

# Total Transportation Services, Inc

## Houston, Texas

### Key Project Information

**Equipment:** Drayage Trucks  
**Project:** New Hydrogen Fuel Cell Trucks  
**Number of Trucks:** 40  
**Project Year:** 2012  
**Funding Agency:** U.S. Department of Energy-  
 National Energy Technology Laboratory and the  
 Office of Energy Efficiency and Renewable Energy



Houston is home to some of the worst air quality in the nation, stakeholders banded together to support the introduction of a zero-emission technology into market to haul freight at the Port of Houston. Made possible by a grant awarded by the U.S. DOE, this project is a 2-year demonstration of hydrogen fuel cell vehicles in real world conditions at the Port of Houston; the project will help Total Transportation Services, Inc. (TTSI) and other operators evaluate the true viability of introducing Class 8 Hydrogen fuel cell - electric hybrid trucks into its Alternative Fuel Vehicle (AFV) fleet. The initial expectation is that the new Hydrogen fuel cell trucks will enable TTSI to eliminate harmful greenhouse gases and cut operating and maintenance costs while delivering performance and meeting the environmental, economic and social needs of the communities they service. Should this demonstration project at the Port of Houston ultimately achieve the expected benefits of the zero-emission Hydrogen fuel cell trucks, TTSI will be incorporating these vehicles into their national operations as soon as practical. Long-term benefits of demonstration of this technology include reduction of pollutant emissions from port drayage operations, one of the largest sources of emissions at any port.

### Estimate Project Benefits:

- CO<sub>2</sub> Reduced- 65,340 tons
- NO<sub>x</sub> Reduced- 22,845 tons
- PM Reduced- 420 tons
- Diesel Savings- 6,000,000 gal
- Fuel Cost Savings- \$27,000,000

The vehicles proposed for this project are the Vision Industries Corporation (Vision) TYRANO™. With over 80% of the truck components manufactured and assembled in the United States, the TYRANO™ is a heavy duty vehicle weighing 19,000 lbs that runs on a hydrogen fuel cell plus plug-in hybrid electric batteries. A hydrogen fuel cell-powered truck has an electric motor powered by Lithium-ion batteries. The batteries are constantly charged by a fuel cell that converts hydrogen gas into electricity. The batteries can also benefit from the use of regenerative braking to incrementally add charge.