

Regional Zero-Emission Transit Transition Strategy Update

Metropolitan Transportation Commission
Programming and Allocations Committee
October 9, 2024



Transition Strategy Document Overview

1. Why did MTC and Operators Undertake this Study?
2. Key Findings of the Study
3. Recommendations and Next Steps



1. Why Did MTC and Operators Undertake this Study?

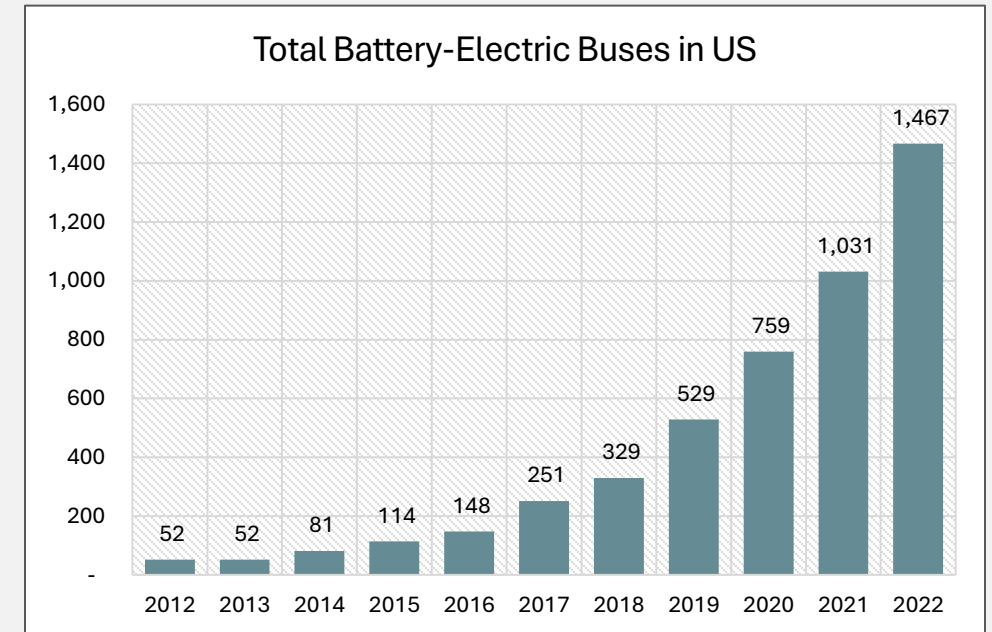


1. Why Undertake this Study? CARB Mandates

- California Air Resources Board (CARB) Innovative Clean Transit rule requires transit agencies to transition to 100% zero-emission bus fleets by 2040.
 - Purchase requirements underway for large operators
 - Operators have submitted Rollout Plans to CARB
 - Majority of operators have initial ZEB deployments
- CARB Commercial Harbor Craft Regulation requires lower-emission ferry fleets.
- While the region's agencies are working to meet these mandates, there are challenges and risks to overcome for a full transition.
- Agencies can collaborate in identified areas to more easily facilitate the ZEV transition.

1. Why Undertake this Study? National Market Trends

- ZEB market share is growing nationally, with high demand
- Bus manufacturers facing supply chain issues, labor shortages, and other challenges
- Result is rising bus prices and delayed deliveries
- MTC interested in understanding the total regional cost of meeting CARB mandates, and the funding shortfall



Source: National Transit Database. Note that FCEBs are not included; they represented 6% of the BEB figure in 2022.

2. Key Findings of the Study



2. Key Findings of the Study: Transition Costs

Estimated costs include:

- **Zero Emission Vehicles** that are replacements of current non-zero emission vehicles.
- **Midlife Overhaul Costs** to battery electric buses
- **Equipment Costs** to support vehicles such as electric charger cabinets and dispensers, and hydrogen fuel tanks and dispensers
- **Facility Costs** including upgrades to bus facilities to support ZEVs, such as new transformers and reconfigurations.

2. Key Findings of the Study: Transition Costs

Summary of the cost analysis:

Item	Bus-related costs (\$M)	Ferry-related costs (\$M)	Total costs (\$M)
ZEV Purchases	\$4,438	\$408	\$4,842
Midlife Overhauls	\$734	N/A	\$734
Equipment	\$276	\$56	\$332
Facility*	ZEV-Specific: \$266 Total: \$1,152	\$564	ZEV-Specific: \$790 Total: \$1,716
Total Capital Costs	\$5,714 or \$6,600 <i>Depending on preferred facility costs</i>	\$1,028	\$6,698 or \$7,624 <i>Depending on preferred facility costs</i>

**ZEV-Specific costs include the cost if the entire facility is being built due to zero-emission compliance or for investment in power upgrades, reconfiguration, charging support equipment and maintenance bays for ZEVs. Not all agencies were able to distinguish between these costs, which is the reason for the large disparity between the ZEV-specific total cost for agencies and the general facility total cost.*

2. Key Findings of the Study: Transition Costs

With current funding projected to be approximately \$2.7B, this leaves a funding **shortfall of between \$4.0B and \$4.9B** across the region.

- This shows a need for increased funding, such as what the Bipartisan Infrastructure Law provided.
- Part of the gap may be filled by discretionary/competitive, application-based funding sources, which cannot be predicted reliably.

2. Key Findings of the Study: Significant Identified Risks

Schedule risks:

- Risk of facility upgrade delays
- Risk of power upgrade delays or insufficient grid power on required timeframe
- Risk of vehicle delivery delays

Budgetary risks:

- Funding levels are insufficient with current projections (gap in the billions of dollars)
- Capital and operating costs may grow beyond current projections



2. Key Findings of the Study: Best Practices

- **Technology choice:** collaboration to inform decisions on Battery Electric Buses vs Hydrogen Fuel Cell Buses
- **Shared on-route charging:** design guidelines and coordination on technology selection for locations used by multiple transit agencies
- **Collaboration with PG&E** early in the process to secure required infrastructure upgrades and navigate incentive programs

2. Key Findings of the Study: Best Practices

- Agencies can set up a regional **hydrogen fuel purchasing collaborative** to reduce the cost of hydrogen fuel.
- Agencies can partner with ZEB U at AC Transit for **workforce training** to support the ZEV transition.
- Agencies can agree on common bus specifications to facilitate **joint procurement** to reduce bus and equipment purchase costs.

2. Key Findings of the Study: Best Practices

- MTC should provide a **forum on zero-emission knowledge sharing and best practices**, Initial topics for collaboration should include:
 - **A forum for transit agencies on zero-emission paratransit**, as these fleets could be subject to CARB ICT requirements starting as early as 2026.
 - **Workforce development** best practices and knowledge sharing across agencies.
 - **Emergency response** topics such as fire safety requirements and special ICE fleets for resiliency needs.

3. Recommendations and Next Steps



3. Recommendations and Next Steps

- Continued collaboration at regional level -- through **provision of a forum**, convened and supported by MTC, **focusing on zero-emission knowledge sharing and best practices.**
- **Coordinated advocacy efforts** -- strengthen partnerships with transit allies in state and at national level to address transition in a rational and strategic manner given risks and funding shortfalls.
- Set **clear funding and grant strategies** for federal, state, and other sources, including non-traditional sources available for zero-emission, to advance agencies'/sub-regional partnerships consistent with FTA guidance and regional coordination efforts.
- Identify further areas for detailed study.

Questions

