



NATIONAL FUEL CELL BUS PROGRAM: OHIO 2 BUS FINAL REPORT

Background

This report provides an overview of the Ohio 2 fuel cell bus demonstrated at the Stark Area Regional Transit Authority (SARTA) under the Federal Transit Administration (FTA) National Fuel Cell Bus Program. The bus was funded by the National Fuel Cell Bus Program (NFCBP), and the project started in 2011. The original fleet demonstration partner was the Chicago Transit Authority; SARTA later stepped in to serve as the fleet partner.

Objectives

The objective of this project was to develop and demonstrate next generation Buy America-compliant fuel cell buses in a large transit fleet environment and operate the bus in cold climate conditions and accelerate the commercialization of this technology. This would further the technological and commercial development of fuel cell buses and provide understanding of their performance in real-world conditions. The demonstration allowed the project partners to demonstrate the bus, obtain real-world performance data, and continue to refine the bus design and maintainability.

Findings and Conclusions

This project examined FCEBs and hydrogen fueling in cold climates to investigate methods and technologies for improving cold weather performance of the bus and hydrogen fueling.

The fuel cell electric bus tested was manufactured by ElDorado National in partnership with FTA, CALSTART, BAE Systems, Ballard Power Systems, and SARTA. The bus is an FTA Buy America-compliant vehicle referred to as the Ohio 2 bus operated by SARTA in the Canton, Ohio, region. The bus was demonstrated by SARTA and operated on local and regional routes. Hydrogen fueling infrastructure was constructed in parallel to this project. SARTA collected operating data throughout the testing period, allowing the project team to evaluate the performance and reliability of the Ohio 2 bus.

The study focused on technologies that could improve the cold weather performance of the bus, including fuel cell waste heat capture, climate-controlled seating, hydrogen fuel-fired heaters, insulation and air curtains, and high-pressure 700-bar hydrogen fueling.

Through this demonstration, SARTA was able to gain valuable experience operating the latest generation of FCEBs and associated infrastructure and to learn more about operating and maintaining the buses as well as planning for an FCEB fleet. This knowledge is important for deploying a larger fleet and eventually completing the transition to a 100% zero-emission fleet. Through the Borrow-a-Bus program, SARTA helped other transit agencies learn more about deploying FCEBs and allowed SARTA to communicate best practices with fleets that are interested in demonstrating or purchasing FCEBs.

Benefits

This study examined the feasibility of implementing these technologies and can guide future technology demonstrations for confronting cold climate bus performance. The demonstration of the Ohio 2 bus is valuable for SARTA and the transit industry, as development of the Ohio 2 bus has helped to advance commercialization of FCEB technology.

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