

Zero-Emission Bus Rollout Plan



Prepared For:



Prepared By:

**Sam
Schwartz**



September 2022

Section A. Transit Agency Information

City of Glendora
116 E Foothill Blvd
Glendora, CA 91741

Air District: South Coast Air Quality Management District

Total Number of Buses in Annual Maximum Service: 4

Contact Information:

Steven Mateer
Transportation Manager
626-852-4846
SMateer@cityofglendora.org

Joint Group: The City of Glendora is not part of a Joint Group.

Section B. Rollout Plan General Information

The City of Glendora has a goal to fully transition to zero-emission buses well ahead of the 2040 deadline to begin purchasing only zero-emission technologies. The City plans to fully transition to 100% battery-electric buses (BEB) between 2022 and 2025. This transition will not entail early retirement of any City vehicles.

This plan was prepared by City staff and Sam Schwartz Engineering, D.P.C. The cost for the creation of the Rollout Plan was \$15,000 in consultant time. A copy of the board approved resolution was approved on September 13, 2022 and is attached in Appendix A.

For any additional information regarding the Rollout Plan, please contact:

Steven Mateer
Transportation Manager, City of Glendora
SMateer@cityofglendora.org
626-852-4846

Section C. Technology Portfolio

Types of zero-emission bus technologies to be deployed through 2040

The City of Glendora will be purchasing a total of four BEB minibuses to replace four existing CNG and gasoline cutaway buses. The City's Fleet Management Plan focuses on replacing its existing cutaways between 2022 and 2025. The City will also be acquiring four ChargePoint Express chargers (62.5 kWh) to charge the buses overnight and during midday layovers.

Section D. Current Bus Fleet Composition and Future Purchase

Existing Bus Fleet

The City of Glendora operates three shuttle services: Midday Shuttle, Gold Line Commuter Shuttle, and a Metrolink Commuter Shuttle. The Midday Shuttle has a total of three routes (Orange, Green, and Tripper). Major stops for the Midday Shuttle include middle schools, high schools, Glendora Village, Glendora Library, Crowther Teen & Family Center, and Glen Oaks Golf Course. The Midday Shuttle operates from Monday through Friday during the school year.

The Gold Line Shuttle provides AM and PM service to and from the APU/Citrus and Downtown Azusa stations on the Metro Gold Line light rail. The shuttles run from these two station locations to terminals in Glendora with stops along the way.

The Metrolink Commuter Shuttle has both AM and PM shuttle service. The shuttle departs from Glendora Transit Parking Plaza and connects to the Covina Metrolink Station. The Gold Line Shuttle operates with two routes (North and South) which provide services from two park-and-ride lots to the Metro L (Gold) Line APU/Citrus College Station. The City is considering rerouting this service to connect with the newly completed Covina Transit Center.

The City of Glendora currently has a total of six (6) vans and four (4) cutaways. The vans are not required for inclusion in the rollout plan but are described for context. Three of the four cutaway vehicles are fueled by CNG, and one is fueled by gasoline. The model years for the four cutaways range from 2011 to 2015 as seen in **Table 1: Individual Bus Information of Current Bus Fleet**.

Table 1: Individual Bus Information of Current Bus Fleet

Number of Buses	Engine Model Year	Bus Model Year	Fuel Type	Bus Type
1	2011	2011	CNG	Cutaway
1	2014	2014	Gasoline	Cutaway
1	2015	2015	CNG	Cutaway
1	2015	2015	CNG	Cutaway

Currently GreenPower EV250 buses are being considered as BEB replacements for existing cutaway buses as seen in **Table 2: Future Bus Purchases**. GreenPower EV250 minibuses are approximately 30-32 feet long with a seating capacity of 26. The GreenPower EV250 bus has a battery capacity of 260 kWh and an advertised battery consumption rate of 1.6 kWh/mi. It has a 163-mile range per manufacturer claims and is estimated to cost \$460,192.00 (after a state HVIP Program voucher) as shown in **Table 3: Range and Estimated Costs of Future ZEB Purchases**. The City of Glendora will not be converting any conventional buses to zero-emission buses as shown in **Table 4: Schedule of Converting Buses to Zero-Emission Buses**.

Table 2: Future Bus Purchases (by Delivery Date)

Timeline	Total Number of Buses to Purchase	Number of ZEB Purchases	Percentage of Annual ZEB Purchase	ZEB Bus Type	ZEB Fuel Type	Charging Technology	Number of Conventional Bus Purchase	Percentage of Annual Conventional Bus Purchases	Type(s) of Conventional Buses	Fuel Type(s) of Conventional Buses
2023	1	1	100%	Minibus	EV	Plug-in Garage Charging	N/A	N/A	N/A	N/A
2023	1	1	100%	Minibus	EV	Plug-in Garage Charging	N/A	N/A	N/A	N/A
2025	1	1	100%	Minibus	EV	Plug-in Garage Charging	N/A	N/A	N/A	N/A
2025	1	1	100%	Minibus	EV	Plug-in Garage Charging	N/A	N/A	N/A	N/A

Table 3: Range and Estimated Costs of Future ZEB Purchases (by Delivery Date)

Timeline	Number of ZEBs	Bus Type(s)	Advertised BEB Range (Miles)	Estimated Cost of Each Bus
2023	1	Minibus	163	\$460,192
2023	1	Minibus	163	\$460,192
2025	1	Minibus	163	\$460,192
2025	1	Minibus	163	\$460,192

Table 4a: Schedule of Converting Conventional Buses to Zero-Emission Buses

Timeline	Number of Buses	Bus Type	Removed Propulsion System	New Propulsion System
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

Performance Analysis

To determine whether the available battery size for the GreenPower EV250 would be sufficient to operate Glendora’s existing shuttle service, we estimated the vehicle’s range using its advertised battery consumption rate per mile as well as a battery consumption rate per mile was estimated to reflect real world conditions. The table below, **Table 5: Estimated Battery Consumption Rates**, summarizes expected battery consumption rates for a new vehicle without battery degradation compared to an older one with degradation. The battery consumption rates in this analysis were informed by operational data for other similar battery-electric models in relation to their advertised performance. Performance data specific to the GreenPower EV250 was not available.

Table 5: Estimated Battery Consumption Rates

	Estimated Range in Miles (advertised battery consumption 1.6 kWh/mi)	Estimated Range in Miles (adjusted battery consumption 1.79 kWh/mi)
Reduce capacity: 20% for usability	130 mi	116 mi
Reduce capacity: 20% for usability and 18% for degradation	107 mi	95 mi

Daily mileage for the City’s three vehicle schedules were then calculated to assess whether battery sizes would be compatible with existing service using the estimated real world battery ranges in **Table 5**. This analysis is shown in **Table 6: Vehicle Schedule Analysis**. The fourth cutaway vehicle is retained as a spare vehicle.

Table 6: Vehicle Schedule Analysis

Vehicle	AM Gold Line	Mid-Day	PM Gold Line	Total Distance (Miles)	Total Daily Energy Needed (kWh)	Total Required Daily Charging Time (Minutes)
1 (Northern Route)	5:20 AM - 9:09 AM	2:30 PM - 3:15 AM	4:20 PM - 8:09 PM	85	136-243	131-234

Vehicle	AM Gold Line	Mid-Day	PM Gold Line	Total Distance (Miles)	Total Daily Energy Needed (kWh)	Total Required Daily Charging Time (Minutes)
2 (Southern Route)	5:15 AM - 9:27 AM	2:30 PM - 3:45 AM	4:25 PM - 8:35 PM	109	174-312	167-300

Vehicle	AM Metrolink Shuttle	Mid-Day Tripper	PM Metrolink Shuttle	Total Distance (Miles)	Total Daily Energy Needed (kWh)	Total Required Daily Charging Time (Minutes)
3	5:10 AM - 7:56 AM	2:45 PM - 3:55 AM	4:15 PM - 6:50 PM	106	170-304	163-291

While the total mileage per day per vehicle exceeds the estimated mileage available on a full charge for a GreenPower EV250 bus in some cases, the addition of midday charging at the bus facility during layovers is expected to be sufficient to operate all three schedules, even with battery degradation over time.

Section E. Facilities and Infrastructure Modifications

The City of Glendora currently has one Transit Facility which houses the City’s six (6) vans and four (4) cutaways. The current facility is located at 410 E Dalton Avenue. However, due to electrical capacity constraints at the current site, the City is planning to relocate the Transit Facility to 1636 Compromise Line Road.

The Conceptual Plan for installation of the four plug-in chargers (**Figure 1**) shows where chargers would be installed in cutaway bus storage spaces. These charges can be used over both overnight and midday layover charging. Planned facility are detailed in **Table 7: Facilities Information and Construction Timeline**. The City plans to install 4 ChargePoint Express 250 Stations (62.5 kW) with Carl Moyer grant funding as well as with participation from Southern California Edison under the ChargeReady Transport Program. There are no anticipated impacts to parking capacity and there is sufficient capacity to add an additional two BEBs in the future if needed. In addition, there is sufficient capacity for the City to contemplate shared charging with Pomona Valley Transportation Authority (PVRTA) at this location.

Figure 1: Conceptual Plan for Installation of Charging Equipment

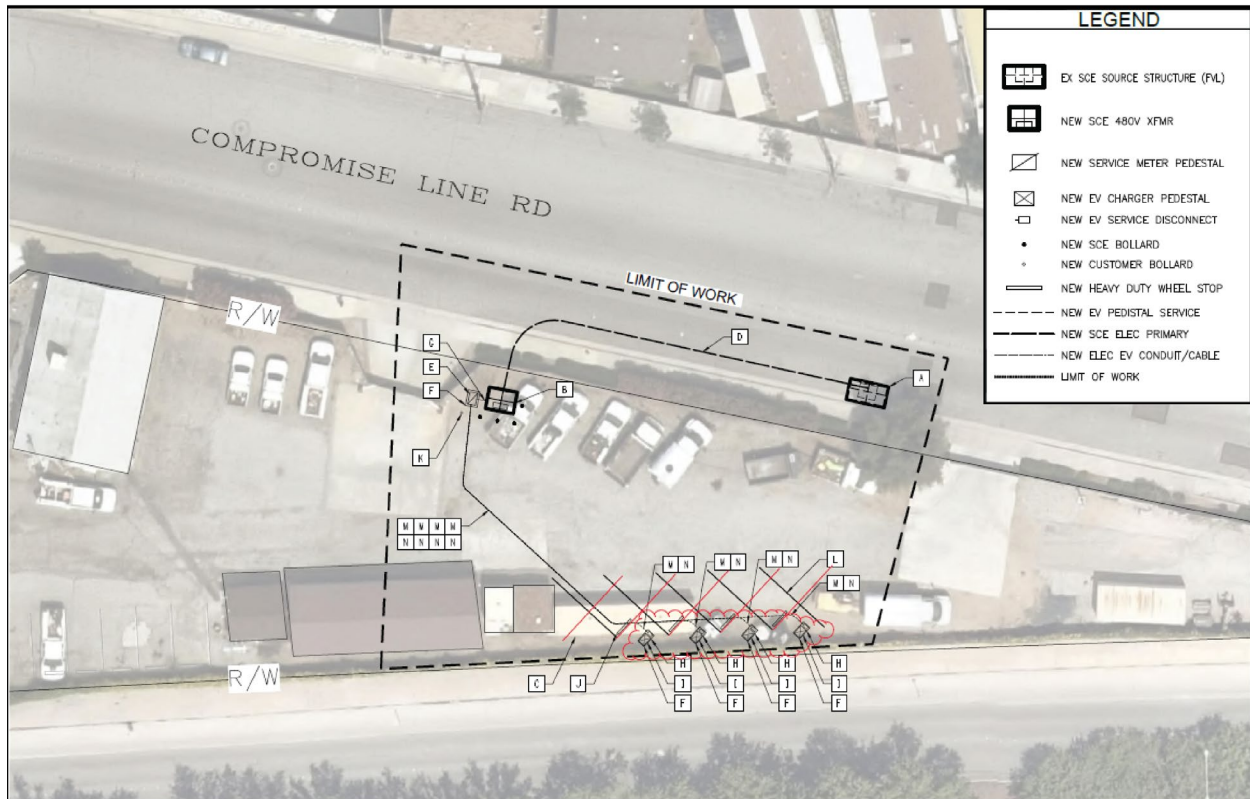


Table 7: Facilities Information and Construction Timeline

Facility Name	Address	Main Function	Types of Infrastructure	Service Capacity	Needs Upgrade (Y/N)	Estimated Construction Timeline	Electric Utility Company
Transit Facility	1636 Compromise Line Road, Glendora, CA, 91741	Storage and charging for both vans and buses	4 plug-in depot chargers will be installed	4 buses and 6 vans before and after installation of charging stations	Yes	2023	Southern California Edison

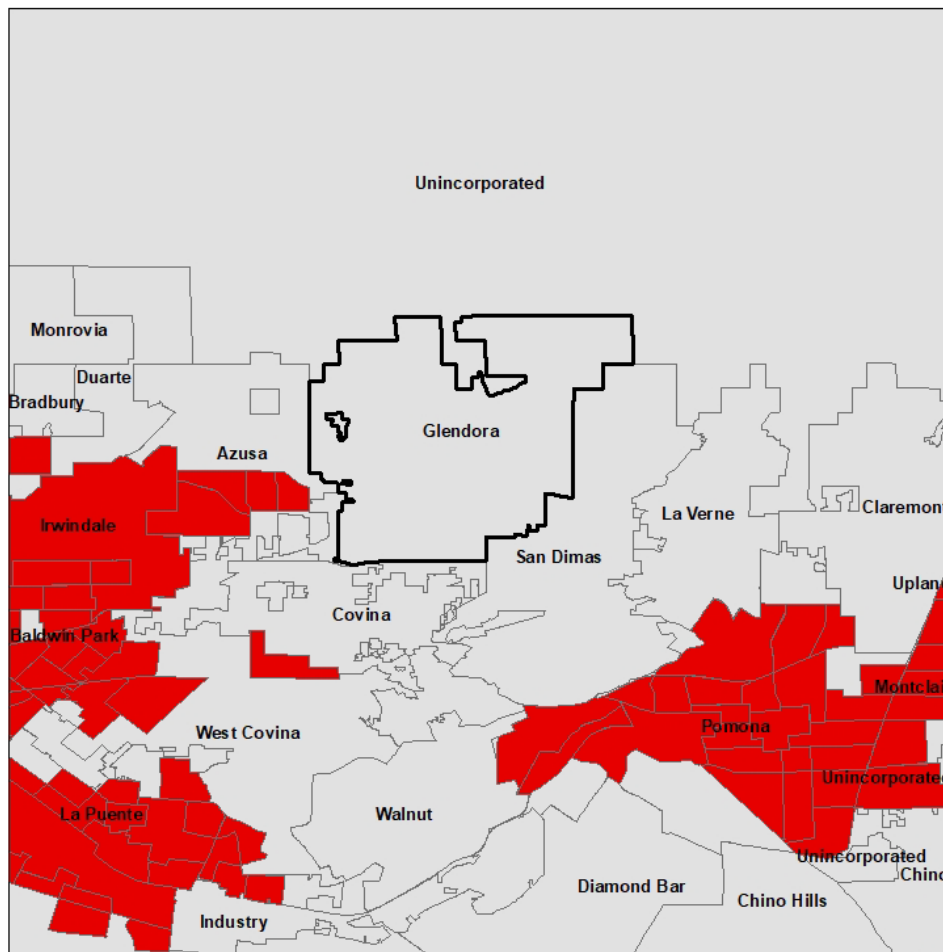
Bus operations and maintenance is currently contracted out to Transportation Concepts, a passenger transportation services company, and is conducted off-site. It is anticipated that this will continue to be the case following transition to all BEBs. Transportation Concepts has experience with maintaining battery electric buses for agencies similar in scale and circumstance to the City of Glendora. Therefore, the City does not anticipate changes to its current maintenance procedures

Section F. Service in Disadvantaged Communities

According to the California Office of Environmental Health Hazard Assessment (OEHHA), disadvantaged communities are defined as the top 25% in terms of scoring in the CalEnviroScreen. CalEnviroScreen is a tool that identifies communities that are most vulnerable to pollution by using environmental, health, and socioeconomic data to produce a score for every census tract within the state of California.

According to the OEHHA Disadvantage Communities map, there are no disadvantaged communities within the City of Glendora, as shown in **Figure 2: City of Glendora Disadvantaged Communities Map**.

Figure 2: City of Glendora Disadvantaged Communities Map



Legend

- Disadvantaged Communities
- City of Glendora Boundary

Section G. Workforce Training

Workforce training will be the responsibility of Transportation Concepts, the contracted bus service provider, who has experience with maintaining battery electric buses for agencies similar in scale and circumstance to the City of Glendora. Therefore, the City will not be directly responsible for conducting workforce trainings.

The City of Glendora also has a stated goal of forming a long-term relationship with Citrus College, a local community college, to facilitate job training for zero-emission bus maintenance activities.

Section H. Potential Funding Sources

Existing Funding

Carl Moyer Program

The Carl Moyer Program offers grant funding for cleaner engines, equipment, and other sources of air pollution reduction.¹ The City of Glendora will be using Carl Moyer grant funding for the purchase and installation of four ChargePoint plug-in garage chargers. The South Coast Air Quality Management District will oversee the funding distribution to the City of Glendora.

Southern California Edison Ready Charge Program

The Charge Ready program supports businesses or organizations for installation of EV charging equipment. Public Sector properties are eligible for two both the Charge Ready Program and the Charging Infrastructure and Rebate Program.² By using this program for installation of four EV chargers, the agency will save an estimated \$87,137, as determined by an independent contractor.

California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)

The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) supports deployment of zero-emission and near-zero-emission technologies by facilitating point-of-purchase price reductions. The program is administered by CALSTART behalf of California Air Resources Board (CARB).

Low Carbon Fuel Standard (LCFS)

The LCFS program is administered by CARB to help mitigate greenhouse gas emissions. The program focuses on reducing GHG emissions and other toxic air pollutants by improving vehicle technology and supports reducing fuel consumptions while promoting transportation mobility options.

AB2766 Air Quality Improvement Funds

The City of Glendora receives a per capita allocation of vehicle license fees collected by the South Coast Air Quality Management District (AQMD). These funds are reserved for transportation project and programs which reduce criteria air pollutants. The City intends to use these funds for the purchase of ZEBs as well as charging infrastructure.

¹ California Air Resources Board. Source URL: <https://ww2.arb.ca.gov/our-work/programs/carl-moyer-memorial-air-quality-standards-attainment-program>

² Southern California Edison. Source URL: <https://www.sce.com/evbusiness/chargeready/public>

Mobile Sources Reduction Committee (MSRC) Grants

The City of Glendora received a MSRC Grant for the purchase of one electric transit vehicle. The MSRC makes grant periodically available to local governments within the AQMD for the purpose of clean air projects. The City anticipates additional MSRC funds to purchase ZEBs in later years.

Los Angeles County Local Transportation Sales Taxes

Los Angeles County has four sales taxes devoted to transportation. Part of each sales tax has a “local return” portion which is distributed to each city based on statute and population. The City plans on using these funds for capital and operations of the transit fleet.

Cost Assessment and Existing Funding Contributions

The table below represents the costs associated with upgrading the current transportation facility according to the plans shown in **Figure 1**, including installation of chargers and associated site work. Funding for the upgrades includes Proposition A, Carl Moyer grant, and Air Quality Management District funds.

Table 8: Transportation Yard Upgrades for EV Fleet

Project Expenditures	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	Total
Chargers			\$247,104				\$247,104
Moving/Site Work/Other		\$50,009		\$95,663			\$145,672
Total Project Cost		\$50,009	\$247,104	\$95,663			\$392,776
Project Revenues	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	Total
Fund 209 - Prop A Local Return		\$50,009	\$104,328	\$95,663			\$250,000
Fund 207 - Carl Moyer			\$107,776				\$107,776
Fund 215 - AQMD/AB2766			\$35,000				\$35,000
Total Revenues		\$50,009	\$247,104	\$95,663			\$392,776
Balance		\$ -	\$ -	\$ -			\$ -

Table 9 details the costs associated with Glendora’s Fleet Replacement Plan, including BEB bus purchases (aligned with delivery dates for buses), dispatching software, and replacement vans. Funding for the plan includes Proposition A, HVIP, Air Quality Management District funds, MSRC, and FTA's Section 5310 program.³

Table 9: Glendora Transit Fleet Replacement

Project Expenditures	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	Total
ZEB Transit Bus			\$1,196,384		\$1,196,384		\$2,392,768
Dispatching Software	\$139,000						\$139,000
DAR Van (4)	\$111,733	\$131,080	\$ -	\$ -	\$ -		\$246,813
Total Project Cost	\$250,733	\$131,080	\$1,196,384	\$ -	\$1,196,384	\$ -	\$2,778,581
Project Revenues	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	Total
Fund 209 - Prop A Local Return	\$47,465	\$37,718	\$293,913		\$43,777		\$422,873
Fund 211 - Prop C Local Return			\$375,000				\$375,000
Fund 001 - LCFS Credits			\$24,280				\$24,280
Fund 209/215 - HVIP Voucher			\$195,500		\$195,500		\$391,000
Fund 215 - AQMD/AB2766			\$256,931				\$256,931
Fund 207 - MSRC/Other Grant			\$50,760		\$957,107		\$1,007,867
Fund 207 - FTA Section 5310	\$203,268	\$97,362					\$300,630
Total Revenues	\$250,733	\$135,080	\$1,196,384	\$-	\$1,196,384		\$2,778,581
Balance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

³ FTA Section 5310 provides formula funding to states for the purpose of assisting private nonprofit groups in meeting the transportation needs of older adults and people with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs.

Potential Additional Funding Sources

Federal Funding

Note: In LA County, small cities are generally not eligible to be direct recipients of federal funds but can receive funds as a sub-recipient through LA Metro.

Low or No Emission (Low-No) Grant Program

The Low or No Emission competitive Federal Transit Authority (FTA) grant program supports funding to state and local governments for the purchase or lease of zero-emission and low-emission transit buses. Eligible projects include: (1) purchasing or leasing low- or no-emission buses; (2) acquiring low- or no-emission buses with a leased power source; (3) constructing or leasing facilities and related equipment (including intelligent technology and software) for low- or no-emission buses; (4) constructing new public transportation facilities to accommodate low- or no-emission buses, and/or (5) rehabilitating or improving existing public transportation facilities to accommodate low- or no-emission buses.⁴

In June 2021, the FTA allocated approximately \$192 million in funding for the next program year. In 2020 the program funded 41 projects with a total of approximately \$129 million. Of the 41 projects, the average funding amount was approximately \$3.1 million. The lowest amount awarded was approximately \$300,00 and the largest amount awarded was approximately \$7 million.

Grants for Buses and Bus Facilities Program

The Grants for Buses and Bus Facilities Program is administered by the FTA to replace, rehabilitate, and purchase buses and related equipment to construct bus facilities. Previous project selections include the City of Hazleton, PA which received \$10 million for constructing a new bus maintenance and storage facility. SEPTA was also a past recipient of the program, receiving \$2 million to fund and construct new bus stations to extend its Roosevelt Boulevard Direct Bus Service from Frankford Transportation Center to Wissahickon Transportation Center.

Targeted Airshed Grants Program

The Targeted Airshed Grants program, administered by the US Environmental Protection Agency (EPA), assists local, state, and tribal air pollution control agencies with developing plans and conducting projects to reduce air pollution in non-attainment areas that EPA determines are the top five most polluted areas for ozone and PM 2.5 National Ambient Air Quality Standards. The program has approximately \$59 million for the 2021 Fiscal Year. In 2020, the Allegheny County Health Department in Pennsylvania received approximately \$5.6 million in funding to replace public transit buses with zero-emission alternatives. The California Air Resources Board in Nevada County also received approximately \$2.4 million in 2020 to replace public transit buses with zero-emission buses.

Clean Fuels Grant Program

The Clean Fuels Grant Program is administered by the FTA to assist in maintaining National Ambient Air Quality Standards for ozone and carbon monoxide, as well as support emerging clean fuel technologies for transit buses. This includes the purchase or lease of clean fuel buses; construction or leasing of bus fueling or charging facilities and equipment; projects related to clean fuel, biodiesel, hybrid-electric, or zero-emissions technology; and buses that have lower emissions than existing clean fuel or hybrid electric technologies. Funds for a project are available over a three-year period.

⁴ USDOT FTA. Source URL: <https://www.transit.dot.gov/lowno>

Energy Efficiency and Conservation Block Grant (EECBG)

The EECBG program is administered by the US Department of Energy (DOE) to support and manage projects that improve energy efficiency and decrease energy use and fossil fuel emissions. This program received one-time funding under the American Recovery and Reinvestment Act (ARRA) of 2009. The EECBG program will receive \$550 million through the Infrastructure Investment and Jobs Act for a new round of grants to state and local governments for clean energy investment projects, loan programs, and energy saving performance contracting programs (i.e., budget-neutral approaches to make improvements that reduce energy use and pay for them through future energy savings usage).⁵ ⁶ In the 2009 round of funding, the City of Boston received approximately \$6.5 million toward reducing fossil fuel emissions, reducing total energy use, and improving energy efficiency in the building sector.⁷

The Infrastructure Investment and Jobs Act – Carbon Reduction Program

The newly passed federal Infrastructure Investment and Jobs Act has over \$1 trillion in federal infrastructure investment. The legislation establishes guaranteed funding levels through Fiscal Year 2022-2026 and is not a one-time stimulus. Its focus is to provide a foundation for a long-term surface transportation reauthorization bill. The legislation also includes investments in aviation, EV charging infrastructure, resiliency, and more.

Within the legislation is a Carbon Reduction Program that will distribute approximately \$6.4 billion over five years to states for investment in projects that will help reduce transportation emissions. Eligible projects include transportation electrification, EV charging, public transportation, infrastructure for bicycling and walking, infrastructure that would support congestion pricing, diesel engine retrofits, port electrification and intelligent transportation systems (ITS) improvements. Approximately 65% of this funding would be allocated by population to projects in local communities.⁸

The Infrastructure Investment and Jobs Act – Grants for Charging and Fueling Infrastructure

This grant was established behalf of the Infrastructure Investment and Jobs Act. Approximately \$2.5 billion over five-years start in 2022 to support the deployment of publicly accessible alternative fuel charging infrastructure. This includes EV charging infrastructure, hydrogen fueling, propane fueling, and natural gas fueling infrastructure through 2026.

State Funding

California Energy Commission Clean Transportation Program

Formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program, this program invests up to \$100 million annually in projects that support adoption of cleaner transportation powered by alternative and renewable fuels. Funding areas include electric vehicles and charging infrastructure, including for public transit buses.

⁵ Office of Energy Efficiency & Renewable Energy. Source URL: <https://www.energy.gov/eere/slsc/energy-savings-performance-contracting>

⁶ Office of Energy Efficiency & Renewable Energy. Source URL: <https://www.energy.gov/eere/femp/energy-savings-performance-contracts-federal-agencies>

⁷ ProPublica. Source URL: https://projects.propublica.org/recovery/gov_entities/8900/list/1

⁸ The Bipartisan Infrastructure Investment and Jobs Act of 2021, U.S. Senate Committee on Environment and Public Works. Source URL: https://www.epw.senate.gov/public/_cache/files/2/e/2e879095-7fcd-4f6e-96fd-a4ad85afa0cc/7D48782E0BEB430002A767AC75961EB0.bif-highway-one-pager-final-2.pdf

Transit and Intercity Rail Capital Program (TIRCP)

The Transit and Intercity Rail Capital Program (TIRCP) was created to provide grants from the Greenhouse Gas Reduction Fund (GGRF) to help fund capital improvements to modernize California's intercity rail, bus, ferry, and rail transit systems. The program is focused on the following policy objectives: (1) reduce emissions of greenhouse gases, (2) expand and improve transit service to increased ridership, (3) integrate the rail service of the state's various rail operations, including integration with the high-speed rail system, and (4) improve transit safety.

California Air Resources Board (CARB)

The CARB has several grant opportunities that are focused on protecting public health and combatting air pollution. The Community Air Protection Program provides a community air grant which includes provisions for technical assistance to community-based organizations to support their efforts towards improving air quality and climate efforts.

California Climate Investments (CCI)

CCI is a statewide initiative that supports reducing greenhouse gas emissions, strengthening the economy, improving public health, and improving environmental conditions, with a focus on disadvantaged communities. This program uses greenhouse gas cap-and-trade proceeds to invest in projects that will reduce greenhouse gas emissions.

Clean Mobility Options Voucher Pilot Program

The Clean Mobility Options Voucher Pilot Program (CMO) awards voucher-based funding for zero-emission mobility programs that provide service in California's historically underserved communities. CMO is funded by California Climate Investments and is administered by a collaboration between CALSTART, the Shared Use Mobility Center, GRID Alternatives, and Local Government Commission. CMO has made a concerted effort to center equity in its awardee process.

Under this grant program, the City of Richmond which was awarded \$1 million to implement the City's first citywide, on-demand shuttle program. Other examples in Northern California include the Oakland Department of Transportation \$1 million grant for an Oakland E-bike Library. Oakland also received approximately \$500,000 for an on-demand Oakland Unified Student Transportation program.

Low Carbon Transit Program (LCTOP)

The LCTOP was created to support operating and capital assistance for transit agencies to reduce greenhouse gas emissions and enhance mobility. This program gives priority to serving disadvantaged communities. Eligible projects selected by LCTOP will support new or expanded bus or rail services, expand intermodal transit facilities, and may include equipment acquisition, fueling, maintenance and other costs to operate those services or facilities, with each project reducing greenhouse gas emissions.⁹

⁹ Low Carbon Transit Program (LCTOP). Source URL: <https://dot.ca.gov/programs/rail-and-mass-transportation/low-carbon-transit-operations-program-lctop>

Section I. Start-Up and Scale-Up Challenges

Resiliency Considerations

The City of Glendora 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 power shut-offs due to wildfire risk from high winds during the dry season and excess energy usage during heat waves. If these trends continue into the future, as expected, this will only exacerbate the need for the City to have a strategy to charge buses during power outages. The City of Glendora 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. Grant opportunities cited in the above section could potentially be used to fund such installations to augment the resiliency of Glendora transit operations.

Cost Considerations

While BEBs have a higher purchase price than CNG or gasoline-powered vehicles, maintenance and fuel costs tend to be lower. However, due to the nascent nature of the technology this, lower maintenance and fuel costs may not materialize as expected. Maintenance cost uncertainty may be somewhat mitigated because of the contract nature of Glendora's shuttle service. However, this remains an area of uncertainty that may present challenges during the transition period. Additionally, there are limited sources of funding for new capital expenditure. Much of the existing funding is programmed to capital, operations, and maintenance. One avenue of opportunity would be partnership or group application for small operators to seek additional funding.

Technological Maturity and Uncertainty

Cutaway BEBs are relatively newly available on the market, and their market may not be entirely mature in terms of product development. Their performance is also somewhat unproven. This may be mitigated with contract warranties and a planned spare ratio of 25%. However, performance issues could potentially lead to challenges with providing scheduled service.

Appendix A
Resolution Approving
Zero Emission Bus Rollout Plan

RESOLUTION CC 2022-50

**A RESOLUTION OF THE CITY COUNCIL APPROVING THE CITY OF
GLENDDORA ZERO-EMISSION BUS ROLLOUT PLAN**

**THE CITY COUNCIL
City of Glendora, California**

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 be approved by its governing Board; and

WHEREAS, Zero-Emission Bus Rollout Plan sets forth the City of Glendora'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 the City of Glendora 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 City of Glendora 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, THE CITY COUNCIL OF THE CITY OF GLENDDORA,
CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:**

SECTION 1. The City Council hereby approves the City of Glendora's Zero-Emission Rollout Plan as forth in full.

SECTION 2. That insofar as the provision(s) of any resolution, regulation, statement of policy, or previous resolution of the City Council or administrative action by the City Manager, adopted or issued prior to the date of this Resolution, which are inconsistent with the provisions of this Resolution, the same shall no longer be of any force or effect and this Resolution and the implementing Board Policies adopted herein shall control.

SECTION 3. The City Clerk shall certify to the passage and adoption of this resolution and shall enter the same in the Book of Original Resolutions.

PASSED, APPROVED and ADOPTED this 13th day of September, 2022.

City Council of Glendora, CA

BY: DocuSigned by:
KAREN K. DAVIS
D783429E90AE408...
KAREN K. DAVIS
Mayor

APPROVED AS TO FORM:
Aleshire & Wynder, LLP

DocuSigned by:
William W. Wynder
9E096A23BACG45F
WILLIAM W. WYNDER
City Attorney

CERTIFICATION

I, Kathleen R. Sessman, City Clerk/Communications Director of the City of Glendora, do hereby certify that the foregoing Resolution was duly adopted by the City Council of the City of Glendora at a regular meeting held on the 13th day of September, 2022, by the following vote:

AYES: COUNCIL MEMBERS: Allawos, Fredendall, Thompson, Boyer, Davis.
NOES: COUNCIL MEMBERS: None.
ABSENT: COUNCIL MEMBERS: None.
ABSTAIN: COUNCIL MEMBERS: None.

Dated: September 14, 2022

DocuSigned by:
Kathleen R. Sessman
2252A9F44B69431...
KATHLEEN R. SESSMAN
City Clerk/Communications Director

Certificate Of Completion

Envelope Id: D11F478D99EC41AA872237F981D92B94	Status: Completed
Subject: Please DocuSign: Resolution CC 2022-50 Approving Zero Emmissions Bus Rollout Plan.pdf	
Source Envelope:	
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Time Zone: (UTC-08:00) Pacific Time (US & Canada)	116 E Foothill Blvd
	Glendora, CA 91741
	edominguez@cityofglendora.org
	IP Address: 173.196.201.130

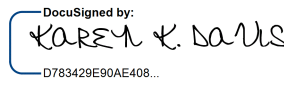
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9/13/2022 10:58:22 AM	edominguez@cityofglendora.org	

Signer Events

KAREN K. DAVIS
kdavis@cityofglendora.org
Mayor
Security Level: Email, Account Authentication (None)

Signature

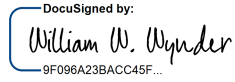
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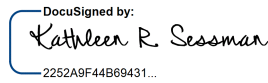
William W. Wynder
wwynder@awattorneys.com
Security Level: Email, Account Authentication (None)

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Kathleen R. Sessman
kssessman@cityofglendora.org
City of Glendora
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In Person Signer Events	Signature	Timestamp
Editor Delivery Events	Status	Timestamp
Agent Delivery Events	Status	Timestamp
Intermediary Delivery Events	Status	Timestamp
Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp
City Clerk Group CityClerkGroup@ci.glendora.ca.us Security Level: Email, Account Authentication (None)	COPIED	Sent: 9/15/2022 10:37:03 AM Viewed: 9/15/2022 10:48:11 AM
Electronic Record and Signature Disclosure: Not Offered via DocuSign		

Witness Events	Signature	Timestamp
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Notary Events	Signature	Timestamp
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Envelope Summary Events	Status	Timestamps
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Signing Complete	Security Checked	9/15/2022 10:37:02 AM
Completed	Security Checked	9/15/2022 10:37:03 AM

Payment Events	Status	Timestamps
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Electronic Record and Signature Disclosure