

S T A F F R E P O R T

SUBJECT: Zero-Emission Bus Master Transition Plan

FROM: Toan Tran, Director of Operations and Innovation

DATE: January 24, 2022

Action Requested

Staff requests the Project & Services Committee recommend the Board of Directors approve Resolution 03-2022, authorizing staff to proceed with the development of the Zero-Emission Bus (ZEB) Rollout Plan using the all fuel cell electric bus transition scenario.

Background

Under the California Air Resources Board’s (CARB) Innovative Clean Transit Rule, LAVTA’s new bus purchases are required to be a minimum of 25% ZEBs beginning in 2026 and ramping up to 100% in 2029, with the goal of transitioning the state’s entire transit fleet to 100% ZEBs by 2040.

LAVTA has been working with the Center for Transportation and the Environment (CTE) to perform a ZEB study. The goal of the study is to develop a board-approved transition plan outlining the capital projects required to fully electrify the fleet in accordance with the CARB Innovative Clean Transit Rule and LAVTA’s local priorities by July 1, 2023.

Discussion

The study analyzed several different zero-emission fleet scenarios and the resources and costs required, and compared them to a baseline. The scenarios were:

- Battery electric bus (BEB) only;
- Battery electric and fuel cell electric mixed fleet;
- Fuel cell electric bus (FCEB) only,

In each scenario, CTE assessed the assumptions and requirements for LAVTA’s routes, service and operations, fleet replacement plan timeline, fuel and charging, facilities and infrastructure, maintenance, associated capital costs, and total cost of ownership.

Staff and CTE provided in-depth presentation on the findings of the study and highlighted the advantages and disadvantages of each scenario at the September 2021 Board of Directors meeting and at the December 2021 Project & Services Committee meeting. A copy of the ZEB Transition Master Plan was also provided to the board for review.

As discussed at the board and committee meetings, each scenario presents its own set up benefits and challenges. However, in evaluating the long-term financial and operational implications, the FCEB scenario offers the greatest balance among the three options.

Total cost of ownership is not the only thing that matters, operational payoff is also very important to consider. Some of these operational factors include:

- Operating range – FCEBs offer comparable range to the existing hybrid diesel buses, which will provide greater flexibility in deployment than BEBs.
- Fueling time – Fueling time for BEBs is much longer than for FCEBs.
- Resiliency – FCEBs is more resilient following a major disaster. If there's a power outage, a BEB fleet would be non-operational while a FCEB fleet will be ready for service once the backup power generator is up and running.
- Reliability and availability – Based on a recent study conducted by a neighboring agency, the data shows that FCEBs have a higher reliability and availability rates than BEB

Additionally, the general expectation is that hydrogen fuel prices will decrease over the next decade with more suppliers entering the market and more hydrogen production plants being built. For these reasons, staff recommends proceeding with the FCEB scenario for the development of the ZEB Rollout Plan.

Recommendation

Staff requests the Project & Services Committee recommend the Board of Directors approve Resolution 03-2022, authorizing staff to proceed with the development of the Zero-Emission Bus Rollout Plan using the all fuel cell electric bus transition scenario.

Attachments:

1. Resolution 03-2022 ZEB Transition Path

RESOLUTION NO. 03-2022

**A RESOLUTION OF THE BOARD OF DIRECTORS
OF THE LIVERMORE AMADOR VALLEY TRANSIT AUTHORITY
AUTHORIZING STAFF TO PROCEED WITH THE DEVELOPMENT OF THE
ZERO-EMISSION BUS (ZEB) ROLLOUT PLAN USING THE ALL FUEL CELL
ELECTRIC BUS TRANSITION SCENARIO**

WHEREAS, Under the California Air Resources Board's (CARB) Innovative Clean Transit Rule, LAVTA's new bus purchases are required to be a minimum of 25% ZEBs beginning in 2026 and ramping up to 100% in 2029, with the goal of transitioning the state's entire transit fleet to 100% ZEBs by 2040; and

WHEREAS, LAVTA has been working with the Center for Transportation and the Environment (CTE) to perform a ZEB study; and

WHEREAS, the goal of the study is to develop a board-approved transition plan outlining the capital projects required to fully electrify the fleet in accordance with the CARB Innovative Clean Transit Rule and LAVTA's local priorities by July 1, 2023; and

WHEREAS, the study analyzed several different zero-emission fleet scenarios and the resources and costs required, and compared them to a baseline; and

WHEREAS, the scenarios were: battery electric bus (BEB) only, fuel cell electric bus (FCEB) only, and BEB and FCEB mixed fleet; and

WHEREAS, in evaluating the long-term financial and operational implications, the FCEB scenario offers the greatest balance among the three options; and

WHEREAS, FCEBs provide greater flexibility in deployment due to the longer operating range, FCEBs have much shorter fueling time, FCEBs is more resilient following a major disaster, FCEBs have higher reliability and availability rate, and the general expectation is that hydrogen fuel prices will decrease over the next decade with more suppliers entering the market and more hydrogen production plants being built

NOW, THEREFORE, BE IT RESOLVED, by the Board of Directors of the Livermore Amador Valley Transit Authority hereby authorizes staff to proceed with the development of the Zero-Emission Bus Rollout Plan using the all fuel cell electric bus transition scenario.

PASSED AND ADOPTED this 7th day of February 2022.

Karla Brown, Chair

ATTEST:

Michael Tree, Executive Director

APPROVED AS TO FORM:

Michael Conneran, Legal Counsel