# EVs and EV Charging:

## The Case For Our Agency

Transportation Authority of Marin

# Electric Vehicles For Fleets: The Financial/Performance Case

## Reduce Overall Fleet Costs

- Reduced maintenance and fuel expenditures
- Minimize impact of gas price
- Potentially leverage incentives to lower purchase/lease price

## Systematically Upgrade Fleet

- We don’t have to convert every vehicle at once.
- Retire costlier, older vehicles.
- Potentially add EVs in stages, beginning with a pilot program

# Electric Vehicle Incentive Overview

## Incentives and rebates can drastically cut the cost for purchasing or leasing an electric vehicle.

**Rebates and Incentives available from:**

- **Transportation Authority of Marin**
  (up to $7,000 per vehicle*)
- **California's Clean Vehicle Rebate Program**
  (up to $7,000 per vehicle*)
- **Federal tax credits**
  (up to $7,500 per vehicle, can be offered to public agencies*)

**Rebates and incentive amounts subject to change*

Total cost of ownership and cost comparison analysis tools - such as Automotive Fleet, among others - can help assess overall budget impact.

# Potential Applications

- Plug-in hybrid electric vehicles (PHEV) and pure battery electric vehicles (BEV) are ideal for many fleet vehicle missions, especially those with short daily round trips.
- Several EV models can travel 150+ miles before needing to be recharged. Easy coverage of smaller Marin cities and towns.
- Available models include transit buses, shuttles, cars, and e-bikes.
- Leading agencies in Marin - including public works, police departments, and schools - already using a range of EVs.

**Both new EVs and used EVs are available for fleet purposes. Types include:**

- Hydrogen Fuel Cell light-duty vehicle
- Battery electric vehicle
- Plug-in hybrid vehicle
- Zero Emission Motorcycle
- Used Light Duty Vehicle
- Electric Assist Bike
- Electric Utility Vehicle
- Medium and heavy duty vehicles (e.g. transit bus, refuse)

# Benefits

An increasingly sustainable fleet that will cost less to maintain and operate year over year.

Positive message for constituents as we join other Marin agencies in doing our part to reduce greenhouse gas emissions and meet local climate goals.

Cheaper fuel cost as vehicles can be charged during non-peak hours.

Resources saved by using EVs - even if on a limited scale initially - can be allocated for other agency needs.

# Cooperative Purchasing

- In addition to purchasing electric vehicles on their own, agencies have the option to join together with other agencies and government groups to take advantage of collective purchasing power.
- Through government service agreements and joint purchase contracts, agencies can save thousands of dollars since they are able to be included in a larger purchase - which typically results in a lower cost per vehicle - without having to purchase a large quantity.
- Similar programs are also available for EV charging equipment.

A few resources for joint purchase power for agencies and EVs include:

- green.ca.gov/fleet
- driveevfleets.org/cooperative-purchasing/
- nppgov.com/state_statute/california
- afdc.energy.gov/laws/all?state=CA

# Example Projects from Around California

## Agencies in Marin aren't alone in their efforts to drive electric.

The following slides highlights how other agencies have used electric vehicles in their fleets.

Where the example EV projects are located

Where the example EVSE projects are located

# Marin County

The Marin County Department of Public Works (DPW) has furthered the County's sustainability commitment by **replacing inefficient gas-powered vehicles in the County fleet with eco-friendly alternatives** whenever possible.

This effort began in 2002 with the purchase of a Toyota Prius, and **today the fleet includes 80 hybrid vehicles and 10 EVs**.

> **The county only spent about $7,400 (of county funds), for an almost $200,000 project. It was an amazing use of leveraging grants and seed money.**
>
> Nick Nguyen
> *TAM EV Program Manager*

# Marin County


In 2018, **41 new charging stations**, 31 of which were available for public use, were installed at the Marin Civic Center's Hall of Justice parking lot.

The other 10 chargers were installed at the Civic Center's garage to be used by the County vehicle fleet.

The County also saved over

**$65,000**

by receiving grants from the Bay Area Quality Management District, TAM and MCE.

The County **utilized the PG&E EV Charge Network Program** to cover the required electrical infrastructure upgrades to the parking lot.

# Los Angeles, CA

The U.S. Navy and Los Angeles Department of Water and Power (LADWP) **expanded their use of plug-in electric vehicles with the Drive the Dream program in 2015**.


The U.S. Department of Navy aimed to lease at least **450 electric vehicles to replace gasoline-powered vehicles** at Navy and Marine Corps bases across California in 2015.

> **In addition to the regional environmental benefits and the opportunity for customers (and LADWP) to save money compared to gasoline, electric transportation has benefits for our utility.**

# Los Angeles, CA

## LADWP PURCHASED AND LEASED 157 PLUG-IN VEHICLES

including 117 Chevrolet Volt plug-in hybrids and 40 Nissan LEAF cars.

That same year they **began installing 104 public chargers on city property** at a cost of $5.5 million. The agency has over 400 Level 2 chargers on city property.

> **EV charging permits us to use our power assets better by adding load when there is capacity on the system.**
>
> Marvin Moon
>
> *LADWP's Director of Power Engineering*

# San Joaquin Valley, CA

**The City of Stockton adopted Northern California's first battery electric transit buses in May 2013.**

By recharging 10 minutes every two hours, the Proterra EcoRide BE35 bus can operate throughout the daily operation cycle.

The AeroVironment charging station is fully automated. When the Proterra bus approaches the charge station, the station recognizes the bus, guides the bus into position, and charges the vehicle without driver interaction.

# San Joaquin Valley, CA

- Kings Canyon Unified School District debuted the nation's first all-electric school bus in March 2014.
- The bus has a range of 80 -100 miles and **saves around 16 gallons of fuel per day which is total annual savings of $16,000.**
- They received $400,000 in cost-saving vouchers from the California Air Resources Board (CARB).
- An electric school bus costs around $230,000, while a diesel school bus costs around $110,000. Lower fuel and maintenance costs help electric buses save school districts money every year. **Over its lifetime, an electric school bus will save around $170,000**.

> **With up to a 40-mile range for the under 10-minute fast charge application, the EcoRide BE-35 can easily replace 80 percent of diesel buses in typical transit and shuttle use without altering schedules or passenger service. The EcoRide can also be configured for longer ranges while charging at a central location.**
>
> Proterra

# San Mateo, CA


- In San Mateo County, the Office of Sustainability has partnered with Peninsula Clean Energy to offer an EV fleet program.
- San Mateo County agencies including police departments and public works have added BEV and PHEV vehicles
  in the form of sedans, motorcycles, and e-bikes.
- San Mateo said in 2019 that the total life cycle cost, based on five years ownership, of a zero emissions vehicle is less than that for a comparable 100 percent fossil fueled car.
- **The cost savings may be as great as $5,000 per vehicle** if the electric vehicle is eligible for certain rebates. That does not include all the fuel and maintenance savings.

# Our Agency Can Easily Apply For and Receive EV Fleet Incentives

## Steps we can take to secure these funds.

1

**Reserve Rebate**
Can reserve before purchasing

2

**Send Letter of Intent**
States what we aim to do with the fleet

3

**Purchase or Lease a New or Used EV**
Medium and heavy duty available. (HVIP and Air District Carl Moyer

4

**Apply for Clean Vehicle Rebate Program Online**
Only for light duty

# Our Agency Can Easily Apply For and Receive EV Fleet Incentives

**Steps we can take to secure these funds.**

5

**Submit Required Documents to Center for Sustainable Energy**
Only for light duty

6

**Share Documents with Rebate Provide such as TAM**

7

**Receive Rebate**
Some rebates can be processed in less than 45 days

8

**Recover Vehicle Expenses**

# Steps for Converting Our Fleet

## Four Step Plan to Convert Fleets with EVs:

1. **Determine vehicle fleet needs.**
   - Review fleet to see which vehicles are the oldest, are driven the most, have highest fuel cost or lowest fuel efficiency, have highest maintenance cost, and those that travel less than 150 miles a day.
   - Review available rebates for both purchase and lease.
   - Example: TAM's rebate for up to $5,000 a vehicle can cover up to 5 vehicles each year.
2. **Select an eligible EV replacement.**
   - Light duty vehicles
   - Medium and heavy duty vehicles
4. **Reserve rebates.**
   - Able to reserve rebates before we purchase.
5. **Purchase or lease vehicle following our normal procedure.**

# Fleet Conversion Information Resources

**Our agency can leverage a wide range of available information resources to help support our process.**

- TAM can provide assistance should we need help at any stage.
  - TAM.ca.gov/AgencyToolkit
- Light duty tools
  - cleanvehiclerebate.org/eng/eligibility-guidelines
  - tam.ca.gov/projects-programs/alt-fuel-electric-vehicle-program/
  - driveclean.ca.gov/
  - pge.com/en_US/large-business/solar-and-vehicles/clean-vehicles/ev-fleet-program/ev-fleet-program.page
  - cleanvehiclerebate.org/eng/fleet/eligibility
- Medium and heavy duty tools
  - californiahvip.org/how-to-participate/#Eligible-Vehicle-Catalog
  - fundingfindertool.org/
  - tam.ca.gov/projects-programs/alt-fuel-electric-vehicle-program/
  - cleanvehiclerebate.org/eng/fleet/eligibility

# EV Charging

Transportation Authority of Marin

# The Financial Case

**Provides a cheaper "fuel" source than gasoline or diesel.**

EV chargers could become a **new revenue source** if available to the public.

Can use existing infrastructure to support EV chargers and limit costs.

Funding and rebates for all types of EV chargers are available from a variety of sources including local organizations TAM and MCE.

# Benefits

**Respond to constituent interests in EVs as we add to Marin's overall EV charger total.**

Demonstrate our commitment to our local sustainability goals.

Positive steps to share with our governing boards and public officials.

**Manage fueling cost.** EV chargers offer an additional fueling option that doesn't confront fluctuating prices like petroleum.

# How We Can Fund EV Charging

## Rebates for EV charging equipment available in our own community.

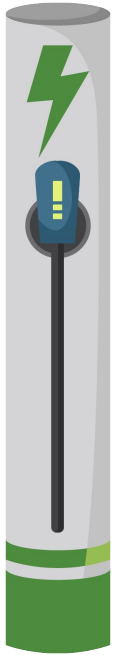
- **TAM**
  *(up to $3,000*)*
- **MCE**
  *(up to $3,000*)*
- **Bay Area Air Quality Management District**
  *(starting at $10,000*)*
- Can stack local funds with regional and state funding to reduce the cost of installations by several thousand dollars.

| Example A: Single Charger Pedestal, 2 Heads | |
|---|---|
| | |
| Charger Costs (Dual Head) | $3,500 |
| Panel Upgrades | $7,000 |
| Trenching Costs | $10,000 |
| **Total Installation Costs** | **$20,500** |
| | |
| MCE REbate ($3k/Head) | $6,000 |
| BAAQMD Rebates | $0 |
| TAM Rebates | $6,000 |
| **Cost to Jurisdiction** | **$8,500** |

| Example B: 5 Pedestal, 10 Heads | |
|---|---|
| | |
| Charger Costs (5 Dual Head Unities) | $17,500 |
| Panel Upgrades | $7,000 |
| Trenching Costs | $20,000 |
| **Total Installation Costs** | **$44,500** |
| | |
| MCE REbate ($3k/Head) | $30,000 |
| BAAQMD Rebates | $10,000 |
| TAM Rebates | $3,375 |
| **Cost to Jurisdiction** | **$1,125** |

**Rebates are subject to change and depend on the charger type selected.*

# Types of EV Chargers Available For Our Use



## Charging levels available for our community.

### Level 1 (slow)

Only requires a 120 volt outlet. Provides an average 4 miles of range per hour.

### Level 2 (faster)

Uses a 240 volt outlet. Special equipment is required and it provides an average of 25 miles of range per hour.

### Level 3 (fastest)

Uses a 500 volt outlet. Special equipment is required and it provides 80% of range in 30 minutes.

# San Rafael

- **In 2019, nine San Rafael schools moved forward with an EV charging project** thanks to grants and rebates from TAM *(up to $3,000 percharging head)*, the regional Transportation Fund for Clean Air *($60,000)*, MCE *($65,772)*, and PG&E *($527 per charging port)*.
- The schools identified for EV stations include: Terra Linda High School; San Rafael High School; Madrone Continuation High School; Davidson Middle School; and Glenwood, Bahia Vista, Coleman, Sun Valley and San Pedro elementary schools.

**“We’re thrilled that our community partners are making EV charging stations possible on so many campuses,” said school district Superintendent Michael Watenpaugh. “Our board, staff, students and community members have advocated for these stations and community funding and rebates will make them possible.”**

# Los Angeles, CA

- In addition to adding EVs to their fleet (see slide 8) the Los Angeles Department of Water and Power has also been installing EV chargers throughout their service territory.
- In one such case, the LADWP expanded their weekend hours and increased number of fast chargers giving residents greater access to EV charging at the Crenshaw Customer Service Center. The Center has 4 level 3 DC Fast chargers and 16 level-2 chargers.

**LADWP is proud to support, implement and advocate for the increase of EV charging stations and EV adoption for ALL customers in the communities we serve.**

**The EV chargers at our Crenshaw facility are part of an overall larger effort to modernize our customer service centers and to install 10,000 publicly accessible charging stations by 2022 while facilitating the adoption of 145,000 EVs in the city by 2022.**

Nancy Sutley

*LADWP's Chief Sustainability Officer*

# Lynwood & Ontario, CA

- Lynwood and Ontario, California are just two examples of cities using EV charging incentives provided by the Charge Ready program designed and managed by Southern California Edison.
- In 2017, **Ontario installed more than 45 new EV chargers at seven locations throughout the city**. That same year Lynwood added 15 new chargers including locations at the civic center public lot.

> **We are excited that this program not only gives our citizens more options to charge electric vehicles, but also by having a fleet of electric cars, the city of Lynwood is part of the solution to cleaner air and lower greenhouse gas emissions in Southern California.**
>
> Alma Martinez
> *Lynwood City Manager*

# Sacramento, CA

- The City offers charging at no additional cost to patrons at City parking facilities (with exception of the pay-to-charge DC fast charger at the Sacramento Valley Station). City-owned facilities with chargers are identified in the interactive map.
- As of April 2019, the City Fleet consists of approximately 50% alternative fuel vehicles. Of these vehicles, 51 are zero emission vehicles (ZEV) – either all-battery EVs or hydrogen-fuel cell vehicles. **Sacramento consistently ranks as one of the top green fleets in the nation**. Efforts to increase ZEVs in the fleet are ongoing.

# Sacramento, CA

**Sacramento has over 600 public and workplace chargers within city limits.**
The City's interactive Electric Vehicle (EV) Parking Map App shows publicly available EV charging locations and on- and off-street parking options within the community.

- As of May 2020, **Sacramento operates 168 charging connectors at City-owned facilities**. While 51 serve the City fleet, 117 are available for public or employee charging.
- In May 2020, the City of Sacramento completed. **construction to replace and expand electric vehicle charging access at all five City-owned and operated parking garages**. As a result, there are now 85 EV connectors available across the City's five garages, nearly doubling the amount of public chargers than previously available at these sites.

# Chula Vista, CA

- Chula Vista city fleet includes 41 electric vehicles. They started with 15 EVs and then quickly expanded to 36.
- **The city funded the effort by pairing with the local utility SDG&E** who offers an EV charger rebate program similar to MCE's in Marin.
- **Chula Vista has seen annual fuel costs decrease by 75%,** maintenance and repair cost per mile decrease by 80%, and **down time hours decrease by 84% after acquiring them in 2018**.


**There are 123 chargers available at Chula Vista's City Hall, Public Works Department, and Police Department to serve the city's fleet vehicles, as well as employees.**

# California Utilities

- Southern California Edison and the Pacific Gas and Electric Company (PG&E) will spend up to $343 million and $236 million, respectively, **to build charging infrastructure that will support thousands of medium or heavy-duty vehicles at around 1,500 locations throughout the state**. PG&E will spend another $22 million building 234 DC fast-charging stations at around 50 different sites throughout the state.
- PG&E's FleetReady Program ($236 million): PG&E will install the make-ready infrastructure at a **minimum of 700 sites to support the electrification of at least 6,500 medium- or heavy-duty vehicles.**

In 2018, California's Public Utilities Commission approved up to

**$738 MILLION WORTH OF EV**

charger projects to cover the next five years.

# Our Agency Can Easily Apply For and Receive EV Charging Incentives

**Steps for securing EV charging equipment funding.**

- Reserve grant with TAM or other funding partner
  - Can reserve grant before making purchase
- Confirm commitment
  - Within 30 days of reserving the grant, we'll send a letter of commitment to the funding provider
- Purchase and install charging equipment
  - To meet grant requirements, we must operate and maintain the chargers for at least 3 years.
- Submit required documents to TAM or other funding provider
- TAM or other funding provider will verify the rebate
  - This guarantees we'll receive the rebate if we complete all the steps laid out in the commitment letter.

# Determining Our EV Charger Needs

TAM provides a step-by-step process that we can follow to determine how many EV charging stations are needed and where they can be best placed.

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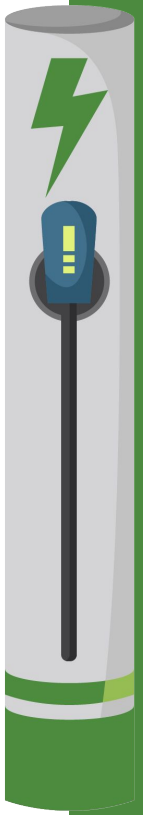
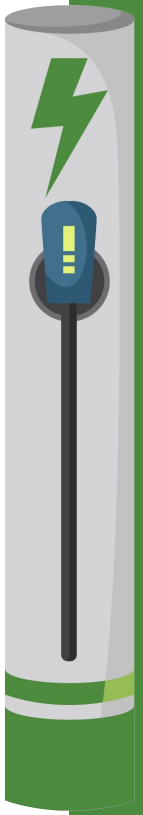


- Review rebate options
  - TAM staff can point us towards applicable rebates
- Estimate demand
  - MCE and TAM can help calculate how many chargers will be needed to meet demand
- Review charging station options
  - Multiple options including single head, dual head charging, and more.
- Reserve rebates
  - Can reserve rebates from MCE, TAM and others before purchasing
- Conduct site evaluation with MCE or electrical contractor
  - Includes a site walk where charging infrastructure will be installed.

# Determining Our EV Charger Needs

TAM provides a step-by-step process that we can follow to determine how many EV charging stations are needed and where they can be best placed.

Transportation Authority of Marin



- Estimate capital cost
  - Based on number and type of charging stations required. MCE and TAM can provide assistance here.
- Develop management policies
  - Lay out how we want the chargers used.
- Secure board/public approval
  - Follow our standard procedure here
- Contract with vendors
  - Review offered equipment and service contracts following our normal protocol.
- Finalize planning and permitting.
  - This is where the management policy and plans for installing will be used.
- Install, test and commission
  - Report any issues to the installing company.
  - Receive positive press

# Resources for Our EV Charging Equipment

**We can leverage regional, state, utilities and private funding sources for the installation of EV charging equipment.**

- **TAM Charger Rebates** TAM.ca.gov/AgencyToolkit
- **MCE Charger Rebate** mcecleanenergy.org/ev-charging/
- **BAAQMD Charge! Rebate** baaqmd.gov/funding-and-incentives/businesses-and-fleets/charge
- **PG&E's EV Fleet Charging Rebate** pge.com/en_US/large-business/solar-and-vehicles/clean-vehicles/ev-fleet-program/ev-fleet-program.page
- **Estimants on EV Charging Cost** theicct.org/sites/default/files/publications/ICCT_EV_Charging_Cost_20190813.pdf

## Address

900 Fifth Avenue
Suite 100
San Rafael, CA 93901

## Phone & Web

415-226-0831
**tam.ca.gov**

Transportation Authority of Marin