



Zero Emission Bus Rollout Plan

Marin County Transit District



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Executive Summary

This rollout plan is a living document and guide to the implementation of Marin Transit's zero emission bus fleet. The plan provides estimated timelines based on Marin Transit's fleet replacement plan.

Marin County Transit District (Marin Transit) is the local transit provider in Marin County. Marin Transit has a fleet of 81 buses that operated in fixed route service which include 6 battery electric buses, 39 diesel-hybrid buses, 20 diesel narrow-bodied and high-floor buses, and 14 medium duty cutaways. The paratransit and demand-response fleet is made up of 34 vans and cutaways. Pre-COVID, Marin Transit served 3.2 million local passengers each year on 33 bus and shuttle routes, paratransit services, and innovative community-based transportation programs.

Marin Transit plans to convert its fleet entirely to Battery Electric Buses and has identified two key challenges to accomplishing that goal:

- Land availability on which to install infrastructure
- Range requirements of rural routes

This plan focuses mostly on Marin Transit's Fixed Route Fleet, which is covered by the ICT. Marin Transit also plans to electrify its light-duty paratransit and demand-response fleet but is still evaluating technologies and waiting for prices in lighter-duty vehicles to decrease before making large investments. Marin Transit plans to purchase one minibus to test in Paratransit service in FY2023, which will help guide Marin Transit's decisions moving forward. This plan includes references to planning for infrastructure required to electrify the paratransit and demand-response fleet in the facilities section.

Land Availability

Marin Transit owns all its vehicles but relies on four purchased contract operators to operate fixed route and demand-response services. Until recently, Marin Transit owned no facilities which drove the need for many small contracts with requirements to provide associated transit vehicle parking and maintenance facilities.

The lack of sufficient facilities is Marin Transit's largest obstacle to converting to a zero-emission fleet. It's difficult to justify large capital investment in infrastructure on property that is not directly owned by Marin Transit. Marin Transit's fleet operates out of 13 maintenance and storage facilities that are largely owned or leased by contractors. Marin Transit-owned facilities can support the electrification of 25% of the fixed route fleet and 100% of the demand-response fleet. Marin Transit is actively searching for additional real property to develop a bus charging and maintenance facility.

Range Requirements

Marin Transit operates several rural routes in West Marin which will be the most difficult routes to electrify. Vehicle blocks on these routes travel over 300 miles on terrain that is hilly, long, and remote. Current electric bus ranges do not meet those service requirements. Marin Transit plans to investigate

opportunities to install on-route charging in West Marin, the need for additional vehicles to meet service operation requirements, and may investigate hydrogen fuel cell buses if technology has not improved by the year 2030, when conversion of that fleet begins.



Section A: Transit Agency Information

Marin County Transit District (Marin Transit) provides local public transit service in Marin County, just north of the Golden Gate Bridge. The current zero emission fleet includes 6 battery-electric buses, which comprises about 8% of Marin Transit's fixed route fleet. Marin Transit is committed to transitioning its entire bus fleet to zero-emission in accordance with the California Air Resource Board (CARB) Innovative Clean Transit (ICT) Regulation.

Marin Transit operates fixed-route and paratransit service, and contracts with four different providers for those services as follows:

Marin Airporter: Operates Local Big Bus and shuttle services (Fixed Route)

MV Transportation: Operates Rural and Supplemental School Services (Fixed Route)

Golden Gate Transit: Operates Local Big Bus service (Fixed Route)

Transdev: Operates paratransit and demand response services (Demand Response)

Marin Transit provides 3.2 million trips each year to a population of approximately 247,289 residents in the 828 square miles of Marin County.

Transit Agency's Name: Marin County Transit District (Marin Transit)

Mailing Address: 711 Grand Ave, Ste 110, San Rafael, CA 94901

Transit Agency's Air District: Bay Area Air Quality Management District

Transit Agency Air Basin(s): San Francisco Bay Area

Total Number of Buses in Annual Maximum Service: Fixed Route: 59, Demand Response: 21

Is your transit agency part of a Joint Group? No

Section B: Rollout Plan General Information

Innovative Clean Transit Regulation

The Innovative Clear Transit (ICT) regulation was adopted by the California Air Resources Board (CARB) in December 2018 and became effective on October 1, 2019. The regulation requires public transit agencies in California to gradually transition their fleets to zero-emission technologies. The rule requires a percentage of new bus purchases to be zero-emission buses (ZEBs) starting for small transit agencies like Marin Transit in 2026, when 25% of purchases need to be ZEBs. In 2029, 100% of purchases are required to be ZEBs. Each transit agency must adopt and submit a Zero Emission Bus Rollout Plan to CARB by June 30, 2023 describing how the agency will meet the targets.

Marin Transit Rollout Plan

Marin Transit's initial Rollout Plan was developed in 2019 by Marin Transit staff to transition the agency's fixed route bus fleet to 100% zero-emission by 2040 to meet the deadline set in the draft ICT Regulation. This plan has been updated to meet requirements outlined in the ICT Regulation.

For purposes of the Fleet Replacement Plan, staff assumed the following availability for all-electric vehicles:

- A narrow body bus or an alternative smaller bus eligible for FTA funding will be available in 2030; and
- The range of in-depot charged buses will increase to 300 miles by 2027; and
- Marin Transit will be able to purchase additional right of way for parking and maintaining the electric fleet by the year 2025 and
- Over the next five years, there will not be a significant infusion of capital funding for Marin Transit to construct infrastructure improvements that support in-route vehicle charging or hydrogen fueling stations.

To plan for technological uncertainty, Marin Transit staff has developed the following recommendations:

- 1) Develop a base plan that assumes the zero-emission technology is available to meet the minimum ICT requirements, without significant changes to routing or requiring in-route charging infrastructure;
- 2) Identify decision points that will allow time for developing route changes or infrastructure projects, if required; and
- 3) Identify decision points for purchasing additional zero-emission vehicles if technology exceeds expectations and/or there is significant additional capital to pursue in-route charging or other mitigations to deploy zero-emission buses.

To meet the replacement plan goals, Marin Transit first will concentrate efforts on converting the standard bus fleet to electric buses. The second priority will be the cutaway fleet used for local shuttle

service. The additional price per vehicle to electrify at this time is three times the cost of a standard cutaway bus, which is a large investment for a vehicle with a useful life of only 7 years. Marin Transit expects the price to decrease on these vehicles as they are more widely adopted. The narrow-bodied vehicles needed for rural and recreational services have vehicle work blocks of over 300 miles on steep, hilly terrain. This makes them the most challenging to convert. Marin Transit plans to start to replace those vehicles with zero-emission technology in FY 2031 to allow more time for the technology to improve. Marin Transit will be able to modify the procurements planned for FY 2024 and FY 2027 should a suitable zero emission vehicle type become available earlier.

Decision Points and Next Steps

Staff have identified points in the next ten years when Marin Transit will decide whether to make investments in Zero Emission Buses earlier or make other decisions regarding the future of the zero-emission fleet. Financial feasibility analyses will be needed at each of these milestones.

- 2025 – Confirm Vehicle Types for FY 2027 Procurement – Marin Transit will evaluate the battery range of available zero-emission vehicles. The District will also evaluate the status of its infrastructure and power delivery capabilities to determine whether it is possible increase the percentage of zero-emission buses in the FY 2027 procurement. At this time, the FY 2027 procurement is planned to consist of seven 40-foot electric and four 30-foot hybrid buses.
- 2025 – Determine if a zero-emission cutaway bus is available – Marin Transit’s first planned replacement of a cutaway (shuttle) with zero-emission technology is planned for FY 2026 to provide additional time for testing. In addition, the price of the zero emission shuttles needs to reduce for purchase of these vehicles to be cost effective over the shorter vehicle life (seven years). Marin Transit is testing a potential electric minibus for replacement of the cutaway. If this proves successful, and the vehicle successfully passes through federally required Altoona testing, and becomes Buy America compliant, this could be Marin Transit’s replacement for the cutaway buses.
- 2025 – Evaluate the need to purchase expansion vehicles in order to electrify full fleet - Current industry estimates that transit agencies will require at least 20 percent additional vehicles to operate an all-electric fleet at the same service levels as their traditional counterparts. Marin Transit expects that by 2025, there will be a clearer understanding of Electric Bus range capacity and whether an expanded fleet will be needed.
- 2026 – Update Infrastructure Plan – If Marin Transit has not acquired additional land to accommodate the purchase of 10 ZEBs in FY 2029, Marin Transit will have to investigate alternatives including hydrogen fuel cell buses if fueling is available, or consolidating electric vehicles with contractors who are able to install electric infrastructure on their properties.
- 2027 – Confirm Vehicle Types for FY 2029 Procurement - Determine whether battery range has improved enough to deliver the District’s existing service profile. If not, the FY 2029 procurement allows time for Marin Transit to evaluate purchasing additional vehicles, cutting

or re-designing service to match vehicle constraints, and/or negotiating with jurisdictions to install opportunity charging at strategic locations throughout the county.

- 2028 – Confirm Vehicle Types for FY 2031 Procurement of Narrow-Bodied Vehicles - Decide whether there is a zero-emission bus capable of operating on the terrain and over distances required to serve West Marin. If not, Marin Transit will have to consider cutting these programs. If a narrow-bodied vehicle is available and the range is the only concern, the District will evaluate purchasing additional vehicles to provide the service and/or whether installing opportunity charging along the routes is feasible.
- 2029 – Update Initial Infrastructure Plan – Based on the current fleet status and the state of zero-emissions bus technology, Marin Transit will update the infrastructure plan in advance of the FY 2032 procurements that will bring the District’s fleet to over 50 percent electric.

Electric bus technology is evolving rapidly. Marin Transit values the benefits of zero-emission buses. The District will recommend investments that take advantage of proven technologies while closely monitoring new developments. Marin Transit needs to be flexible as it develops the quickest, most reliable path toward a sustainable and completely zero-emission fleet. Staff will explore technology options as each of decision points nears and will evaluate the best investments that will move the District toward a battery electric fleet at a faster pace than the current vehicle replacement plan.

Marin Transit’s Board of Directors approved this plan on May 1, 2023. A copy of the signed Board Resolution is attached to the Rollout Plan submitted to CARB.

Section C: Technology Portfolio

Marin Transit plans to use battery electric buses (BEBs) to electrify its fleet.

An initial investment in battery electric buses was made in 2016 with the purchase of 2 BYD Battery Electric buses to be used in a pilot project allowing Marin Transit contractors to gain experience with the new technology. These buses required minimal infrastructure improvements to install overnight charging at a contractor-owned facility.

Further investment in overnight charging has been made at Marin Transit's facility located at 600 Rush Landing Rd in Novato, where four chargers have been installed, and future-proof electrical infrastructure was installed to charge up to 20 standard sized buses at this site.

Marin Transit is also developing a project at its facility at 3010/3020 Kerner to make it ready for future overnight Electric Bus Charging. This project will include a solar canopy and battery storage to manage charging and increase resilience in the case of power outages. The facility is planned to park paratransit vehicles.

Rural service will be the most difficult for Marin Transit to transition to battery Electric due to the hilly terrain and long scheduled blocks. If range doesn't improve to meet the service requirements of these routes, Marin Transit will investigate Hydrogen Fuel Cell Buses. A final decision will be made in 2028, prior to the electrification of these vehicles which is planned to begin in 2031.

Fleet Transition Schedule and Cost

Marin Transit's replacement schedule is based on the agency's Transit Asset Management Plan mandated by the Federal Transit Administration and follows guidelines set by the ICT for purchasing Zero Emission Buses.

Using cost estimates from Marin Transit's two battery electric bus pilot project, and 2022 four battery electric bus purchase, the total cost to transition the rest of Marin Transit's fixed route fleet to 100% zero emission buses will be \$73,440,000. This does not include the cost to purchase additional real property to charge battery electric buses but includes estimate to bring additional power to a site and install chargers and infrastructure. The estimate also excludes the six buses that have already transitioned to battery electric as well as three vehicles that are retired-active and not eligible for replacement.

This estimate is based on Rough Order of Magnitude estimates developed from projects at facilities at Rush Landing and 3010/3020 Kerner. Marin Transit estimates that it will take \$1.13 Million to electrify each standard-sized bus and \$443,000 to electrify each cutaway bus. Actual costs are expected to fluctuate with each purchase. Table 1 shows the summarized costs.

Table 1 - Technology Cost

Bus Type	Fleet Quantity	Bus Cost	Infrastructure Cost	Total Technology Cost
Standard Battery Electric Bus	60	\$54,000,000	\$14,100,000	\$68,100,000
Battery Electric Medium-Duty Cutaway	12	\$3,000,000	\$2,340,000	\$5,340,000
Total	72*	\$57,000,000	\$16,440,000	\$73,440,000

*Does not include 6 already electrified vehicles and 3 retired active vehicles currently in the fleet.

Battery Electric Bus Fuel Analysis

Marin Transit evaluated the cost of fuel for its first two battery electric buses over Fiscal Year 2021-22 and has made projections for the cost to operate the next four buses. As the fleet expands, Marin Transit will have to invest in managed charging options to optimize fuel costs.

Marin Transit has two BYD electric buses that are operated by Golden Gate Transit and fueled at their yard. Marin Transit has four Gillig electric buses that are not yet in service but will be operated by Marin Airpporter and fueled at Marin Transit's Rush Landing yard.

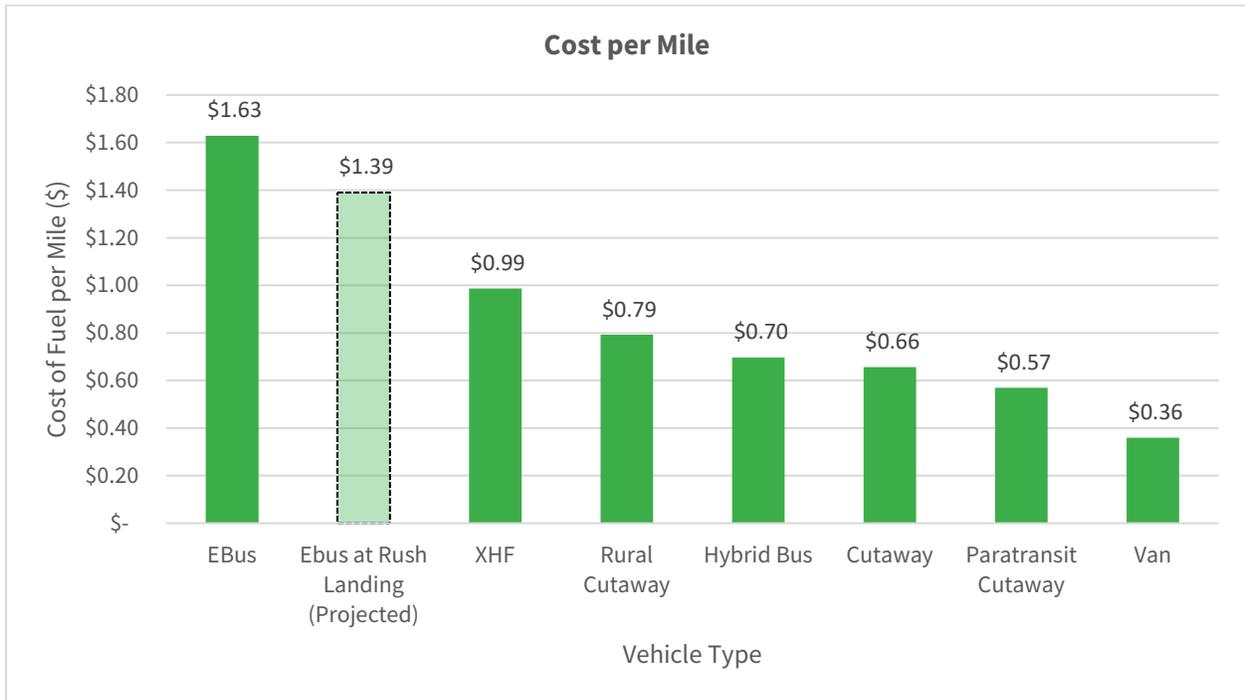
The cost of electricity depends largely on rate structure. Due to this structure, the electric bus cost per mile is more variable than for the traditional-fuel buses. Electricity is subject to demand charges. Utility demand charges are incurred based on the highest amount of energy pulled at a given moment during the billing period. If the buses are charged once a month, there is demand charge fee placed on the utility bill no matter how many miles the vehicles traveled during that period. This charge accounts for most of the cost for electricity; over FY2021-22, it was about 85% of each month's utility cost. Marin Transit deliberately chose vehicles that can charge slowly overnight when demand charges are lower to decrease the impact of this charge. Due to this rate structure, when buses are traveling more miles in a month, the demand charges are spread across more miles and the cost per mile decreases.

Over the period (FY 2021/22), there was not much variation in the electric vehicle miles the BYD buses traveled per month and therefore the cost per mile was relatively stable averaging \$1.63 per mile. However, electricity rates for demand charges did increase in January 2022, and Marin Transit saw a 15% increase in cost for these vehicles overall after those changes. The cost per mile went from an average of \$1.54 per mile before the rate increases, to \$1.71 per mile after the rate increase. Figure 1 shows the average cost of energy per mile for the BYD Electric buses compared with the other vehicle types.

Marin Transit is dependent on Golden Gate Transit's electric rates for charging the BYD buses and is not separately metered from their yard. Prior to FY 2021/22 Marin Transit benefitted from this by only paying demand charges based on the difference between peak usage at the Golden Gate Facility and

peak usage with the BYD buses are plugged in, up to 160 kW (the maximum potential pull from the chargers). Unfortunately, Golden Gate Transit's other power usage at night has decreased since the BYD electric vehicles were initially put into service and Marin Transit paid the full price of the demand charges throughout FY 2021/22.

Figure 1 - FY2021/22 Average Cost of Fuel Per Mile for Vehicle Types



Marin Transit's four battery-electric Gillig buses will be charged at 600 Rush Landing. The District just finished an electrification project that included a new meter and is participating in PG&E's EV Fleet rate program. This rate structure allows for a more predictable cost to operate by replacing demand charges with a subscription fee and a higher cost for energy used. As shown in Figure 1, above, staff anticipates the cost to operate an electric bus will be less under this rate plan. Marin Transit will evaluate the cost differences in the different rate structures once these vehicles enter full service.

Section D: Current Bus Fleet Composition and Future Bus Purchases

Table 2: Individual Bus Fleet Composition (Fixed Route Only)

Number of Buses	Engine Model Year	Bus Model Year	Fuel Type	Bus Type
1	2008	2008	Diesel	Standard, Narrow-Body 35' High Floor (retired-active)
7	2010	2010	Hybrid-Diesel	Standard 35' Low Floor
3	2011	2011	Diesel	Standard, Narrow-Body 35' High Floor
5	2012	2012	Diesel	Standard, Narrow-Body 35' High Floor
2	2013	2013	Unleaded Gasoline	Cutaway (retired active)
4	2015	2015	Hybrid-Diesel	Standard 30' Low Floor
7	2015	2015	Hybrid-Diesel	Standard 40' Low Floor
2	2015	2015	Unleaded Gasoline	Cutaway
1	2015	2015	Diesel	Standard, Narrow-Body 30' High Floor
1	2016	2016	Unleaded Gasoline	Cutaway
10	2017	2017	Hybrid-Diesel	Standard 40' Low Floor
2	2017	2017	Diesel	Standard, Narrow-Body 30' High Floor
2	2018	2018	Battery Electric- Depot Charging	Standard 35' Low Floor
2	2018	2018	Diesel	Standard, Narrow-Body 35' High Floor
1	2018	2018	Unleaded Gasoline	Cutaway
1	2019	2019	Unleaded Gasoline	Cutaway
11	2019	2019	Hybrid-Diesel	Standard 40' Low Floor
4	2021	2021	Diesel	Standard, Narrow-Body 30' High Floor
2	2021	2021	Diesel	Standard, Narrow-Body 35' High Floor
9	2021	2021	Unleaded Gasoline	Cutaway
4	2021	2021	Battery Electric- Depot Charging	Standard 40' Low Floor

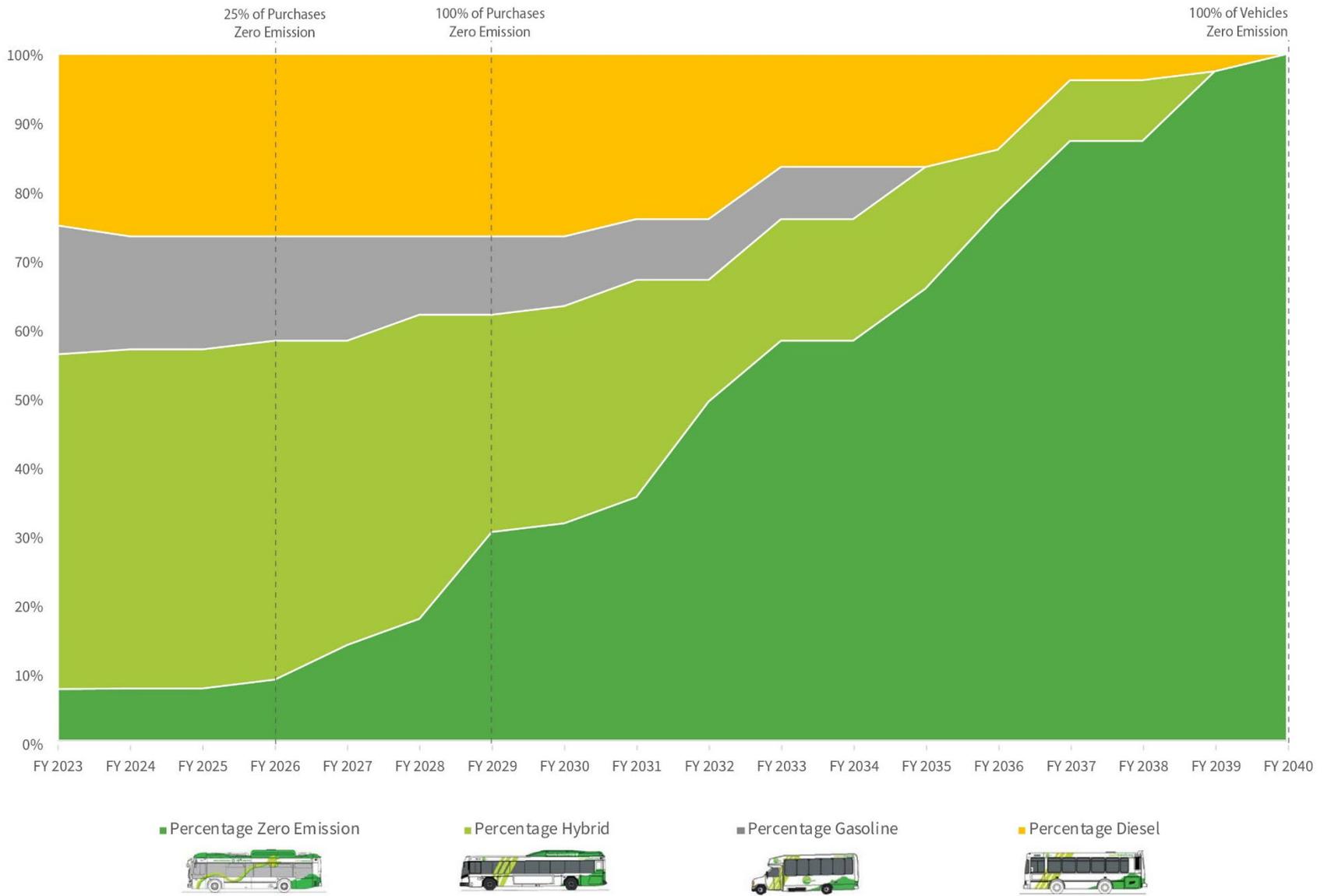
Source: Marin Transit.

Table 3 - Future Bus Purchases (Fixed Route)

Timeline (Year)	Total Number of Buses	ZEB Purchases				Conventional Bus Purchases		
		#	% of Total Purchases	Bus Type(s)	Fuel Type(s)	#	Type(s) of Buses	Fuel Type(s)
2024	10	0	0%	N/A	N/A	10	Standard Low Floor (7), Standard High Floor (2), Cutaway (1)	Hybrid Diesel (7), Diesel (2), Unleaded Gasoline (1)
2025	8	0	0%	N/A	N/A	8	Standard High Floor	Diesel
2026	2	1	50%	Cutaway	BEB	1	Cutaway	Unleaded Gasoline
2027	12	4	25%	Standard Low Floor	BEB	8	Standard Low Floor (7), Standard High Floor (1)	Hybrid Diesel (7), Diesel (1)
2028	11	3	27%	Cutaway	BEB	8	Standard High Floor (2), Cutaway (6)	Diesel (2), Unleaded Gasoline (6)
2029	10	10	100%	Standard Low Floor	BEB	0	N/A	N/A
2030	0	0	100%	N/A	BEB	0	N/A	N/A
2031	5	4	100%	Cutaway (1) Standard (4)	BEB	0	N/A	N/A
2032	11	11	100%	Standard (11)	BEB	0	N/A	N/A
2033	8	8	100%	Cutaway (2), Standard (6)	BEB	0	N/A	N/A
2034	0	0	100%	N/A	BEB	0	N/A	N/A
2035	13	13	100%	Cutaway (9), Standard (4)	BEB	0	N/A	N/A
2037	8	8	100%	Standard	BEB	0	N/A	N/A
2038	1	1	100%	Cutaway	BEB	0	N/A	N/A
2039	12	12	100%	Standard	BEB	0	N/A	N/A
2040	4	4	100%	Cutaway (2), Standard (2)	BEB	0	N/A	N/A

Marin Transit will purchase new zero-emission buses and is not considering converting its conventional buses into zero-emission buses.

Figure 2 - Fixed Route Fleet Composition over Time



Section E: Facilities and Infrastructure Modifications

Facility Constraints:

Marin Transit does not own sufficient real property to park, charge, or fuel buses. Marin Transit will need to acquire additional property to meet the ZEB Rollout Plan Goals. Staff and Directors are actively seeking more property.

Figure 3 shows the property at 600 Rush Landing Road in Novato. Here, the site is constrained by Highway 101 to the west of the property, and train tracks on the east. While the property's shape makes parking layouts difficult, an additional challenge for electrification of the site is a major water pipeline which runs along the East side of the property. No infrastructure can be installed above this pipeline, resulting in the ability to install charging infrastructure only on the west side of the property. Marin Transit recently completed a project to install 4 bus chargers here. The switchgear and infrastructure have been future proofed to charge up to 20 battery electric buses at this site.

The second property Marin Transit recently acquired is 3010/3020 Kerner Blvd in San Rafael. This site is about an acre and is currently planned for demand response vehicle parking. The site will be repaved, and conduit laid for future charging in the next 2 years.

Marin Transit still requires land for charging an additional 60 fixed-route vehicles.

Figure 3 - Aerial of 600 Rush Landing Rd



Table 4 - Marin Transit Facilities

Division/Facility Name	<i>Rush Landing</i>	<i>3000 Kerner</i>	<i>3010/3020 Kerner</i>
Address	600 Rush Landing Rd, Novato	3000 Kerner Blvd, San Rafael	3010/3020 Kerner Blvd San Rafael
Main Function(s)	Bus Parking, Administration	Bus Maintenance, Administration	Bus Parking
Type(s) of Infrastructure	Overnight Charging Infrastructure	Charging infrastructure related to vehicle maintenance	Solar Canopy, Battery Energy Storage, Overnight Charging Infrastructure
Service Capacity	Level 3 Depot chargers to deploy 20 BEBs by 2033	Level 2 Depot charging for one bus	Level 2 Depot charging for 40 paratransit cutaway vehicles
Needs Upgrade? (Yes/No)	Yes	No	Yes
Estimated Construction Timeline	Start (4 chargers with oversized switchgear): June 2021 Complete: Nov. 2022 Additional chargers will be installed to meet the electrification needs for vehicles parked here as listed below	Complete: April 2023	Construction initiated to install 5 chargers in September 2023. Additional chargers will be added as demand response fleet is electrified.

Rush Landing

In November 2022, Marin Transit added electrical service to the site for electric vehicle charging of up to 6 heavy duty buses. The facility can park up to 35 vehicles but will only be able to park and charge 20 full-sized buses due do the narrow width and the inability to install charging infrastructure on the east side of the lot.

The project completed in November 2022 included installation of an oversized switch gear, so that Marin Transit will be able to more easily increase power capacity to the site and charge up to twenty (20) 40-foot Battery Electric Buses using level 3 chargers.

Marin Transit plans to deploy the following Battery Electric Buses at this site using depot charging:

- FY2023 – Four 40ft Battery Electric Buses (Existing)
- FY2027 – Four 30ft Battery Electric Buses
- FY2028 – Three Cutaway Battery Electric Buses
- FY2030 – One Cutaway Battery Electric Bus
- FY2031 – Four 35ft Battery Electric Buses
- FY 2033 – Four 30ft and Two 35ft Battery Electric Buses

Marin Transit will work with our utility, Pacific Gas & Electric (PG&E) to increase power capacity at the site to meet the needs each of these purchases.

Active Grant Requests

Marin Transit is submitting an application for the Federal FY2023 Low or No Emission Grant Program and the Grants for Buses and Bus Facilities Competitive program to install charging infrastructure and to improve the energy efficiency and resiliency of the facility. The project includes:

- Bus charging for sixteen 40ft buses
- Solar panels and energy storage
- Upgrading building subsystems like HVAC, lighting, and windows to increase energy efficiency
- Installing accessible access to building's second floor
- Repave bus parking area

Kerner Facilities

Marin Transit purchased 3000 Kerner Blvd in 2021 for use as an administrative and bus maintenance facility for Marin Transit's demand response services. A level 2 charger has been added to this facility to support future maintenance of Electric Vehicles.

Marin Transit purchased the adjacent property at 3010/3020 Kerner Blvd in 2022 for use as vehicle parking. A project is currently underway to demolish the existing office building and create a bus parking facility. It will include solar canopy over a portion of the lot and battery storage to help manage energy at this site. The project will also include five level 2 chargers and provisions will be made for additional charging throughout the lot. While, the lot is planned as a paratransit parking facility, Marin Transit is also planning for the ability to park larger vehicles at the site on the northern side of the lot.

Utility Partnership

Marin Transit is actively working on its utility partnership by participating in Pacific Gas and Electric's (PG&E's) Electric Vehicle Fleet Program. This program was created when the California Air Resource Board allocated \$236 million to PG&E to support the conversion of commercial and public fleets to electric. The program pays for all improvements to increase electrical capacity to support an electric fleet up to the customer's meter. This means that any infrastructure improvements that are required to bring a larger power capacity to the site including any necessary transformer upgrades will be paid for by the program. Marin Transit is then responsible for the cost of all improvements after this meter, which may include, electrical panels, switch gears, and electric vehicle chargers.

This program ensures that proper design standards for fleet electrification infrastructure are leveraged into each of our BEB infrastructure installations and also ensures that adequate grid capacity will be available and interconnected to our site(s) prior to the planned commissioning dates of our vehicles.

Additionally, Marin Transit is in conversations with another local energy provider, MCE, to discuss electric rate structures and how to get the greenest energy into our fleet.

Additional Facility Requirements

Marin Transit is actively seeking additional land to house and electrify the remainder of the fixed route fleet with the goal of acquiring a facility by 2025 in order to develop plans and get infrastructure in place to charge the ten 40ft electric buses that will be purchased in 2029. An additional facility is vital to Marin Transit's fleet electrification plans.

Active Grant Requests

Marin Transit has submitted an application to the Federal FY 2023 Low or No Emission Grant Program and the Grants for Buses and Bus Facilities Competitive program to purchase land that would accommodate the electrification of Marin Transit's fixed route fleet. Not only will this benefit Marin Transit in allowing us to reach our goal of being 100% zero emission by the year 2040, but it will also improve the system by eliminating inefficiencies created through operating out of several different yards. This will consolidate existing leased facilities and save transit operations costs.

The grant request also includes the development and implementation of a transformative workforce development program that includes unionized and employee-owned purchased transportation providers.



Section F: Providing Service in Disadvantaged Communities

Marin Transit riders, when compared with Marin County’s general population, Marin Transit riders have significantly lower income levels and only 35% identify themselves as Caucasian/White or Asian. Based on the onboard surveys and U.S. Census data for Marin County, 59% of transit riders have an annual household income of less than \$50,000. Over 39% of Marin Transit riders do not have access to a car, while 95% of Marin County residents do.

CalEnviroScreen 3.0

Marin Transit does not serve disadvantaged communities, as listed in the latest version of CalEnviroScreen 3.0.

Zero (0) percent of Marin Transit’s facilities are located in communities that are classified as “disadvantaged” according to CalEnviroScreen.

Justice40 Communities

Marin Transit serves two Transportation Disadvantaged Census Tracts. Routes that serve these communities account for 62% of systemwide fixed-route ridership and 53% of revenue hours. A map of these communities is shown on the next page in Figure 4.

Equity Priority Communities

Marin Transit serves three regionally-designated Equity Priority Communities represent 76% of ridership and 67% of revenue hours. The transition to Zero Emission Buses will reduce air pollution in these neighborhoods. A map of these communities is shown in Figure 5.

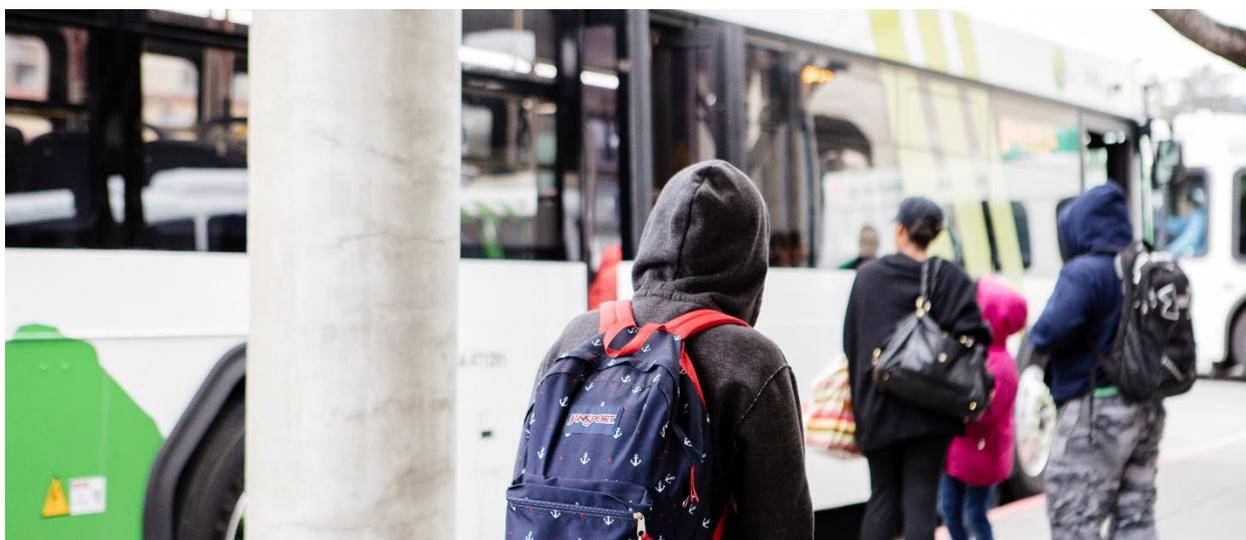
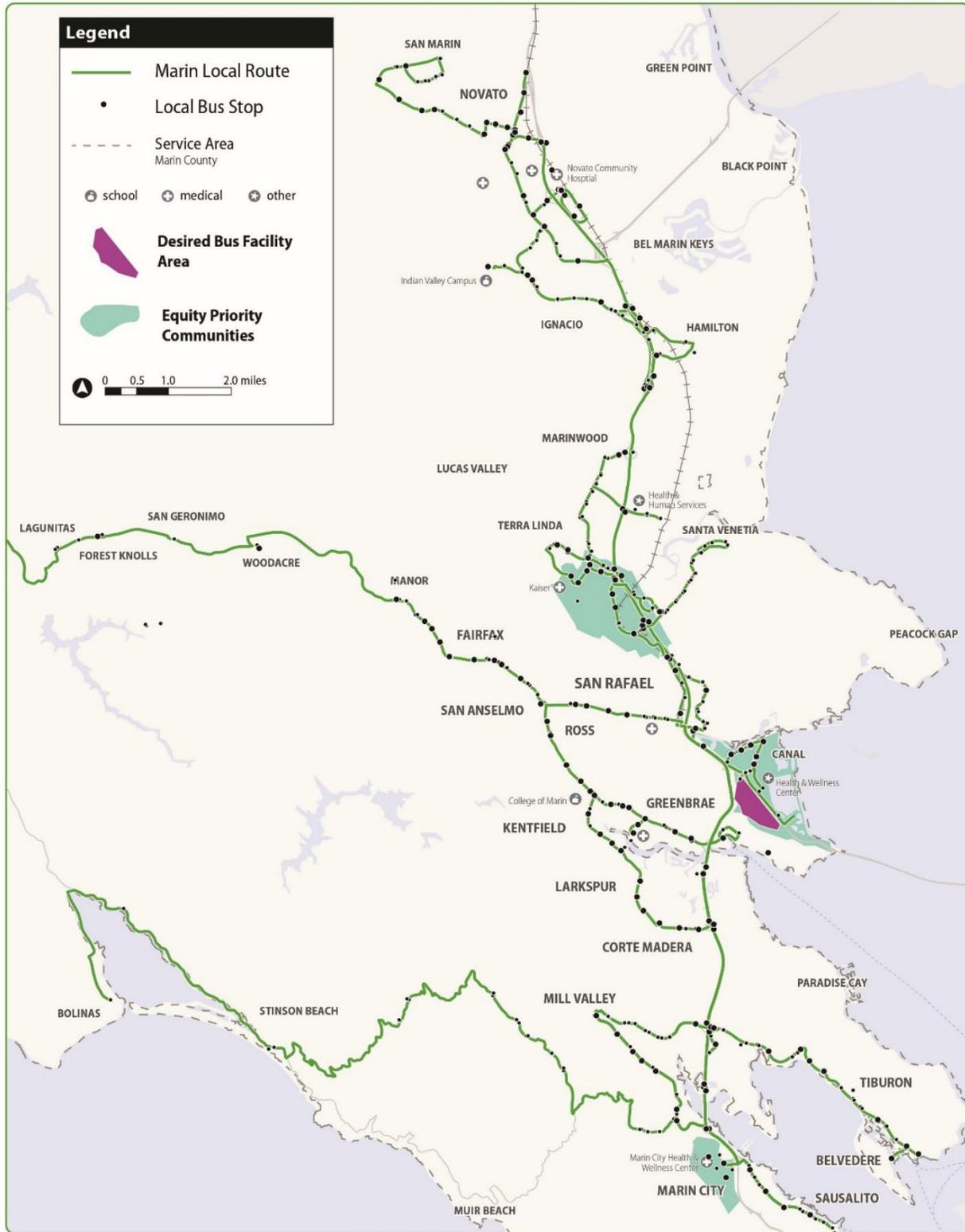


Figure 5 - Equity Priority Communities



Equity Priority Communities

Sources: Metropolitan Transportation Commission; Marin Transit

Section G: Workforce Training

Marin Transit contractors will receive training provided by vehicle OEMs, technology suppliers and infrastructure providers as equipment is deployed onsite.

In addition, Marin Transit is seeking FTA Section 5339 Low and No Emission Grants which include funding for workforce development. Should Marin Transit receive award of these funds, the Workforce Development plan will be expanded to include components outlined in the grant application. These components elements could include:

1. Training and Re-training the Existing Workforce
 - Provide 8 hours per year of paid training to all drivers on the operation of zero-emission buses.
 - Provide 16 hours per year of paid training to all mechanics on the maintenance and monitoring of zero emission vehicles.
 - Fund conference attendance for maintenance managers, other key contract staff, and direct staff.
 - Provide Marin Transit's capital and operations teams with training on solar power opportunities and integration with District facilities.
2. Recruiting and Training a New Workforce
 - Collect data from contractors to better understand recruitment challenges
 - Partner with College of Marin, Santa Rosa Junior College and our contractors to develop a training and apprenticeship program for bus operators and mechanics.
3. Develop and Construct On-site Childcare Facility
 - Eliminates barrier to employment for working parents.
4. Provide Childcare Subsidies to Transit Workers
 - Offset costs of proposed on-site facility
 - If developing and constructing an On-site childcare facility is determined to be infeasible, the subsidy could be provided for off-site childcare.

Section H: Potential Funding Sources

Marin Transit is currently and will continue to monitor funding and financing opportunities that Marin Transit can use to transition its fleet to Zero Emission.

Table 5 below, identifies the existing potential funding sources that Marin Transit is aware of.

Table 5 - Potential Funding Sources

Agency Level	Fund/Grant	Description	Applicability
Federal	FTA Formula Funds (5307)	Through the Metropolitan Transportation Commission's Transit Capital Priorities Program, Federal Funds are made available for Bus Replacements	Marin Transit uses these to fund up to 80% of its bus replacement purchases
Federal	Low or No Emission Program (Low-No Program)	Low-No provides competitive funding for the procurement of low or no emission vehicles, including the leasing or purchasing of vehicles and related supporting infrastructure.	Applications for this program were combined this year with the Buses and Bus Facilities Program. Marin Transit submitted two applications, one for \$3.6 million for improvements to Rush Landing, and one for \$46.7 million for a new facility on April 13, 2023
Federal	Buses and Bus Facilities Program (5339)	Grants applicable to rehabbing buses, purchase new buses, and invest and renovate related equipment and facilities for low or no emission vehicles or facilities.	Applications for this program were combined this year with the Low-No Program. Marin Transit submitted two applications, one for \$3.6 million for improvements to Rush Landing, and one for \$46.7 million for a new facility on April 13, 2023
State	Cap & Trade	Low Carbon Transit Operations Program, Affordable Housing & Sustainable Communities, and Transit & Intercity Rail Capital Program	Marin Transit receives LCTOP funds through Caltrans, and has submitted applications for the TIRCP funding availabilities.
State	Low Carbon Fuel Standard (LCFS Credits)	LCFS credits are collected through using ZEBs and are then traded to reduce operating costs.	Marin Transit currently collects and 'sells' LCFS credits through a broker in order to reduce operating costs.

State	HVIP	Voucher program aimed at reducing the purchase cost of zero-emission vehicles.	Marin Transit received HVIP vouchers on its first battery electric bus purchase in 2016. The program was oversubscribed when Marin Transit made its next purchase in 2020. Marin Transit will apply for this funding source as it is available when Marin Transit makes vehicle purchases.
State	SB 1 – State of Good Repair	SGR Funds are competitive and eligible for transit maintenance, rehabs, and capital programs.	Marin Transit should apply for this funding opportunity in the next cycle.
State	California Energy Commission	Funding for Fuels and Transportation	Marin Transit should consider applying for this funding.
Regional	Regional Measure 3	Bay Area toll revenues to fund highway and transit improvements	Marin Transit will investigate opportunities to participate in this funding source.
Regional	Carl Moyer Program (CARB, BAAQMD)	Funding to help procure low-emission vehicles and equipment.	Marin Transit should apply for this if additional local match is needed for future bus replacements.
Regional	Transportation for Clean Air (BAAQMD)	Provides funding to procure zero-emission vehicle replacements	Marin Transit applied for and received TFCA funds for its first two battery electric buses. The district will consider this funding source for future purchases as well.
Local	Marin County Measure AA Sales Tax	½-cent County sales tax dedicated to Transportation Projects. 4% of this revenue is dedicated towards transit capital projects	Marin Transit uses revenue from Measure AA as a local match for infrastructure and capital projects.
Local	Marin County Property Tax	This dedicated tax is allocated directly to Marin Transit	Marin Transit uses revenue from property tax as a local match for infrastructure and capital projects.

Section I: Start-up and Scale-up Challenges

For Marin Transit, the biggest challenge is **insufficient property** on which ZEB infrastructure can be installed. Marin Transit has been search for 10+ years and continues to search for a site for a Zero Emission Bus Facility for Maintenance and Parking.

In addition, Marin Transit has identified to the following challenges in adopting Battery Electric Buses:

- Procurement of Zero Emission Buses has to coincide with infrastructure improvements.
- Supply chains still haven't recovered from the COVID-19 pandemic making procurement of necessary items like switchgears an issue for infrastructure improvements.
- Deployment of Battery Electric Buses and additional power requirements is vulnerable to utility company priorities
- Additional operating costs related to IT and infrastructure
- Additional cost to operate vehicles (Electricity is more expensive than Diesel)
- Uncertainties about future electric rate structures
- Uncertainties about future range capacity of Battery Electric Buses and whether a BEB can be a one for one replacement with a traditional bus.
- Building in solutions for resiliency and interruptions in power
- Additional capital costs (bus prices)
- Manufacturers are slow to develop non-standard vehicle types, for example narrow-body or smaller vehicles, due to lower market demand

APPROVED

May 1, 2023

MARIN TRANSIT

RESOLUTION #2023-04

**RESOLUTION OF THE BOARD OF DIRECTORS OF THE MARIN COUNTY
TRANSIT DISTRICT TO APPROVE AND ADOPT THE MARIN COUNTY TRANSIT
DISTRICT 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 Marin County Transit District'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 Marin County Transit District 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 the Marin County Transit District 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 District hereby approves the Marin County Transit District Zero-Emission Bus Rollout Plan as set forth in full.

BE IT FURTHER 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.

APPROVED, PASSED, AND ADOPTED this 1st day of May 2023

Agency Board Designee:

BY:  _____