



Zero Emission Bus Transition Plan

House Transportation Committee

March 8, 2022

2021 Minnesota Statutes

473.3927 ZERO-EMISSION AND ELECTRIC TRANSIT VEHICLES.

Subdivision 1. **Transition plan required.** (a) The council must develop and maintain a zero-emission and electric transit vehicle transition plan.

(b) The council must complete the initial plan by February 15, 2022, and revise the plan at least once every five years.

Subd. 2. **Plan development.** At a minimum, the plan must:

- (1) establish implementation policies and guidance;
- (2) set transition milestones or performance measures, or both, which may include vehicle procurement goals over the transition period;
- (3) identify barriers, constraints, and risks, and determine objectives and strategies to address the issues identified;
- (4) consider findings and best practices from other transit agencies;
- (5) analyze zero-emission and electric transit vehicle technology impacts, including cold weather operation and emerging technologies;
- (6) consider opportunities to prioritize the deployment of zero-emissions vehicles in areas with poor air quality;
- (7) provide detailed estimates of implementation costs; and
- (8) summarize updates to the plan from the most recent version.

Subd. 3. **Copy to legislature.** Upon completion or revision of the plan, the council must provide a copy to the chairs, ranking minority members, and staff of the legislative committees with jurisdiction over transportation policy and finance.

Transition Milestones & Vehicle Procurements

- **Vehicle procurement** – Measure in percent of purchases over time horizon
 - **Target:** Between 2022 and 2027, at least 20% of Metro Transit 40' bus replacement purchases will be electric.
 - **Projection:** Between 2028 and 2032, the percentage of Metro Transit bus procurements that are zero emission will be driven by key performance indicators and available budgetary resources.



Performance Measures

Fleet Mileage – how many miles vehicles are driven annually

Bus Availability - % of calendar year ready for service

Infrastructure Availability - % of calendar year infrastructure available for use

Bus Reliability – mean distance between road calls

Charger Reliability – warranty ticket volume

Cost/mile – energy cost per mile driven

Environmental Impact – emissions reduction or cost of carbon

Equity and Environmental Justice – miles driven through high priority EEJ areas

Guiding Principles & Supporting Actions



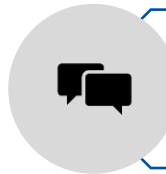
Technical Viability

Strive to achieve a level of service where ZEBs and diesel buses are referred to as just "buses" rather than by their propulsion type



Technical Viability

Partner with Xcel Energy to assess and upgrade electrical infrastructure for bus operations and maintenance facilities



Equity & Environmental Justice

Implement and prioritize ZEB service reflecting transparent fact-driven community engagement and education



Equity & Environmental Justice

Target ZEB investment in communities where air pollution, racial, and socioeconomic disparities are greatest while also balancing the challenges of new technology



Fiscal Impact

Deploy ZEBs in a fiscally efficient manner in order to maximize use of vehicles and infrastructure



Fiscal Impact

Operate and invest within fiscal means by planning for and optimizing capital and operating expenditures while pursuing new funding streams


Methodology for Establishing Policies and Guidance

- 4-Step sequential filtering of service schedules

1. Garage Suitability & Xcel Power Analysis



2. Sufficient Vehicle Battery Capacity Including in Cold Weather



3. Equity Prioritization



4. Fiscal Efficiency Prioritization

Barriers, Constraints, Risks

- Electrical Grid Capacity
 - Increasing and competing demands of power from the grid
- Large infrastructure projects can adversely impact garage operations
- Manufacturer and supply chain capacity to meet increasing demand
- Manufacturer ability to meet performance necessary to deliver reliable service
- Speed of innovation
 - Technology obsolescence and minimum life requirements

Objectives and Strategies

- Evaluate multiple charger and bus manufacturers in smaller orders before proceeding to larger orders
- Identify learning objectives for each project
- Maximum concurrent work at two garages to manage disruption to operations
- Ensure project timelines align with Xcel Energy timelines for planning, engineering, construction of power supply
- Pair ZEB projects with development of other areas of the business including software tools, workforce development, etc.

Funding Opportunities & Current Activities

- Federal Funding Opportunities
 - \$3.2M in Governor’s Supplemental Budget Request for electric buses could be used for local match to federal grants
 - FFY22 Low-No / Bus & Bus Facilities grant opportunities opened March 4, 2022
- Current Activities
 - Purchase of (8) 40’ electric buses and charging system
 - FFY21 Low-No grant awarded for \$4.2M received towards \$10.8M project