Hydrogen Fuel Cell Hybrid Electric Delivery Vans in Disadvantaged Communities

The Department of Energy's (DOE's) Hydrogen and Fuel Cell Technologies Office (HFTO) is co-funding the Center for Transportation and the Environment (CTE) on a project to improve local air quality in a disadvantaged community and demonstrate the viability of hydrogen fuel cell delivery vans. The project will replace 15 diesel-powered United Parcel Service (UPS) vans in Ontario, California, with hybrid-electric vans powered by hydrogen fuel cells.

The harm caused by using gasoline and diesel for transportation is both global *and* local. *Globally*, petroleum-powered vehicles contribute significantly to the warming of the climate, and, *locally*, they cause pollution that degrades air quality and leads to serious health conditions, like asthma and respiratory illnesses. Historically, the local impacts of air pollution caused by cars, vans, buses, and trucks have fallen disproportionately on disadvantaged communities.

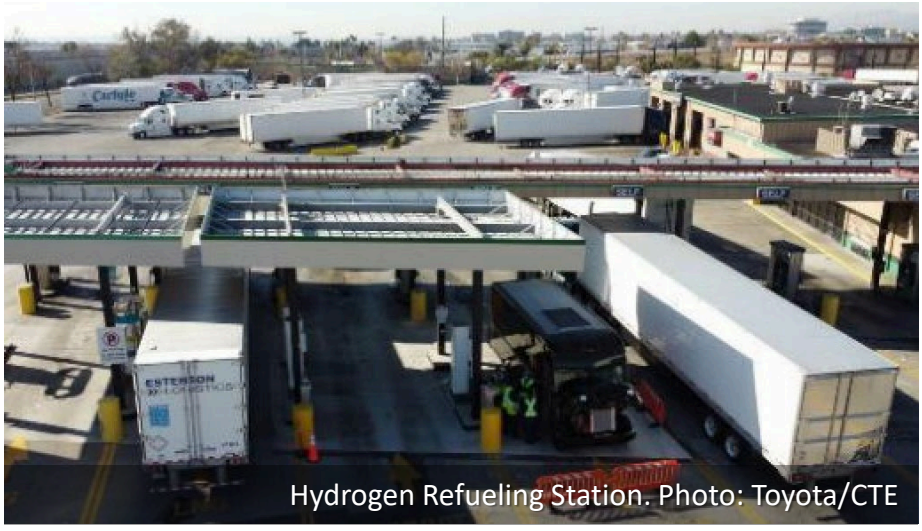
HFTO is working to solve these problems and make alternatives a reality—by supporting the development and deployment of clean hydrogen technologies.

Hydrogen is a fuel that can be produced with zero or near-zero greenhouse gas emissions, and when used in a fuel cell, no pollution is emitted, only water. Clean hydrogen offers a solution for many different types of applications and can play an important role in cases where other clean-energy solutions are especially challenging.

Objectives

- Demonstrate that zero-emissions fuel cell hybrid-electric delivery vans can be commercially viable and takes a few minutes to fuel
- Reduce local air pollution in a disadvantaged community, while also reducing petroleum consumption, emissions of greenhouse gases, and noise pollution
- Accelerate the introduction of electric drive, fuel cell, and hydrogen technology into the market to meet growing demands of fleet operators shifting to zero-emission alternatives
- Increase the distance the vans can travel between refueling, to at least 125 miles per tank of hydrogen.

For more information on this CTE and UPS project, see:
[Fuel Cell Hybrid Electric Delivery Vans for Disadvantaged Communities]


Hydrogen Refueling Station. Photo: Toyota/CTE

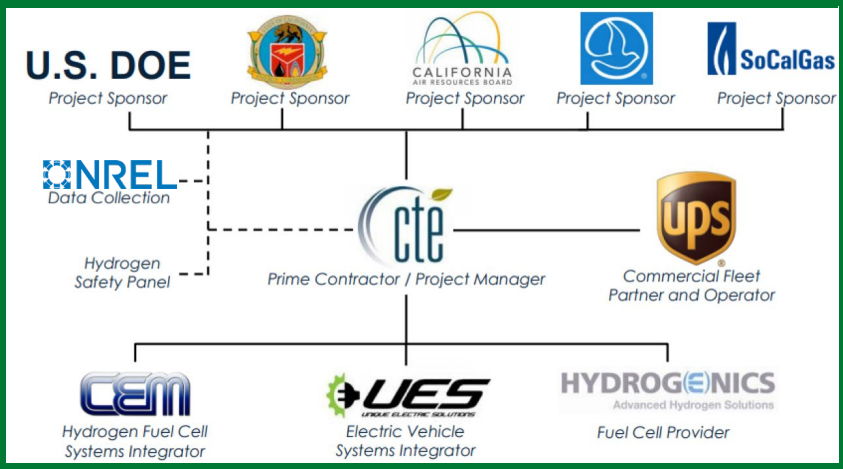
Cost and Benefits

The project has a total budget of $11.3 million, with $3 million in funding from DOE and additional support from UPS, the California Air Resources Board, the Southern California Air Quality Management District, and the California Energy Commission.

When fully operational, the project's 15 delivery vans could reduce diesel fuel use by 56,000 gallons per year, with significant reductions in local air pollutants such as soot (particulate matter), nitrogen oxides, and carbon monoxide. And when the hydrogen is produced from renewable resources, these vans could eliminate more than 600 tons of greenhouse gas emissions annually. If this success spreads and just 1% of California's class-3 to -8 urban work trucks adopt this technology, we'll avoid the pollution from more than 8.8 million gallons of diesel—each year!

The project aims to make adoption of zero-emissions vehicles easier for fleet operators, through the use of conversion kits, which can be far less expensive than purchasing new hydrogen battery hybrid vehicles. Since the vehicle frames and bodies of UPS vans almost always outlast their diesel engines and drivetrains, these conversion kits will allow opera-tors to get as much life as possible from each vehicle—

Project Partners



while still cleaning up the air for the local community. Fleet operators can also benefit from Federal and State credit for deployment of zero-emission vehicles.

Similar Projects

Through the *H2Rescue* program, DOE and the Department of Defense are funding early demonstrations of hydrogen fuel cell/battery hybrid trucks that provide power, heat, and water for disaster response.

DOE also funds cost and performance analyses of fuel cell bus demonstrations at the National Renewable Energy Laboratory to inform RD&D and future deployments.

Photo: Unique Electric Solutions (UES)