WMATA Zero Emission Bus Update

MWCOG Regional Public Transportation Subcommittee

July 28, 2020

Topics to cover

- Background/Context
- WMATA efforts underway
- Groundwork/Regional Collaboration
- Next Steps

Context

- Many major metropolitan areas – including ours – are setting zero-emission transit goals and making investments in zero-emission buses.
  - ZEBs reduce local air pollution, provide a quieter, smoother ride and support a more livable and prosperous region.

- Metro is taking steps to make Metrobus service more clean, efficient and effective by preparing for zero-emission bus operations.
  - Washington Area Bus Transformation Project
  - Metro's 2025 Energy Action Plan

Metro is creating a foundation for greening the fleet.

- **Opportunities Analysis** – Considered different fuel types and manufacturers, local conditions, grid infrastructure constraints, regional policies & rate structures to design a test & evaluation program.
- **Renewable Natural Gas** – Issue procurement to evaluate local market readiness for renewable natural gas (RNG) supply for existing compressed natural gas (CNG) buses.
- **Electric Bus Test & Evaluation** – Launch a two-year test and evaluation to ensure that different brands of buses and charging technologies can work interchangeably.
- **Fleet Planning** – Initiate fleet plan revision to account for zero-emission bus technology deployment advances.
- **Zero-Emission Ready Facilities** – Continue incorporating zero-emission energy technology considerations into planned infrastructure projects and identify electric utility investment needed for wider electrification.
  - Metro is rebuilding Northern and Bladensburg bus garages to be “electric bus ready.”
  - Metro is also identifying potential on-route fueling locations.

Electric Bus Test & Evaluation

- **Goals**
  - Develop strategy around multi-manufacturer electric bus test and evaluation program
  - Assess electric bus *and* charging technology for inter-operability and scalability
  - Evaluate electric grid infrastructure constraints and rate structure considerations
  - Focus on developing in-house capabilities not tied to a specific bus manufacturer
  - Leverage existing skills from operating Metrorail power systems
- **Outline**
  - Plan to test and evaluate up to 14 electric buses and required chargers from a variety of manufacturers
    - FTA Low-No Grant funds for two-60ft buses, overhead depot chargers and facility improvements
    - Separate procurement for up to an additional 12 - 40ft buses
  - Operate from Shepherd Parkway Garage
- **Status/Timeline**
  - Late CY20 initiate procurement and site design activities

Metro cannot achieve transition to ZEB alone

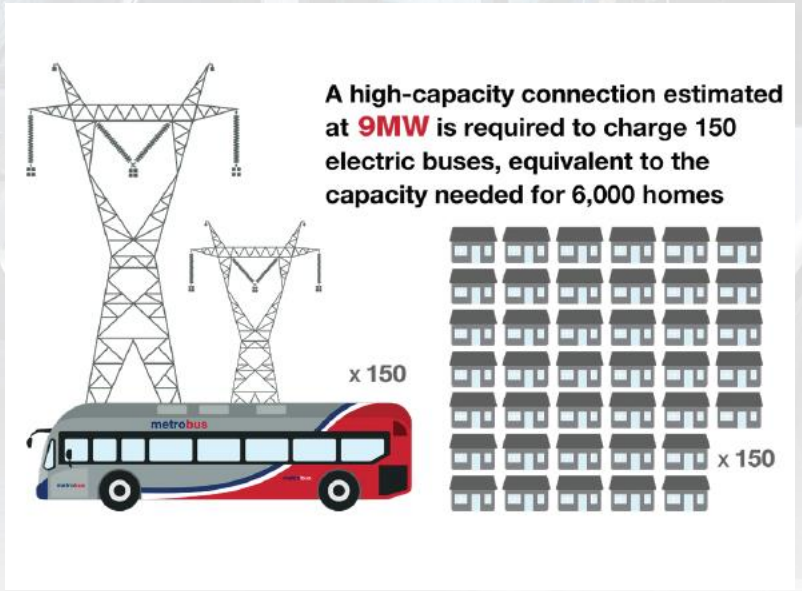
Prerequisites for a successful transition to a zero-emission bus fleet:

1. **Energy Infrastructure Investments** - Identify, fund and build electric utility infrastructure required to operate service
2. **Policies & Rate Structures** - Establish regional policies and electricity rate structures e.g. Hawaii and British Columbia
3. **Funding for Zero-Emission Buses & Facility Conversion** - Increase funding to replace the existing fleet with cleaner buses

➢ The transition to zero-emission bus service will require significant regional investment and coordination.

1. Energy Infrastructure Investments

- Electrical power supply and charging infrastructure required to run zero emission bus fleet
- Scale, timing, location, and cost of required regional infrastructure investment haven't been identified yet
- Region must prioritize the investments needed and identify funding



➢ Need to identify, fund and build utility infrastructure required to operate service

Example: Metro Garages range from 100-250 buses. Zero emission bus fleet will require installation of sizeable infrastructure capable of carrying 9MW of power

2. Policies & Rate Structures

- New policies must be developed in parallel across jurisdictions to address: rate structures, new frameworks for shared charging infrastructure, utility investment requirements, and funding responsibilities
  - Collaboration between industries & institutions
  - Must consider risks, uncertainties, and evolving technology

➢ Need to establish regional policies & energy rate structures

3. Funding for Zero-Emission Buses & Facility Conversion

- Zero-emission technologies have significantly higher upfront capital cost but potential to reduce O&M cost
- Conversion of existing facilities needed to support new fuel technologies
- Requires a multi-year plan to manage bus supply and long-term maintenance challenges
  - Zero emission bus manufacturing capacity

➢ Need to increase funding to replace the existing fleet with cleaner buses and make necessary infrastructure investments

Regional coordination is key

Prerequisites for success:

1. **Energy Infrastructure Investments**
2. **Policies & Rate Structures**
3. **Funding for Zero-Emission Buses & Facility Conversion**

Metro seeks regional cooperation and shared commitment to:

- Engage in zero emission policy working groups
- Identify infrastructure and vehicle needs, costs and funding sources
- Work to establish supportive rate structures
- Evaluate and identify potential for shared charging facilities and on-route locations