



ZERO-EMISSION BUS (ZEB) STRATEGY UPDATE

**Executive Committee
September 6, 2024**



INNOVATIVE CLEAN TRANSPORTATION (ICT) REGULATIONS

- **California Air Resources Board (CARB) adopted ICT regulations in 2018**
- **Two main requirements impacted Omnitrans:**
 1. ZEB Transition
 2. ZEB Rollout Plan
- **Ultimate impact is 100% of fleet to be ZEB by 2040**

ZEB Transition Requirement

Starting Year	Min. ZEB Purchase Share
2023	25%
2026	50%
2029	100%

OMNITRANS ZEB ROLLOUT PLAN

OMNITRANS ZERO-EMISSION BUS ROLLOUT PLAN



WSP USA Inc.
862 E. Hospitality Lane, Suite 250
San Bernardino, CA 92408
wsp.com

ver 8, 2020

- **ZEB Rollout Plan approved by Omnitrans Board in March 2020**
 - Submitted and accepted by CARB
 - Minor updates for grants submissions
- **Plan deliberately focused on “ZEBs” instead of defining Battery Electric or Fuel Cell Buses to maximize flexibility**

ZEB ROLLOUT PLAN FUTURE BUS PURCHASES

Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34 – FY36	FY37	FY38	FY39	FY40
CNG	18	10	0	8	0	0	0	0	0	0	0	0	0	0
ZEB	22	10	15	8	15	13	0	28	24	0	22	10	33	26
%ZEB	15%	21%	30%	35%	43%	51%	51%	65%	79%	79%	79%	79%	89%	100%

CNG / ZEB: Number of buses purchased by fuel type each year

% ZEB: Percent of fleet that is zero emissions at end of fiscal year



BATTERY ELECTRIC BUSES SO FAR

Accomplished

- **4 Battery Electric Buses in service since 2021**
 - 9 plug-in bus chargers installed
- **18 Battery Electric Buses ordered for WVC**
 - 2 delivered

Learned

- **Reliable Range**
 - up to 150 miles
 - Meet <25% of Omnitrans daily bus pullouts
- **Lower Maintenance Costs: (Parts costs only)**
 - \$0.25 per mile, about half the cost of CNG buses

WHAT WE KNOW SO FAR: BATTERY ELECTRIC BUSES

- **Battery Electric Buses will not fully meet operational needs**
 - Possible Mitigations:
 - Significant on street charging infrastructure implemented
 - *Investment makes sense on BRTs with dedicated fleets and off-street dedicated end-of-route stops for charging*
 - Bus replacement in excess of one-to-one
- **Significant SCE coordination needed**

FUEL CELL BUSES SO FAR

Accomplished

- **4 Fuel Cell Buses delivered**
 - Revenue service expected to start in October
- **Awarded Project for Portable Hydrogen Fueling Station**

Learned

- **Infrastructure market is still emerging**
 - Companies interested in large projects
- **Hydrogen Fuel costs are high, variable but declining**
 - Currently prices are 2X to 4X CNG price

WHAT WE KNOW SO FAR: FUEL CELL BUSES

- **Fuel cell buses will be needed to meet daily range requirements and meet ICT regulations**
- **Partnership & technical experience on infrastructure and fueling will be critical to success**
- **Omnitrans focused on fuel dispensing infrastructure, not production. Production should be regional and coordinated for economies of scale**

MIXED FLEET OUTCOMES

Likely outcome remains a mixed ZEB fleet:

- **No clear superior technology for Omnitrans or for the industry**
- **Different technologies support different route types**
- **Diversification reduces risks**
 - Power outages or hydrogen fuel shortages would not fully shutdown transit service

UPCOMING PROJECTS

**Award 18 CNG Bus Purchase
To Board by End of Year**



**Complete A&E to
Electrify sbX Greenline
Expected Mid-2025**



**Install HySpenser-1 Portable
Hydrogen Fuel Dispenser
Expected Early 2025**

**Award Contract for Conceptual Design,
Site Selection, NEPA for Land Purchase
for Hydrogen Fuel Dispensing
To Board by End of Year**



**Followed by Fuel Dispensing
INfrastructure**

ARCHES 1,000 BUS INITIATIVE

ARCHES, U.S. DOE ink \$12.6 billion agreement to build the California Hydrogen Hub

The deployment of more than 1,000 fuel cell buses across 13 transit agencies in the state is included in the project with the effort being led by the Center for Transportation and the Environment.



- **Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES) entered into \$12.6 billion agreement with US DOE**
- **Includes 1,000 bus initiative with 13 public transit agency partners including Omnitrans**
 - Provides funding towards Fuel Dispensing Infrastructure, Maintenance Upgrades, Subsidy for up to 86 fuel cell bus
 - Total grant potential for Omnitrans approximately \$30 million
- **Currently reviewing subrecipient agreement. Will need to develop implementation plan.**

CONCLUSION

- **Mixed fleet provides flexibility, diversification and ability to match technology with need**
- **OmniTrans has been successful getting grants to advance both battery and fuel cell technology**
- **Continuing to advance both technologies until or unless there is a clear choice in order to meet ICT**
- **Purchasing additional CNG buses while able to for cost effectiveness and until infrastructure needs can be met**



THANK YOU