
CITY OF SANTA ROSA ZERO-EMISSION BUS ROLLOUT PLAN

As adopted by the City of Santa Rosa City Council
on June 6, 2023



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Executive Summary

The City of Santa Rosa has developed this Zero-Emission Bus (ZEB) Rollout Plan to meet both California's Innovative Clean Transit (ICT) regulation (13 CCR § 2023.1) and the Federal Transit Administration's (FTA) amended requirement for agencies seeking federal grants. Although developed to meet these requirements, this plan has its roots in the vision set forth by the residents of Santa Rosa and work of City Council since 2005 with an initial resolution setting GHG emission reduction targets and subsequent climate action activities.

Through the ICT regulation which became effective October 1, 2019, the California Air Resources Board (CARB) has mandated all California public transit agencies to transition bus fleets to zero-emission technologies by 2040. The ICT regulation requires agencies to adopt Zero-Emission Bus Rollout Plans as a means to work through the potential challenges associated with the transition to zero-emissions bus fleets. The ZEB Rollout Plan is a living document, and once approved by CARB, will be updated as needed to reflect changing conditions and plans. As the regulations stipulates, the CityBus ZEB Rollout Plan includes the following sections addressing the following topics:

- A) Transit Agency Information
- B) Rollout Plan General Information
- C) Technology Portfolio
- D) Current Bus Fleet Composition and Future Bus Purchases
- E) Facilities and Infrastructure Modifications
- F) Service in Disadvantaged Communities
- G) Workforce Training
- H) Potential Funding Sources
- I) Start-up and Scale-up Challenges

At the federal level, the signing of the Bipartisan Infrastructure Law (Pub. L. 117-58) by President Biden on November 15, 2021, amended the statutory provisions for the 5339 Grants for Buses and Bus Facilities Competitive Program and Low or No Emission Program to require that any applicant for projects related to zero-emission vehicles have a Zero-Emission Transition Plan. To meet this statutory requirement the CityBus Zero-Emissions Bus Rollout Plan includes a long-term fleet plan (Section D); resources needed to meet the cost of a transition to an all battery electric fleet (Sections D,E, and H); policy and legislative impacts (Sections A, B, and C); evaluation of existing and future facilities (Sections C and E); relationship with utility (Sections B, E and H); and impacts to workforce (Section G).

The City of Santa Rosa Transportation and Public Works Department provides transit services through the Transit Division's operation of Santa Rosa CityBus, with a service area predominantly within the City of Santa Rosa. The City of Santa Rosa City Council has supported several actions to accelerate the transition of CityBus' fleet entirely to

Battery Electric Buses (BEBs) ahead of ICT mandates. As discussed in this plan, Santa Rosa CityBus anticipates reaching full electrification of its 41-vehicle fleet (29 40' fixed route BEBs and 12 cutaway BEBs) by 2037, 3 years in advance of the ICT requirement.

Santa Rosa's paratransit service and the deviated-fixed route service are currently operated by a contractor using cutaway vehicles. Currently the ICT regulations states that the requirement for purchase of ZEB cutaway buses will be specified on or after January 1, 2026, once cutaway models with federally required Bus Testing Reports are available (described in section 2023(b)(8) of the regulation (13 CCR § 2023.1) as the "Altoona Test"). CityBus has included all cutaway vehicles in that fleet as part of this plan. CityBus will respond to further guidance on the requirements for cutaway vehicles and will re-evaluate the cutaway vehicle market prior to each cutaway purchase. As the cutaway vehicle market progresses, CityBus will look for opportunities to accelerate the adoption of electric cutaway vehicles and update the ZEB Rollout Plan accordingly.

All CityBus' fixed-route services operate out of a single facility at 45 Stony Point Road in Santa Rosa, California. Paratransit operations and maintenance are based at the paratransit contractor's facility in Santa Rosa at 77 W 3rd St., with oversight and monitoring by the City of Santa Rosa. CityBus will accommodate the storage, maintenance, and fueling of all 29 fixed route BEBs and the fueling of all 12 cutaways as early as 2035 and by 2040. Pursuing a BEB fleet in place of a diesel fixed-route fleet and gasoline cutaway fleet will require additional resources, both for the initial purchase of electric replacement vehicles and deployment of bus charging infrastructure as well as the ongoing replacement of higher-cost electric vehicles.

As discussed in this Plan, CityBus will pursue funding opportunities at the federal, state, and local levels to support the BEB transition and ensure that appropriate staff training and workforce development is provided to support an effective deployment of a ZEB bus fleet. This Rollout Plan provides estimated timelines based on information regarding bus and cutaway purchasing options, infrastructure upgrades, workforce training, and other developments and expenses that are available at the time of writing.

Section A: Transit Agency Information

City of Santa Rosa CityBus Profile

The City of Santa Rosa's Transit Division (within the Transportation and Public Works Department) operates Santa Rosa CityBus fixed route services and manages the paratransit services within the Santa Rosa city limits. The agency operates 28 fixed-service buses and manages the operations of 12 cutaway vehicles that either operate on the deviated fixed route or paratransit service. Before the COVID-19 pandemic, in FY 2018-19, CityBus provided approximately 1.8 million passenger trips on its fixed-

route service, 35,000 passenger trips on paratransit and 4,500 trips on the deviated fixed route service. In FY 2021-2022 CityBus provided approximately one-million rides on fixed-route service, 25,000 paratransit trips and 4,600 trips on the deviated fixed route service.

CityBus currently has one depot, located at 55 Stony Point Rd. as part of the City's Municipal Services Center Complex (Figure A-1). CityBus currently operates a fixed route fleet of 28 diesel-buses of varying sizes: 30-ft. and 40-ft. buses. Additionally, the City contracts for paratransit and deviated-fixed route services with the current contractor's facility at 77 W 3rd St. in Santa Rosa. The contractor provides maintenance for 12 cutaway vehicles.

CityBus plans to expand the fixed-route fleet by one vehicle with funding from the California Department of Housing and Community Development's Affordable Housing and Sustainable Communities Program (AHSC). In 2040, CityBus expects to have a BEB fleet of 29 fixed route vehicles and 12 cutaway vehicles.

The City of Santa Rosa Municipal Services Center Complex currently includes the depot, the administrative offices for the Transit Division, the City garage, and the battery electric depot charging facility. The City expects to provide the charging facilities for all 29 fixed route vehicles and 12 cutaways at this facility.

Figure A 1

Santa Rosa CityBus Basic Information

- ❖ **Transit Agency's Name:**
Santa Rosa CityBus
- ❖ **Mailing Address:** 45 Stony Point Road, Santa Rosa, CA 95401 (Figure A-1)
- ❖ **Transit Agency's Air Districts:** San Francisco Bay Area
- ❖ **Transit Agency's Air Basin:** San Francisco Bay Area
- ❖ **Total Number of Buses in Annual Maximum Service:**
Fixed route: 24 buses.
Paratransit: 9 cutaways.
Deviated fixed route: 1 cutaway.
- ❖ **Fleet make up:**
 - Fixed-route – 24 diesel buses and 4 BEBs



- Deviated fixed-route – One cutaway
- Paratransit – 11 cutaways
- ❖ **Urbanized Area¹**
 - Size: 79.4 square miles
 - Population: 297,329
- ❖ **Service Area:**
 - Size: 41.5 sq mi
 - Population: 176,938
- ❖ **Contact Information of transit general manager:**
 - Rachel Ede, Deputy Director-Transit, [rede@srcity.org](mailto:redede@srcity.org), 707-543-3337
- ❖ **Is your transit agency part of a Joint Group?** No

City of Santa Rosa Sustainability Goals

The City of Santa Rosa has a long-standing commitment to environmental protection and working to reduce greenhouse gas (GHG) emissions. In August 2005, the City adopted a resolution setting a GHG emission reduction target for City government operations of 20% below 2000 levels by 2010, and a community wide GHG emissions reduction target of 25% below 1990 levels by 2015.

To reach these ambitious targets, City staff and consultants prepared two Climate Action Plans. The Community-wide Climate Action plan (CCAP) guides GHG reduction policies and activities at the community level. That includes measures to improve community access and use of transit. The Municipal Climate Action Plan (MCAP) focuses on the GHG emissions associated with municipal facilities and operations and identifies the City's goal to upgrade buses to lower emissions models.

On January 14, 2020, the Council adopted a [Climate Emergency Resolution](#). This Resolution committed the City to ongoing efforts related to climate change and greenhouse gas emission reductions through the implementation of Climate Action Subcommittee direction, the work of City departments, and collaboration with the Regional Climate Protection Authority (RCPA).

As CityBus updates our Short-Range Transit Plan (SRTP), carbon reductions strategies will continue to have a more central role as is demonstrated within this Zero-Emission Bus Rollout Plan. Our existing SRTP references the City's General Plan and highlights sustainable infill mixed use development along transit corridors. CityBus additionally works to increased transit-oriented developments as a response to the SB 375 directive to address climate change and reduction of greenhouse gases (GHG).

¹As published by U.S. Census Bureau on December 29, 2022.

The City of Santa Rosa's City Council, the governing board for CityBus, has provided direction to staff and has been fully supportive throughout the development the existing BEB infrastructure.

Section B: Rollout Plan General Information

Overview of the Innovative Clean Transit Regulation

The California Air Resources Board (CARB) enacted the Innovative Clean Transit (ICT) regulation on December 14, 2018, obligating California public transit agencies to transition to zero-emission bus fleets by 2040. The regulation details the percentage of new buses that must be zero-emission for each year (2023–2040). Small transit agencies are directed to follow the below annual percentages for new purchases:

ICT Zero-Emission Bus Purchase Requirements for Small Agencies:

- ❖ January 1, 2026 – 25% of all new bus purchases must be zero-emission
- ❖ January 1, 2027 – 25% of all new bus purchases must be zero-emission
- ❖ January 1, 2028 – 25% of all new bus purchases must be zero-emission
- ❖ January 1, 2029+ – 100% of all new bus purchases must be zero-emission
- ❖ March 2021-March 2050 – Annual compliance report due to CARB

This purchasing schedule allows agencies to attain the goal of zero-emission fleets in 2040 while ensuring vehicles reach at least the required useful life period, 12 years for fixed route buses and 6 years for cutaway vehicles. CityBus' average replacement schedule necessitates bus replacements closer to 14 years and cutaways closer to 7-10 years. Agencies can deviate from this schedule in the event of economic hardship or if zero-emission available vehicles cannot meet the needs of a local service.

City of Santa Rosa CityBus Rollout Plan General Information

CityBus' Rollout Plan achieves a zero-emission fleet in 2037, ahead of the ICT's 2040 target. The last of the agency's fixed route diesel buses will reach the end of its 12-year useful life in 2030 but will likely not be replaced until 2034 per the current funding plan for fleet electrification. The current cutaway fleet will reach the end of its 6-year useful life in 2026, but due to the limitations of electric cutaways in this weight class on the market in 2023 CityBus has estimate that the first electric cutaway vehicles will be purchased in 2032 with the last of the cutaway vehicles being electrified in 2036. CityBus will re-evaluate the market prior to purchasing each cutaway look for opportunities to accelerate the adoption of electric cutaway vehicles into the City fleet.

- ❖ **Rollout Plan's Board Approval Date:** Expected June 6, 2023
- ❖ **Resolution No. (optional):** TBD
- ❖ **Is a copy of the Board-approved resolution attached to the Rollout Plan?**

- A copy of the City Council approved resolution will be included as **Appendix A**
- ❖ **Contact Information:**
 - Yuri Koslen, Transit Planner, ykoslen@srcity.org, 707-543-3335
 - Shawn Sosa, Administrative Analyst, ssosa@srcity.org, 707-543- 3327
 - Rachel Ede, Deputy Director, [rede@srcity.org](mailto:redede@srcity.org), 707-543-3337
- ❖ **Who created the Rollout Plan?**
 - City of Santa Rosa Transit Division staff drafted the Zero-Emission Bus Rollout Plan. This Plan was informed by the Battery Electric Bus Planning and Engineering Study for Santa Rosa CityBus sponsored by Sonoma Clean Power and prepared by The Cadmus Group in December 2019.
- ❖ **Cost of creating the Rollout Plan.**
 - The cost of creating the Rollout Plan is City staff time. Staff time includes applying for grants, coordinating regional discussions, working with Sonoma Clean Power to develop the Engineering Study, applying for PG&E's EV Fleet program, meeting with PG&E on site, working through PG&E contracting, developing Phase I project plans, managing the design build contracts for Phase I, working through the purchasing of the first four BEB vehicles, plus the general management of the electrification process that has enabled the City staff to become knowledgeable enough to produce this plan.

Section C: Technology Portfolio

ZEB Transition Technology Selection

CityBus is pursuing a battery-electric bus (BEB) only fleet. In 2037 the City of Santa Rosa is projected to operate a zero-emission bus fleet comprised of 29 40' BEBs and 12 cutaway BEBs. City of Santa Rosa Transit Division staff researched the deployment of fuel-cell technology, but a few factors guided the determination that deployment of battery electric vehicles is the best choice for the fixed-route fleet. First, Sonoma County has the world's largest geothermal geyser field (<https://geysers.com/history11>) as a source for 100% local renewal power (<https://sonomacleanpower.org/programs/evergreen>). Plus, since CityBus only operates local service, our route blocking distance per vehicle is a maximum of 170 miles/day and our service hours (6am – 9pm) enable CityBus to utilize depot charging for about 8 hours each evening. With a small fleet and limited mechanical staff, the City will not pursue a mixed ZEB fleet.

CityBus' investment in BEBs builds on a history of working with Sonoma Clean Power that began in 2013 when the City voted unanimously to join Sonoma Clean Power.

Section D: Current Bus Fleet Composition and Future Bus Purchases

Description of CityBus's Current Fleet

The City of Santa Rosa has a fleet currently composed of twenty-five 40' diesel buses, three 30' diesel buses, eleven 21' gasoline cutaway vehicles and one 26' gasoline cutaway vehicle. The diesel vehicles typically run a block of work that is composed of multiple routes throughout the City, ranging between 120-170 miles. The gasoline cutaways typically operate just under 100 miles/day. The maintenance for the fixed route fleet is completed at the City of Santa maintenance facility while the gasoline cutaway fleet is maintained at the contractor's facility. Table 1 details the CityBus fleet as it exists in February 2023. In January 2023 CityBus placed into revenue service the first four BEBs. With the addition of these BEBs CityBus expects to retire four 2002 diesel vehicles. As new BEBs are purchased as detailed in Tables 2 and 9, existing internal combustion engine (ICE) vehicles will be retired. Tables 1, 2 and 9 provide details on the CityBus long-term fleet plan to meet FTA's Zero-Emission Transition Plan requirement.

The City of Santa Rosa's transit service fuel consumption and mileage is tracked for billing and benchmarking purposes as detailed in Table 1a. Thus, as the fleet is converted to BEBs the mileage and operations costs can be compared with ICE vehicles. In FY 21-22 CityBus spent approximately \$1.4 million on scheduled and unscheduled maintenance including parts and labor for fixed route vehicles (excluding accident-related costs), the result is an average maintenance cost of \$1.41/mile. As part of the contract for services, the City of Santa Rosa paid our contractor about \$250,000 in FY 21-22 for vehicle maintenance costs, shop tools and maintenance wages and benefits, the result is an average maintenance cost of \$1.45/mile.

Table 1: Individual Bus Information of Current Bus Fleet

# of Buses	Service type	Bus Make	Bus Model	Bus Type	Bus Length (ft.)	Bus Fuel Type	Bus Manufacture Year	Propulsion Technology Type	Engine Model Year	Charging Technology
2	fixed route (retirement imminent)	Gillig	Low Floor	Standard Bus	40	Diesel	2002	Conventional	2002	n/a
1	fixed route	Gillig	Low Floor	Standard Bus	29	Diesel	2002	Conventional	2002	n/a
2	fixed route	Gillig	G30E102N2	Standard Bus	30	Diesel	2008	Conventional	2008	n/a
7	fixed route	New Flyer	XDE40	Standard Bus	40	Diesel	2011	Conventional	2011	n/a
6	fixed route	New Flyer	XD40	Standard Bus	40	Diesel	2013	Conventional	2013	n/a
4	fixed route	New Flyer	XD40	Standard Bus	40	Diesel	2016	Conventional	2016	n/a
4	fixed route	Eldorado	Axcess	Standard Bus	40	Diesel	2018	Conventional	2018	n/a
4	fixed route	Proterra	ZX5 Max	Standard Bus	40	Electricity	2022	Zero-Emission	2022	Depot Charging
1	Deviated-fixed	ARBOC	Mobility LF	Cutaway	27	Gasoline	2010	Conventional	2010	n/a
6	paratransit	StarCraft	Allstar	Cutaway	21	Gasoline	2014	Conventional	2014	n/a
1	paratransit	StarCraft	Allstar	Cutaway	21	Gasoline	2015	Conventional	2015	n/a
4	paratransit	StarCraft	Starlite	Cutaway	22	Gasoline	2020	Conventional	2019	n/a

Table 1a Current Fleet fuel consumption

	Annual mileage of the fleet	Annual fuel consumption in Gallons	Fleet average efficiency	2022 Fuel Expense	Average diesel cost/gallon
Fixed routes	785,562	173,950	4.516	\$775,208	\$4.46
Deviated fixed route	26180	3151		\$9,170	\$2.91
Paratransit service	168,000	25187	6.67	\$100,600	\$2.91

Zero-Emission Bus Procurement Plan and Schedule

At this time the current market for fixed route buses has matured more so than for cutaway vehicles. Due to this fact, CityBus can detail with more clarity the transition of our 28-diesel bus fleet to battery electric bus (BEB). Although CityBus is committed to transitioning our 12-vehicle cutaway fleet to BEB as well, the procurement and schedule of this replacement is less certain due to the lack of vehicles on the market. Whether it is cutaway vehicles or the fixed fleet, vehicles will not be replaced until they reach their end of useful life. The City of Santa Rosa does not plan to retrofit nor convert any existing vehicles to zero-emission vehicles. CityBus does plan to expand the fleet by one fixed route vehicle with its 2023 BEB purchase with funding from Affordable Housing and Sustainable Communities Program (AHSC) from the California Department of Housing and Community Development. Figure 2 provides details showing the intended purchases of replacement BEBs each year through 2040.

Table 2: Future Bus Purchases

Year of Purchase	Service Type	Total # of Buses to be Purchased	# of ZEB Purchases	% of Annual ZEB Purchases	% of fleet ZEBs	ZEB type	ZEB fuel	# of conv. bus purchases	Required ZEB Range	Estimated Cost/Bus	Funded
2022	fixed route	4	4	100%	13%	standard	electricity - depot	0	170	\$1,200,000	yes
2023		5	5	100%	30%			0	170	\$1,400,000	yes
2025		6	6	100%	50%			0	170	\$1,500,000	yes
2027		6	6	100%	70%			0	170	\$1,500,000	app. submitted
2030		4	4	100%	83%			0	170	\$1,500,000	unfunded
2034		4	4	100%	100%			0	170	\$1,500,000	unfunded
2024	deviated fixed	1	0	0%		n/a	n/a	1	n/a	n/a	yes
2024	paratransit	3	0	0%		n/a	n/a	4	n/a	n/a	yes
2026		4	0	0%		n/a	n/a	4	n/a	n/a	unfunded
2028		4	0	0%		n/a	n/a	4	n/a	n/a	unfunded
2032	deviated fixed	1	1	100%		cutaway	electricity - depot	0	125	\$700,000	unfunded
2032	paratransit	3	3	100%				0	125	\$900,000	unfunded
2034		4	4	100%				0	125	\$1,200,000	unfunded
2036		4	4	100%				0	125	\$1,200,000	unfunded

CityBus fixed route vehicles are cycled through a variety of blocks ranging in daily distance between 120-170 miles. CityBus cutaway vehicles operating paratransit and the deviated fixed route service typically operate about 100 miles a day in service miles. CityBus plans to only purchase BEBs that can complete any of the blocks within our fixed route service area, meaning that all the BEBs we purchase will operate all of fixed routes and blocks within our service area at some point. Table 2a and 2b shows the composition of the CityBus fleet through 2036 when ongoing fixed route and cutaway fleet replacement buses will be incorporated into revenue service, changing the composition of the fleet to entirely BEBs.

Table 2a

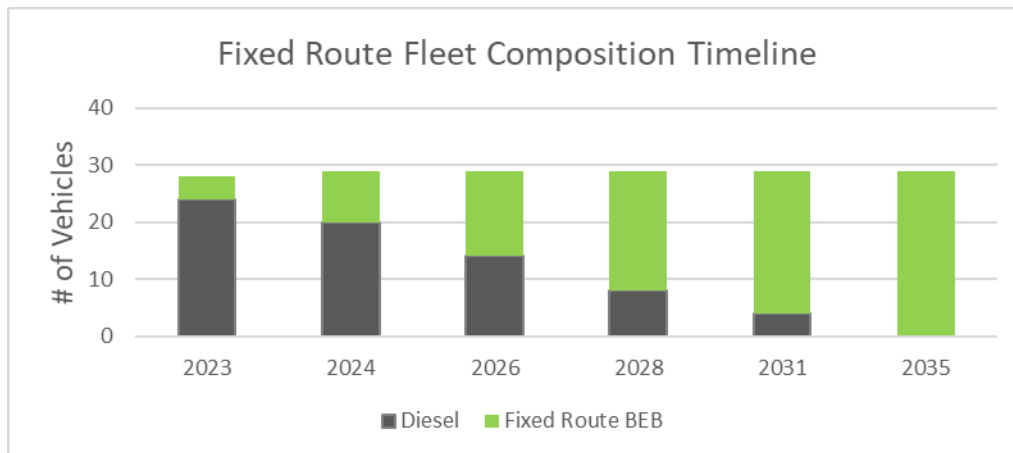
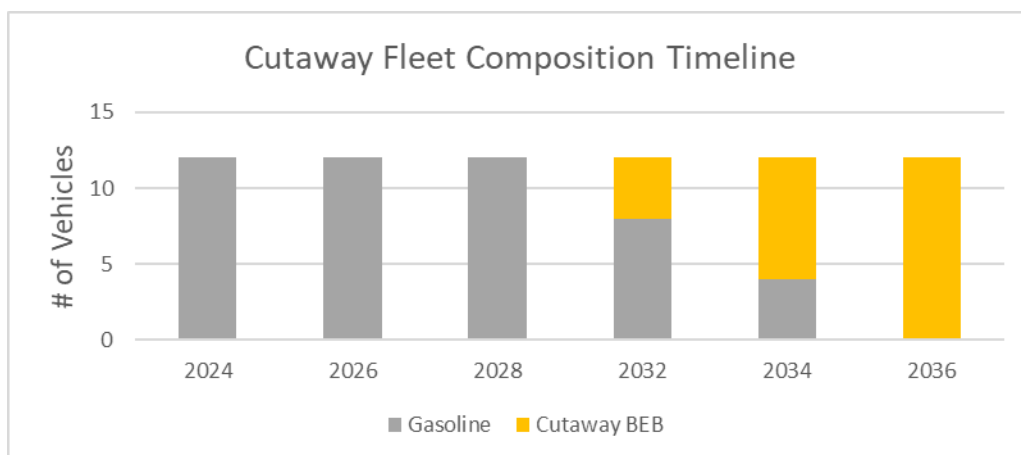


Table 2b



Projected Annual Capital Costs for ZEB Purchases

For CityBus, the total capital cost over the entire transition period in order to fully electrify the fleet of fixed route and cutaway vehicles is estimated at \$55 million. Costs are incurred cyclically, according to a CityBus goal of a 14-year replacement cycle of fixed route buses and 7–10-year replacement cycle for cutaway vehicles. Additionally, the cost of ensuring that the charging infrastructure is in place prior to the delivery of the vehicles is critical.

CityBus presently purchases BEBs through a State of California Department of General Services contract using Federal Transit Administration partial funding as well as other sources. Ensuring procurement mechanisms are available and that the manufacturers can supply the desired vehicles will continue to be a challenge. CityBus will continue to apply for additional funding for these vehicles through zero-emission vehicle specific funding opportunities, which are discussed further in Table 9.

Section E: Facilities and Infrastructure Modifications

The City of Santa Rosa plans to utilize only depot charging to meet the needs of our BEB fleet. This section along with Section H details the resources needed to transition to a 100% BEB fleet. Below are the attributes of the City of Santa Rosa Transit Division Facility Configuration and Depot Layout.

Current Depot Address: City of Santa Rosa's Municipal Service Center (MSC) 55 Stony Point Rd. Santa Rosa 95401

Electric Utility: PG&E

Located in a Nox Exempt Area? No

Bus Parking Capacity: 41+

Propulsion Types That Will be Supported at Completion of ZEB Transition:

Battery Electric Buses

Current Vehicle Types Supported:

The City of Santa Rosa Transportation and Public Work Department includes both the Transit Division and the Fleet Division. The Fleet Division currently maintains all the fixed route diesel vehicles. A contractor currently maintains all of the gasoline cutaway vehicles, although the Fleet Division performs randomized monthly inspections on these vehicles. The City Facilities Division and Finance Department currently manage the gasoline and diesel fueling infrastructure, which both the contracted service and fixed route use for refueling. With the transition to BEBs the City expects to charge all fixed route, paratransit and deviated fixed route fleet vehicles at the MSC yard.

Facilities Assessment Methodology

BEB deployment has required electrical infrastructure upgrades, including upgrades to the transformer, switchgear, and utility service connections. Phase 1 was completed in 2022 as part of the City's participation in the PG&E Fleet Ready Program which was initiated in 2020. The Fleet Ready program supported project planning and design work including the detailed electrical and construction drawings required for permitting resulting in five 150kW dual port chargers. This plan assumes that infrastructure projects will be completed prior to each bus delivery. Additionally, the City's charging facilities plan assumes that not all chargers will be always operating (due to mechanical issues). For this reason, the City has deployed added charging capacity to ensure the charging infrastructure can reliably support the BEB fleet. With the City fleet size of 41 (29 fixed route buses and 12 cutaways) vehicles, we have detailed a plan with 23 150kw dual/triple-port chargers of which CityBus of which 19 charges will be required nightly in order to meet service requirements. These projects are described in detail below.

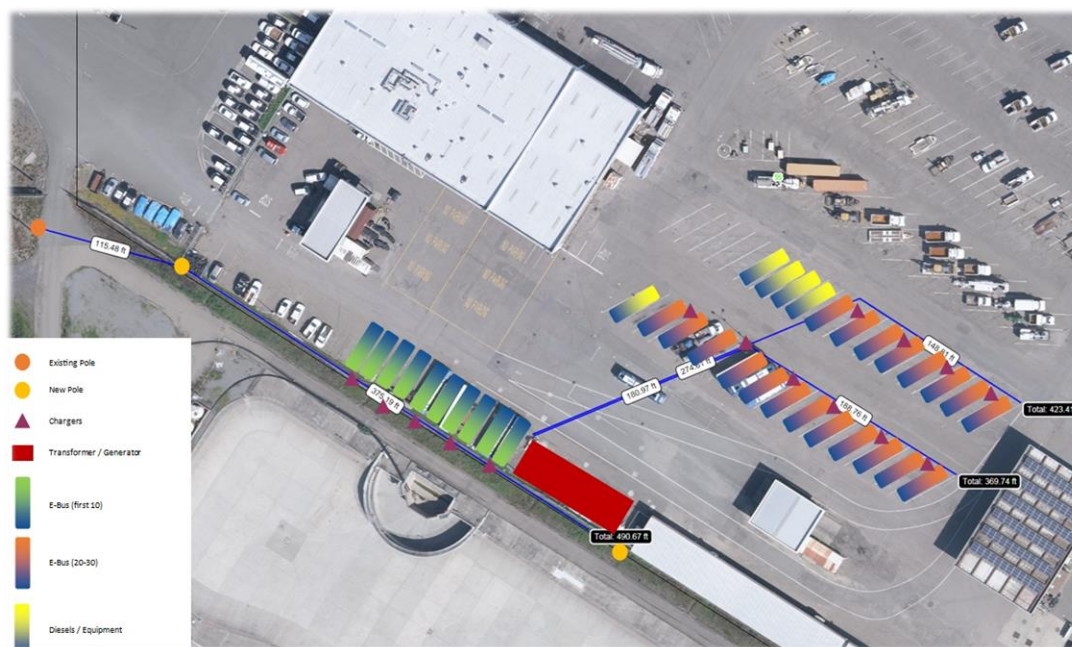
Table 5: Facilities Information and Construction Timeline

Division Facility Name	Address	Main Function	Type of Infrastructure planned	Phase	Service Capacity		Needs Upgrade?	Estimated Construction Timeline	Estimated Cost
					Vehicles	Chargers			
Municipal Service Center	55 Stony Point Rd. Santa Rosa, CA 95401	Municipal Garage, Facilities yard, fuel island	Depot Charging	Phase 1	6	3, 150kW- Dual Port	Yes	Completed 2022	\$800,000
				Phase 1B	4	2, 150kW- Dual Port	Yes	2023	\$245,000
				Phase 2	10	5, 150kW- Dual Port	Yes	2025	\$1,499,000
				Phase 2+	10	Engineering study, Resiliency, battery back, solar, 5 150kW Dual Port	Yes	2025	\$4,375,000
				Phase 3	3	3, 150kW- Dual Port	Yes	2031-33+	\$900,000
				Phase 3 Paratransit	15	5, 150kW- Triple Port for Paratransit vehicles	Yes	2031-35+	\$1,500,000

Description of Changes to Depot

Phase 1 of the electric vehicle charging infrastructure has been constructed in the MSC yard in parking spaces that had previously been used by the Fleet Division, shown in Figure A2 with the green colored rectangles. These 13 parking spaces were converted to 10 BEB charging locations in consultation with PG&E's EV Fleet Program representatives due to the proximity of the existing pole and the limited "to the meter" infrastructure PG&E was willing to construct as part of the program.

Figure A 2



Phase 2 of the City's BEB charging infrastructure is already funded via a Transit and Intercity Rail Capital Program (TIRCP) grant and may be combined with a "Phase 2+", shown by the yellow rectangles in Figure A2. Phase 2+ is meant to include an engineering study to determine the needed design and specifications to size a transformer and switchgear necessary to move to full fleet electrification. The study will also look at charging locations in the MSC yard and resiliency/adaptation strategies (including battery storage, solar, and back-up generator) in order to enable the completion of Phase 2 and Phase 3. The location of Phase 2, 2+, 3 and 3-Paratransit work will also occur at the MSC yard and will likely utilize the existing parking area for CityBus' diesel vehicles. This will require use of an additional six parking spaces for the fixed route fleet and 15 parking spaces for the cutaway vehicles to build out the BEB charging infrastructure. Phase 3 will be completed just prior to the full fleet electrification in 2031-2035 (shown in Figure A2 as orange rectangles).

Section F: Providing Service in Disadvantaged Communities

Providing Zero-Emission Service to DACs

In California, CARB defines disadvantaged communities (DACs) as areas throughout California that most suffer from a combination of economic, health, and environmental burdens, as defined by SB 535 and CARB. The state identifies DAC areas by collecting and analyzing information from communities. CalEnviroScreen (<https://oehha.ca.gov/calenviroscreen/sb535>) displays an analytical tool created by the California Environmental Protection Agency (CalEPA) that shows a census tract score and identifies communities that are considered DACs. The following Santa Rosa census tracts identified as DACs in the 2022 map:

- ❖ **Census Tract -6097153104** – This area is west of Highway 101, south of Highway 12, and includes the areas of Sebastopol Road, west to Stony Point Road, and south of Sebastopol Road by one to seven blocks.
 - This tract is served by CityBus routes 2, 2B, 12, 15 and Santa Rosa paratransit
- ❖ **Census Tract -6097153200** – This area is west of Highway 101, south of Hearn Avenue, east of Stony Point Road, and North of Wilfred Avenue
 - This tract is served by CityBus routes 12, 15 and Santa Rosa paratransit.

Of CityBus' thirteen routes, about 28% are within a DAC. Santa Rosa paratransit services the DAC census tracts in their entirety. Table 7a shows the four fixed routes that operate within a DAC. Ridership throughout the City of Santa Rosa has been impacted by COVID-19. Starting with the pandemic in March 2020 all fixed routes in Santa Rosa experienced service reductions including the four routes serving the DAC areas of Santa Rosa. In 2022, CityBus was able to fully restore the pre-pandemic frequency on the routes serving the DACs, but ridership is still slow to return to the pre-pandemic levels as can be seen in the ridership in Table 7a. During the pandemic and the post-pandemic time, paratransit demand has experienced an all-time low, but the availability of service has not been altered.

Table 7a: Service in Disadvantaged Communities

Route	Frequency	2019 Ridership	2022 Ridership
Route 2	30-minute	111,466	68,598
Route 2B	30-minute	139,498	97,937
Route 12	30-minute	96,185	54,482
Route 15	60-minute	59,674	51,561

The City's first four fixed-route BEBs as well as all future fixed route BEBs purchased by the City of Santa Rosa are expected to be rotated between different routes and thus expected to serve all the routes and areas of Santa Rosa within a DAC. The City of

Santa Rosa will also deploy paratransit cutaway BEBs throughout the paratransit service area.

Table 7b: Service in Disadvantaged Communities

Timeline	New ZEBs in CityBus fleet	Total ZEBs in CityBus fleet	Location of Disadvantaged Community
2022	4	4	South Santa Rosa
2023	5	9	South Santa Rosa
2025	6	15	South Santa Rosa
2027	6	21	South Santa Rosa
2030	4	25	South Santa Rosa
2034	4	29	South Santa Rosa

The State of California's transition to zero-emission buses will benefit the Bay Area region by reducing fine particulate pollution and improving air quality particularly at the locations where the polluting industries are located. Also, this transition will support better public health outcomes for Santa Rosa residents in DACs.

CityBus' current ICE fleet consumes an annual average of 173,950 gallons of diesel and 28,339 gallons of gasoline. This fuel when burnt exposes those who are reliant on this transportation option to diesel exhaust, a classified carcinogen linked to asthma and other lung health issues. Moving CityBus' fleet to BEBs will help alleviate this pollution and improve the health of our community. Replacing our existing vehicles with BEBs not only has the potential to improve service reliability to DAC areas but also increase the profile of CityBus as a solution to climate change and air pollution.

Section G: Workforce Training

CityBus's Current Training Program

The City of Santa is experienced in recruiting, hiring, training, and integrating new staff to ensure that CityBus employees are qualified to provide quality services to riders. The level of training that CityBus drivers and maintenance staff engage in is dependent upon their level of experience at time of hiring. CityBus training is managed internally by the City of Santa Rosa staff, specifically by the Transit Superintendent, and conducted by one of five Transit supervisors.

The City of Santa Rosa paratransit service and deviated fixed route service are operated by the City contracted operations provider who hires and trains the drivers and mechanics that maintain the cutaway fleet. The contractor's training program is detailed within the contract with the City of Santa Rosa and fosters safe driving behaviors and accident preventability as the service requires a Class B with passenger endorsement license.

Examples of the training required by experience level are shown below:

Not previously licensed (Class C only):

- A 55.5-hour classroom curriculum
- Obtain a Class B Commercial License Permit (CLP) by passing three California Department of Motor Vehicles (DMV) written tests: air brake, passenger, and general knowledge.
- A 90-hour behind-the-wheel instruction period. This includes 8.0 hours of skills and 82+ hours of city driving. A one-hour final check ride is required and must be approved by Transit Supervisor.
- Successful completion of a vehicle inspection, including air brake test, basic control skills, and road test with a certified DMV third party examiner.
- Obtain a Verification of Transit Training (VTT). This consists of a minimum 20 hours of city driving which is part of the 90 hours of behind-the-wheel instruction.
- Successful completion of a “cadet” program which includes 30 hours or more driving in revenue service with a mentor on several routes and a final one-hour check ride given by Transit Supervisor.

Licensed but no verification of transit training (Class B):

- A 21-hour classroom curriculum
- An 80-hour behind-the-wheel instruction period inclusive of 8.0 hours of skills to receive a VTT from the DMV. A one-hour final check ride is required and must be approved by Transit Supervisor
- Successful completion of a “cadet” program which includes 30 hours or more riding in revenue service with a mentor on several routes and a final one-hour check ride given by Transit Supervisor.

Incumbent (fully licensed)

- A 12-hour classroom curriculum
- A 40-hour behind-the-wheel instruction period, which includes six hours of skills and final one-hour check ride given by a Transit Supervisor.
- Successful completion of a “cadet” program including 30 hours or more riding in revenue service with a mentor on several routes and a final one-hour check ride given by Transit Supervisor

Requirements for all operators

All operators are required to keep their credentials current. Maintaining credentials is described as follows:

- Must have a driver proficiency certificate on file which is good for the duration of employment
- Annual renewal of Customer Service class
- Annual renewal of the Americans with Disabilities Act (ADA) sensitivity class.
- Annual renewal of the Mobility Device securement process
- Annual driving record review
- Annual pull notice
- Annual or biannual renewal of the medical certificate
- Quinquennial (five year) VTT renewal which is completed by attending monthly Safety Meetings
- Quinquennial license renewal, obtained by following DMV requirements and having a current medical certification on file

Hiring process for mechanics

Within their first year of employment, Mechanics are required to obtain their Class A Commercial Driver's License with a Passenger Endorsement. Newly hired Mechanics are enrolled in a licensed FMCSA Entry Level Drivers Training program in addition to the Passenger Endorsement training. Mechanics must also earn and maintain a selection of up to 11 ASE certificates in the Automotive and Truck categories. Mechanics receive industry-specific training related to fleet vehicles from vendors, as well as manufacture-specific training such as BEV Diagnosis, Repair, and Safety when new technology joins the fleet. Additionally, the Fleet Division holds Bi-Weekly Safety Meetings and Peer Training events.

CityBus's BEB Training Plan

With the acquisition of new equipment, the City of Santa Rosa will ensure that front-line staff have all the information and training necessary to operate the new equipment per the OEM specification, state and federal laws, or as deemed necessary by Supervisors. In the fall of 2022, CityBus received the first four Proterra BEBs and the first ABB chargers were commissioned. The following Table 8 details the training needed by City of Santa Rosa staff in advance of putting the first vehicles into operation.

Table 8: Workforce Training Schedule

Timeline	Training Program Class	Purpose of Training	Name of Provider	Number of Trainees	Trainees' Positions	Training Hours	Training Frequency	Estimated Cost Per Class
Fall of 2022	Proterra Mechanic Training	Ensure mechanics have training needed	Proterra	10	Mechanics	20	as needed	Part of bus purchase
Fall of 2022	Proterra Driver Supervisor Training	Ensure supervisors are able to train drivers	Proterra	5	Driver Supervisors	10	as needed	Part of bus purchase
Fall of 2022	Driver Training	Ensure drivers have training needed	City Supervisors	45	Drivers	5	as needed	Part of bus purchase
Fall of 2022	Charger infrastructure	Ensure electrical staff understand new infrastructure	ABB	5	Electrical Technicians	2	as needed	Part of infrastructure costs

As new equipment is procured for operations, CityBus will ensure appropriate training is provided to all staff that are part of safely operating and maintaining the equipment.

OEM Training

CityBus will rely on trainings that are provided with the new equipment from the bus manufacturers and charging station suppliers, including maintenance and operations training and other trainings that may be offered by the technology providers. OEM trainings provide critical information on operations and maintenance aspects specific to the equipment model procured.

OEM Optional On-Site Training

Various OEMs of buses are designing workforce development trainings that would allow CityBus to contract for an on-site, full or part-time, OEM employee to work on our electric buses and train our City staff in the process. As our bus fleet grows over the next few years, this prospect becomes an increasingly valuable option to be sure our staff are well trained, and for our buses to have short repair cycles with a resident technician.

Bus and Fueling Operations and Maintenance

The transition to a BEB fleet will have an impact on operations and maintenance. CityBus staff will work closely with the OEM providing vehicles to ensure all mechanics, service employees, and bus operators complete necessary training prior to deploying BEB technology and that these staff undergo refresher training as needed. Additionally, trainers including the Transit Superintendent or Fleet Manager will observe classes periodically to determine if any staff would benefit from further training.

Section H: Potential Funding Sources

Sources of Funding for ZEB Transition

CityBus has and will continue to seek funding for its BEB transition at the federal, state, and local levels. CityBus estimates that it will cost approximately \$55 million to fully electrify the City of Santa Rosa fixed route and cutaway fleet. CityBus has been awarded over \$22 million in funding for BEBs and related infrastructure. Table 9 details the sources of these funds. Transit Division staff have projected that an additional \$32 million will be needed to fully electrify the CityBus fleet. Table 9 attempts to project the replacement schedule for fixed route and cutaway vehicles to match the Table 2 Future bus purchasing timeline as well as the Table 5 Facilities timeline for charger installation, while color coding the cutaway vehicles and infrastructure.

CityBus expects to apply for Low Carbon Fuel Standard (LCFS) credits to offset the agency's electricity costs. The LCFS program is administered by CARB to help mitigate greenhouse gas emissions.

Table 9: Funding Sources

AWARDED FUNDS				
Timeline	Name of Funding Source	How Each Fund is Planned to be Used	Estimated Amount of Each Funding Source	Number of ZEBs to Purchase or Maintain, or Type(s) of Infrastructure to Install or Upgrade
2022	FTA 5307 UZA Formula	Buy Buses	\$383,334	4 - 675kWh BEB's
	FTA 5339(b) Discretionary		\$2,986,651	
	HVIP		\$552,000	
	TDA		\$693,159	
2022	PG&E EV Fleet	Install Chargers	\$346,000	Infrastructure to support 750kWh 3 - 150kWh Dual Port Electric Chargers
	TDA		\$454,000	
2023	TIRCP	Install Chargers	\$245,000	2 - 150kWh Dual Port Electric Chargers
2023	FTA 5307 UZA Formula	Buy Buses	\$1,316,002	5 - 738kWh BEB's
	FTA 5339 UZA Formula		\$1,767,706	
	TFCA		\$447,670	
	AHSC		\$800,000	
	LPP		\$551,000	
	LCTOP		\$706,928	
	HVIP		\$690,000	
	TDA		\$220,694	
2024	5310	Buy Deviated route Cutaway	\$81,200	1 - gasoline cutaway
	TDA		\$140,800	
2024	5310	Buy Paratransit Cutaway	\$212,000	3 - gasoline cutaway
	TDA		\$188,000	
2025	TIRCP	Install Chargers	\$1,499,000	Infrastructure to support 750kWh 5 - 150kWh Dual Port Electric Chargers
2025	FTA 5339(b) Discretionary	Buy Buses	\$4,288,300	6 - 738kWh BEB's
	FTA 5339 UZA Formula		\$587,785	
	TIRCP		\$2,524,000	
	PG&E EV Fleet		\$206,000	
	HVIP		\$828,000	
	EnergIIZE		\$370,098	
	TDA		\$195,817	
UNFUNDED PROJECTS				
Timeline	Name of Funding Source	How Each Fund is Planned to be Used	Estimated Amount of Each Funding Source	Number of ZEBs to Purchase or Maintain, or Type(s) of Infrastructure to Install or Upgrade
2025	Any in above fund listing	Install Chargers and Resiliency	\$4,375,000	Infrastructure to support 2mW 1.5mW Backup Battery 750kWh Solar PV 5 - 150kWh Dual Port Electric Chargers
2027		Buy Buses	\$8,000,000	6 - 738kWh BEB's
			\$275,000	
			\$828,000	
			\$17,000	
2026		Buy Paratransit Cutaway	\$600,000	4 - gasoline cutaway
2028		Buy Deviated route Cutaway	\$600,000	4 - gasoline cutaway
2030		Buy Buses	\$6,000,000	4 - BEB's
2031		Install Chargers	\$600,000	2, 150kWh Triple Port Cutaway Chargers
2032		Buy Deviated route Cutaway	\$500,000	1 - BEB cutaway
2032		Buy Paratransit Cutaway	\$900,000	3 - BEB cutaway
2032		Install Chargers	\$600,000	2, 150kWh Triple Port Cutaway Chargers
2033		Buy Paratransit Cutaway	\$1,200,000	4 - BEB cutaway
2033		Install Chargers	\$900,000	3 - 150kWh Dual Port Electric Chargers
2034		Buy Buses	\$6,000,000	4 - BEB's
2035		Install Chargers	\$600,000	2, 150kWh Triple Port Cutaway Chargers
2036		Buy Paratransit Cutaway	\$1,200,000	4 - BEB cutaway
2036+		Replace Above BEB's		

Federal Funding Opportunities

Below is a list of the federal funding sources that the Transit Division monitors and may seek funding from in the future. (Table 9 details the federal awards CityBus has received for electrification thus far):

- ❖ Federal Transportation Administration (FTA)
 - Urbanized Area Formula program
 - State of Good Repair Grants
- ❖ United States Department of Transportation (USDOT)
 - Better Utilizing Investments to Leverage Development (BUILD) Grants
- ❖ Federal Transportation Administration (FTA)
 - Bus and Bus Facilities Discretionary Grant
 - Urbanized Area Formula program
 - State of Good Repair Grants
 - Capital Investment Grants – New Starts
 - Capital Investment Grants – Small Starts
 - Low-or No-Emission Vehicle Grant
 - Metropolitan & Statewide Planning and Non-Metropolitan Transportation Planning
 - Enhanced Mobility of Seniors & Individuals with Disabilities - Section 5310
 - 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

State Funding Opportunities

Below is a list of the state funding sources that the Transit Division monitors and may seek funding from in the future. (Table 9 details the state awards CityBus has received for electrification thus far):

- ❖ Senate Bill 1 State of Good Repair (SGR)
- ❖ Transit and Intercity Rail Capital Program (TIRCP)
- ❖ 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
 - Low Carbon Fuel Standard (LCFS)
- ❖ 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
- ❖ California Energy Commission

Local Funding Opportunities

CityBus also relies on local funding opportunities to support BEB deployment including state Transportation Development Act (TDA) funds distributed in Sonoma County and Sonoma County Transportation Authority's local sales tax measure for transportation (Measure M/Go Sonoma). CityBus also seeks funding for BEB equipment through the Metropolitan Transportation Commission (MTC) for capital costs. CityBus will regularly assess opportunities for fiscal support for the BEB program.

Section I: Start-up and Scale-up Challenges

Cost Considerations

Making a significant industry change with a new propulsion technology, its corresponding infrastructure, and training for operators and maintenance staff poses new barriers and challenges. The most significant challenge facing transit agencies through the start-up and scale-up phases of the zero-emission transition is the financial requirement. New 40' BEBs cost between \$1,100,000 to \$1,500,00 which is about \$250,000 to \$850,000 more than traditional diesel buses. New cutaway BEBs are also significantly more expensive than traditional gasoline cutaways. Additionally, the necessary infrastructure to support these BEBs adds to the financial burden of transitioning to a BEB fleet. The costs of fueling infrastructure appear to be about \$250,000-\$300,000 per 150 kWh dual port charger. The as-yet unknown costs of fueling/charging the vehicles with electricity are another financial consideration as the City moves into the operations of BEBs. Continued financial support at the local, state, and federal level to offset the capital cost of this new infrastructure is imperative.

Resiliency Considerations

The City of Santa Rosa will also need to consider resiliency as it deploys BEBs. Because BEBs are reliant on electric charging, a power outage at the depot may mean that it would not be possible to provide scheduled service for those who depend on it. In addition, in recent years, there have also been an increasing number of PSPS events (Public Safety Power Shutoffs) due to wildfire risk from high winds during the dry

season and excess energy usage during heat waves. If these trends continue, as expected, this will only exacerbate the need for the City to have a strategy to charge a fully electrified bus fleet during power outages. The City of Santa Rosa will be exploring opportunities to install on-site solar photovoltaic panels to generate on-site power, as well as battery solutions for on-site energy storage. Additionally, for resiliency the City expects to investigate the need for a diesel generator for emergency power. Grant opportunities cited in the above section could potentially be used to fund such installations to augment the resiliency of CityBus transit operations.

Paratransit Fleet Transition

A challenge facing long-term transition planning is the uncertainty around the performance and availability of zero-emission paratransit cutaway vehicles. At present, zero-emission paratransit cutaway vehicles are beginning to be available for purchase using Federal funding. Currently the ICT regulations states that the purchase of ZEB cutaway bus will be specified on or after January 1, 2026, once more cutaway models obtain Bus Testing Reports that allow transit agencies to purchase them using federal funds (described in section 2023(b)(8) of the regulation (13 CCR § 2023.1) as the “Altoona Test”).

Additionally, CityBus currently uses 5310 funding through a Caltrans grant to purchase vehicles for its Oakmont deviated fixed-route service and its ADA Paratransit service. These funds currently are provided in an amount that supports the purchase of gasoline or CNG vehicles. This funding stream requires that the City use a federally procured contract which is typically the CALACT/MBTA Purchasing Cooperative. Thus, a cutaway battery electric vehicle would need to be an option on this contract or another federalized contract and be authorized by 5310 and Caltrans. The City’s paratransit service and Oakmont deviated-fixed route service are included in this first version of the CityBus ZEB Transition Plan, but for the above stated reasons the City plans to continue to purchase gasoline powered cutaway vehicles until after 2029 or until the 5310 grant funding and cutaway market make the financing and operational implementation of BEB cutaways more feasible. CityBus will re-evaluate the cutaway vehicle market prior to each cutaway purchase. As the cutaway vehicle market progresses, CityBus will look for opportunities to accelerate the adoption of electric cutaway vehicles and update the ZEB Rollout Plan accordingly.

Availability of Continued Funding

CARB can support CityBus by ensuring continued funding for the incremental cost of BEBs and fueling infrastructure. Funding opportunities should emphasize proper transition and deployment planning and should not preclude hiring consultants to ensure best practices and successful deployments.