Electric Bus Update
Presentation to the Metropolitan Council
March 10, 2021
Overview

• Electric Bus Pilot Update
• 60-foot Bus Procurement
• Advancing the Electric Bus Program
Electric Bus Pilot Background

• 2017: Awarded Low / No Emissions grant of $1.75 M
• 2018: 8 electric and 6 diesel buses procured for C Line service
• February 2019: First METRO C Line electric bus delivered
• April 2019: 4 of 8 depot chargers delivered
• May 2019: First of two on route chargers delivered
• June 2019: METRO C Line Opens
Electric Bus Pilot Status

• No tailpipe propulsion emissions (some emissions from auxiliary diesel heater)
• Customers like and want electric buses
• Smoother, quieter ride
• When on route chargers work, range performance meets pilot program expectations (120-140+ miles based on weather)
• C Line provides a good opportunity for experience and evaluation
  – Range
  – Reliability
  – Cost
Electric Bus Pilot Range and Reliability

Unable to implement service plan based on targeted range

- 631 service days (June 2019 through February 2021)
- Both depot and online chargers available for 152 of the 631 days
- Diesel buses available on average 90% of days while electric buses available on average 72% of days
- 10 days with all electric buses and all chargers available
Electric Bus Pilot Range and Reliability

Alternative service plan required 5 more diesel buses to cover lost range

- Electric bus was 60% of planned C Line fleet and represented 24% of total miles.
- 71,000 average miles for diesel buses vs 31,000 average miles for electric bus
- Electric bus pilot program has been suspended 3 times, including March 2, 2021
- Today, all chargers are shut down and planned for replacement
60’ Electric Bus Cost Estimates

• Added upfront capital costs for 60’ electric bus and infrastructure
  – Per bus cost ~$570,000 more than diesel
  – Additional buses due to range limits ~$200,000
  – Depot charger cost per bus ~$125,000
  – On route charger cost per bus ~$100,000

  **Total** + $995,000 estimated incremental cost per 60’ electric bus

• Cost of operations and lifecycle maintenance
  – Fuel cost
  – Estimated midlife battery replacement of $300 K
  – Bus preventative maintenance
  – Bus repair maintenance
  – Charger preventative maintenance
  – Charger repair maintenance

• Not yet able to predict lifecycle operations and maintenance costs
Procurements 2019 - 2022

Receive - Test - Evaluate - Decide

Goal: 100% Electric Bus Delivery
60’ Bus Procurement Overview

Business item 2021-53 authorizes a base order of 143 sixty-foot diesel buses with options for 29 additional buses in a total amount not to exceed $121,997,561

- METRO Orange Line: 14 buses
- METRO D Line 18 buses (in addition to 8 already purchased)
- METRO B Line: 20 buses
- Commuter express route replacements: 91 buses
Applying Experience to 60’ Bus Procurement

• 60’ electric bus is new technology that poses range, reliability, and cost challenges, especially for longer routes

• Proposed 60’ bus procurement, given the route types, is not the best next step for electric bus program growth

• What offers the best value for our electric bus dollar?
Advancing the Electric Bus Program

- New Minneapolis Bus Garage intentionally designed to accommodate electric buses in the future
- Partnership with Xcel in electric vehicle proposal
- FTA Low / No Emissions Grant opportunity
- Forthcoming master contracts for future fleet electrification work
- Expand experience to 40’ electric buses
Next Steps

• Bring forward fleet electrification master contract business item

• Plan regular updates to Metropolitan Council

• Launch webpage to consolidate information and updates
  – www.metrotransit.org/electric-buses