



# ZERO-EMISSION BUS ROLLOUT PLAN



**Basin Transit**  
62405 Verbena Road  
Joshua Tree, CA 92252  
Basin-transit.com

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## Section A: Transit Agency Information

Morongo Basin Transit Authority (Basin Transit) is a joint powers authority (JPA) between the Town of Yucca Valley, the City of Twentynine Palms, and San Bernardino County.

**1. Transit Agency's Name (required)**

Morongo Basin Transit Authority (Basin Transit)

**2. Mailing address (number, street, city, county, zip code) (optional)**

Basin Transit, 62405 Verbena Road, Joshua Tree, CA 92252

**3. Name of transit agency's air district(s) (optional)**

Basin Transit is part of Mojave Desert Air Quality Management District (MDAQMD).

**4. Total number of buses in Vehicles Operated in Maximum Service (optional)**

Peak Vehicles: 13

**5. Population of rural area (optional)**

Population: 70,888

**6. Contact information of General Manager (optional)**

Cheri Holsclaw, General Manager  
760-366-2986  
cheri@basin-transit.com

**7. Is your transit agency part of a Joint Group (13 CCR § 2023.1(d)(3) (required)**

No. Basin Transit is not part of a Joint Zero-Emission Bus Group.

**8. Service Area (optional)**

Basin Transit operates public transit services in 10 desert communities including Yucca Valley, Twentynine Palms, Joshua Tree, and unincorporated areas within San Bernardino County, extending south to Palm Springs in neighboring Riverside County. Much of the Morongo Basin's residential and commercial development is along the State Route 62 corridor between Yucca Valley in the west and Twentynine Palms in the east. This development parallels the northern border of Joshua Tree National Park and is largely the service area for Basin Transit routes. Two regional, long-distance routes, 12 and 15, connect the Morongo Basin to Palm Springs.

**9. Schedule and Operations (optional)**

Basin Transit runs three types of routes: neighborhood shuttles, intercity service, and longer-distance service to Palm Springs. Basin Transit's eight bus routes include:

Route 1 – Intercity service between Yucca Valley and Twentynine Palms Transit Center or Twentynine Palms Marine Corps Base

Route 3A – Shuttle service between Twentynine Palms Transit Center and Twentynine Palms Marine Corps Base

Route 3B – Neighborhood shuttle around Twentynine Palms

Route 7A – Neighborhood shuttle around North Yucca Valley, servicing the Yucca Valley Transit Center and Walmart Center

Route 7B – Neighborhood shuttle around South Yucca Valley, servicing the Yucca Valley Transit Center and Walmart Center

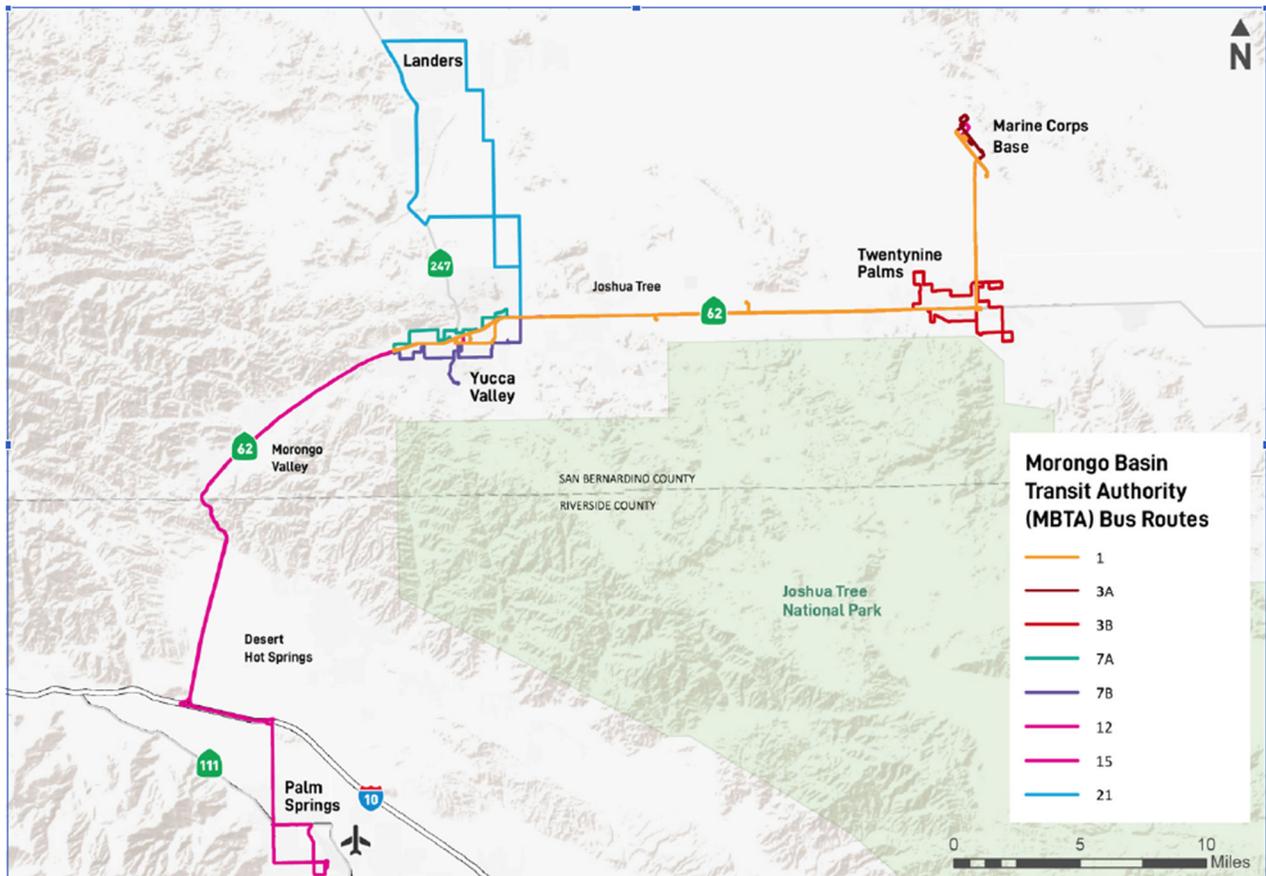
Route 12 – Long-distance service between Yucca Valley Transit Center and Palm Springs

Route 15 – Long-distance service between Twentynine Palms Marine Corps Base and Palm Springs

Route 21 – Shuttle service between Landers and Yucca Valley Transit Center

The majority of Basin Transit’s neighborhood shuttle routes run between 18 and 24 miles in length; Route 21 runs on a 48-mile loop; the intercity route runs between 27 and 43 miles; and the longer-distance routes run between 39 and 79 miles, depending on point of origin relative to Palm Springs.

While most bus routes have designated fixed stops, in some areas there are no posted bus stops, and passengers may flag the driver to board. Deviations to the fixed route are also available to passengers who are unable to get to regular fixed stops by reserving at least one hour in advance. All routes will deviate up to ¾-mile, except for Route 21, which will deviate up to 1.5 miles. These deviations add slight variability and unpredictability both to the length of runs and blocks, and to the terrain over which the buses operate.



## Section B: Rollout Plan General Information

- 1. Does your transit agency's Rollout Plan have a goal of full transition to zero-emission technologies by 2040 that avoids early retirement of conventional transit buses (13 CCR § 2023.1(d)(1)(A))? (Yes/No) (required)**

Yes. In accordance with the ICT regulation 13 CCR § 2023.1, Basin Transit's fleet replacement plan serves as a blueprint for achieving a full transition to zero-emission technologies by 2040, considering minimum useful life of buses. Based on initial analysis, the last conventional bus is expected to be purchased in 2025. All new bus purchases are anticipated to be ZEB beginning in 2026.

- 2. The ICT regulation requires 100% ZEB purchase in 2029. Conventional transit buses that are purchased in 2028 could be delivered in or after 2029. Please explain how your transit agency plans to avoid potential early retirement of conventional buses in order to meet the 2040 goal. (optional)**

Early retirement should not be an issue pursuant to the ICT regulation based on Basin Transit's procurement schedule. However, if it becomes one, Basin Transit will deploy various strategies to ensure that buses fulfill their "useful life". One potential strategy is to place newly acquired buses on Basin Transit's longest (distance) blocks of service. This will ensure that these buses meet their distance-based useful life requirement more rapidly.

- 3. Is a copy of the board approved resolution attached to the Rollout Plan submitted to CARB (13 CCR § 2023.1(d)(2)) (required)**

Yes. See Section J for Resolution 23-04, approved May 25, 2023.

## Section C: Technology Portfolio

- 1. What type(s) of zero-emission bus technologies (e.g., battery electric and fuel cell electric buses) does your transit agency plan to deploy through 2040? (13 CCR § 2023.1(d)(1)(B)) (required)**

ZEB analysis for Basin Transit's operations has determined that Battery-electric buses (BEBs) adoption is the ZEB technology that best meets the needs of Basin Transit for their purchasing and transition requirements pursuant to the ICT regulation. Fuel Cell Electric Buses (FCEBs), at this time, are not feasible due to no current manufacturers offering a cutaway vehicle.

### Battery-Electric Buses

Basin Transit's future BEBs are expected to have specifications that are compatible with the Society of Automotive Engineers (SAE) J1772 charging standard (e.g., "plug-in charging"). It is recommended that Basin Transit specify charging ports on the rear of BEBs to allow for their existing site circulation and parking patterns to continue without additional modifications. Battery sizing (kilowatts) will be determined based on service needs requirements and what is available and feasible based on costs and weight. Charger rating (kilowatt-hour) will be based on service needs, battery acceptance, and costs.

## Fuel Cell Electric Buses

Currently, there are no manufacturers in the U.S. market that offer a FCEB cutaway vehicle, deeming hydrogen power infeasible, under existing conditions. While a hydrogen-powered cutaway may be developed in the future, Basin Transit must plan and design for facilities and buses that are currently on the market to ensure they can comply with CARB’s ICT regulation. However, as technology further develops, Basin Transit will remain open to technologies outside of BEB and will update plans, studies, and strategies, accordingly.

For specific blocks that are not capable of being served efficiently by existing BEB technology, FCEBs could be a viable option, if cutaways are eventually introduced to the market. In that case, it is recommended that FCEBs be fueled at future commercial/public hydrogen fueling stations located in either Twentynine Palms or Palm Springs or a purpose-built Basin Transit containerized hydrogen storage and dispensing unit with pre-compressed hydrogen delivery on site.

## Section D: Current Bus Fleet Composition and Future Bus Purchases

As of April 2023, Basin Transit directly operates 22 compressed natural gas (CNG) powered buses for fixed-route and on-demand services, and one (1) electric ADA van. Buses range between 25 and 36 feet in length. Table 1 represents Basin Transit’s current fleet.

**Table 1: Individual Bus Information (optional)**

# OF BUSES IN REVENUE SERVICE	MODEL YEAR	MAKE	MODEL	FUEL TYPE	BUS TYPE	LENGTH
1	2011	EL DORADO	XHF	CNG	STANDARD	36'
1	2015	GLAVAL	ENTOURAGE	CNG	CUTAWAY	33'
1	2015	EL DORADO	AERO ELITE	CNG	CUTAWAY	32'
6	2018	SENATOR	STARTRANS II	CNG	CUTAWAY	25'
1	2016	SENATOR	STARTRANS II	CNG	CUTAWAY	25'
1	2016	ARBOC	SPIRIT	CNG	CUTAWAY	26'
3	2016	EL DORADO	AERO ELITE	CNG	CUTAWAY	32'
1	2016	GLAVAL	ENTOURAGE	CNG	CUTAWAY	33'
2	2018	GLAVAL	ENTOURAGE	CNG	CUTAWAY	33'
2	2019	GLAVAL	ENTOURAGE	CNG	CUTAWAY	33'
1	2017	GILLIG	LOW FLOOR	CNG	STANDARD	35'
1	2020	EL DORADO	AERO ELITE	CNG	CUTAWAY	32'
1	2021	GILLIG	LOW FLOOR	CNG	STANDARD	35'
1	2022	FORD	ETRANSIT	ELECTRIC	MINIVAN	19'

Assuming a 1:1 replacement ratio, each existing bus will eventually be replaced with a BEB cutaway bus (of similar size). However, the number of ZEBs required may increase based on service requirements. Table 2 represents a summary of Basin Transit’s anticipated bus procurements through 2034. This replacement schedule is subject to change as Basin Transit periodically adjusts its service levels in response to rider demand.

**Table 2: Future Bus Purchases (required)**

<u>Timeline (Year)</u>	<u>Total # of Buses to Purchase</u>	<u># of ZEB Purchase</u>	<u>% of Annual ZEB Purchase</u>	<u>ZEB Fuel Type</u>	<u>ZEB Bus Type</u>
2025	4	4	0%	<b>CNG</b>	CUTAWAY
2026	3	3	100%	<b>ELECTRIC</b>	CUTAWAY
2027	1	1	100%	<b>ELECTRIC</b>	CUTAWAY
2028	0	0	100%	<b>ELECTRIC</b>	CUTAWAY
2029	2	2	100%	<b>ELECTRIC</b>	CUTAWAY
2030	3	3	100%	<b>ELECTRIC</b>	CUTAWAY
2031	6	6	100%	<b>ELECTRIC</b>	CUTAWAY
2032	4	4	100%	<b>ELECTRIC</b>	CUTAWAY
2033	1	1	100%	<b>ELECTRIC</b>	STANDARD
2033	1	1	100%	<b>ELECTRIC</b>	CUTAWAY
2034	2	2	100%	<b>ELECTRIC</b>	STANDARD

Table 3 represents the required operating range for future zero-emission buses to serve Basin Transit's fleet and its estimated cost.

**Table 3: Range and Estimated costs of Future ZEB Purchases (optional)**

<u>Timeline (Year)</u>	<u>Total # of Buses to Purchase</u>	<u>ZEB Bus Type</u>	<u>ZEB Fuel Type</u>	<u>Required BEB Range</u>	<u>Estimated Cost of Each Bus</u>
2025	4	CUTAWAY	CNG	N/A	\$251,082
2026	3	CUTAWAY	ELECTRIC	250	\$412,990
2027	1	CUTAWAY	ELECTRIC	250	\$412,990
2028	0	CUTAWAY	ELECTRIC	250	\$412,990
2029	2	CUTAWAY	ELECTRIC	250	\$412,990
2030	3	CUTAWAY	ELECTRIC	250	\$412,990
2031	6	CUTAWAY	ELECTRIC	250	\$412,990
2032	4	CUTAWAY	ELECTRIC	250	\$412,990
2033	1	STANDARD	ELECTRIC	400	\$412,990
2033	1	CUTAWAY	ELECTRIC	250	\$412,990
2034	2	STANDARD	ELECTRIC	400	\$412,990

\* The estimate cost of an articulated bus is unknown at this time.

**1. Is your transit agency considering converting some of the conventional buses in service to zero-emission buses (13 CCR § 2023.1(d)(1)(E))? (Yes/No) (required)**

No. Basin Transit plans to replace the current CNG vehicles with electric vehicles after each vehicle has reached its useful service life during the years 2026-2034.

**Section E: Facilities and Infrastructure Modifications**

Since ZEB technology continues to evolve, it is difficult to commit to a costly strategy that may become outdated or obsolete in the future. For that reason, the recommended facility and infrastructure modifications are based on what can physically be accommodated at each facility. This provides the agency with a ceiling for what can physically be constructed

and at what cost. Service changes and bus movements may happen multiple times a year, for some agencies. By establishing a full build scenario, agencies can optimize, and tailor strategies based on existing (or anticipated) services for implementation.

**1. Table 4: Facilities Information and Construction Timeline (required)**

<u>Phase Timeline</u>	<u>Address</u>	<u>Main Functions</u>	<u>Type(s) of Infrastructure</u>	<u>Facility Service Capacity</u>	<u>Needs Upgrade</u>
Present – 2028	62405 Verbena Rd, Joshua Tree CA	Fueling, Storage, and Maintenance	Installation of solar arrays with battery backup and wiring for overhead charging capacity up to 26 buses.	26 Buses	Yes
Present – 2028	6994 Bullion Ave, Twentynine Palms CA	Fueling and Storage	Installation of solar arrays, transformers and panels, conduit and wiring for charging capacity up to 8 buses.	8 Buses	Yes

Adhering to the construction schedule and milestones will be critical because the facilities’ construction must be completed before buses are delivered, otherwise, the buses will not be able to operate. To accomplish this, construction for BEB-supporting infrastructure is expected to be done in phases to minimize disruption of operations.

Additional electrical capacity may be required to meet the service needs of buses at the Joshua Tree Yard if there is not enough space for the number of solar arrays required to charge up to 26 buses. Construction and enhancements to bring this additional electrical capacity are anticipated to take three to five years based on SCE’s protocol. This timeframe would include methods of service studies, design, and construction. It is recommended that electrical infrastructure such as transformers and switchgears be installed with the initial phase to avoid the disruption of ongoing charging operations.

**2. Please explain the types of necessary upgrades or infrastructure each facility or division needs to support your transit agency’s long-term transition to ZEB. Please also provide the specification of each infrastructure in the related facility or division before and after the upgrades or modifications. (optional)**

Basin Transit does not anticipate needing to make changes to the parking configuration to accommodate chargers. However, Basin Transit’s transition to ZE technologies, namely, BEB, will require a number of modifications and changes to existing infrastructure and operations. This would include the decommissioning of CNG equipment, enhancements and expansions of electrical equipment, additional electrical capacity, and the installation of solar arrays, BEB chargers, and other components. These modifications will occur at Basin Transit’s two yards in Joshua Tree and Twentynine Palms.

Based on Basin Transit’s existing service needs and site configurations, Basin Transit plans on installing overhead plugin chargers to support BEBs at both Joshua Tree and Twentynine Palms yards. The proposed full facility layout is based on a 1:1 charging ratio. This charger-to-dispenser ratio would meet the requirements to charge Basin Transit’s fleet during the vehicles’ servicing and dwell time on the site while minimizing the peak electrical demand.

## Joshua Tree Yard

### Joshua Tree Yard Existing Conditions

Joshua Tree Yard is located at 62405 Verbena Road in the City of Joshua Tree. Electrical service is provided by Southern California Edison (SCE). Currently, 26 CNG-powered buses are stored, maintained, fueled, and serviced at the yard. Buses are parked one deep in angled tracks in the yard or backed in along the eastern fence line. Buses fuel with CNG when they return to the site at the end of daily service via one of two fast-fill CNG positions at the fuel canopy on the southeast corner of the site, or in one of the ten time-fill positions located along the northeastern edge of the parking lot.

The primary vehicles used for service out of Joshua Tree are cutaway buses, which are currently not available as FCEBs. For this reason, hydrogen power at Joshua Tree is not recommended. As these technologies become available in the future, Basin Transit may consider hosting a hydrogen fueling yard located on the southern portion of the site adjacent to the existing CNG yard if commercially available hydrogen fueling stations are not utilized.

Washing is handled by service staff in the mornings and evenings via a pressure wash unit located under a canopy on the southeast boundary of the site.

### Joshua Tree Yard Planned ZEB Modifications

Overhead chargers and dispensers can be installed without any trenching modification to the existing paved parking areas. Installation for the Joshua Tree Yard is to install solar arrays with battery backup and 26 overhead charging dispensers constructed over the parking spaces on the eastern boundary of the yard.

Joshua Tree Yard Overview:



## Twentynine Palms Yard

### Twentynine Palms Yard Existing Condition

Twentynine Palms Yard is located at 6994 Bullion Avenue in the City of Twentynine Palms. Electrical service is powered by Southern California Edison (SCE).

Currently, eight CNG-powered buses are stored and fueled at the division. The Twentynine Palms Yard site consists of the following separate structures and major site areas: bus parking, a portable restroom for operators, standalone fuel island, and an adjacent CNG compressor yard with support equipment. To the north, the rest of the site is used for storage, maintenance, and operations by the public works department.

Buses enter from Bullion Avenue and are backed in along the eastern and southern fence line for nightly parking.

Buses fuel with CNG when they return to the site at the end of daily service via either single fast-fill CNG position on the fuel island on the southeast corner of the site or in one of the six time-fill positions located along the southern edge of the parking lot. No maintenance, dispatch, or wash facilities are located on the Twentynine Palms Yard site for Basin Transit.

### Twentynine Palms Yard Planned ZEB Modifications

Charger installation for the Twentynine Palms Yard would be to install asphalt, solar arrays with battery backup, and 8 overhead charging dispensers constructed over the parking spaces on the southern boundary of the yard.

### Twentynine Palms Overview



**3. Do you expect to make any modifications to your bus parking arrangements? (optional)**

No, Basin Transit will utilize its original bus parking spaces.

**4. Do you expect to need additional parking spaces for completing the transition to zero-emission technologies? (optional)**

No, Basin Transit does not anticipate needing additional parking spaces.

**5. Table 5: NOx-Exempt Area and Electric Utilities' Territories. (optional)**

<u>Division/Facility Name</u>	<u>Type(s) of Bus Propulsion System</u>	<u>Located in NOx-Exempt Area</u>	<u>Type(s) of Infrastructure</u>
Joshua Tree Yard 62405 Verbena Rd, Joshua Tree CA	CNG	No	Southern California Edison
Twentynine Palms Yard 6994 Bullion Ave, Twentynine Palms CA	CNG	No	Southern California Edison

**6. Please identify the electric utilities in your transit agency's service area. (optional)**

Southern California Edison (SCE)

**Section F: Providing Service in Disadvantaged Communities**

**1. Does your transit agency serve one or more disadvantaged communities, as listed in the latest version of CalEnviroScreen? Yes/No (required)**

No. At this time, neither the Joshua Tree Yard nor Twentynine Palms Yard is in an area considered "disadvantaged". Its routes currently traverse 19 and 25 census tracts, respectively, all of which are not considered disadvantaged.

oehha.ca.gov/calenviroscreen/sb535

CalEPA California Environmental Protection Agency

SB 535 Disadvantaged Communities (2022 Update)

California Climate Investments are funds (Greenhouse Gas Reduction Fund and appropriated by the Legislature) from the proceeds of the State's Cap-and-Trade Program specifically targeted for investment in disadvantaged communities in California. These funds must be used for programs that further reduce emissions of greenhouse gases.

Senate Bill 535 (De León, Statutes of 2012) directed that at least a quarter of the proceeds go to projects that provide a benefit to disadvantaged communities and at least 10 percent of the funds go to projects located within those communities. The legislation gives CalEPA the responsibility for identifying those communities.

**How to use this map**

- Use your mouse or touchpad to pan around.
- Zoom in/out with a mouse wheel or the +/- icons.
- Search by location or census tract number with the search icon.
- Click on a census tract to view additional information in the pop-up window.
- Dock the pop-up window to the side of the screen by clicking the dock icon.
- Export a map view that includes the legend and popup using the screenshot widget.
- Click the links in the header to view additional resources related to SB 535 Disadvantaged Communities

SB 535 Disadvantaged Communities 2022 (Census Tracts and Tribal Areas)

## Section G: Workforce Training

### 1. Please describe your transit agency's plan and schedule for the training of bus operators and maintenance and repair staff on zero-emission bus technologies (13 CCR § 2023.1(d)(1)(G)). (required)

Basin Transit will use the training provided by the bus and charger manufacturers for the training of bus operators and maintenance staff on zero-emission bus technologies. Training will begin in 2026 since Basin Transit will procure its first BEB in 2026 with an expected delivery shortly after and training will be conducted in advance of the delivery of the first bus. It is expected that all personnel will be sufficiently trained before the first bus arrives.

Training conditions and schedules will be included in procurement documents, as they are with all existing procurements. If other OEM-provided buses are procured in the future and/or if new components, software, or protocols are implemented, it is expected that Basin Transit's staff will be trained well in advance of the commissioning of these additions. Since battery technology is rapidly evolving, it is likely that buses and their supporting battery chemistries and software will change between 2020 and 2040, therefore, Basin Transit's future procurements/deliveries will require a refresher or updated training for relevant staff.

In addition to manufacturer training, Basin Transit currently has the TAPTCO training program to develop mechanics which complies with FTA and FMCSA requirements. The program is administered by one (1) full-time training supervisor. The program not only covers safety, familiarity, and basic troubleshooting but also more in-depth procedures and troubleshooting. Safety training will be provided on an annual or other occurring basis to ensure that staff is knowledgeable and maintains best and safe practices when operating, handling, or servicing BEB-supporting components or infrastructure.

<u>Timeline (Year)</u>	<u>Job Title</u>	<u>Type(s) of Training</u>
2026	Bus Operators	Bus operators will need to be familiarized with the buses, safety, bus operations, and BEB operations.
2026	Mechanics	Mechanics will need to be familiarized with scheduled and unscheduled repairs, high-voltage systems, and the specific maintenance and repair of equipment.
2026	Facilities Maintenance Staff	Maintenance staff will need to be familiarized with scheduled and unscheduled repairs, high-voltage systems, and the specific maintenance and repair of equipment.
2026	Safety & Training Supervisor	Supervisors will need to understand all aspects of the transition of ZEBs to train others.
2026	Utility Service Workers	Staff will become familiarized with proper charging protocol and procedures that are ZEB-specific.
2026	Management Staff	All Management will be familiarized with ZEB operations and safety procedures.

## Section H: Potential Funding Sources

1. Please identify all potential funding sources your transit agency expects to use to acquire zero-emission technologies (both vehicles and infrastructure) (13 CCR § 2023.1(d)(1)(H)). (required)

There are a number of potential federal, state, local, and project-specific funding and financing sources at Basin Transit's disposal. Basin Transit will monitor funding cycles and pursue opportunities that yield the most benefits for the agency pursuant to the ICT regulation. The following table identifies the many funding opportunities that Basin Transit may take advantage of in the next 20 years.

### 2. Table 8: Potential Funding Sources (optional)

TYPE	AGENCY	FUNDING MECHANISM
Federal	United States Department of Transportation (USDOT)	Better Utilizing Investments to Leverage Development (BUILD) Grants
	Federal Transportation Administration (FTA)	Capital Investment Grants – New Starts
		Capital Investment Grants – Small Starts
		Bus and Bus Facilities Discretionary Grant
		Low- or No-Emission Vehicle Grant
		Metropolitan & Statewide Planning and Non-Metropolitan Transportation Planning
		Urbanized Area Formula Grants
		State of Good Repair Grants
		Flexible Funding Program – Surface Transportation Block Grant Program
	Federal Highway Administration (FHWA)	Congestion Mitigation and Air Quality Improvement Program
	Environmental Protection Agency (EPA)	Environmental Justice Collaborative Program-Solving Cooperative Agreement Program
	Department of Energy (DOE)	Design Intelligence Fostering Formidable Energy Reduction and Enabling Novel Totally Impactful Advanced Technology Enhancements
State	California Air Resources Board (CARB)	Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
		State Volkswagen Settlement Mitigation
		Carl Moyer Memorial Air Quality Standards Attainment Program
		Cap-and-Trade Funding
	California Transportation Commission (CTC)	Solution for Congested Corridor Programs (SCCP)
	California Department of Transportation (Caltrans)	Low Carbon Transit Operations Program (LCTOP)
		Transportation Development Act
		Transit and Intercity Rail Capital Program
		Transportation Development Credits
		New Employment Credit
Local and Project-Specific		Joint Development
		Parking Fees
		Tax Rebates and Reimbursements
		Enhanced Infrastructure Financing Districts
		Opportunity Zones

## Section I: Start-up and Scale-up Challenges

### 1. Please describe any major challenges your transit agency is currently facing in small scale zero-emission bus deployment. (optional)

To comply with the ICT regulation's purchase and transition requirements, there are a number of challenges and opportunities that Basin Transit has identified. The following sections briefly describe some of the challenges that Basin Transit faces in its transition.

**Uncertainty of ZEB cutaways.** As discussed, there is a small market for ZEB cutaways. For the cutaways that do exist, there is uncertainty in their product range and if they're Altoona-tested. Unfortunately, the cutaway market does not currently offer FCEBs, so Basin Transit has no other alternative and will need to plan on BEB adoption.

**Range issues.** Basin Transit has some blocks that exceed the current BEB range. This means that Basin Transit will need to consider the following strategies to reduce or avoid service disruptions:

- **Buy more buses.** This can assist with service requirements; however, more buses will require more chargers, more space at the division, and potentially higher utility costs.
- **Opportunity charging.** This strategy could potentially reduce the costs (per bus) due to a smaller battery requirement, however, it would result in more capital infrastructure and utility costs.
- **Service changes.** This would require the manipulation of block structure. While the riders may not notice the change, the agency will need to consider the potential impacts on operator and maintenance costs.

**Technological adaptation.** Currently, Basin Transit is modeling and planning for a transition based on existing service and ZEB technology. With the 2040 deadline looming, it is difficult to anticipate future technological enhancements and changes, such as improved batteries and chargers. Slight changes in these technologies could improve bus ranges, in turn, reducing costs. Basin Transit (and the market) needs to be aware of these changes as it would be counterproductive to invest in technologies that will soon be outdated.

**Costs.** Adoption of ZEBs has many benefits, including potential lifecycle cost savings. However, the investment required for capital and change management will be very expensive. Basin Transit will need to be creative with funding mechanisms and sources to ensure that the transition to ZEB will not be detrimental to its operations and service.

**Market Production Factors.** The ICT regulation will put a lot of pressure on OEMs to produce ZEBs at unprecedented rates. However, it is not only California that is interested in converting to ZEBs. These monumental policy changes will have a great impact on these transitions, however, it will also make it challenging to meet ZEB goals for agencies if the supply of buses can meet with demand.

## Section J: Resolution

**RESOLUTION # 23-04**

**AUTHORIZATION FOR THE EXECUTION OF THE  
ZERO-EMISSION BUS ROLLOUT PLAN**

**WHEREAS**, California Code of Regulations Title 13, Division 3, Chapter 1, Article 4.3, Part 2023.1(d) Zero Emissions Bus Rollout Plan Requirements requires that a transit agency Zero-Emission Bus Rollout Plan must be approved by its governing Board; and

**WHEREAS**, Zero-Emission Bus Rollout Plan sets forth the Basin Transit's plan which meets the following requirements:

- A goal of full transition to zero-emission buses by 2040 with careful planning that avoids early retirement of conventional internal combustion engine buses;
- Identification of the types of zero-emission bus technologies Basin Transit is planning to deploy;
- A schedule for zero-emission and conventional internal combustion engine bus purchases and lease options;
- A schedule for conversion of conventional internal combustion engine buses to zero-emission technologies;
- A schedule for construction of facilities and infrastructure modifications or upgrades, including charging, fueling, and maintenance facilities, to deploy and maintain zero-emission buses;
- Explanation of how Basin Transit plans to deploy zero-emission buses in Disadvantaged Communities;
- A training plan and schedule for zero-emission bus operators and maintenance and repair staff; and
- Identification of potential funding sources.

**NOW, THEREFORE, BE IT RESOLVED** that the Board of Directors of the Basin Transit hereby approves the Basin Transit's Zero-Emission Bus Rollout Plan as set forth in full.

**NOW, THEREFORE, BE IT RESOLVED** that insofar as the provisions of any Ordinance, Resolution, document, or previous action of the Board and/or the Executive Director, prior to the date of this Resolution, are inconsistent with the provisions of this Resolution or any policy adopted by this Resolution, this Resolution and the Board Policies adopted herein shall control.

**PASSED AND ADOPTED** by the Board of Directors of the Basin Transit in San Bernardino County, State of California, on the 25<sup>th</sup> day of May 2023.

  
\_\_\_\_\_  
Chair of the Board

I, Cheri Holsclaw, duly appointed and qualified, Clerk of the Board of the Basin Transit, do hereby certify that the above is a true and correct copy of a resolution passed and approved by the Board of Directors of the Basin Transit adopted at a legally convened meeting of the Board of Directors of the Basin Transit held on the 25<sup>th</sup> day of May 2023.

  
\_\_\_\_\_  
Board Secretary