Metro Transit Electric Bus Overview

Electric buses for Metro Transit

Going greener, with power that’s cleaner.

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Why Metro Transit?

• Metro Transit is a national leader in clean-fuel technologies. Since 2001, Metro Transit has a track record at partnering with bus manufacturers to advance bus electrification to the benefit of the national transit industry.
  • Biodiesel
    • 2001: Started testing
    • 2005: B2 (2%)
    • 2006: B5 (5%)
    • 2007: B10 (10%)
    • 2018: B20 (20%)
  • Hybrid-electric buses
  • “Super” hybrid pioneers
Policy and Community Benefits

– Supports 2040 Transportation Policy Plan and THRIVE MSP 2040 goals

– Reduces harmful emissions along routes
  • Criteria pollutants (VOC’s, CO, NOₓ, PM₁₀/PM₂.₅)
  • Greenhouse Gases (CO₂, CH₄, N₂O)
  • 16 ton annual CO₂ emissions reduction globally per bus when switching from diesel to electric, and 58 tons at the tailpipe

– Equity & Public Health
  • Reduces exposure to emissions released by diesel powered buses.
  • Affords greater Socioeconomic and Environmental Justice to ACP’s and ACP50’s than diesel buses.
  • Reduces exposure to heart & lung disease causing pollutants
Environmental Justice & ACP50’s

- Rapid bus line (In service)
- Rapid bus line (In development)
- Rapid bus line (Planned)
- Existing and Planned METRO System
- Northstar Commuter Rail
- Multimodal Transportation Hub
- ACP50 (Area of Concentrated Poverty; >50% People of Color)
Arterial Bus Rapid Transit – Upcoming Projects
Operational Benefits

– Anticipated longer service life
– Lower operations & maintenance costs due to:
  • Better reliability, fewer moving parts
  • Fuel savings
– Reduces bus garage HVAC costs
  • Fewer diesel engines idling in garages reduces expensive winter heating & ventilation needs
– Quiet, smooth propulsion providing a ride experience approaching that of an LRV (depending on the manufacturer)
Technology Status

- Propulsion: technology is proven and improving
  - Builds on our experience with 133 hybrid-electric buses in-service today

- Battery: technology is rapidly advancing
  - Current vehicle range: 100-170 miles per charge on average
  - Predicted vehicle range 2020: 200-500 miles per charge on average

- Charging Protocol: Combination of On-Route and In-Garage charging, Standardization is anticipated to be finalized in 2017

- Winter Heating (Northern Climates): small diesel heaters needed for cold winter days to preserve range

- Service: As range increases, more existing route blocks become suitable for electric buses
ROI Info

- **Current 40-foot electric bus price range:** $700,000-$800,000
- **Standard 40-foot diesel cost:** $450,000
- **Current 60-foot electric bus price range:** $1.2 m - $1.3 m
- **Current 60-foot diesel cost:** $800,000
- Based on a 16-year life cycle cost analysis including a premium for electric buses:
  - **Fuel cost savings**
  - **Maintenance cost savings**
  = 12-14 year simple payback
- Factoring in $32 per metric ton for the social cost of carbon* further improves the ROI
- This ROI only gets better as technology improves

*Metro Transit Social Cost of Carbon Data
Funding Opportunities & Next Steps

2017
- Supplemental funding opportunities: 2017 FTA LoNo & Met Council Thrive Grant awards
- Continue development of partnerships and support
- Issue RFP for Electric Buses (Including options for additional buses)

2018
- Metro Transit begins to take delivery of initial fleet of electric buses
- VW Settlement monies available for additional battery electric bus purchases

2019
- Metro Transit deploys electric buses into service operation on C Line
- Refine RFP for future electric bus purchases
Questions?