

# FTA

FEDERAL TRANSIT ADMINISTRATION

## Transit Research & Hydrogen Fuel Cells

Sean Ricketson

Department of Energy  
Annual Merit Review

April 2019



U.S. Department of Transportation  
Federal Transit Administration

# Key Topics in Public Transit Research

- This discussion introduces selected programs supported by the FTA research office that may be of interest to the hydrogen and fuel cell technology industry

# FTA Research – Overview

Legacy  
Programs  
& Projects

Recent  
Congressional  
Legislation



Agency &  
Departmental  
Priorities

# FTA Research – Overview

- **Legacy Programs**
  - National Fuel Cell Bus Program
  - LoNo Program 2013-15
- **Recent Congressional Legislation**
  - Low or No Emission Program 2016-Present
  - LoNo Component Testing
  - Expansion of FTA's Bus Testing Program
- **Agency and Departmental Priorities**
  - Safety, Innovation, Efficiency

# Fuel Cell Bus Program

- In 2005 Congress created FTA's National Fuel Cell Bus Program, signed by President Bush, to advance the commercialization of fuel cell buses
- Funded for 7 years - 2006-2012 ~ \$13 million per year, ~\$90 million total



# Fuel Cell Bus Program 2019

- **All funding obligated**
- **5+ remaining active projects, all involving bus operations support, several with extensions**
  - 1. New Flyer 60' FC Bus
  - 2. Two FC Buses in Ohio
  - 3. Battery Dominant FC Bus
  - 4. FC Bus in Orange County, CA
  - 5. AC Transit FC Bus Fleet Support
  - Plus support to National Renewable Energy Laboratory (NREL) for evaluations

# Fuel Cell Bus Program 2019

Final program activity is  
in Ohio and California

- Stark Area  
Regional Transit  
Authority

- AC Transit
- OCTA
- Sunline









# NREL Evaluations

- FTA, with support from DoE, funds bus evaluations by the National Renewable Energy Lab
- NREL provides evaluations of real-world technology bus performance
- NREL gathers data on a variety of metrics of both new technology buses and conventional technology as baseline
  - Maintenance costs
  - Operating costs
  - Reliability (Miles Between Roadcalls)
- Consistency over time and across projects ensures data confidence and comparability

# LoNo 2013-2015

- Low or No Emission Vehicle Deployment Program
  - Funded from the FTA Research Budget (Section 5312) for the purchase of clean transit vehicles
  - 17 Projects, \$77.5M, 111 buses, mostly battery-electrics
  - Includes 13 Fuel Cell Buses at SARTA & Sunline
  - The performance of the SARTA buses is being evaluated by NREL

# Low-No 2016 to Present

- Low or No Emission Vehicle Deployment Program
  - Funded from FTA’s Bus Capital Program (Section 5339) until 2020
  - So far, three years, 2016-18:
    - 123 projects, \$195M
    - Including 2 fuel cell buses pending delivery, one at SARTA, and one at Champaign-Urbana
  - <https://www.transit.dot.gov/funding/grants/lowno>

# LoNo CAP

- Low and No Emission Component Assessment Program (LoNo-CAP)
- Up to \$3M/year, total
- Auburn University and Ohio State
- FTA pays 50% of the cost for the testing of bus components including batteries, fuel cells, power management
  - Tests maintainability, reliability, performance, structural integrity, efficiency, and noise
- Voluntary, no passing or failing scores

# Bus Testing

- FTA's Model Bus Testing Program (Altoona Testing) tests new transit bus models for
  - safety
  - structural integrity and durability
  - reliability
  - performance (including brakes)
  - maintainability
  - noise
  - fuel economy and
  - emissions

# Bus Testing cont'd

- To be eligible for purchase a transit bus using FTA funds, buses must receive a passing score
- Until the FAST Act, bus testing occurred at Penn State only (Altoona Testing)
- Now, testing is being expanded to include Ohio State and Auburn Universities
- This presents a challenge to ensure all three facilities are identical in capability and procedures

# Bus Testing & LoNo-CAP

- As a result of the need to coordinate three centers, as well as the ongoing work under LoNo-CAP, FTA has the opportunity to support innovative research effort going forward focused on facilitating bus and component testing and research



# Thanks!

Sean Ricketson, Office of Research, Demonstration  
and Innovation

Federal Transit Administration

[sean.ricketson@dot.gov](mailto:sean.ricketson@dot.gov)

202-366-6678