

# Zero-Emissions Bus Rollout Plan

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Fresno County Rural Transit Agency (FCRTA)



**FCRTA**  
Fresno County  
Rural Transit Agency

*Accessible EV **Mobility & Infrastructure** For All*

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*Developed by Walker Consultants on behalf of the Fresno County Rural Transit Agency*

# Executive Summary

The Fresno County Rural Transit Agency (FCRTA) is on the leading edge of deploying new technology to provide high-quality, sustainable transportation service and infrastructure in rural, disadvantaged areas. In doing so, FCRTA will support State and local goals to reduce vehicle miles traveled (VMT) and Greenhouse Gas Emissions (GHGs) and increase transportation equity and resiliency. FCRTA has been a leader in advancing energy-efficient transportation and the transition to zero-emission vehicles (ZEVs). FCRTA has transitioned some of its fleet to electric vehicles (EV), installed public EV charging infrastructure throughout the County, implemented EV micro-transit service, and will provide transportation and EV charging infrastructure at affordable housing sites. To prepare the electric grid for the transition to EVs and ZEVs, FCRTA conducted an electrical grid analysis study and an EV charging infrastructure network and readiness plan. FCRTA is also conducting a microgrid feasibility study to plan a rural transit solar-powered microgrid network on vacant land that would power its ZEV fleet and support community mobility and resiliency.

FCRTA's goal is 100 percent electrification by 2030, well ahead of a 2040 horizon requirement from the State of California. To do so, FCRTA would need to make an estimated investment of \$21.3 million.<sup>1</sup>

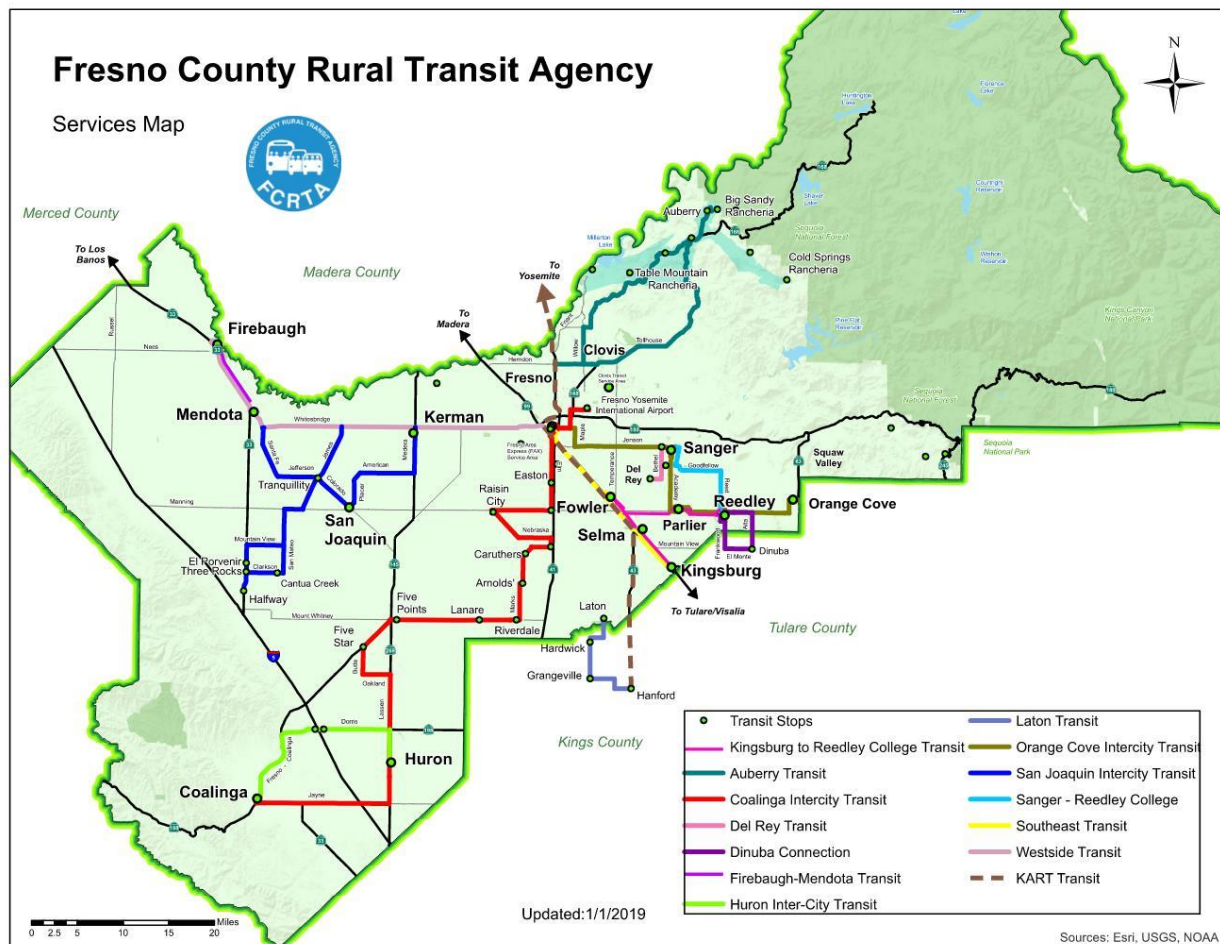
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<sup>1</sup>All cost estimates are at a rough order-of-magnitude (ROM) and intended to be for planning purposes only.

# Section A: Overview

The Fresno County Rural Transit Agency (FCRTA) provides public transit service to rural communities throughout Fresno County, keeping the Central Valley connected and allowing passengers to conveniently travel within their community and throughout the Central Valley. FCRTA provides both scheduled, fixed route services with designated bus stops along specific routes, as well as reservation-based, demand-response service that offers curb-to-curb transportation. **Figure 1** shows the FCRTA transit service area.

**FIGURE 1: FCRTA SERVICE AREA**



Source: Fresno County Rural Transit Agency

FCRTA operates 26 transit subsystems with 127 vehicles that operate in 13 rural incorporated cities throughout the County. FCRTA's transit services are available to the elderly (60+), disabled, low-income, and general public patrons within each of the 13 rural incorporated cities of Fresno County. In addition, FCRTA serves 39 unincorporated rural communities within Fresno County.

FCRTA has relationships with several local, regional, and statewide transit providers, including:

- Fresno Area Express
- Clovis Transit
- Kings Area Rural Transit
- Dinuba Connections
- Sequoia Shuttle
- Yosemite Area Regional Transportation System (YARTS)

**Amtrak**, with support from the California Department of Transportation (Caltrans), operates daily intercity San Joaquin trains linking Fresno with locations throughout California. Amtrak augments San Joaquin trains with an extensive system of buses that have guaranteed train-side connections. The Fresno Amtrak Station is located at 2650 Tulare Street, Building B on the corner of Tulare Street and Santa Fe Avenue.

**Greyhound** provides frequent daily service from Fresno to a variety of points within California. Destinations served north of Fresno County include Sacramento, Oakland, San Francisco, San Jose, and Stockton. Destinations served south of Fresno County include Visalia, Bakersfield, and Los Angeles. Connecting service is available to San Diego (via Los Angeles) and Yosemite National Park (via Merced).

**Orange Belt Stages** does not service Fresno or Selma but serves Hanford, Lemoore, Kettleman City, and Paso Robles, as well as continued service to Atascadero, San Luis Obispo, Grover Beach, and Santa Maria.

**Transportes Intercalifornias** provides daily round-trip service from Fresno to Los Angeles, with connecting services onward to Santa Ana, San Ysidro, Tijuana, and other cities.

**Central Valley Ridesharing (CRV)** provides riders with a match list of compatible commuters that have expressed an interest in ridesharing. CVR's ride-matching database currently covers Fresno, Kings, Madera, and Tulare Counties. All of the services and information are provided free of charge to commuters, employers, and other organizations.

Figure 2 provides more information on FCRTA.

**FIGURE 2: FCRTA AGENCY INFORMATION**

Transit Agency Information	
Transit Agency's	Fresno County Rural Transit Agency (FCRTA)
Mailing Address	2035 Tulare Street, Suite 201 Fresno, CA 93721
Transit Agency's Air District	San Joaquin Valley Pollution Control District
Transit Agency's Air Basin	San Joaquin Valley
Number of Buses in Annual Maximum Service	65
Fresno Urbanized Area Population (2017)	701,045
Contact Information	Moses Stites General Manager 559.233.6789 <a href="mailto:mstites@fresnocog.org">mstites@fresnocog.org</a>
Joint Group Member	N/A

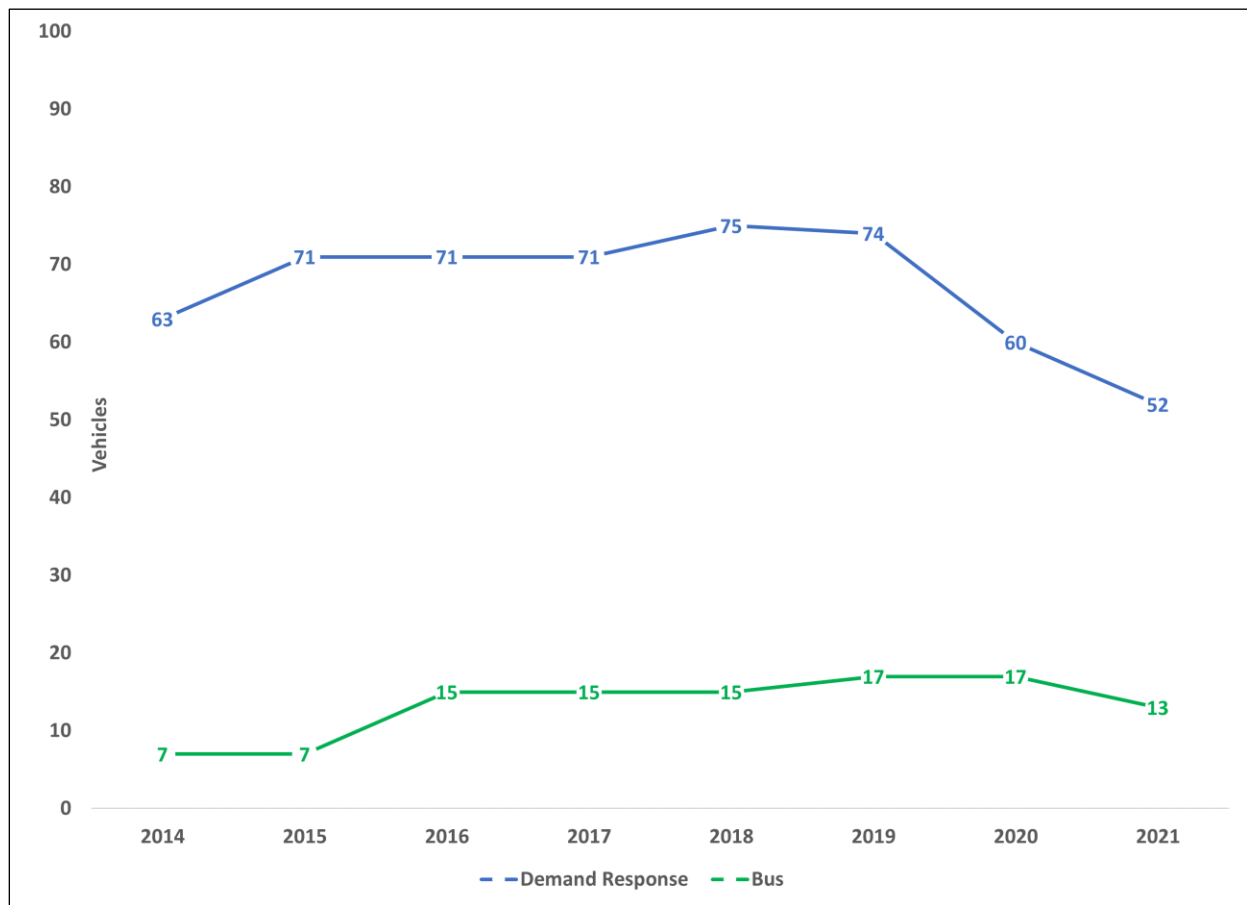


During the Covid-19 pandemic, FCRTA has continued to operate regular service, with the only service changes were to temporarily shut down for college routes because there were no in-person classes. FCRTA also stepped in to support its member cities to perform their meal delivery service and offered free rides for passengers to get vaccinated. As shown in Figure 3, in 2019 FCRTA deployed its largest number of vehicles at maximum capacity (91) before reducing to the current 65 vehicles.



FCRTA delivered meals to support residents during the pandemic

**FIGURE 3: FCRTA VEHICLES OPERATED AT MAX CAPACITY**



Source: Fresno County Rural Transit Agency

There are two (2) utility companies within the FCRTA service boundary (Fresno County), Pacific Gas & Electric Company (PG&E) and Southern California Edison (SCE). PG&E covers 8,079 square miles (86%) of Fresno County, while SCE covers the remaining 1,300 square miles of the County (14%).

# Section B

## Rollout Plan General Information

To improve air quality and mitigate climate change, the State of California and Fresno County have aggressive GHG emission reduction goals. The State has a GHG reduction target of 40 percent and 80 percent below 1990 levels by 2030 and 2050, respectively. The per capita GHG reduction target for the Fresno region in the 2022 Sustainable Communities Strategy is 14% and 21% below 2005 levels by 2035 and 2046, respectively. To support these goals, transit agencies are electrifying their fleets and converting them to zero-emissions.

FCRTA's goal is to convert to a 100 percent electric vehicle (EV) fleet by 2030. FCRTA has already made significant strides toward this goal by deploying 33 EVs to date and will ensure all future bus/vehicle purchases comply with Innovative Clean Transit regulation requiring 100 percent ZEB by 2029.

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

FCRTA will avoid retiring its fleet of conventional buses before they meet their useful life benchmarks (ULBs). Currently, 34 of 89 (38%) of FCRTA's current buses (with GVWR over 14,000 pounds) meet or exceed their useful life benchmarks (older than 10 years and/or mileage beyond 150,000). FCRTA also recognizes that 87 of 89 (98%) of its conventional bus fleet will have met their ULBs by 2030 including five Proterra BEBs and two BYD BEBs. With wise planning and the aggressive pursuit of grant opportunities, FCRTA will replace its aging fleet with appropriately sized buses capable of carrying its patrons across its fixed-route network. Figure 4 shows FCRTA's current bus fleet.

**FIGURE 4: FCRTA EXISTING BUS FLEET WITH GVWR GREATER THAN 14,000 POUNDS (89 BUSES)**

Number of Buses	Engine Model Year	Bus Model Year	Fuel Type	Bus Type
4	2007	Bluebird	CNG	Bus
12	2008	GMC Glaval Titan	CNG	Cutaway
15	2009	GMC Glaval Titan	CNG	Cutaway
38	2013 <sup>1</sup>	Chevy Arboc	Gasoline	Cutaway
8	2016 <sup>2</sup>	El Dorado	CNG	Bus
2	2016	Ford E350 Champion	CNG	Cutaway
1	2017	Ford Villager	Gasoline	Bus
5	2018	Proterra	Electric	Bus
2	2019	BYD K95 35-Ft	Electric	Bus
2	2021	BYD K7M-ER 30-Ft	Electric	Bus

1 Two Chevy Arbocs exceed their useful life based on mileage.

2 One El Dorado exceeds its useful life based on mileage.

Source: Fresno County Rural Transit Agency

# Section C

## Technology Portfolio

Given the rural nature of FCRTA's services, the long distances FCRTA must travel to serve the rural communities of Fresno County, high operations and maintenance costs, and maneuverability challenges with large buses on rural roads, FCRTA is planning to decrease the size of vehicles used for service.

FCRTA plans to operate the majority of its intra-city on demand services with electric passenger vans, with wheelchair accessibility (4 passenger, 2 wheelchair). In looking at route ridership, FCRTA believes these vehicles would have sufficient capacity to accommodate FCRTA's needs while providing significant savings on purchase, operations, and maintenance costs.

FCRTA also intends on investing in 30-foot or smaller zero-emission buses (23-foot, if possible, based on manufacturing availability) that provide low-level-boarding accommodating designs to serve disabled patrons. Fleet conversion goals can range depending on the type of services such as micro transit, fixed route, or paratransit operations.

FCRTA will purchase buses with conventional technologies if the battery or fuel cell bus technologies are not available to meet the FCRTA's needs at the time of purchase.



# Section D

## Current Bus Fleet Composition and Future Bus Purchases

FCRTA operates 26 transit subsystems with 127 vehicles that operate in 13 rural incorporated cities throughout Fresno County. To date, FCRTA has deployed 9 battery electric buses (BEBs), 18 Chevy Bolts, and six (6) Electric Zenith Ram 3500s for its electric vehicle micro-transit and on-demand service, installed public electric vehicle (EV) charging infrastructure throughout Fresno County and will provide transportation and EV charging infrastructure at new affordable housing sites. Figure 5 outlines the existing fleet composition.

**FIGURE 5: FCRTA CURRENT VEHICLE FLEET COMPOSITION**

Number of Vehicles	Engine Model Year	Vehicle Model	Fuel Type	VehicleType
4	2007	Bluebird	CNG	Bus
12	2008	GMC Glaval Titan	CNG	Cutaway
15	2009	GMC Glaval Titan	CNG	Cutaway
4	2009	Chevrolet Uplander	Gasoline	Cargo Van
38	2013	Chevrolet Arboc	Flexible Fuel	Cutaway
2	2014	Ford 4 Wheel Van	Gasoline	Passenger Van
2	2014	Ford F-450	Gasoline	Serv. Truck
6	2016	Zenith Ram 3500	Electric	Passenger Van
8	2016	El Dorado	CNG	Bus
2	2016	Ford E-350	CNG	Cutaway
1	2017	Ford Villager	Gasoline	Bus
5	2018	Proterra	Electric	Bus
1	2018	Big Rex Trailer	N/A	Trailer
14	2019	Chevrolet Bolt	Electric	Car
2	2019	BYD K95 35-Ft	Electric	Bus
4	2020	Chevrolet Bolt	Electric	Car
2	2021	BYD K7M-ER 30-Ft	Electric	Bus
5	2022	Chrysler Voyager	Gasoline	Passenger Van
127	Total Vehicle Fleet			

Source: Fresno County Rural Transit Agency

In order to meet the goal of a full transition to zero-emission buses by 2030, FCRTA will need to replace 87 buses in their existing fleet (with GVWR greater than 14,000 pounds in weight), by 2030. Buses phase out of their ULB after 10 years or 150k miles (whichever comes first). Based on a review of FCRTA's operations, FCRTA has determined that only 78 vehicles need to be replaced to accommodate its transit service needs. Figure 6 on page 10 illustrates a schedule of new vehicle purchases that if followed will enable a full conversion of battery electric buses by 2030. It should be noted that seven (7) of FCRTA's existing battery electric buses will meet their ULB before 2030, and those too will need to be replaced by 2030.

**FIGURE 6: REPLACEMENT VEHICLES FOR BUSES OVER 14,000 POUNDS THAT WILL EXCEED USEFUL LIFE BY 2030**

Year Bus Exceeds Useful Life	Bus Model	Fuel Type	Vehicle Type	# of Vehicles	Replacement Vehicle	# of Replacement Vehicles	Replacement Year
Exceeded	Bluebird	CNG	Bus	4	Not Replaced	0	N/A
Exceeded	GMC Glaval Titan	CNG	Cutaway	27	Electric Passenger Van	30	2023
Exceeded							
Exceeded	Chevy Arboc	Gasoline	Cutaway	2	Electric Passenger Van	2	2023
Exceeded	El Dorado	CNG	Bus	1	30-foot BEB	1	2023
2023	Chevy Arboc	Gasoline	Cutaway	36	Electric Passenger Van	28	2024
2026	El Dorado	CNG	Bus	7	30-foot BEB	7	2027
2026	Ford E350 Champ	CNG	Cutaway	2	Electric Passenger Van	2	2027
2027	Ford Villager	Gasoline	Bus	1	30-foot BEB	1	2028
2028	Proterra 40-foot	Electric	Bus	5	30-foot BEB	5	2029
2029	BYD K95 35-foot	Electric	Bus	2	30-foot BEB	2	2030

Source: Fresno County Rural Transit Agency

Figure 7 shows the estimated cost of future electric bus purchases to convert FCRTA's fleet. The estimated costs are based on quotes received by FCRTA, applying a 3 percent annual price increase for both vehicle types.

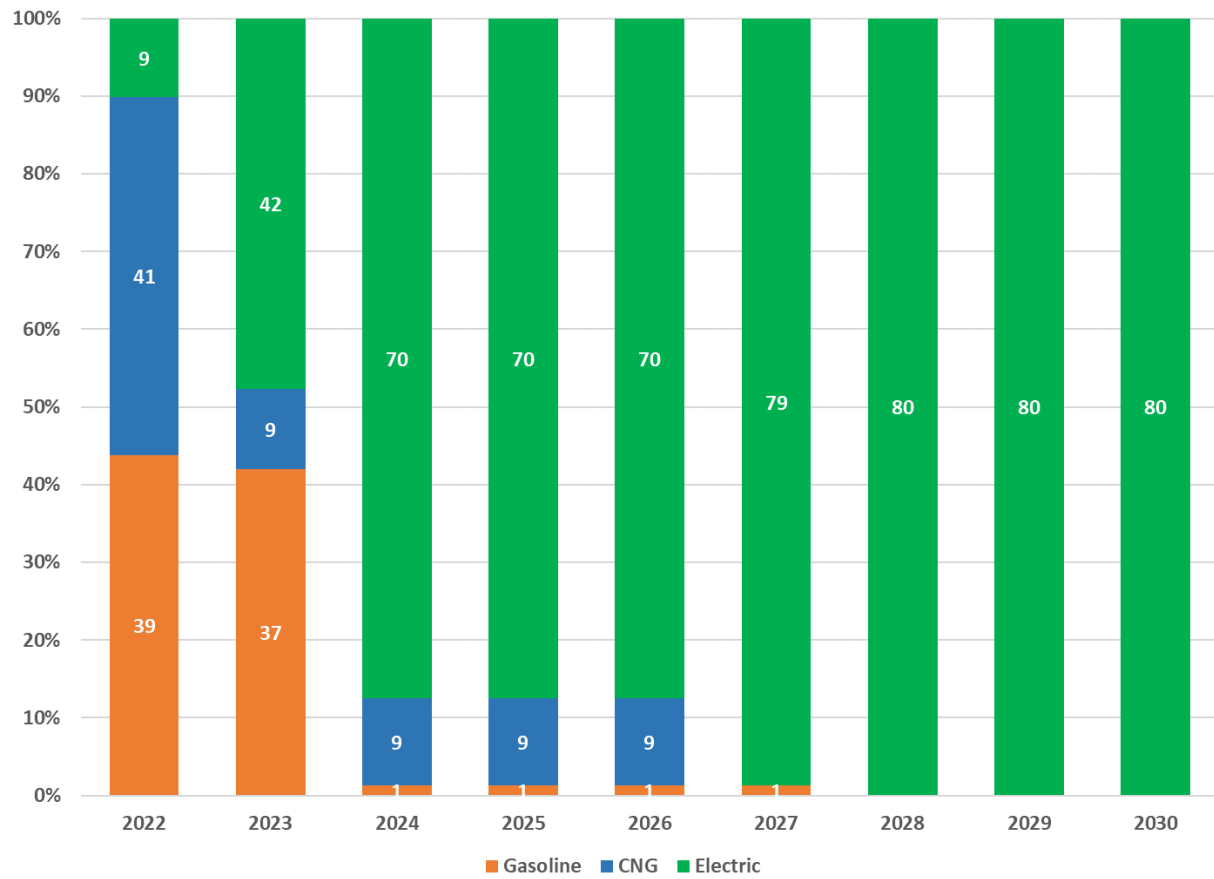
**FIGURE 7: RANGE AND ESTIMATED COSTS OF FUTURE ZERO EMISSION VEHICLE PURCHASES**

Timeline (Year)	Number of ZEBs	Bus Type(s)	Estimated Cost Per Vehicle	Total Estimated Cost
2023	32	Electric Passenger Van	\$125,053	\$4,001,681
2023	1	30-foot BEB	\$727,920	\$727,910
2024	28	Electric Passenger Van	\$128,804	\$3,606,515
2027	7	30-foot BEB	\$819,280	\$5,734,963
2027	2	Electric Passenger Van	\$140,748	\$281,495
2028	1	30-foot BEB	\$843,859	\$843,859
2029	5	30-foot BEB	\$869,175	\$4,345,873
2030	2	30-foot BEB	\$895,250	\$1,790,500
<b>Total Estimated Cost</b>				<b>\$21,332,806</b>

Source: Fresno County Rural Transit Agency

FCRTA intends to procure new battery electric vehicles as an alternative to converting aging buses to electric propulsion systems. This allows FCRTA to better calculate maintenance needs, and charging times/utility rates, as well as have a predictable understanding of bus ranges between each charging period. Figure 8 shows a fleet conversion schedule from 2022 to 2030. The schedule accounts for the replacement of CNG, diesel, and battery electric buses that will meet or exceed their ULBs by 2030. This conversion schedule allows FCRTA the flexibility to allocate aging CNG and Gasoline buses to spare or training functions while deploying a larger BEB fleet for regular operational uses.

**FIGURE 8: FCRTA 2030 FLEET CONVERSION SCHEDULE (END OF YEAR)**



Source: Walker Consultants analysis of Fresno County Rural Transit Agency data.

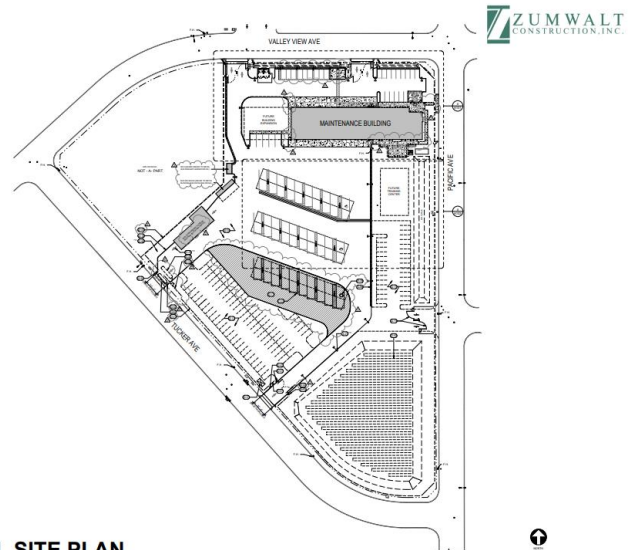
# Section E

## Facilities and Infrastructure Modifications

Fresno Area Express (FAX), Clovis Transit, and Fresno County Rural Transit Agency (FCRTA) are the three transit agencies that serve Fresno County. Both FAX and Clovis Transit utilize one bus depot for the entirety of their fleets, while FCRTA is currently spread among 13 bus depots, due to the need to provide service coverage over long distances and having vehicles near route start and end locations.

FCRTA is constructing a new maintenance facility known as the Selma Maintenance Facility Project which consists of developing a 7.5-acre vacant in Selma California for dispatch and vehicle maintenance operations that serve rural Fresno County and accommodate future transit needs. The project is going through a design-build process with plans to finalize construction in 2023. Figure 9 shows the Selma Maintenance Facility design. The facility will include a maintenance shop equipped to service both natural gas and 40-foot battery electric buses, light-duty electric vehicles and vans.

**FIGURE 9: PLANNED SELMA MAINTENANCE FACILITY**



**OVERALL SITE PLAN**

The project will include office building split evenly between a centralized dispatching and supervisor's offices and a training facility for technician training in advanced transit vehicle technology (electric and solar). Also included is a bus wash capable of washing up to 40-foot transit buses that would apply conservation and operations best practices such as on-site recycled water, a reverse osmosis final rinse water system, and bus air dryers. A much-needed wash pad with a canopy for handwashing cars and vans will also be installed along with a tire storage and canopy, and a new covered hazardous material storage with concrete curb containment.

The project will require the installation of three (3) Level 2 Chargepoint chargers, 27 WitriCity Level 2 Halo EV chargers, one (1) WAVE inductive charger, two (2) BYD depot chargers, three (3) solar bus ports, solar field, battery storage, and an energy management system.

FCRTA intends for the on-site solar, battery storage, and electric vehicle chargers to be connected into a single integrated system comprehensively managed by an onsite energy management control system and/or microgrid system to minimize impact to the electric utility grid for bus charging and reduce electric utility demand charge costs for FCRTA. The chargers, solar, and battery storage will be separate from the building power supplies.

As mentioned earlier, FCRTA deploys its bus fleet from 13 different bus depots. Figure 10 displays 16 bus yards spread across 13 cities and notes additional FCRTA charging infrastructure in these cities. FCRTA will determine which sites are best suited for charging infrastructure and the pertinent upgrades.

**FIGURE 10: FACILITIES INFORMATION AND CONSTRUCTION TIMELINE**

Division/Facility Name	Address	Main Function	Type(s) of Infrastructure	Needs Upgrade? (Yes/No)	Estimated Construction Timeline	Additional Charging Infrastructure Locations (outside of bus yard)
<b>Coalinga</b>	27500 Phelps Ave Coalinga, CA 93210	Bus Yard	2 Plug-in Chargers	Yes	Long-term plans to work with the City and PG&E on upgrades	1 Envision Arc Solar Charger located at the Downtown Parking Lot, 245 North 6 <sup>th</sup> Street, Coalinga, CA 93210 1 BYD Charger and 1 Solar Tree at 779 East Polk Street, Coalinga, CA
<b>Firebaugh 1</b>	1890 7th St Firebaugh, CA 93662	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	1 Envision Arc Solar Charger located at Firebaugh City Hall, 1133 P Street, Firebaugh, CA 93622
<b>Firebaugh 2</b>	1734 Saipan Ave Firebaugh, CA 93622	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	
<b>Fowler</b>	231 S. 5th St Fowler, CA 93625	Bus Yard	1 JuiceBox 40 Level III Charger	Yes	Long-term plans to work with the City and PG&E on upgrades	1 Envision Arc Solar Charger located at Fowler Branch Library, 306 South 7 <sup>th</sup> Street, Fowler, CA 93625
<b>Huron</b>	36311 Lassen Ave Huron, CA 93234	Bus Yard	Envision Arc Solar Charger	Yes	Long-term plans to work with the City and PG&E on upgrades	
<b>Kerman</b>	15201 W California Kerman, CA 93630	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	2 Envision Arc Solar Chargers located at Kerman Community Center, 15100 West Kearney Blvd., Kerman, CA 93630 and 850 S. Madera, Kerman, CA 93630
<b>Kingsburg</b>	1200 Kern St Kingsburg, CA 93631	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	1 Envision Arc Solar Charger located at Kingsburg Branch Library, 1399 Draper Street, Kingsburg, CA 93631



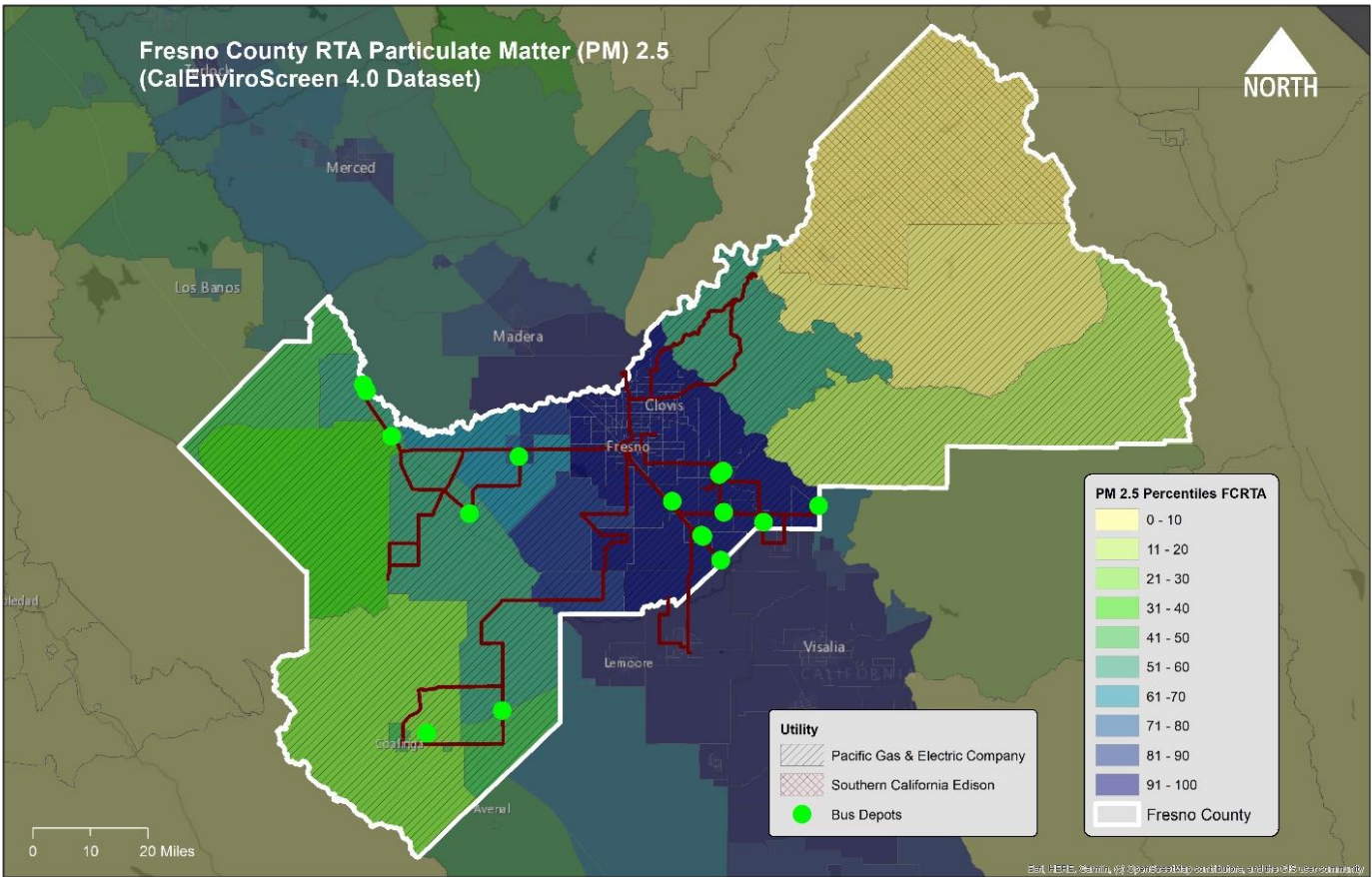
<b>Mendota</b>	1300 2nd St. Mendota, CA 93640	Bus Yard	2 Juicebox 75 Level II Chargers located	Yes	Long-term plans to work with the City and PG&E on upgrades	1 Envision Arc Solar Charger located at Mendota City Hall, 643 Quince Street, Mendota, CA 93640
<b>Orange Cove</b>	802 2nd St Orange Cove, CA 9.646 Bus Yard	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	2 Envision Arc Solar Charges located at Orange Cove City Hall, 633 6 <sup>th</sup> Street, Orange Cove, CA 93646 1 BYD Charger and 1 Solar Tree located at 1705 Anchor Avenue, Orange Cove, CA 93646
<b>Parlier</b>	8770 Mendocino Parlier, CA 93648	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	2 Envision Arc Solar Chargers located at Parlier City Hall, 1100 East Parlier Avenue, Parlier, CA 93648 and Police Department, 8770 S. Mendocino Ave. Ste A, Parlier, CA 93648 3 JuiceBox 40 Level III Chargers at an unknown address
<b>Reedley</b>	1108 S I Street, Reedley, CA 93654	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	2 Envision Arc Solar Chargers located at Reedley Public Works, 845 G Street, Reedley, CA 93654 and Reedley Airport, 4557 Frankwood Ave., Reedley, CA 93654 10 JuiceBox Level II Chargers located in the parking lot behind Reedley City Hall
<b>San Joaquin</b>	21956 W Railroad Ave San Joaquin, CA 93660	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	1 Envision Arc Solar Charger located at San Joaquin City Hall, 21900 West Colorado Avenue, San Joaquin, CA 93660
<b>Sanger</b>	1864 Industrial Way Sanger, CA 93657	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	1 Envision Arc Solar Charger located at Sanger Civic Center, 1700 7 <sup>th</sup> Street, Sanger, CA 93657
<b>Sanger</b>	3537 S Academy Sanger, CA 93657	Bus Yard		Yes	Long-term plans to work with the City and PG&E on upgrades	1 JuiceBox Level II Charger at an unknown address
<b>Selma 1</b>	1325 Nebraska Ave, Selma, CA 93662	Bus Yard	1 Juicebox 75 Level II Chargers located (not yet installed) 2 Proterra Chargers	Yes		1 BYD Bus Charger, 1 Proterra Charger, 2 JuiceBox 40 Level III Chargers, 1 JuiceBox 40 Level II Charger at 1870 Dockery Avenue, Selma, CA 93662 4 Proterra Chargers at Glacier Lot, Selma, CA
<b>Selma 2</b>	1100 Valley View Ave,	Bus Yard		Yes	Upgrades planned as part of new	

	Selma, CA 93622				Selma Maintenance Facility project (2024)	
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Source: Fresno County Rural Transit Agency and Walker Consultants.

Environmental justice should play a role in the location of ZE infrastructure and their resulting benefits to disadvantaged communities. Figure 11 and Figure 12 on page 16 show the distribution of bus yards in particulate matter (PM) 2.5 concentrated areas as well as across disadvantaged communities. PM 2.5 has been shown to cause respiratory illness in children, seniors, and at-risk residents. All existing and future buses will be dispatched from PM 2.5 areas as defined by California Ambient Air Quality Standards (CAAQS). Environmental justice mapping as seen in Figure 12 revealed that 9 of 16 bus yards are in locations with high percentile concentrations of PM 2.5 (90% and above). Figure 11 indicates the particulate matter percent concentrations as defined by the CalEnviroScreen.

FIGURE 11: FCRTA PARTICULATE MATTER 2.5 DISTRIBUTION



Source: CalEnviroScreen

FIGURE 12: PARTICULATE MATTER 2.5 PERCENTILE RANGE BY BUS DEPOT SITES

Division’s Name	PM 2.5 Percentile
Coalinga	24.4

Firebaugh 1	50.8
Firebaugh 2	50.8
Fowler	95.7
Huron	50.7
Kerman	76.2
Kingsburg	97.5
Mendota	50.5
Orange Cove	90.3
Parlier	95.4
Reedley	95.6
San Joaquin	50.2
Sanger 1	95.9
Sanger 2	94.9
Selma 1	98.1
Selma 2	96.5

Source: CalEnviroScreen

# Section F

## Providing Service in Disadvantaged Communities

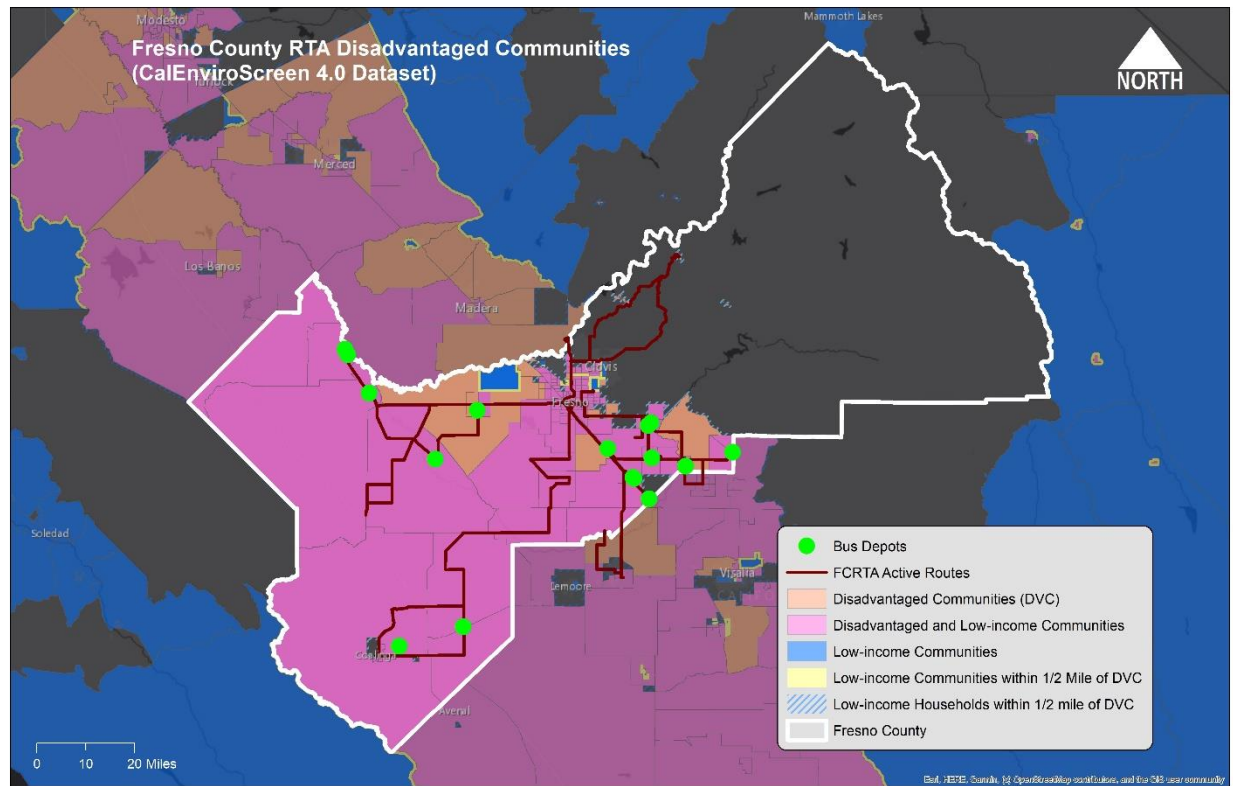
The majority of the Fresno County Regional Transit Agency service area operates in disadvantaged communities as defined in the latest version of CalEnviroScreen 4.0. Social service organizations and non-governmental organizations across Fresno County have expressed the need for transportation services for their residents/clients to travel to jobs, healthcare appointments, training, and other quality-of-life locations. While some organizations provide limited transportation services, most lack the resources necessary to provide transportation or lack the funding to reach their full client base. The lack of transportation results in a high number of missed appointments, a lack of access to essential needs, and a lack of access to education and employment opportunities, which perpetuates the poverty cycle in many of these rural, disadvantaged communities. FCRTA is stretched to provide regular, fixed-route services to all areas of need throughout Fresno County. Operations are expensive because FCRTA must cover a 6,000 square mile area that consists of sparsely populated, low-density communities that are many miles away from one another and from services located in the City of Fresno. As a result, communities are left with gaps in access. FCRTA is working to apply innovative concepts to fill these gaps, including expanding EV micro-transit service, a system of solar microgrid mobility/resiliency hubs, and partnerships with affordable housing developers.

Most of the communities in the FCRTA service area are designated as disadvantaged, as shown in the California Climate Investments Priority Populations 4.0 by Census Tract:

- Sixty-four percent (62%) of all census tracts within Fresno County are considered disadvantaged communities according to the CalEnviroScreen 4.0 Dataset.
- 62 of 67 bus stops are located in disadvantaged communities (93 percent).
- All of FCRTA's routes serve disadvantaged communities.
- FCRTA provides service to 69 disadvantaged communities in Fresno County.

Figure 13 on page 18 displays the distribution of disadvantaged communities in relation to existing bus yards and future electric vehicle infrastructure.

**FIGURE 13: FCRTA DISADVANTAGED COMMUNITY AREAS**



Source: CalEnviroScreen

FCRTA's electric vehicles will be deployed on all of FCRTA's service routes (both fixed route and demand response); therefore, all of the vehicles will serve disadvantaged communities.



# Section G

## Workforce Training

New technologies such as ZEVs and their associated charging infrastructure require a responsive network of trained and skilled professionals who ensure a safe and reliable fleet of buses. Workforce development planning prevents job displacement, while also providing standardized education, training, certifications, apprenticeships, while supporting new jobs across multiple sectors. Workforce development is a critical but often overlooked building block of EV market development.

FCRTA's transit operator is MV Transportation. MV Transportation employs 30 drivers to operate FCRTA's transit services. All 30 drivers belong to a labor union (Amalgamated Transit Union Local 1027). There is a collective bargaining unit in place for the drivers.

In 1989, SB 1586, a State of California law, created the General Public Transit Vehicle driver training, licensing, and background checks requirements. In response, FCRTA developed and implemented a forty (40) hour training program that included classroom and behind-the-wheel training for all drivers assigned to operate buses.

These training programs are now administered by MV Transportation, FCRTA's contract operator. All new MV operators receive 110 hours of defensive driver training courses. In addition, MV operators meet monthly during two (2) hour sessions to gain training/insight from disability advocates, insurance representatives, the California Highway Patrol Offices, Drug and Alcohol Consortium representatives, and others to improve the interaction of operators with FCRTA patrons.

MV Transportation provides 16-20 hours of formal training specifically designed to teach drivers how to operate electric vehicles and buses. MV Transportation is Transportation Safety Institute (TSI) certified and is therefore able to administer all required training in-house. In addition, the MV Transportation supervisors that administer the trainings have all received "train the trainer" training from electric vehicle vendors Build Your Dreams and Proterra, so they have the expertise needed to ensure drivers are properly trained. All of 30 of the drivers that operate FCRTA's services have received the 16-20 hours of training and are equipped to operate electric buses, and all new drivers have and will continue to have the opportunity to receive the same training. MV Transportation's training program is designed to provide training to all drivers to operate the electric vehicles, avoiding displacing the existing workforce or excluding the new drivers from being recruited. All required training is paid for through FCRTA's existing contract with MV Transportation.

To operate Air Break buses (electric buses that exceed 35 feet in length), drivers must receive a separate certification from the California Department of Motor Vehicles. MV Transportation works with drivers to identify the required certification program and provides training to drivers once they receive the certification. Due to the rural nature of FCRTA's service and the fact that transit ridership has declined as a result of the COVID-19 pandemic, FCRTA is transitioning to smaller electric vehicles, reducing the number of drivers who will need the Air Break certification.

Ongoing maintenance and repair work on fleet vehicles is contracted with the City of Selma through a maintenance manager, who also coordinates maintenance vendor training. There are a total of eight employees who maintain the vehicle fleet: two detailers, two shuttle drivers, two mechanics, one fleet

services manager, and one service coordinator. Currently, only six of these positions are filled, two of the positions are posted and vacant. All employees are City of Selma employees and are represented within the City's collective bargaining units. All employees are trained to maintain the electric vehicles by the OEM bus vendors.

Further, bus manufacturers Proterra and BYD coordinate with the City of Selma and MV staff to provide operator and maintenance training to staff as new buses are purchased. FCRTA Maintenance staff and MV trains staff, charge buses, troubleshoot, operations, and maintenance, and daily pre-trip daily inspections. The following is a list of regular education and instructional courses provided by municipal and operator managers.

- Defensive driver training
- Operational guidelines for safety
- Motor vehicle code regulations
- Patron assistance techniques
- Daily vehicle inspection
- Maintenance
- Record keeping and reporting procedures
- Fire extinguisher usage
- Wheelchair securement recertification
- Emergency incident procedures
- Sexual harassment training

# Section H:

## Potential Funding Sources

The following funding sources are potential opportunities to fund FCRTA's fleet transition costs.

1. Low or No Emissions Vehicle Program 5339 (c)
  - a. **Rationale:** Provides funding to state and local governments for the purchase or lease of zero-emission and low-emission transit buses.
2. Low Carbon Transit Operations Program (LCTOP)
  - a. **Rationale:** Provides operating and capital assistance for transit agencies to reduce greenhouse gas emissions with a priority on serving disadvantaged communities.
3. Local Measure C
  - a. **Rationale:** This local half-cent sales tax supports transit in Fresno County and could serve as a local match for larger grants.
4. Affordable Housing and Sustainable Communities Program (AHSC)
  - a. **Rationale:** State funding from cap and trade dollars and funds transportation projects to support infill and compact development that reduce greenhouse gas emissions, priority is for disadvantaged areas.
5. Transit and Intercity Rail Capital Program (TIRCP)
  - a. **Rationale:** Provides grants for transformative transportation projects that reduce greenhouse gas emissions.
6. Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
  - a. **Rationale:** The vehicle is an eligible vehicle type as listed on the HVIP website
7. VW Mitigation Trust - Zero-Emission Transit, School, and Shuttle Buses
  - a. **Rationale:** All 49 vehicle(s) qualify for the tax credit. Specifically, the BYD K7Ms 30' are eligible. To qualify, a vehicle must be a class 4 - 8 zero-emission shuttle bus or transit bus meant to replace an older, high-polluting equivalent vehicle.
8. EV Fleet Program
  - a. **Rationale:** PG&E EV Fleet Program offers competitive incentives to facilitate the installation of EVSE for medium- and heavy-duty vehicle fleets. PG&E offers dedicated electrical infrastructure design and construction services and reduced costs for electrical infrastructure work.
9. Compressed Natural Gas (CNG) and Electricity Tax Exemption for Transit Use
  - a. **Rationale:** CNG and electricity that local agencies or public transit operators use as a motor vehicle fuel to operate public transit services are exempt from applicable user taxes a county imposes. Typical Amount Description Tax exemption.
10. Zero-Emission Transit Bus Tax Exemption
  - a. **Rationale:** Zero-emission transit buses sold to public agencies eligible for HVIP are exempt from sales and use tax in California.
11. PG&E EV Charge Network Program
  - a. **Rationale:** PG&E will install ten (10) 7,500 Level 2 electric vehicle (EV) chargers at multi-unit dwellings and workplaces. If you have at least ten parking spots that can be used, this

program provides an opportunity to contribute to California's energy goals, while also improving your property.

12. San Joaquin Valley Incentive Project

- a. **Rationale:** The District is currently accepting applications to replace on-road diesel trucks and yard trucks with cleaner technology units or to expand fleets with the cleanest technology available.

13. Drive Clean in the San Joaquin

- a. **Rationale:** The District is currently accepting applications for its Drive Clean Rebate Program which provides rebates to Valley residents and businesses for the purchase or lease of new, clean-air vehicles.

14. Qualified PEV Tax Credit

- a. **Rationale:** The tax credit is only available for qualifying electric vehicles for which final assembly occurred in North America. Further changes to the eligibility rules will begin in 2023. Overall, the reforms in the Inflation Reduction Act mean that the tax credit for electric vehicles will evolve considerably over the coming months and years.

15. The California Energy Commission (CEC)

- a. **Rationale:** \$2.9 billion investment plan that accelerates California's 2025 electric vehicle (EV) charging and hydrogen refueling goals.

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

## 1. Costs and Funding

Deployment of zero emissions vehicles have significant capital cost and unknown operating and maintenance costs. The cost of ZEVs is greater than gasoline powered buses, in addition to the charging infrastructure and ongoing energy and maintenance costs, ranging from monthly electricity bills to cleaning solar panels. Further, upgrading the grid capacity at FCRTA's maintenance yards will likely be necessary to support charging infrastructure. Support from the federal and state government will be necessary to meet the ICT regulation requirements. Most funding is only granted on a competitive basis, which is a resource intensive effort for small rural agencies. CARB could support by leading a statewide capital procurement. FCRTA will rely on CARB and other sources to provide funding opportunities that allow rural transit agencies to compete with larger agencies for a full conversion of electrified buses by 2030.

## 2. Energy Management System

FCRTA will need to develop an electric vehicle energy management system, which will collect data to maximize the efficiency of the existing electrical infrastructure and avoid any costs with capacity upgrades. The system would provide tools to manage, reduce, and conserve and optimize electricity consumption. It would allow FCRTA to understand energy compaction, detect leaks and other failures, set conservation targets, and measure and plan for energy performance to minimize risk and price fluctuations. This would save create cost savings overtime.

## 3. Trade in Battery Replacement Program

The most critical and expensive part of an electric vehicle is the battery. Batteries degrade over time based on use and exposure. EV battery replacement can be expensive and not always possible. CARB could develop a program or standards for bus manufacturers to offer battery replacement.

## 4. Technology Advancement and Range Limitations

BEBs are new to the market and their performance is unproven, especially in rural areas. These vehicles have not been in operation long enough to comprehend their performance and reliability. FCRTA has mitigated this issue in the short-term by having spares available to account for any range issues. However, this increases FCRTA's spare ratio, which can then be a challenge when apply for grant funding. The technology is constantly improving and access to data on their performance in areas similar to rural Fresno County will be helpful to guide future purchases.

## 5. Grid Resiliency:

Grid resiliency is critical for FCRTA's successful transition to a fully electrified fleet as well as ensuring timely compliance with local agency zoning laws and policies. FCRTA has prepared an Electrical Grid Analysis Study to identify the impacts of the anticipated increased electrification on the electric grid system and the unique challenges faced by rural communities serviced by FCRTA. To develop this Study, existing conditions within Fresno County were assessed to identify existing grid-related issues. This included reviewing data from sources that provided information about



socioeconomic conditions, energy sources, electrification efforts, and an assessment of the electric grid system.

A major concern is resiliency for lifeline and emergency response in case of emergency and power outage. FCRTA is currently conducting a microgrid feasibility study to assess how to leverage existing and develop additional solar facilities, electricity storage facilities, and charging infrastructure to support electric buses through partnerships with municipalities and potential bus manufacturers. The study would determine the demand for electric buses during normal operations as well as during critical events and emergencies. The study would also determine the optimal solar and storage power and assess their potential to support the power distribution system by addressing capacity concerns, providing energy capacity if the rest local grid is out of service, put power back in the grid, and/or provide other services that are meaningful to the local communities such as backup power for lifeline responses during an emergency. The study would identify five (5) potential sites in rural Fresno County for placement of a distributed energy resource technology/microgrid or another affordable electric vehicle charging model that is zero emissions based, as well as opportunities for future expansion.

FCRTA will need to address charging infrastructure opportunities, technologies, and cost profiles in the future that are not necessarily addressed in this plan. CARB can help FCRTA with funding streams as they become available as planning work reveals the ideal locations for the five sites mentioned previously.

#### **6. Future High-Capacity Transit Plans:**

FCRTA has plans for potential high frequency transit service on the Highway 99, Golden State Highway corridor, using either monorail, light rail, or bus rapid transit (BRT). FCRTA is studying the service mode. FCRTA will need to identify the needed charging infrastructure, propulsion systems, and a corridor alignment that meets community expectations. If bus rapid transit is the preferred service mode, CARB can help advocate for BRT systems that address transit efficiencies and zero-emission designs.

#### **7. Lack of Vehicle Types:**

There is a lack of vehicle types (smaller battery electric buses and cutaways) that meet FCRTA's needs. CARB should conduct surveys and interviews on future needs and the lack of available vehicles to meet these from manufacturers.

#### **8. VMT Analysis**

FCRTA requests that CARB help analyze a new LOS to VMT metric – with applied credits for electric vehicle charging stations to developers who provide needed infrastructure. The newly passed VMT legislation does not provide a subcategory for a level of service. Can CARB help with legislation amendments that offer VMT/LOS credits if developers partner with transit agencies to offer service with ZEVs, with new calculations for the riders, and the vehicle type? In rural areas the issue is even greater, rural areas will have greater VMT, how can the legislation be amended to incentivize development + VMT mitigation if a developer partners with a transit agency to purchase buses and have credit for using EVs – economic development plus more transit capacity?

# Appendix I: Board Resolution

## RESOLUTION #2023-08

RESOLUTION APPROVING THE FRESNO COUNTY RURAL TRANSIT AGENCY ZERO-EMISSIONS BUS (ZEB) ROLLOUT PLAN AND AUTHORIZING THE GENERAL MANAGER TO SUBMIT THE ZEB ROLLOUT PLAN TO THE CALIFORNIA AIR RESOURCES BOARD IN ACCORDANCE WITH THE INNOVATIVE CLEAN TRANSIT REGULATIONS

**WHEREAS**, Fresno County Rural Transit Agency (FCRTA) is a Joint Powers Authority and its Board of Directors is comprised of one elected official from each member agency in Fresno County.

**WHEREAS**, FCRTA has been a leader in advancing energy-efficient transportation and the transition to zero-emission vehicles (ZEVs). FCRTA has transitioned some of its fleet to electric vehicles (EV), installed public EV charging infrastructure throughout the County, and implemented an EV micro-transit service.

**WHEREAS**, to prepare the electric grid for the transition to EVs and ZEVs, FCRTA conducted an electrical grid analysis study and an EV charging infrastructure network and readiness plan. FCRTA is also conducting a microgrid feasibility study to plan a rural transit solar-powered microgrid network on vacant land that would power its ZEV fleet and support community mobility and resiliency.

**WHEREAS**, the Innovative Clean Transit (ICT) regulations were adopted by the California Air Resources Board (CARB) in December 2018 and became effective on October 1, 2019; and

**WHEREAS**, Title 13 of the California Code of Regulations (13 CCR 2023.1 through 2023.11) requires all public transit agencies to gradually transition their bus fleet to zero-emissions technologies, with the following 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

**WHEREAS**, each transit agency must adopt and submit to CARB a ZEB Rollout Plan describing how the agency will transition to a zero-emission fleet; and

**WHEREAS**, FCRTA's goal is to fully transition to zero-emission technologies by 2030, with a plan that avoids early retirement of gasoline or compressed natural gas (CNG) powered buses, and can be achieved with available funds; and

**WHEREAS**, per the requirements of the ICT, the Board of Directors of Fresno County Rural Transit Agency adopts the FCRTA ZEB Rollout Plan, a living document intended to guide FCRTA's conversion to a ZEB fleet, which achieves the following pursuant to the ICT Regulations:

- Introducing FCRTA's operation, service area, and other operational factors;
- Identifies the current fleet composition and current bus purchases;
- A goal to transition its bus fleet to zero-emission by 2030 with careful planning that avoids early retirement of gasoline buses;
- Identifies the types of ZEB technologies that FCRTA intends to continue to deploy, including battery electric and solar microgrid technologies;

- Identifies construction of facilities and infrastructure modifications or upgrades required to deploy and maintain the ZEBs;
- Sets forth a schedule of ZEB purchases;
- Describes how FCRTA plans to deploy ZEBs in disadvantaged communities;
- Background on workforce training in regard to ZEB implementation;
- Identifies a rough order of magnitude costs for full ZEB transition.
- Identifies potential funding sources; and
- Identifies start-up and scale-up challenges that FCRTA must address to achieve the ZEB Rollout Plan goals.

**NOW THEREFORE, BE IT RESOLVED** that the Board of Directors of the Fresno County Rural Transit Agency hereby adopts the FCRTA Zero-Emissions Bus Rollout Plan and approves it for submission to CARB in accordance with the ICT Regulations.

**AGENCY BOARD DESIGNEE: MOSES STITES, GENERAL MANAGER**

**ADOPTED** this 25<sup>th</sup> day of May, 2023

AYES: Kerman, Kingsburg, Mendota, Parlier, Reedley, San Joaquin, Selma, Fresno County, Sanger

NOES: None

ABSTAIN: None

ABSENT: Coalinga, Fowler, Orange Cove, Firebaugh, Huron

Signed

Alma Beltran, Chairperson

I hereby certify that the foregoing is a true copy of a resolution of the Fresno County Rural Transit Agency Duly adopted at a meeting thereof held on the 25<sup>th</sup> day of May, 2023.

Signed

Moses Stites, General Manager