



Florida Department of Transportation Research Tracking Cost of Alternately Fueled Buses in Florida – Phase II BDK85 977-38

Many public transit agencies have invested in vehicles that use alternative fuels to reduce greenhouse gases, urban pollution, and fuel costs. Available alternatives include biodiesel, compressed natural gas (CNG), diesel-electric hybrid, electric, hydrogen fuel cell, and others. In addition to the benefits of these new types of vehicles, they also present costs, such as modified maintenance and fueling facilities. But while the vehicles are usually more expensive to purchase than traditional transit vehicles, they can be less expensive to maintain and operate. The Florida Department of Transportation has been interested in collecting and evaluating data on public transit fleets from many years to gain insight into the costs and benefits of alternatively powered vehicles and provide a proper basis for public transit fleets planning to incorporate them.

In this project, University of South Florida researchers built on a previous FDOT-funded project, (*Tracking Costs of Alternately Fueled Buses in Florida*, Project BDK85 977-18), in which the same research group created a framework for data capture and estimated costs of the transition to new vehicles.

The primary goal of this project was to collect data on the performance and costs of alternatively fueled public transit vehicles in Florida and to develop a method of getting agency data reported more consistently in order to keep the Bus Fuels Fleet Evaluation Tool (BuFFeT) cost model current. The researchers were also available to assist the FDOT Public Transit Office in evaluating various local projects related to the performance of alternatively fueled vehicles and strategies for emission reduction and fuel efficiency.

The researchers made numerous contacts with transit agencies to collect data on their alternatively fueled vehicles. Data sought included length of the vehicle, power plant, fuel type, duty cycle, date placed in service, acquisition cost, warranty status, life-to-date mileage, life-



One of Palm Beach Transit's diesel-electric hybrid vehicles in operation. Palm Tran has used these hybrids since 2009.

to-date fuel usage, life-to-date parts costs, and life-to-date labor costs. The researchers offered assistance to agencies in collecting data to facilitate compliance, and nine agencies provided the data on which the project report was based.

Reporting was limited in some cases, especially for paratransit vehicles, but valuable information was nonetheless developed; the nine responding agencies represent a majority of Florida's fixed-route transit fleet. Of over 2,000 vehicles included in the data collection, approximately 9% were alternative fuel vehicles, and all of these were diesel-electric hybrids, leaving comparison of various alternative fuel technologies as a goal for future projects.

The researchers found that alternatively fueled vehicles were more expensive to purchase and required modifications to maintenance and fueling facilities that could represent substantial costs. However, they also found that the alternative vehicles had lower overall costs per mile – including fuel, parts, and maintenance – than traditional vehicles. These findings bode well for Florida's transit fleets as they transition to alternative vehicles with their potential cost and environmental benefits.