 16-kilowatt Hydrogenics fuel cell power modules and by regenerative braking while the bus is in operation. The battery pack and fuel cells are controlled by on-board computers

Project Partners

BurbankBus	Operates the bus
CARB	Provides primary project funding
Proterra	Manufactures the bus and provides warranty support
Hydrogenics	Supplies the fuel cell
DOE/NREL	Provides data collection and reporting

“The City of Burbank has always prided itself on exploring alternative sources of fuel, and this project is another example of our Council’s commitment to sustainability.”

— Michael S. Flad
City Manager, Burbank CA

Burbank Fuel Cell Bus Facts

to regulate the power needs of the bus for optimal efficiency. At the end of the day, the bus can be fully charged by plugging it into a 220-volt outlet.

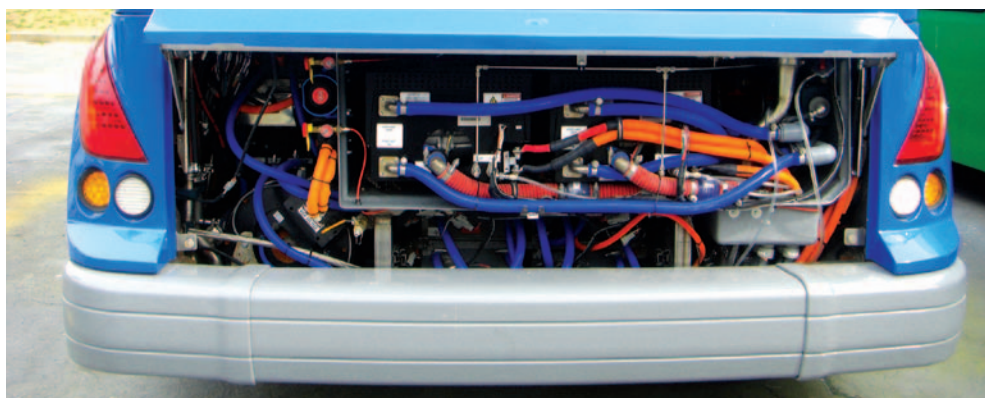
BurbankBus plans to operate the fuel cell bus on all of its routes to fully test the vehicle’s capabilities in a variety of route and operating conditions. The agency’s goal is to evaluate the technology’s performance and determine whether these kinds of buses should be included in future purchases.

In-Service Evaluation

BurbankBus is collaborating with the U.S. Department of Energy’s (DOE) Fuel Cell Technologies (FCT) Program to evaluate the bus. The agency will run the bus in revenue service for at least one year. During that time, DOE’s National Renewable Energy Laboratory (NREL) will collect and analyze performance and operations data so that researchers can better understand the status of the technology and determine any future development work that needs to be done. Information gathered during the demonstration will also help fleets make informed purchase decisions. Results will be fed back into the research and development process to focus future resources, as appropriate.

Bus chassis	Proterra lightweight composite body
Length/ width/ height	35 ft/102 in./129 in.
GVWR*/curb weight	36,000 lb/26,680 lb
Passenger capacity	37 seated (or 33 seated with two wheelchairs), 18 standees
Hybrid system	Proterra: battery-dominant plug-in hybrid
Fuel cell	Hydrogenics: HyPM HD16, two 16-kW PEM stacks
Energy storage	Altairnano: TerraVolt 368, lithium titanate, 48 23-V modules
Traction motor	UQM: PowerPhase 150, 150-kW peak power
Accessories	Electrically driven
Fuel/storage	Compressed hydrogen @ 5,000 psi, 29 kg in four SCI Type III tanks

*Gross vehicle weight rating



The bus features a plug-in hybrid configuration using two Hydrogenics fuel cells and an advanced lithium titanate battery pack.

If questions remain, contact:

Johnathan Frank
 City of Burbank
 (818) 238-5318
JFrank@ci.burbank.ca.us

Leslie Eudy
 National Renewable Energy Laboratory
 303-275-4412
leslie.eudy@nrel.gov

Web sites:

- BurbankBus: www.burbankbus.org
- CARB: www.arb.ca.gov
- Proterra: www.proterra.com
- Hydrogenics: www.hydrogenics.com
- NREL fuel cell bus publications: www.nrel.gov/hydrogen/proj_fc_bus_eval.html

Photo credits: Front page photo- Joshua Goldman, Proterra Inc., PIX 17238; Back page photo- Proterra Inc., PIX 17241