



## REPORT TO CITY COUNCIL

**Approved by:**

*Michael Lima*

Michael Lima, Director of Financial Services

*Arnoldo Rodriguez*

Arnoldo Rodriguez, City Manager

**Council Meeting of:** June 7, 2023

**Agenda Number:**         D-4        

**SUBJECT:**

2023 Zero Emission Bus (ZEB) Rollout Plan for Madera Metro

**RECOMMENDATION:**

Adopt a Resolution Approving the 2023 Zero Emission Bus Rollout Plan

**SUMMARY:**

The California Air Resource Board's (CARB) Innovative Clean Transit regulation (ICT) became effective October 1, 2019. The ICT requires that public transit agencies transition bus fleets to zero-emission technologies by 2040. The ICT applies to all transit agencies that own, operate, or lease buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. It includes standard, articulated, over-the-road, double-decker, and cutaway buses. The ICT requires a percentage of new bus purchases to be Zero Emission Buses (ZEB). The ZEB percentage increases gradually with time.

Given that the City operates its transit system, it must develop a ZEB Rollout Plan that identifies how it will transition its bus fleet to 100 percent ZEB by 2040. The ZEB stipulates that small transit agencies, defined as an agency that operate fewer than 100 buses, are required to comply beginning in 2026. These requirements are phased in as follows:

- Effective January 1, 2026, 25 percent of the total number of new bus purchases in each calendar year must be zero-emission buses; and
- Effective January 1, 2029, all new bus purchases must be zero-emission buses with a goal of complete transition to ZEBs by 2040.

The ZEB Rollout Plan must be submitted to CARB no later than June 30, 2023.

## **DISCUSSION:**

The purpose of the ZEB Rollout Plan is expected to serve as a guide during the transition. The plan provides estimated timelines based on the City's replacement program. As outlined in the ICT guidance, the following sections are included as required:

A. Transit Agency Information

This section provides an overview of the current service levels provided by Madera Metro, including service areas, facilities, and route information.

B. Rollout Plan General Information

This section provides the timeline requirements related to zero-emissions bus purchases.

C. Technology Portfolio

This section provides an overview of the City's current fleet portfolio.

D. Current Bus Fleet Composition and Replacement Schedule

This section provides additional details related to the City's fleet portfolio and an overview of the City's fleet replacement schedule.

E. Facilities and Infrastructure Modifications

This section provides an overview of facilities and transit operations including detail related to the Madera Transit Center.

F. Services in Disadvantaged Communities

This section defines Disadvantaged Communities and includes a map of these communities within Madera Metro's service area.

G. Workforce Training

This section provides an overview of how workforce training will be implemented. Training will include the maintenance of ZEBs.

H. Potential Funding Sources

This section provides a brief overview of the City's intentions to hire a consultant to assist in the execution of the ZEB Rollout Plan and identifies potential funding sources. Staff will return to Council for consultant procurement approval and the proposed funding source(s) to pay for this consultant.

I. Start-Up and Scale-Up Challenges

This section provides potential challenges in implementing the ZEB Plan including resiliency related to vehicle charging, costs, and technology uncertainties concerning Battery Electric Buses.

**FINANCIAL IMPACT:**

There is no financial impact associated with the submission of the ZEB Plan to CARB. However, there will be consulting, vehicle, and charging infrastructure costs associated with the transition. Staff will return to Council for procurement approval and the proposed funding sources for these costs.

**ALTERNATIVES:**

As an alternative, Council may choose to not approve the Zero Emission Bus Rollout Plan. As a result, the City's transit would more than likely be deemed out of compliance with the CARB-ITC and would not meet ICT Regulation, 13 CFR Article 4.3. The City will also be considered out of compliance with the FTA's Zero-Emission Transition Plan which includes zero-emission vehicle grant opportunities.

**ATTACHMENTS:**

1. Attachment A - City of Madera - 2023 Zero Emission Bus Rollout Plan
  - Exhibit A – Resolution

**RESOLUTION NO. 23-\_\_\_**

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MADERA,  
CALIFORNIA ADOPTING THE 2023 CITY OF MADERA ZERO EMISSION BUS  
ROLLOUT PLAN**

**WHEREAS**, on October 1, 2019, the California Air Resource Board's (CARB) Innovative Clean Transit regulation (ICT) became effective; and

**WHEREAS**, the ZEB stipulates that small transit agencies, defined as an agency that operate fewer than 100 buses, are required to comply beginning in 2026; and

**WHEREAS**, the purpose of the ICT requires all public transit agencies to gradually transition bus fleets to zero-emission technologies by 2040; and

**WHEREAS**, the City must develop a Zero Emissions Bus (ZEB) Rollout Plan to fulfill this requirement and submit such Plan to CARB by June 30, 2023.

**NOW THEREFORE**, the City Council of the City of Madera hereby finds, orders and resolves as follows:

1. The above recitals are true and correct.
2. The Council hereby adopts the 2023 City of Madera Zero Emission Bus Rollout Plan attached as Attachment A to this resolution and incorporated by reference.
3. This resolution is effective immediately upon adoption.

\* \* \*



# ZERO EMISSION BUS ROLLOUT PLAN

June 2023

City of Madera – Madera Metro Transit System

City of Madera

205 West 4<sup>th</sup> Street, Madera, Ca. 93637

559-661-5440

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## Introduction

In accordance with the California Air Resource Board’s Innovative Clean Transit Regulation (ICT), the following plan serves as the City of Madera – Transit Agency’s Zero Emissions Bus (ZEB) rollout plan to transition its bus fleet to 100% ZEB by 2040.

## Background

The ICT regulation became effective October 1, 2019, and requires all public transit agencies to gradually transition their bus fleets to zero-emission technologies by 2040. The ICT regulation applies to all transit agencies that own, operate, or lease buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. It covers standard, articulated, over-the-road, double decker, and cutaway buses. The ICT regulation requires a percentage of new bus purchases to be ZEBs. The ZEB percentage increase gradually with time. The ZEB purchase requirements begin in 2026 for small transit agencies.

The City of Madera Transit System (Madera Metro) is considered a small transit agency by the ICT regulation’s definition (13 CCR 2023(b)(30)) because it operates less than 100 buses. Under the ICT, 100% of Madera Metro bus purchases starting in 2029 must be ZEBs, with a goal of complete transition of the fleet to ZEBs by 2040.

## Scope

This rollout plan is a living document and a guide to the implementation of Madera Metro’s zero emissions bus fleet. The plan provide estimated timelines based on Madera Metro’s fleet replacement plan. As outlined in the ICT guidance, the following sections are included as required:

Section A: Transit Agency Information

Section B: Rollout Plan General Information

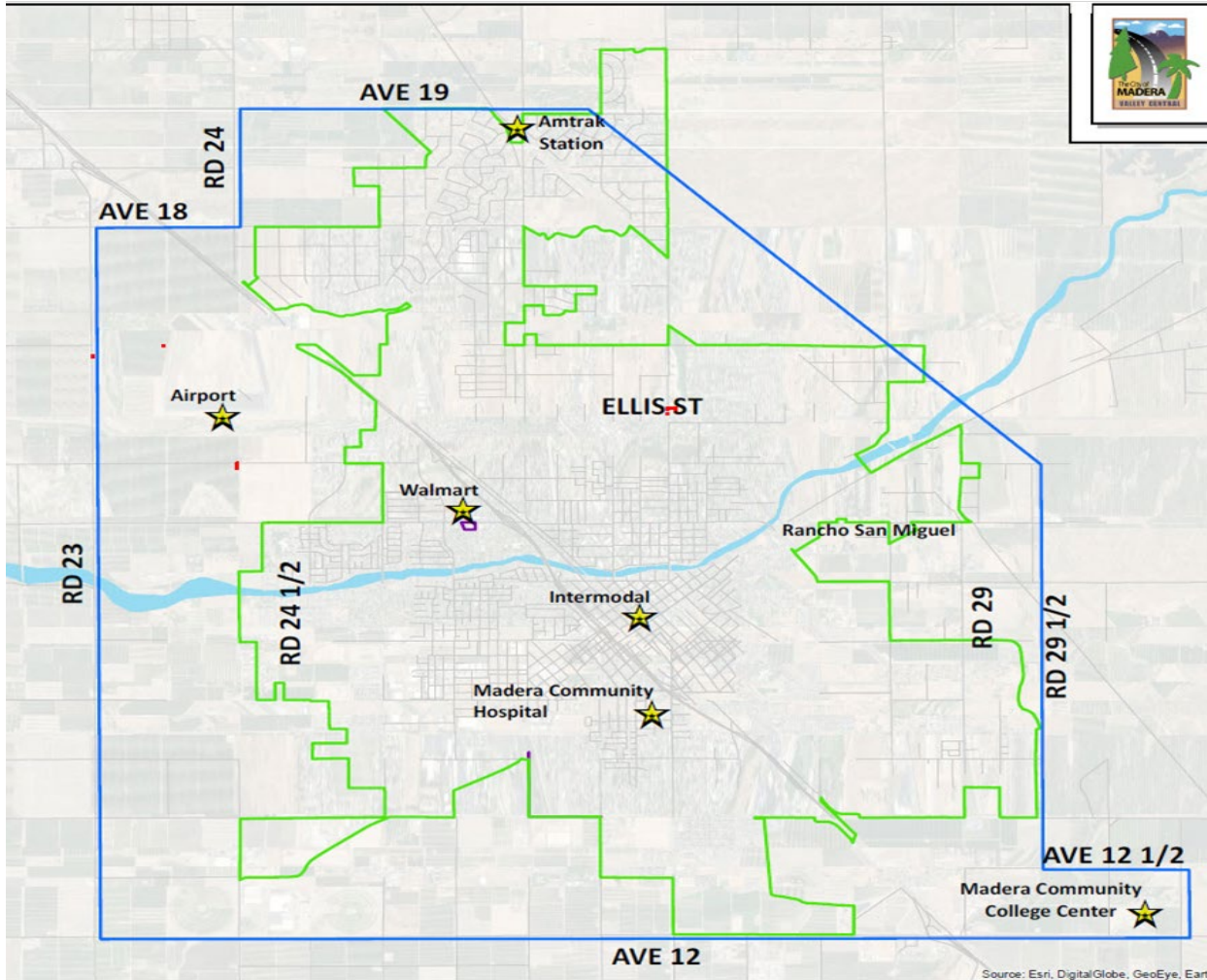
Section C: Technology Portfolio

## Section A – Transit Agency Information

Madera County is in the heart of California and is located in the exact center of California. Madera residents find they have easy access to Yosemite, Kings Canyon and Sequoia National Parks along with access to the Pacific Coast, Bay Area and Southern California. Madera County encompasses 2,147 square miles, with the city of Madera covering approximately 14 square miles. Madera city has a population of 66,224 according to the 2020 Census report.

The City of Madera is the largest provider of transit services in the County, with over 80,000 annual boarding (140,000 pre-covid). Madera Metro operates Dial-A-Ride, Demand Response, and fixed routes throughout the Madera Urbanized Area (UZA). The Madera transit system also has three major hubs: the Madera Intermodal Center, Madera Community Hospital, and Madera Marketplace.

The image below is an outline for the Madera UZA and the Dial-A-Ride service boundary.



Currently Madera Metro possesses no zero emissions vehicles but is committed to transitioning its entire bus fleet to zero-emission in accordance with the ICT.

### Transit Agency Detail

Madera Metro operates three local fixed routes (with a fourth scheduled to be implemented July 2023). Madera Metro operates Monday –Friday and modified fixed route service is offered on Saturday and holidays. A door-to-door Dial-A-Ride for seniors, people with disabilities, and veterans is also offered seven days a week; An on-demand transit service is available as necessary.

City of Madera  
 205 West Fourth Street  
 Madera, Ca. 93637

Air District: San Joaquin Valley APCD  
 Air Basin: San Joaquin Valley  
 Total number of buses in Annual Maximum Service: 19 Cutaways



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

Figure 1: Fleet Vehicles, 32ft Cutaways



Figure 2: Madera Transit Center (Ground and Bird's Eye View)



Figure 3: Madera Metro – Bus Shelter



Figure 4: City of Madera – Transit Website, [www.madera.gov/transit](http://www.madera.gov/transit)

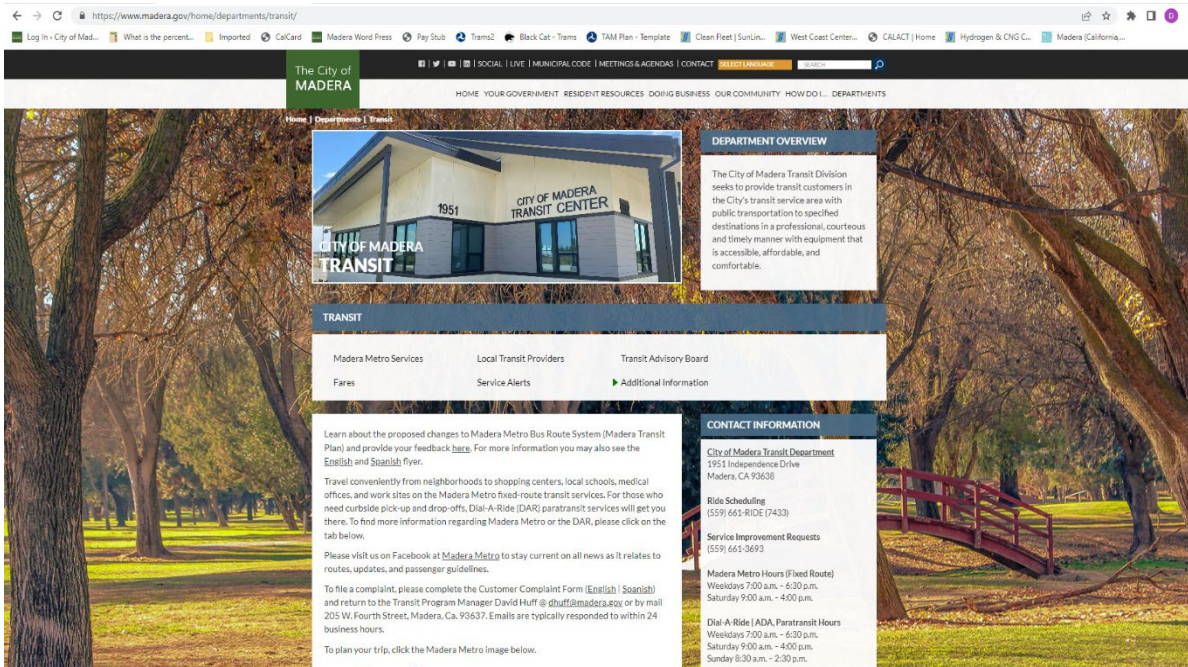


Figure 5: Madera Metro – Facebook, [www.facebook.com/maderametro](http://www.facebook.com/maderametro)



### Transit Agency Route Information

The City of Madera – Madera Metro Transit Agency consist of three fixed routes and is currently evaluating the transit system through the Madera Transit Plan (MTP). The goal in producing the MTP is to evaluate the City’s transit system and devise operational and policy changes that will improve Madera Metro transit services. Goals include improving connectivity with other modes of transportation and systems to advance multi-modal transportation within the region.

Other goals are to evaluate the changes (routes and service) that should be implemented or enhanced, in order to improve the efficiencies and the connectivity with current and planned transportation systems. The plan was finalized in February 2023 with new routes being implemented July 2023. This revised system will allow the City to be efficient with it services while consuming ZEB resources.

### Current Fixed Routes

**Route 1 Current:** Route 1 operates on a 35-minute headway and encompasses key destinations, including Walgreens, the Pan Am Center, the County Social Service Department, the Downtown Intermodal Center, the Department of Motor Vehicles, and the Madera High School’s north campus. Route 1 covers the majority of the City and is the most frequently used route in the network. Current route length is 27.8 miles and has a total of 67 stops (30 NB and 37 SB).

**Route 1 Proposed:** As part of the Madera Transit Plan, Route One will be renamed as the “Purple Line” and will continue with a 30-minute headway time. Key improvements are: Straighter and shorter alignment, fewer turns and number of stops, and improved transfer point to other routes at Greyhound station.

Figure 6: Existing Route 1

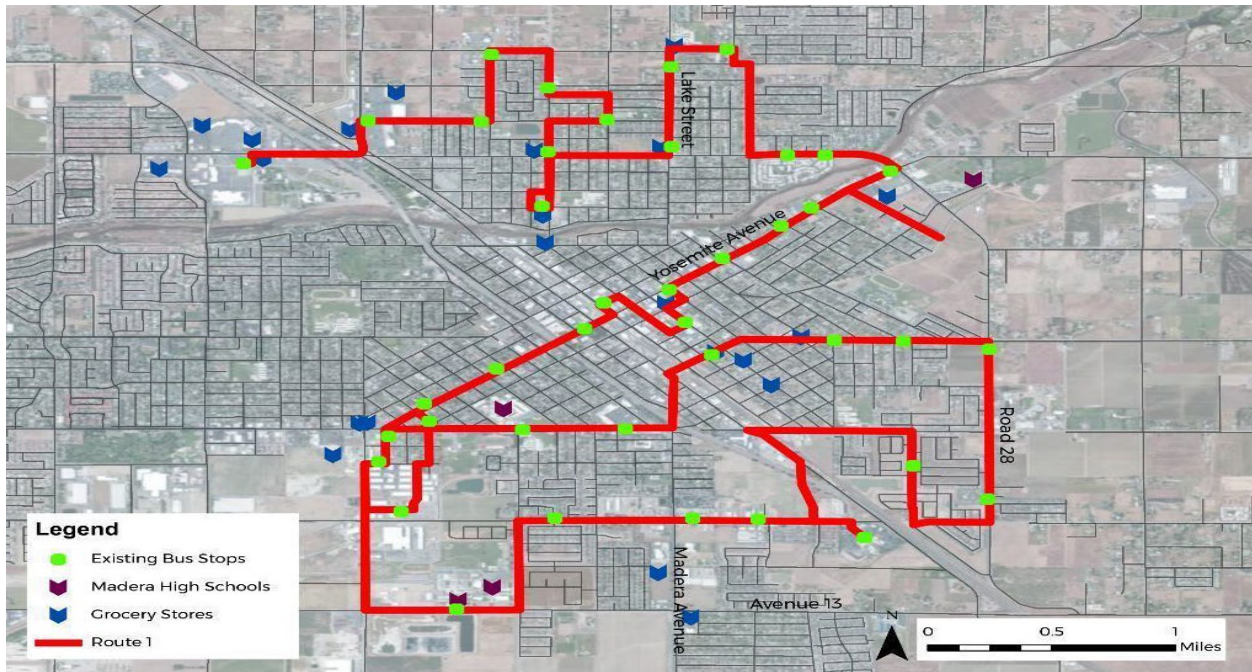


Figure 7: Proposed Changes – Route 1



**Route 2 Current:** Route 2 operates on a 60-minute headway and serves Madera Community Hospital, Madera High School’s north and south campuses, the Howard Road retail corridor including Walgreen’s and the Save Mart – CVS shopping centers, and Walgreens at the Commons shopping complex.

**Route 2 Proposed:** As part of the Madera Transit Plan, Route Two will be renamed as the “Orange Line” and will be revised to a 30-minute headway time. Key improvements are: Improved transfer point to other routes at the Intermodal Center, streamlined alignment along North Granada Drive, and parallel service to the Yellow Line without being overly duplicate.

Figure 8: Existing Route 2

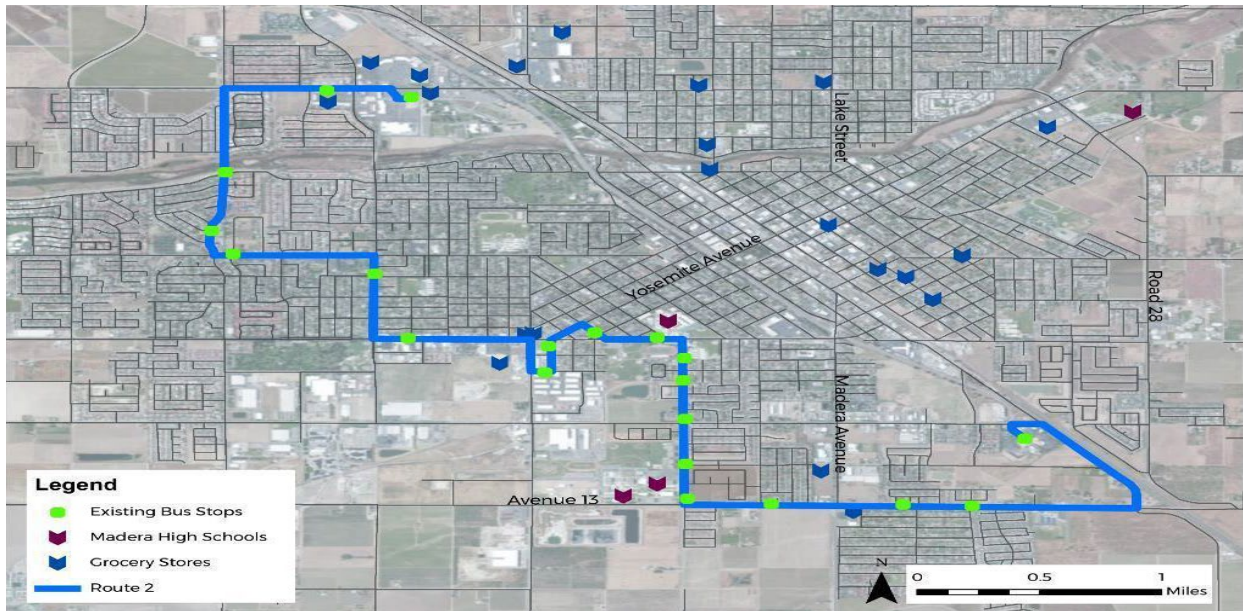
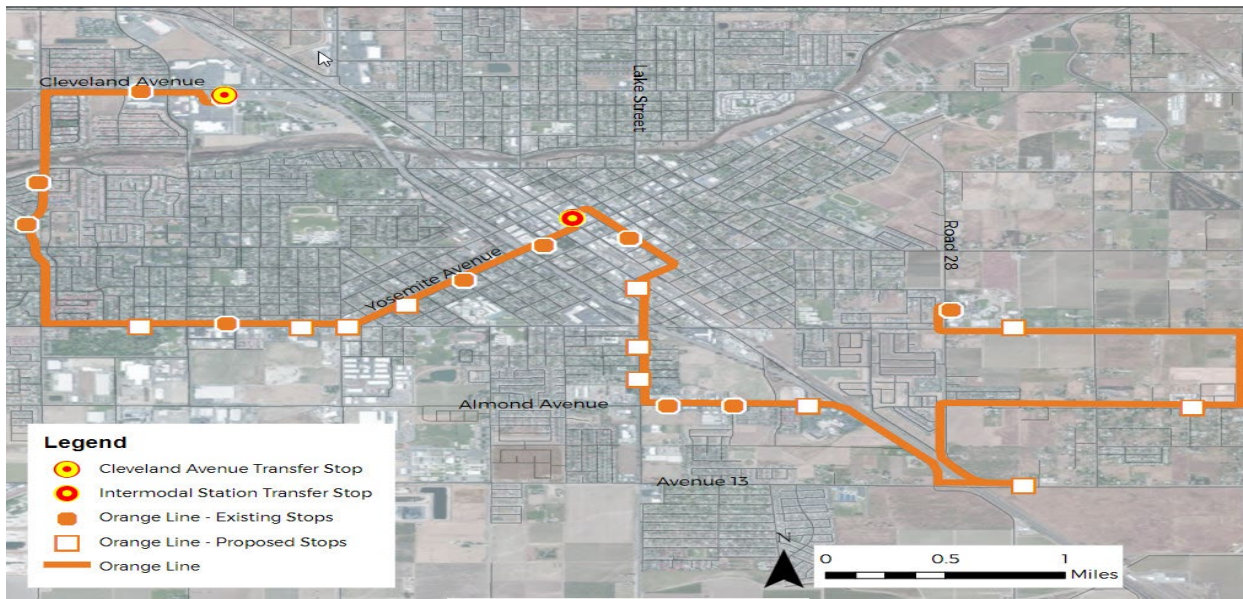


Figure 9: Proposed Change – Route 2



**Route 3 Current:** Route 3 operates on a 60-minute headway time and provides service to Madera Community College Center on Avenue 12. Route 3 and Route 2 are overly duplicative in some areas as service departs Walgreens on Cleveland towards the Madera Community Hospital.

**Route 3 Proposed:** As part of the Madera Transit Plan, Route Three will be renamed as the “Green Line” and will be revised to a 30-minute headway time. Key improvements are: Express service to the Community College, improved transfer points to other routes at the Intermodal Center, and potential to serve the Madera Children’s Hospital at Ave 12 and Hwy 41.

Figure 10: Existing Route 3

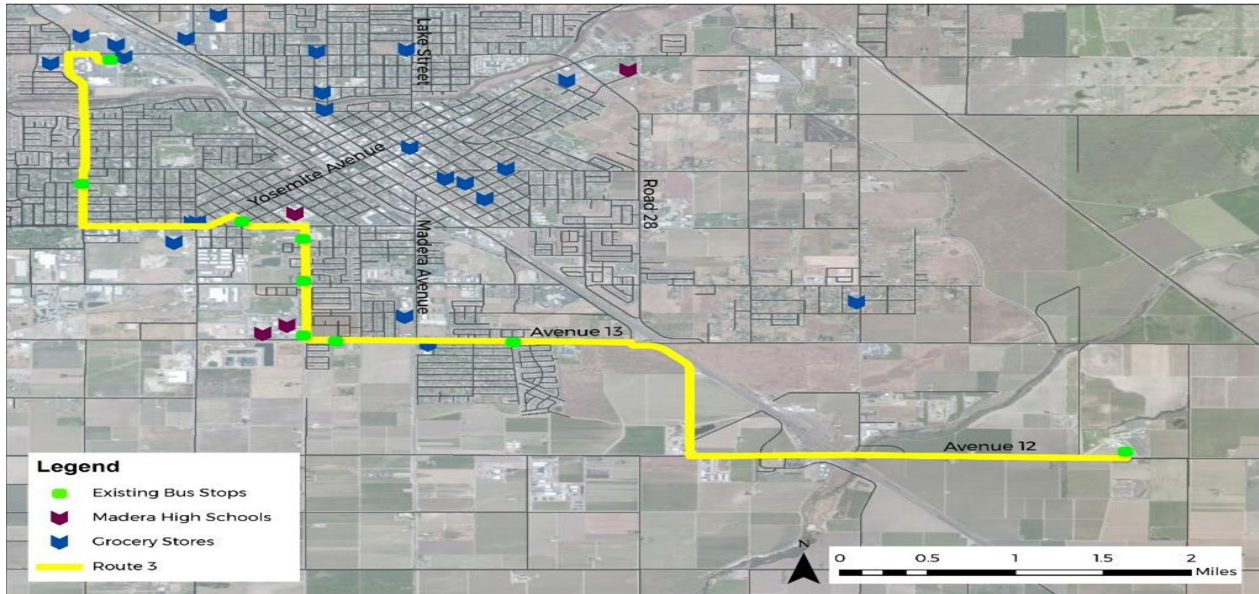


Figure 11: Proposed Changes – Route 3



**Route 4 Proposed Expansion:** Route 4 is a proposed Fixed Route expansion and will service the Northern portion of Madera. Key destinations are Vallarta Supermarket, Pan American Community Center, Desmond Middle School, Matilda Torres High School, and the Madera Amtrak Station.

Figure 12: Route 4 Proposed Expansion

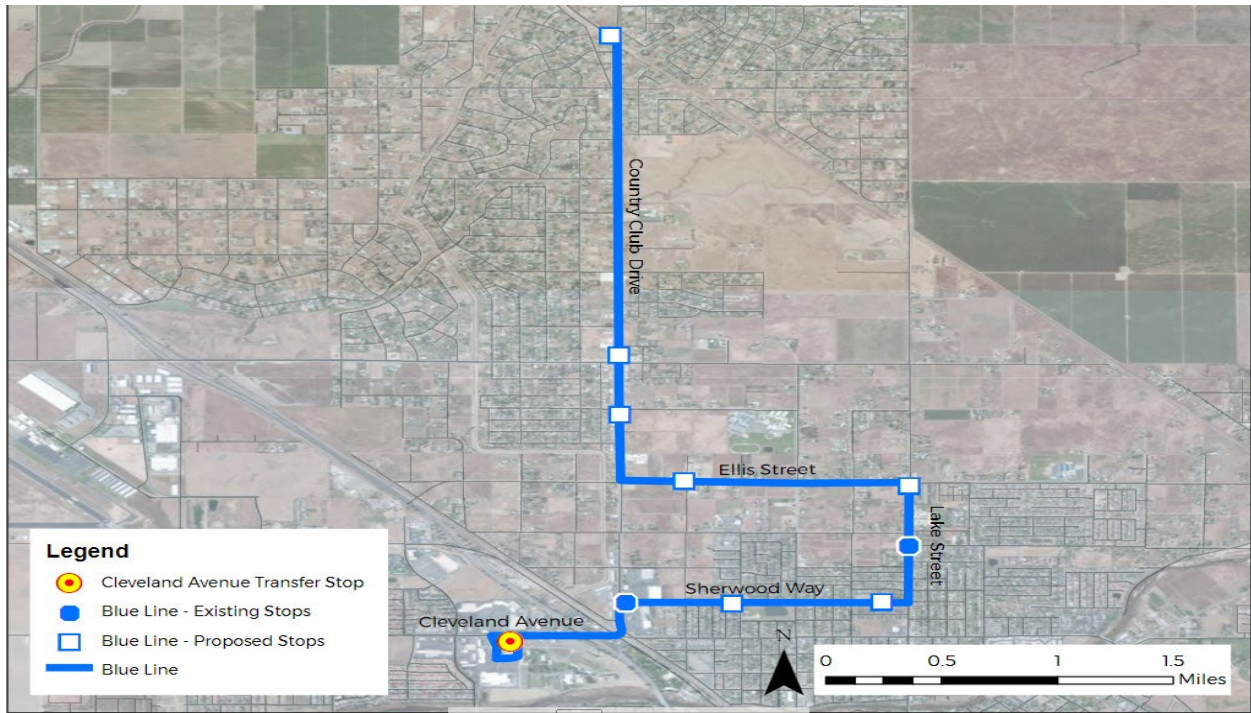
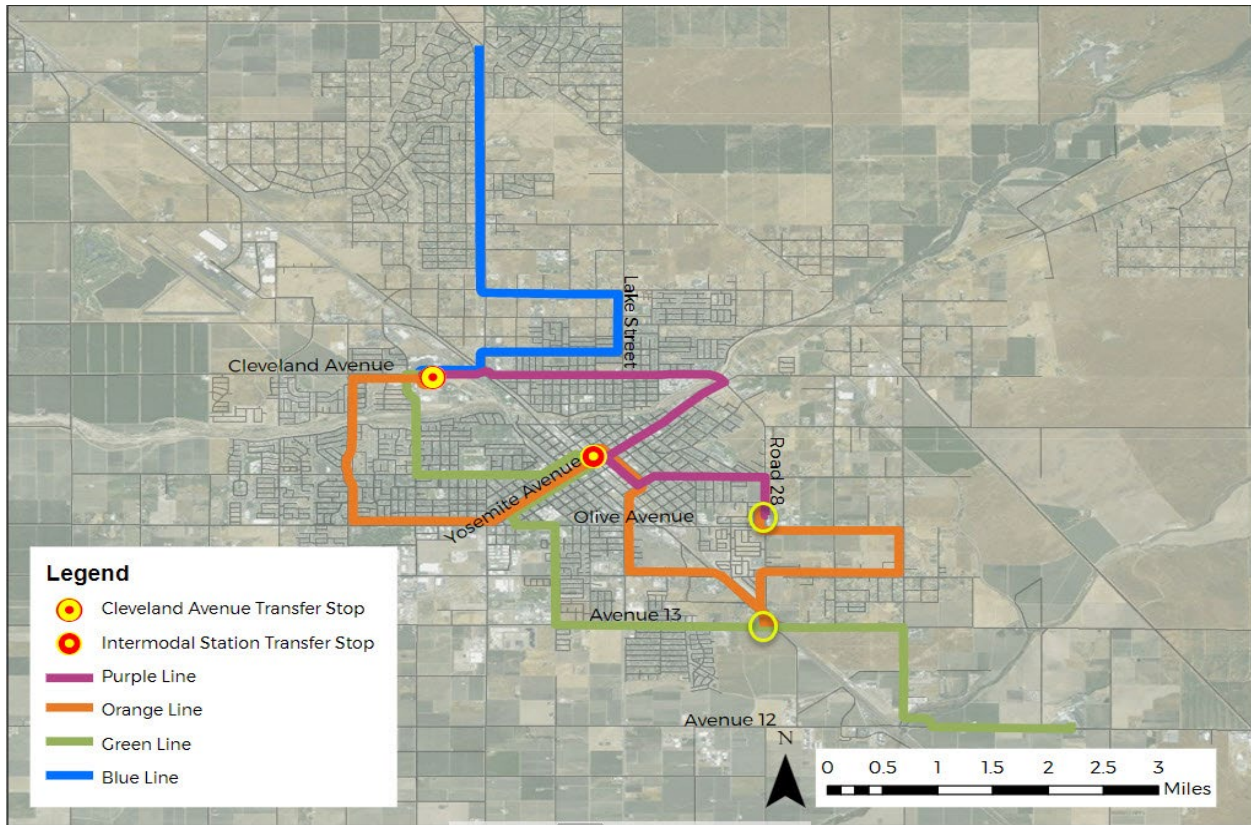


Figure 13: Madera Metro Route System as of June 2023





## Section B – Rollout Plan General Information

The City of Madera - Transit Rollout Plan was developed to transition the agency’s transit fleet to 100% zero-emission by 2040 to meet the ICT. Starting in 2026, a minimum of 25% of all new transit vehicles purchased will be zero emissions. Beginning in 2029, as part of the ZEB purchase requirement, 100% of newly procured transit vehicles will be zero-emissions.

This plan was prepared by City Staff. A copy of the Council approved resolution was approved on ( ) and is attached as Appendix A.

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

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559-661-3693

## Section C. Technology Portfolio

The City of Madera will purchase a minimum of 19 Battery Electric Buses (BEB) to replace its current fleet comprised of both CNG, Diesel, and Gas by 2040. The City’s Fleet Management Plan and Transit Asset Management (TAM) Plan focuses on replacing existing cutaways between 2026 and 2035. The City also plans to consult with an outside agency to assist with the infrastructure and capital needs to successfully implement the ZEB transition.

## Section D. Current Bus Fleet Composition and Replacement Schedule

### Current Fleet

The City of Madera operates Fixed Route service Monday thru Saturday and also provides Dial-A-Ride seven days a week. The Fixed Route service offers three routes (Route 1, Route 2, and Route 3). Major stops include the Madera Community Hospital, Madera Community College, Madera County Offices, and local retail and grocery shopping.

The City of Madera Transit system currently has a total of 19 cutaways. **Table 1 gives a detailed description of the current fleet.**

Number of Buses	Year	Bus Make/ Model	Fuel Type	Size	Bus Type
4	2012	Ford E-450/ Elkhart	CNG	26ft	Cutaway
1	2012	Ford E-450/ Elkhart	Gas	26ft	Cutaway
5	2013	Ford E-450/ Starcraft	CNG	26ft	Cutaway
2	2019	Ford E-450/ Starcraft	Gas	26ft	Cutaway
3	2019	Chevy 4500	Gas	26ft	Cutaway
1	2019	Aero Elite 320/ ElDorado	CNG	26ft	Cutaway
1	2019	Ford F-550/ ElDorado	CNG	32ft	Cutaway

2	2020	International/ Starcraft	Diesel	32ft	Cutaway
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### Future Purchase (Existing Funding)

The City of Madera Transit System currently uses Federal Funds, State, and Local Funds for all transit expenditures. **Table 2 illustrate the funding sources used to fund all transit expenses.**

Federal Funds	Section 5307 (Formula)
	Section 5339 (Formula)
	Other Eligible Competitive Funds
State	State of Good Repair (SB1)
	Low Carbon Transit Operations Program (LCTOP)
Local	Measure T

### Bus Replacement Schedule

The City's Transit system priority is to provide safe, reliable, and sustainable transit services to are of great quality to address the needs of our customers and communities. The City's Transit system goal is to replace vehicles at the end of their useful life as defined in the TAM. Based on the City's current fleet replacement schedule and currently planned procurements, the following tables **Table 3,3a, and 3b** reflects the replacement schedule of all current fleet.

Year	Make	Fuel Type	Schedule Replacement Year	Type
2012	Ford E-450	CNG	FY22/23*	Gas
2012	Ford E-450	CNG	FY22/23*	Gas
2012	Ford E-450	Gas	FY22/23*	Gas
2012	Ford E-450	CNG	FY22/23*	Gas
2012	Ford E-450	CNG	FY22/23*	Gas
2013	Ford E-450	CNG	FY22/23**	Gas
2013	Ford E-450	CNG	FY22/23**	Gas
2013	Ford 3-450	CNG	FY22/23**	Gas
2013	Ford E-450	CNG	FY22/23**	Gas
2013	Ford E-450	CNG	FY22/23**	Gas
2019	Ford E-450	Gas	FY29/30	BEB
2019	Ford E-450	Gas	FY29/30	BEB
2019	Chevy 4500	Gas	FY29/30	BEB
2019	Chevy 4500	Gas	FY29/30	BEB
2019	Chevy 4500	Gas	FY29/30	BEB
2019	Aero Elite 320	CNG	FY31/32	BEB

2019	Ford F-550	CNG	FY31/32	BEB
2020	International	Diesel	FY31/32	BEB
2020	International	Diesel	FY31/32	BEB

**Table 3a: Future Replacement Schedule\***

FY32/33	BEB
FY32/33	BEB
FY32/33	BEB
FY32/33	BEB
FY32/33	BEB

**Table 3b: Future Replacement Schedule\*\***

FY33/34	BEB
FY33/34	BEB
FY33/34	BEB
FY33/34	BEB
FY33/34	BEB

The City is currently working on the development of the supporting infrastructure which will be funded by various state and federal sources. With the current committed funding, the City will be able to deliver the BEB vehicles as early as the 23/24 Fiscal Year.

### Section E. Facilities and Infrastructure Modifications

The City of Madera – Madera Transit Center has sufficient space to install battery electric charging equipment without impacting existing operation. **Table 4 below identifies Facility Information, while Table 5 identifies the Design/ Construction Timeline.**

The Madera Transit Center was designed to meet the future needs of a zero-emissions fleet with the potential to serve as a charging facility. In April 2021, the City was successful in meeting with a firm to discuss needs and potential usage. The image below is to illustrate the proposed suggestion at the said time for a Solar PV Canopy. This size system would be efficient to offset the charging cost of the City’s EV Transit Vehicles at the current fleet amount.

Bus operations are currently contracted out to MV Public Transportation, Inc., at the Madera Transit Center, while maintenance is currently handled by the City’s Fleet Maintenance Department at the City Yard. It is anticipated that as the City transitions to all BEBs, it may partner with other service providers for managing the maintenance of the BEBs.

Figure 14 – Solar PV Canopy Options

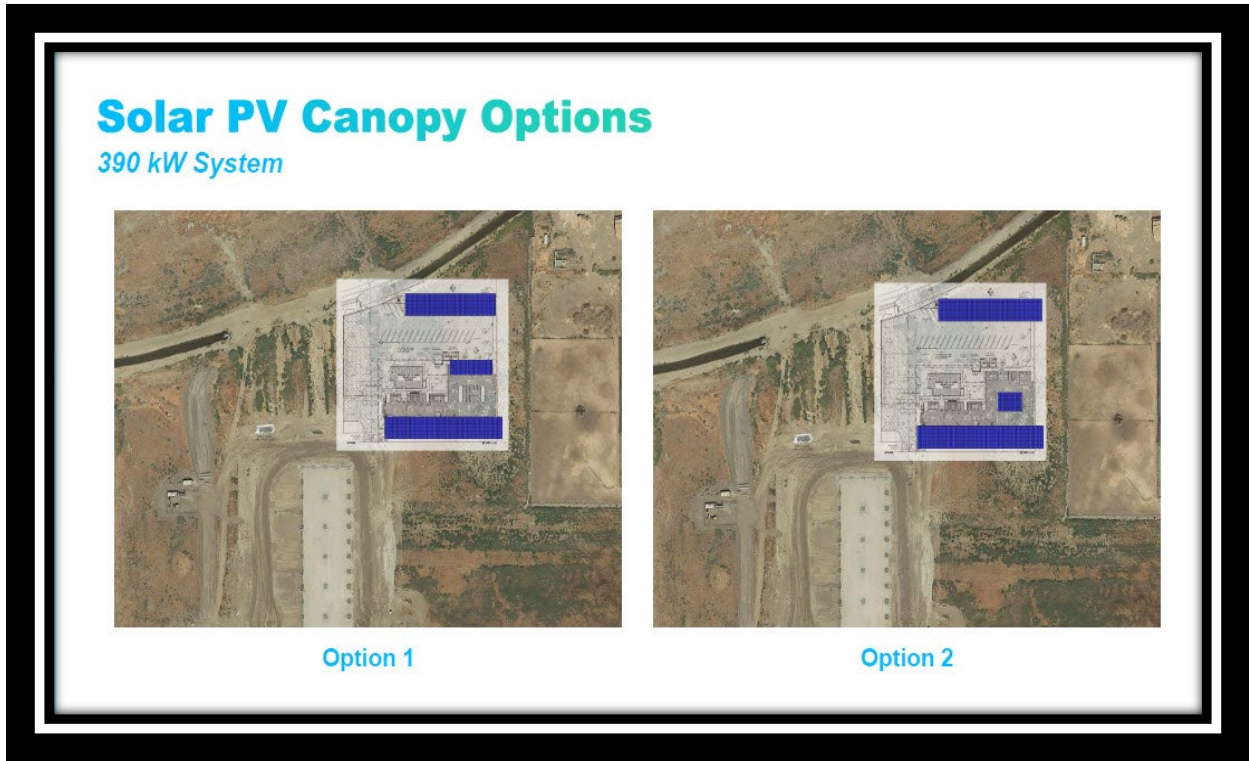


Table 4: Facilities Information	
Facility Name	Madera Transit Center
Address	1951 Independence Drive Madera, Ca. 93638
Main Function(s)	Bus Charging, Bus Parking, Administration
Type(s) of Infrastructure	EV Charging Stations with Solar PV Canopy Charging
Service Capacity	N/A
Upgrades Needed?	Yes
Estimated Construction Timeline	Task will be assigned to hired Consultant

Table 5: Facility Design/ Construction Timeline							
Task	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30		
RFP – Design							
RFP – Build							
Construction							
BEB Purchase (5)							
BEB Purchase (4)							
BEB Purchase (5)							
BEB Purchase (5)							

## 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 (CES). CES 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. **Table 6 give a detailed listing of the City of Madera Disadvantaged Communities Map.**

Figure 14 – CITY OF MADERA, SB 535 Disadvantaged Communities 2022

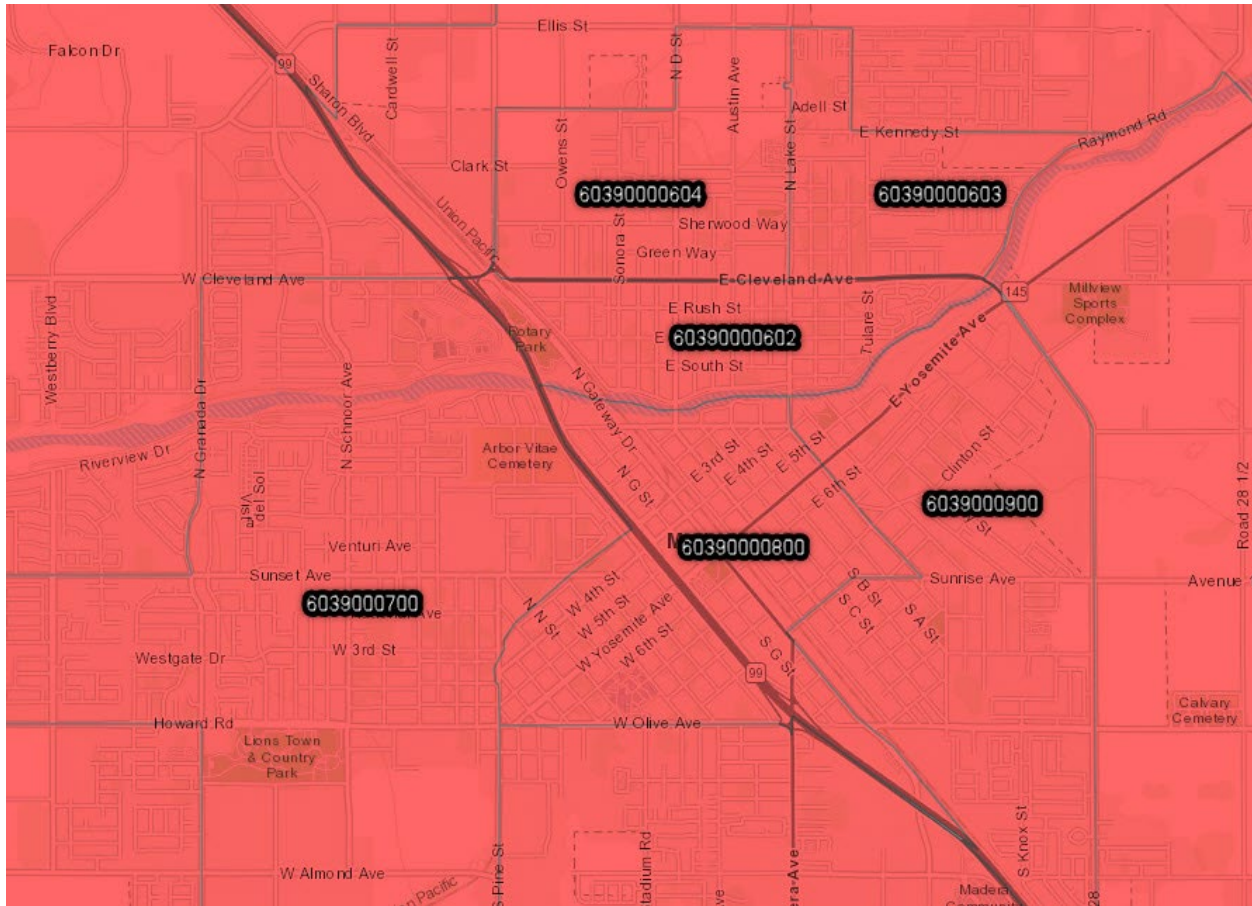


Table 6 give a detailed listing of the City of Madera Disadvantaged Communities Map.

Census Tract	CES 4.0%	CES 4.0 %	CES 4.0 % Range	Pollution Burden %	Pollution Char. %	Pop.	County	ZIP
6039000800	71.55	99.31	<b>95-100% (highest scores)</b>	95.49	98.21	6793	Madera	93637
6039000900	66.63	98.30	<b>95-100% (highest scores)</b>	91.92	97.59	11006	Madera	93638
6039000602	52.38	90.41	<b>90-95%</b>	64.48	97.53	4296	Madera	93638
6039000604	42.05	78.15	<b>75-80%</b>	37.61	98.03	5485	Madera	93638
6039000700	40.88	76.42	<b>75-80%</b>	70.91	71.84	11600	Madera	93637

6039000603	37.95	72.04	<b>70-75%</b>	35.21	92.88	5963	Madera	93638
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## Section G. Workforce Training

Workforce training will be the responsibility of the City of Madera and the selected vendor whom is to assist with managing the maintenance of the BEBs. *The workforce and maintenance training will be aligned with the ZEB purchase schedule and infrastructure upgrades.*

*Staff to be involved in the workforce and maintenance training will be City Transit, Public Work, Fleet Maintenance, and Engineering personnel.*

## Section H. Potential Funding Sources

The City of Madera plans to hire a consultant to assist with the Cost Assessment, Funding, Fleet Replacement Schedule, and Infrastructure needs.

### Existing Funding

**Table 7 identifies the funds currently received by the City of Madera Annually that allows for Capital Improvement**

<b>Funding Source</b>	<b>Funding Entity</b>
Section 5307	Federal
Section 5339	Federal
State of Good Repair (SB1)	State
Low Carbon Transit Operations Program (LCTOP)	State
Measure T	Local

### Potential Additional Funding Sources

#### Federal Funding

##### **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.

##### **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.

##### **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.

### **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.

## Section I. Start-Up and Scale-Up Challenges

### Resiliency Considerations

The City of Madera will also need to consider resiliency as it deploys BEBs. Because BEBs are reliant on electric charging, a power outage at the Madera Transit Center may result in the inability to charge the needed BEBs and therefore unable to provide the scheduled service. 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 throughout the State of California. 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 Madera will explore 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 Madera transit operations. In addition to procuring BEBs, the City will also explore the procurement of Hydrogen Fuel Transit Buses to deploy for service when systems are down.

### 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, lower maintenance and fuel costs may not materialize as expected. As a result, an accurate cost assessment may remain an area of uncertainty that may present challenges during the transition period.

### 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 inexperience 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

City of Madera – Council Staff Report and Resolution Approving the City of Madera Zero Emission Bus Rollout Plan