



**DATE:** January 24, 2018

**TO:** Transportation Authority of Marin Board of Commissioners

**FROM:** Dianne Steinhauser, Executive Director  
Nicholas Nguyen, Principal Project Delivery Manager  
Derek McGill, Planning Manager

**SUBJECT:** Measure B, Vehicle Registration Fee – Element 3.3 Alternative Fuel Program FY 2018/2019 Adoption (Action), Agenda Item No. 12

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## RECOMMENDATION

Receive update of the current fiscal year Measure B – Element 3.3 Alternative Fuel Program and adopt Fiscal Years 2018-19/2019-20 program proposal. The FY 2018-19/2019-20 program is designed to review and refresh the program, with a continued emphasis on electric vehicle (EV) adoption, new EV marketing effort and additional review of new clean transportation fuel technologies.

This item was heard by the TAM Programming and Projects Executive Committee who recommend the board adopt the program proposal.

## BACKGROUND

At the April 26, 2018 Board meeting, staff presented options to program Measure B, the \$10 annual increase in vehicle registration fee (VRF) for Marin County residents approved by public voters in 2010. The discussion centered on the programming of fund reserves over a 3-year period. Revenues generated by Measure B contribute \$2.3 million per year in VRF funds to Marin County transportation projects and programs, and are distributed to the following three elements:

1. **Element 1 - Maintain Local Streets and Pathways:** Includes 35% for local streets and 5% for bicycle and pedestrian pathways
2. **Element 2 - Improve Transit for Seniors and Persons with Disabilities:** Includes 35% for the Senior Mobility Program, which includes Paratransit Plus, Volunteer Driver Program support, low-income rider scholarships, Gap-Grant Program, mobility management staffing
3. **Element 3 - Reduce Congestion and Pollution:** Includes 25% for school safety, dedicated to Crossing Guards, local Marin County commute alternatives, and alternative fuels infrastructure and promotion

Element 3, Reduce Congestion and Pollution, contains the following three sub-elements:

- 3.1. School Safety and Congestion Reduction
- 3.2. Local Marin County Commute Alternatives
- 3.3. Alternative Fuels Infrastructure and Promotion

While Element 3, Reduce Congestion and Pollution, receives 25 percent of the VRF funds generated, the Measure B Expenditure Plan approved by voters did not designate the funding levels that each of the sub-elements is to receive. Rather the Measure B Strategic Plan provides for principles to be followed.

After receiving staff's presentation and taking public testimony, the Board ultimately approved a 3-year budget for Element 3.3 in the amount of \$435,000 for Fiscal Year 2018/19 and \$345,000 in both Fiscal Years 2019/20 and 2020/21. Staff indicated that it will conduct expanded collaboration, including the development of a newly formed Alternative Fuel and Electric Vehicle (AFEV) Board ad-hoc subcommittee, and bring a recommended program to the TAM Board, which is reflected in this staff report.

At the time, staff also stated that while it would continue to engage the Clean Transportation Technology Advisory Working Group, and the newly formed Alternative Fuel and Electric Vehicle (AFEV) Board ad-hoc subcommittee, various immediate and short-term EV-related funding opportunities would be brought to the Board for approval, so as not to delay ongoing implementation opportunities. In July 2018, the TAM board authorized programming of up to \$517,600, for projects that met TAM's pre-existing EV eligibility. This July authorization included carryover from previous fiscal year's unallocated budget and noted that project delivery of various projects may exceed the current fiscal year.

## **DISCUSSION**

### Program Review Process

During spring 2018, staff initiated a comprehensive review of the Alternative Fuel Program and has developed a multi-prong review process with program stakeholders to work towards this year's program update.

Beginning with outreach to Marin Public Works Association, (MPWA), the Marin County Planning Directors, and the Marin Climate and Energy Partnership (MCEP) TAM staff sought initial feedback on previous years EV programs and considerations for ways to expand the program to further promote EV adoption in Marin County. TAM staff coordinated with and reviewed a wide range of current practices in Alternative Fuel Programs, in particular funding programs of EVs from MCE, BAAQMD, PG&E and other grantors, as well as a review of private enterprise efforts in EV promotion and Infrastructure development (e.g. Tesla and VW Electrify America).

Based on this initial feedback and review, consultation with TAM's Clean Transportation Technology Advisory Working Group (CTTAWG) and guidance from the AFEV Board ad-hoc subcommittee, staff developed the newly proposed fiscal year program. CTTAWG membership includes a mix of members of the public and EV advocates, MCE, local sustainability coordinators, and fleet management and public works staff. Starting in June 2018 TAM staff initiated a monthly review process of existing program elements, documenting CTTAWG suggestions and considerations for program re-development. These discussions allowed for a deep dive on topics including:

- EV Site Plan Development – June 2018
- EV Fleet conversion – July 2018
- EV Outreach – August 2018

These discussions were summarized by TAM staff and then shared with CTTAWG for final comments or considerations and shared with members of the AFEV board ad-hoc subcommittee, who served as policy-makers for changes to the EV program. The AFEV discussions were also supplemented with further analysis prepared by TAM staff regarding the locations of existing EV charging stations, fleet information and cost data showcasing various case studies to support policy discussions.

Based on the technical expertise of CTTAWG and discussions with the AFEV ad-hoc in June and September of 2018, TAM staff brought forth elements of the Alternative Fuel Program back to MPWA and MCEP for discussion and input around the following program and presented these comments to CTTAWG in November of 2018 for the final draft of the program.

### Current Year Program Update

#### *Public Agency EV Fleet Rebate*

The Public Agency EV Fleet Rebate was initially proposed and funded in FY 2013-14, and fully implemented in August 2014. The rebate program assists public agencies that replace internal combustion engine (ICE) vehicles with electric and plug-in hybrid vehicles, with a focus on conversion of existing light duty fleet with currently available EVs. TAM's incentive provides "match" funding of up to \$5,000 per vehicle, thereby reducing the cost of a new electric vehicle by up to \$10,000 when combined with the State's own rebate program (the CVRP Program).

As detailed in **Attachment A**: The EV fleet rebate program is proposing a major expansion of the program, allowing for the following new types of eligibility for public agencies in Marin County:

- Leased Vehicles – based on example lease rates and ability to leverage BAAQMD and other funding, expansion of the EV Fleet Rebate to include leased vehicles will significantly lower costs of fleet conversion.
- Used Vehicles – although not supported by some members of CTTAWG, the expansion of this program to include used vehicles may be desired by some jurisdictions in Marin in small numbers. Allowing used vehicles to be purchased will allow the conversion of some agency's fleets.
- Medium/Heavy Duty Fleets – TAM proposes to initiate a category of case-by-case funding to support medium and heavy-duty fleet conversion, by encouraging Marin Public Agencies to apply for BAAQMD Carl Moyer and HVIP grants using TAM's program as a portion of local match requirements.
- Other Light Duty Vehicles – Local jurisdictions requests for utility buggies and electric motorcycles or electric pedal assist bikes would be included in this category providing funding for Zero Emission Vehicles that replace internal Combustion Engine vehicles.

TAM remains at the high end of comparable rebate or incentive programs for EV fleet conversion. TAM staff propose to monitor the uptick in program applications and modify the programs to reflect demand or lack of demand in various sub-elements of the EV fleet program. TAM will work with the AFEV ad-hoc to review and propose program modifications.

Technical assistance for EV fleet conversion is also included in this year's program, and TAM has retained technical consultants to provide fleet management expertise to provide a fleet assessment, identify fleet vehicles that could be converted to EVs or lower emission vehicles, help schedule EV fleet conversions over a multi-year period, and assist with financial planning and grant opportunities. A toolkit to further guide this process is in development for this year.

#### *EV Charging Infrastructure Rebate*

TAM has been an active participant in providing bridge funding for electric vehicle charging station equipment (also known as EVSE) since the inception of the Measure B – Vehicle Registration Fee in 2011. The program is opened to all public agencies within Marin County and is focused on increasing the supply of Level 2 public charging in Marin. The program is revised this year to provide a higher level of match for charging installations of 10 or less chargers, encouraging smaller sites to install EV charging equipment, and supporting agencies with first time charging installations.

As detailed in **Attachment B**, the program is revised this year, on a first-come first-serve basis until funds are depleted, to provide matching funds of 88.5% percent of the complete installation up to \$1,500 for one Level 1 charging port or up to \$3,000 for one Level 2 charging port for 10 chargers or less, and 75% of the complete installation for 11 chargers or more. This includes all aspects of charger installation, including trenching, permitting and equipment purchasing. As part of the grant requirements, charger locations must also be identified with at least two standardized way-finding traffic signs to direct motorists if the chargers are to be publicly accessible.

Additionally, TAM expanded eligibility to promote level 3 or DC fast charging equipment opportunities, specifically in the context of medium or heavy-duty fleet conversions, coordinating with PG&E for their upcoming efforts in this area.

TAM remains at the high end of comparable rebate or incentive programs for EV charging installations. TAM also provides technical assistance to identify locations for EV charging infrastructure, including development of the EV siting plan included as **Attachment C**. TAM is developing a toolkit to further guide development of charging locations, and is providing technical assistance in grant management and financial planning of EV infrastructure. A toolkit for EV charging infrastructure is also in development this year

#### *EV Outreach and Education Program*

TAM's FY 2018/2019 outreach program (see **Attachment D**) will continue to target EV fleet conversion and charging equipment installation through outreach to public agencies focusing on first time installations; as well, TAM is providing technical assistance for agencies considering EV fleet conversion or charging equipment. As mentioned earlier, fleet management assistance, financial planning and grant assistance will also be provided. Primary focus will be on school districts and along key opportunity areas identified in the EV site plan, including major corridors in southern Marin along US 101. Outreach to local elected officials is included and a toolkit of information will be provided on EV Fleet Conversion and Charging Infrastructure installation.

For general public outreach, EV information directly for consumers will be refreshed with new messaging and social media campaigns to promote EV adoption. These messages will be developed by a marketing firm, in coordination with Drawdown Marin and CTTAWG to promote efficient targeting of messages and allocation of resources. TAM is also launching a major community engagement campaign to promote green transportation alternatives, Marin Commutes, and the messaging developed for the EV campaigns will be folded into this larger outreach effort to employers, employees and residents of Marin.

TAM will continue EV "ride and drive" outreach events, including expansion of these activities to provide ongoing regular opportunities for the public to learn about EV options.

#### *Projects Updates*

As shown in **Attachment E**, TAM staff have developed a pipeline tracking tool to monitor project delivery of TAMs EV rebate and incentive programs. Since the July 2018 Board update the county of Marin's 41 charging ports (expanded to 47) have been installed, Marin Transit's EV buses have been delivered and several new projects have been identified by site hosts (See **Attachment F**). As TAM promotes its expanded eligibility, staff will continue to monitor the success of the program and modify eligibility requirements as necessary.

## **FISCAL IMPACTS**

The TAM Board approved the current Fiscal Year 2018-19 Measure B – Element 3.3 budget program amount of \$435,000 at its April 2018 meeting. While rebate commitments have been made, the actual disbursement rate of funds will depend on the recipients' ability to complete their projects and request reimbursements from TAM. As projects are completed, reimbursement requests are paid and new projects are added during the course of the fiscal year, staff may come back to the Board to seek a budget supplement to fulfill these commitments.

In July 2018, \$517,600 of early EV promotion opportunities were approved by the Board, consisting of rebates and grants for public agency EV charging stations, fleet EVs, and marketing support funding to Marin-based EV advocacy groups (see **Attachment F**). Since that time, grant rebate recipients were able to deliver 57 new charging heads in Marin, conducted public education activities, and requested reimbursements of \$133,200.


## **NEXT STEPS**

Incorporating Committee comments, staff will seek program adoption at the January 24<sup>th</sup> Board meeting.

## **ATTACHMENTS**

Attachment A: Electric Vehicle Supply Equipment Program  
Attachment B: Electric Vehicle Fleet Program  
Attachment C: Electric Vehicle Site Plan Update 2018  
Attachment D: Outreach and Education Highlights  
Attachment E: Electric Vehicle Pipeline Tracking Matrix  
Attachment F: Early Commitment Update

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<b>Title:</b> <b>Dates:</b>	<b>Electric Vehicle Supply Equipment Grant Program</b> <u>July 1, 2018-June 30, 2019</u>	
<b>Description:</b>	<p>TAM's Electric Vehicle Supply Equipment (EVSE) Grant Program assists public agencies that install employee-only or publicly accessible electric vehicle charging stations. The application process is designed to be streamlined. To participate, public agencies must meet the requirements below.</p>	
<b>Eligible Agencies:</b>	<p>Marin County's government entities and public districts, including school districts, colleges, and universities.</p>	
<b>Local Fund Source:</b>	<p>TAM's EVSE Grant Program is funded through Measure B, the \$10 Vehicle Registration Fee.</p>	
<b>Rebate Summary:</b>	<p>Based on a first-come first-serve basis until funds are depleted for the year, the EVSE grant program is focused on level 2 charger installation and provides matching funds for the installation of Level 1 and level 2 chargers at the following rebate level:</p> <ul style="list-style-type: none"> <li>• Under 10 charging heads: <b>88.5%</b> of the complete installation up to \$1,500 for one Level 1 charger (per charging head) or up to \$3,000 for one Level 2 charger (per charging head).</li> <li>• For installations over 10 charging heads: <b>75%</b> of the complete installation up to \$1,500 for one Level 1 charger (per charging head) or \$3,000 for one Level 2 charger (per charging head).</li> </ul> <p>Agencies interested in medium and heavy-duty fleet conversions should contact TAM staff for assistance in identifying additional grant opportunities to support Level 3 (DC Fast Charging) equipment.</p>	
<b>*Add'l Fund Source (Not Mandatory to apply for TAM's grant program):</b>	<p>TAM encourages the leveraging of other regional, state, utilities or private funding sources for the installation of EVSE. Additional funding sources are available, and TAM will prioritize the usage of Measure B Funds to leverage other sources, as needed. These fund sources include:</p> <ul style="list-style-type: none"> <li>• MCE Charger Rebate</li> <li>• BAAQMD Charge! Rebate</li> <li>• PG&amp;E's EV Charge Rebate and EV programs</li> <li>• Private Fund Sources including Electrify America</li> </ul> <p>For more information about these fund sources and the applicability for your charging installation, please contact TAM staff to assist in financial planning to maximize leveraging opportunities.</p>	
<b>Summary Requirements:</b>	<p>Eligible Projects:</p> <ul style="list-style-type: none"> <li>• Owned and operated by a Marin County government entity.</li> <li>• Comply with all applicable local, State and Federal requirements.</li> <li>• Are upgrades/improvements that expand access to existing PEV charging stations and new stations.</li> <li>• Have applicable insurance.</li> <li>• Have authorization to apply for and obtain permits for property, and</li> </ul>	

authorization to operate station.

- Have adequate funds to complete project.
- Maintained and operated for no less than 3 years.
- If networked, use an open-standard protocol for network interoperability.
- If not free, accept credit cards as payment & shall not require a subscription fee or membership.
- Projects completed (installed and in-service/operable) within 9 months
- Charger locations must also be identified with at least 2 standardized way-finding traffic signs to direct motorists if the chargers are to be publicly accessible.

Eligible Project Costs:

- Labor & material construction costs.
- Labor & fees associated with cost to obtain permits.
- Equipment and equipment shipping costs.

**How to Apply  
for a TAM  
EVSE Grant:**

1. Reserve your grant with an email to [nnguyen@tam.ca.gov](mailto:nnguyen@tam.ca.gov). Include the quantity and estimated date of installation. Call to confirm with program coordinator, Nicholas Nguyen, at 415-226-0831.
2. Within 30 days of your reservation, confirm your commitment by providing a letter of intent signed by an authorized representative of your agency (use the sample below).
3. Comply with the summary requirements listed above, and purchase/install chargers.
4. Submit supporting documents to show completion, including contract, final costs, digital photographs of installed charger(s), and any changes from letter of intent. Submit electronically to [nnguyen@tam.ca.gov](mailto:nnguyen@tam.ca.gov), or by U.S. Mail to EV Charger Rebate, Transportation Authority of Marin, 900 5<sup>th</sup> Avenue, Suite 100, San Rafael, CA 94901
5. Once TAM verifies compliance with requirements, TAM will notify you and process your grant payment within 45 days.



**[Agency Letterhead]**

**[Date]**

Attn: Nicholas Nguyen, Principal Project Delivery Manager  
 Transportation Authority of Marin  
 900 5<sup>th</sup> Avenue, Suite 100  
 San Rafael, CA 94901

*Subject: TAM Electric Vehicle Supply Equipment (EVSE) Grant Program*

Dear Mr. Nguyen:

This letter confirms **[name of agency's]** participation in TAM's EVSE Grant Program, which assists public agencies in Marin County that replace or install new employee-only or publicly accessible EVSE, also known as EV charging stations.

The **[name of agency]** confirms its intent to replace and/or install \_\_\_\_\_ **(Qty)** charging heads.

Qty.	Specific Location/1 or 2 heads	Public Access (Y/N)	Free to Use (Y/N)	Network (Y/N)	Grid/Off-Grid
1.					
2.					
3.					
4.					
5.					

**[Name of agency]** agrees to meet the requirements of the program:

1. Owned and operated by a Marin County government entity.
2. Comply with all applicable local, State and Federal requirements.
3. Are upgrades/improvements that expand access to existing PEV charging stations and new stations.
4. Have applicable insurance.
5. Have authorization to apply for and obtain permits for property, and authorization to operate station.
6. Have adequate funds to complete project.
7. Maintained and operated for at least 3 years.
8. If networked, use an open-standard protocol for network interoperability.
9. If not free, accept credit cards as payment & shall not require a subscription fee or membership.
10. Projects completed (installed and in-service/operable) within 9 months
11. Charger locations must also be identified with at least 2 standardized way-finding traffic signs to direct motorists if the chargers are to be publicly accessible.
12. Limit six (6) charging head grants per agency per year.

**[Name of agency]** further understands and agrees to the following:

- TAM will process the grant upon verification of compliance;

- TAM will be identified as a contributing funding source in any related articles, news releases or other publicity materials for the installation of chargers;
- this Letter of Intent will not be assigned or delegated by either party without the express written consent of the other party;
- prior to the installation of the charging station(s), either party may terminate this Letter of Intent at any time by giving written notice of termination to the other party; and
- [Name of agency] shall indemnify and save harmless TAM, its directors, officers, agents, and employees from all claims, suits or actions resulting from the performance by [Name of agency] of its duties under this Letter of Intent and TAM shall indemnify and save harmless [Name of agency], its directors, officers, agents, and employees from all claims, suits or actions resulting from the performance by TAM of its duties under this Letter of Intent.

**[In this paragraph, please describe briefly your agency's background and experience with electric vehicle and EVSE implementation.]**

Thank you for considering our project for funding. Should you have any questions, please contact [name, title] by email at [email address] or by phone at [phone number].

Sincerely,

**[Person authorized to execute contracts]**


**[Title of person authorized to execute contract]**

**For TAM's Approval**

Upon review of your intent, TAM has approved \_\_\_\_\_ charging head(s) for grant funding, provided that the requirements stated above have been met and properly documented.

\_\_\_\_\_  
Nicholas T. Nguyen, Transportation Authority of Marin

\_\_\_\_\_  
Date

<b>Title:</b> <b>Dates:</b>	<b>TAM Electric Vehicle Fleet Rebate Program</b> July 1, 2018-June 30, 2019	
<b>Program Description:</b>	TAM's EV Fleet Rebate Program assists public agencies that replace internal combustion engine (ICE) vehicles with electric (fuel cell and battery) and plug-in hybrid vehicles.	
<b>Eligible Agencies:</b>	Marin County's government entities, including jurisdictions, school districts and special districts.	
<b>Local Fund Source:</b>	This program is funded through Marin County's Measure B (\$10 Vehicle Registration Fee).	
<b>*Rebate Summary:</b>	<p>TAM's EV Fleet Rebate Program provides a rebate for public agencies to convert ICE fleets to EV fleets. This program is administered on a first come first serve basis as funds are available and prioritizes conversion of existing light duty fleet conversion. The program provides the following rebates by vehicle type:</p> <ul style="list-style-type: none"> <li>• <b>New Light Duty Vehicles:</b> TAM provides rebates of up to \$5,000 for the purchase <i>or lease</i> of new, eligible zero-emission and plug-in hybrid light-duty vehicles. These funds serve as an <i>additional</i> match to the California Clean Vehicle Rebate Project (CVRP), where rebates up to \$5,000 for new, eligible zero-emission and plug-in hybrid light-duty vehicles are provided by the state. Together these programs reduce the cost of a new EV by up to \$10,000. CVRP and TAM Rebates are as follows:             <ul style="list-style-type: none"> <li>○ Hydrogen Fuel Cell Zero Emission Vehicle (ZEV): \$5,000 CVRP/\$5,000 TAM</li> <li>○ Battery Electric ZEV: \$2,500 CVRP/\$2,500 TAM</li> <li>○ Plug-in Hybrid Vehicle: \$1,500 CVRP/\$1,500 TAM</li> <li>○ Zero Emission Motorcycle: \$900 CVRP/\$900 TAM</li> </ul> </li> <li>• <b>Used Light Duty Vehicles:</b> Used fuel cell and battery ZEV's are eligible to receive a rebate of \$1,000 per vehicle for ZEVs that were CVRP eligible when new.</li> <li>• <b>Other (Non-CVRP) Vehicles:</b> For purchases of new non-CVRP eligible ZEVs, TAM will provide 75% of the cost up to \$1,500/vehicle will be made available to jurisdictions. These vehicle types include Electric Utility Vehicles such as utility and police buggies. Electric assist pedal bikes are eligible in this category and TAM will provide 75% of the cost up to \$1,000/e-bike.</li> <li>• <b>Medium and heavy-duty vehicles:</b> On a case by case basis, funds may be made available to public agencies to serve as a portion of local match requirements for regional, and state grants for fleet/engine replacement, including the Heavy Vehicle Incentive Program (HVIP) and Carl Moyer Grants. These grants support medium and heavy-duty fleet replacement with cleaner technology. Priority will be given to pilot demonstrations. Transit fleet replacements are excluded in this category as Battery Electric Bus fleets are evaluated in the county.</li> </ul> <p>TAM will provide funding for a limit of five (5) vehicles per agency per year, with exceptions made on a case-by-case basis with consultation of TAM staff.</p>	

	<p>Applicants must meet all requirements of the CVRP, including operating the vehicles in California for 36 months (<a href="https://cleanvehiclerebate.org/eng">https://cleanvehiclerebate.org/eng</a>).</p> <p>Applicants are encouraged to apply for additional private, state and regional funding programs as available and applicable. TAM staff will work with project sponsors to promote leveraging of local funding.</p>
<p><b>How to Apply for a TAM EV Rebate:</b></p>	<p>TAM's program follows guidelines in the Clean Vehicle Rebate Project (CVRP). Follow the CVRP process and mail a copy of your documents to TAM. See details at <a href="http://energycenter.org/cvrp">http://energycenter.org/cvrp</a>.</p> <ol style="list-style-type: none"> <li>1. Select an eligible vehicle from the state approved list: <a href="https://cleanvehiclerebate.org/eng">https://cleanvehiclerebate.org/eng</a></li> <li>2. Reserve your rebate with an email to <a href="mailto:EVRebate@tam.ca.gov">EVRebate@tam.ca.gov</a>. Include the quantity and make/model of vehicles, along with the estimated month of purchase. Include also a description of the ICE vehicles to be retired with estimated date and time of retirement.</li> <li>3. Within 45 days of your reservation, confirm your commitment by providing a letter of intent signed by an authorized representative of your agency (sample provided).</li> <li>4. Purchase or lease your eligible vehicle.</li> <li>5. Apply for the CVRP using instructions on their website <a href="https://cleanvehiclerebate.org/eng">https://cleanvehiclerebate.org/eng</a>. You will be issued a CVRP Application Number.</li> <li>6. Mail supporting documents to CSE, per instructions.</li> <li>7. Send a copy of your CSE documents and CVRP Application Number to TAM. Submit electronically to <a href="mailto:EVRebate@tam.ca.gov">EVRebate@tam.ca.gov</a>, or by U.S. Mail to EV Rebate, Transportation Authority of Marin, 900 5<sup>th</sup> Avenue, Suite 100, San Rafael, CA 94901.</li> <li>8. Once TAM verifies approval of your submitted CVRP rebate, TAM will notify you and process your rebate within 45 days.</li> </ol>
<p><b>Other Resources:</b></p>	<ul style="list-style-type: none"> <li>• The Center for Sustainable Energy administers the CVRP: <a href="https://cleanvehiclerebate.org/eng">https://cleanvehiclerebate.org/eng</a></li> <li>• BAAQMD Charge! Program: <a href="http://www.baaqmd.gov/?sc_itemid=F026D4AC-FE69-4FBD-9232-187E17FC428D">http://www.baaqmd.gov/?sc_itemid=F026D4AC-FE69-4FBD-9232-187E17FC428D</a></li> <li>• U.S. Department of Energy Alternative Fuels Data Center has information on alternative fuel vehicles, laws and incentives, and a vehicle cost calculator tool: <a href="http://www.afdc.energy.gov/">http://www.afdc.energy.gov/</a></li> <li>• U.S. DOE fuel economy calculator has information on federal tax credits: <a href="http://www.fueleconomy.gov/feg/taxevb.shtml">http://www.fueleconomy.gov/feg/taxevb.shtml</a></li> <li>• Information about the California Air Resources Board's Zero Emission Vehicle program: <a href="http://www.arb.ca.gov/msprog/zevprog/zevprog.html">http://www.arb.ca.gov/msprog/zevprog/zevprog.html</a></li> <li>• The California Plug-In Electric Vehicle Collaborative is a public/private organization focused on accelerating the adoption of PEVs to meet California's economic, energy and environmental goals: <a href="https://www.driveclean.ca.gov/">https://www.driveclean.ca.gov/</a></li> <li>• The Golden Gate Electric Vehicle Association: <a href="http://www.ggeva.org">www.ggeva.org</a></li> </ul>
<p><b>Supporting:</b></p>	<p>TAM EV Fleet Rebate Program: How it Works</p>

DRAFT

**Title:** TAM EV Fleet Rebate Program  
**Dates:** July 1, 2018-June 30, 2019



**How It Works:**

**Public Agency** submits reservation request to TAM for up to 5 vehicles



**TAM** confirms request within 5 working days



**Public Agency**



1. submits letter of intent to TAM within 45 days  
(applies for BAAQMD or other grants, if applicable)

2. purchases vehicles

3. applies for state rebate (CVRP) within 6 months

4. mails copy of supporting documents to TAM



**CSE** approves CVRP application



**TAM** processes rebate within 45 days



**Public Agency** keeps vehicles operating in California for 36 months  
and meets all requirements of rebate/voucher programs.

**[Agency Letterhead]**  
**[Date]**

Attn: Nicholas Nguyen, Principal Project Delivery Manager  
 Transportation Authority of Marin  
 900 5<sup>th</sup> Avenue, Suite 100  
 San Rafael, CA 94901

Subject: TAM EV Fleet Rebate Program

Dear Mr. Nguyen:

This letter confirms **[name of agency’s]** participation in TAM’s EV Fleet Rebate Program, which assists public agencies in Marin County that replace internal combustion vehicles with electric and plug-hybrid vehicles.

TAM's incentive provides a “match” with the California Clean Vehicle Rebate Program (CVRP). The CVRP, funded by the California Air Resources Board and administered by the Center for Sustainable Energy (CSE), provides rebates of up to \$5,000 for the purchase or lease of new, eligible zero-emission and plug-in hybrid light-duty vehicles. Together, the rebate may be as much as \$10,000 per vehicle. A list of eligible vehicles is available here: <https://cleanvehiclerebate.org/eng>.

The **[name of agency]** confirms its intent to **[purchase or lease] the following** electric or plug-hybrid vehicles.

Qty.	Model/Year	Make	Acquisition Month/Year	Description of Retired ICE Vehicle
1.				
2.				
3.				
4.				
5.				

**[Name of agency]** agrees to meet the requirements of the CVRP, which include applying for the rebate within six (6) months of vehicle purchase and operating the vehicle within California for thirty-six (36) months. **[Name of agency]** will apply for the rebate(s) through CVRP and mail a copy of the required supporting documents and CVRP Application Number to TAM.

**[Name of agency] further understands and agrees to the following:**

- the requirement to apply for a TAM rebate within six (6) month of purchase is shorter than the requirement imposed by the CVRP;
- other applicable conditions are listed on the CVRP website (<http://energycenter.org/clean-vehicle-rebate-project/faq>);
- TAM will process the matching rebate upon verification of approval of the application by CVRP,
- TAM is not obligated to providing matching rebate unless a CVRP rebate is approved, with the exception that **[Name of agency]** met the requirements for a CVRP rebate but the available CVRP rebate funds have been exhausted;

- TAM will be identified as a contributing funding source in any related articles, news releases or other publicity materials for this purchase;
- this Letter of Intent will not be assigned or delegated by either party without the express written consent of the other party;
- prior to the purchase of said vehicles, either party may terminate this Letter of Intent at any time by giving written notice of termination to the other party; and
- [Name of agency] shall indemnify and save harmless TAM, its directors, officers, agents, and employees from all claims, suits or actions resulting from the performance by [Name of agency] of its duties under this Letter of Intent and TAM shall indemnify and save harmless [Name of agency], its directors, officers, agents, and employees from all claims, suits or actions resulting from the performance by TAM of its duties under this Letter of Intent.

**[In this paragraph, please describe briefly your agency's background and experience with electric vehicle implementation.]**

Thank you for considering our project for funding. Should you have any questions, please contact [name, title] by email at [email address] or by phone at [phone number].

Sincerely,

**[Person authorized to execute contracts]**

**[Title of person authorized to execute contract]**

**For TAM's Approval**

Upon review of your intent, TAM has approved \_\_\_\_\_ vehicle(s) for rebate, provided that the requirements stated above have been met and properly documented.

\_\_\_\_\_  
Nicholas T. Nguyen, TAM EV Rebate Coordinator

\_\_\_\_\_  
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# MARIN COUNTY ELECTRIC VEHICLE CHARGING STATION SITING PLAN FINAL DRAFT DECEMBER 2018



This report was developed by the Transportation Authority of Marin (TAM), in cooperation with the TAM's Clean Transportation Technology Advisory Working Group

**Transportation Authority of Marin's Clean Transportation Technology Advisory Working Group**

Cory Bytof	City of San Rafael
Dale W. Miller	Golden Gate Electric Vehicle Association (GGEVA)
Carleen Cullen	Cool the Earth
Brett Wiley	MCE
Dana Armanino	Marin County
Derek McGill	TAM
Gretchen Schubeck	City of Novato
Larry Laino	Marin County
Nick Nguyen	TAM
Scott McDonald	TAM
Sean Condry	Town of San Anselmo
William Carney	Sustainable San Rafael
Talia Smith	City of San Rafael

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**I. EXECUTIVE SUMMARY**

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## II. LIST OF TERMS

BAAQMD	Bay Area Air Quality Management District
BEV	Battery Electric Vehicle
CARB	California Air Resources Board
CARE	Community Air Risk Evaluation
CEC	California Energy Commission
CCS	Combined Charging System
ChaDeMO	Trade name of a quick charge connector
COC	Community of Concern
CVRP	Clean Vehicle Rebate Program
DCFC	Direct-current fast charging equipment, also called Level 3
EV	Electric vehicle, including plug-in hybrids and battery electric vehicles
GHG	Greenhouse Gas
EVSE	Electric Vehicle Supply Equipment (also known as EV charging stations or EV chargers)
MCE	Formerly Marin Clean Energy,
MCEP	Marin Clean Energy Partnership
MTC	Metropolitan Transportation Commission
MUD:	A multi-unit dwelling (also known as multi-family building)
PGE	Pacific Gas and Electric
PHEV	Plug-in Hybrid electric vehicle
SAE	Society of Automotive Engineers
TAM	Transportation Authority of Marin
ZEV	Zero-emissions vehicle

### III. BACKGROUND

The Transportation Authority of Marin (TAM), as a Congestion Management Agency and the Transportation Sales Tax Authority of Marin County, manages and coordinates transportation projects in Marin County, with local, regional, state, and federal funding.

TAMs mission statement is as follows:

*TAM is dedicated to making the most of Marin County transportation dollars and creating an efficient and effective system that promotes mobility and accessibility by providing a variety of high quality transportation options to all users.*

Thanks to Marin County voter support of transportation funding, there are two revenue sources that are dedicated to transportation projects and programs in Marin County. TAM administers Measure A, the ½ cent sales tax measure passed in 2004 and Measure B, the \$10 Vehicle Registration Fee passed in 2010. Revenues generated by Measure B contribute about \$2.4 million per year to Marin County transportation projects and programs and provides funding for alternative fuels infrastructure and promotion among other transportation programs. The goal of the alternative fuels program is to coordinate, support and enhance Marin’s development of public EV charging stations and Public Fleet conversion to EV’s.

In 2011, TAM developed the “Report on Preliminary Plans for the Siting and Placement of Publicly-Accessible Electric Vehicle Charging Stations throughout Marin County.” Referred to as the 2011 EV Site Plan, this report worked collaboratively with local jurisdictions to identify locations for a first wave of EV charging equipment in Marin County.



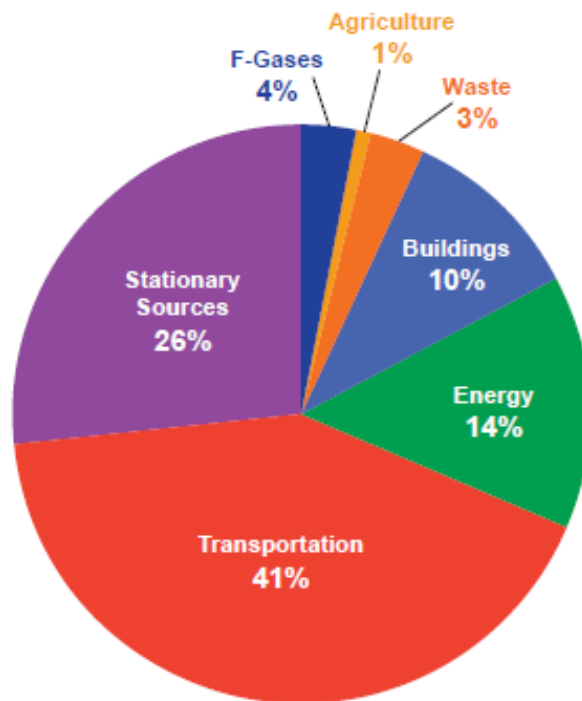
*Public Charging Station Located in downtown San Rafael*

Since the 2011 site plan has been developed, the EV industry and supply of EV chargers has changed dramatically. Marin County has the 2<sup>nd</sup> highest per capita EV ownership of any county in the California, and with 58 charging stations and 201 charging ports, there is more EV charging stations than gas stations in Marin County. EV options and range have also expanded, with more EV's being offered to the public.

Additionally, public agencies and private companies have all dramatically increased their investment in EVs since 2011. Public utility providers and the California Air Resources Board are developing programs to reduce Greenhouse Gas Emissions and meet state mandates of 5 million Zero Emission Vehicles (ZEVs) by 2030.

However, greenhouse gas emissions from transportation remains the largest source of greenhouse gas emissions in California and the Bay Area. In order to tackle this challenge, a partnership of utilities, local jurisdictions, regional and state agencies from a wide variety of sectors will be required. Marin County and all 11 cities and towns have worked closely with their communities and developed Climate Action Plans inventorying greenhouse gas emissions and setting targets to reduce GHG emissions to 1990 levels from both community and municipal activities.

*Bay Area Greenhouse Gas Emissions by Source Category, 2015.<sup>1</sup>*



<sup>1</sup> Source: Bay Area Air Quality Management District Clean Air Plan 2017

In order to help encourage EV adoption and infrastructure development to improve air quality (and reduce GHG emissions), TAM has continuously administered an Alternative Fuel Program to support local public agencies and reduce harmful emissions. TAM provides an incentive for public agencies to install charging infrastructure, an EV fleet program to convert municipal fleets to clean technology solutions, and a public outreach program to increase the public's awareness of electric vehicles. To date, TAM has helped fund 60 charging heads in Marin County, and with additional funding from other public and private investment, TAMs investment in EV charging equipment is increasing.

This 2018 plan takes these considerations and lay out a path forward for TAM's public agency EV charging program and other potential locations for the expansion of EV charging equipment in Marin County.

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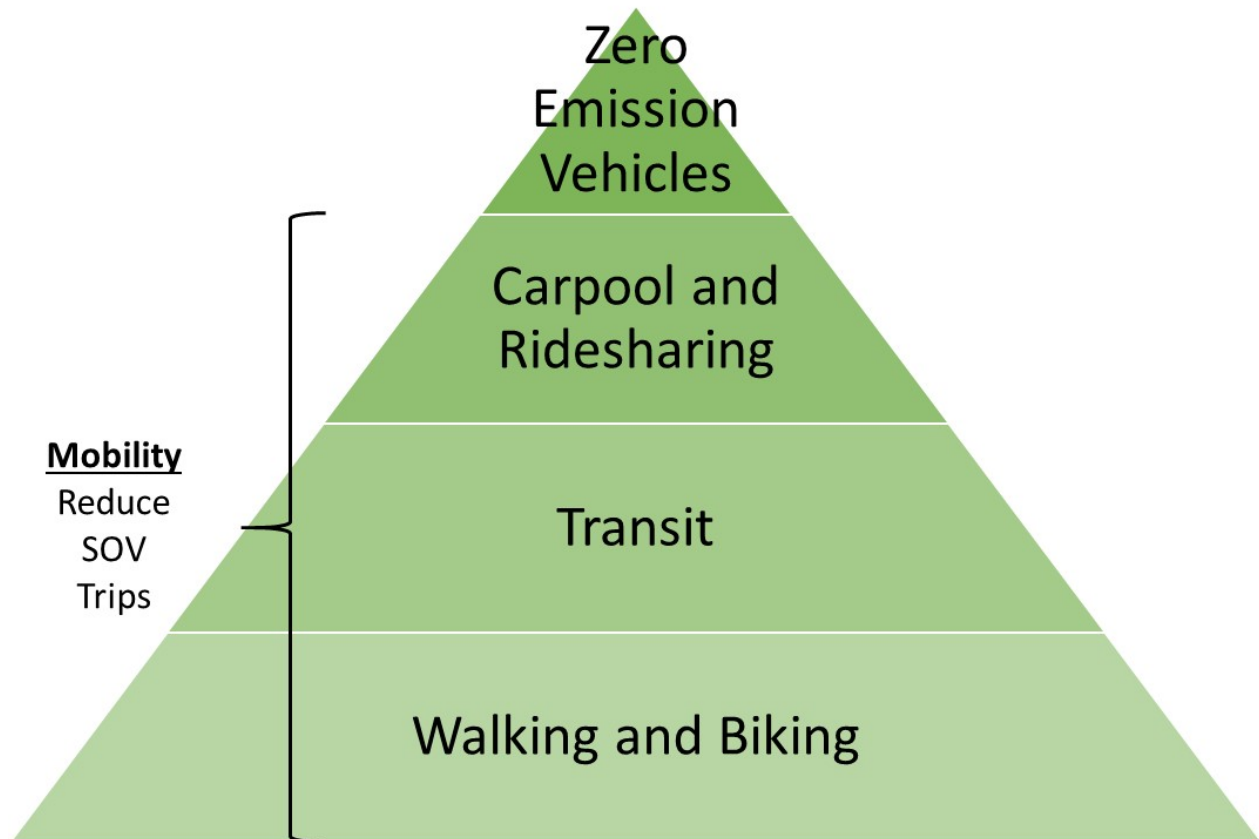


## IV. The EV Landscape

As an emergent technology, the EV landscape is evolving rapidly. New vehicles, technology, funding and regulations all play a role in developing EV charging programs. As TAM plans for increased EV charging stations, an assessment of these current conditions is necessary to support the thoughtful and strategic roll out of EV charging equipment.

TAMs role of congestion management agency and sales tax authority serves all modes of transportation in Marin County, funding transportation programs that promote mobility, congestion reduction, and GHG reductions. In order to achieve goals of mobility and congestion reduction, TAM goals emphasize mode shift through walking, biking, transit, carpooling, and ridesharing. For trips that do require single occupant vehicles, alternative fuel vehicles such as EVs are preferred due to the air quality and greenhouse gas reduction benefits compared to traditional fossil fuel vehicles.

*TAMs Mobility Framework<sup>2</sup>*



<sup>2</sup> Inspired by <https://www.smgov.net/departments/pcd/agendas/Planning-Commission/2017/20171004/Electric%20Vehicle%20Action%20Plan/7A%20attachment%20A%20EV%20Action%20Plan%20Draft.pdf>

### **AB 32, the Global Warming Solutions Act of 2006**

Since 2005, the State of California has responded to growing concerns over the effects of climate change by adopting a comprehensive approach to addressing emissions in the public and private sectors. This approach was officially initiated with the passage of the Global Warming Solutions Act of 2006 (AB 32), which requires the state to reduce its greenhouse gas emissions to 1990 levels by 2020. The AB 32 Scoping Plan was developed to identify strategies for meeting the AB 32 goal, and was adopted by the California Air Resources Board (ARB) in December 2008. Among many other strategies, it encourages local governments to reduce emissions in their jurisdictions by 15 percent below current levels by 2020.

### **Local Climate Action Plans**

Climate Action Plans set local targets to reduce GHG emissions consistent with the state of California's AB 32, the landmark Global Warming Solutions Act of 2006. In order to meet our AB 32 target, emissions must drop 15% by the year 2020. Climate action plans have reported a Marin County total GHG reduction of 17% since 2005, with a 9% reduction in transportation emissions, according to the Marin Climate and Energy Partnership.<sup>3</sup> The mission of the Marin Climate & Energy Partnership (MCEP) is to create a countywide partnership that allows partner members to work collaboratively, share resources and secure funding to:

- 1) discuss, study and implement overarching policies and programs, ranging from emission reduction strategies to adaptation, contained in each agency's Climate Action Plan; and
- 2) collect data and report on progress in meeting each partner member's individual greenhouse gas (GHG) emission targets.

In 2016, California enacted legislation (Senate Bill 32) which requires the State to reduce emissions another 40% by 2030. The State's long-term goal is to reduce emissions 80% below 1990 levels by 2050 – the amount that climate scientists say is necessary to cap global warming at 2 deg C (3.6 deg F) above pre-industrial levels.

### **Benefits of EVs**

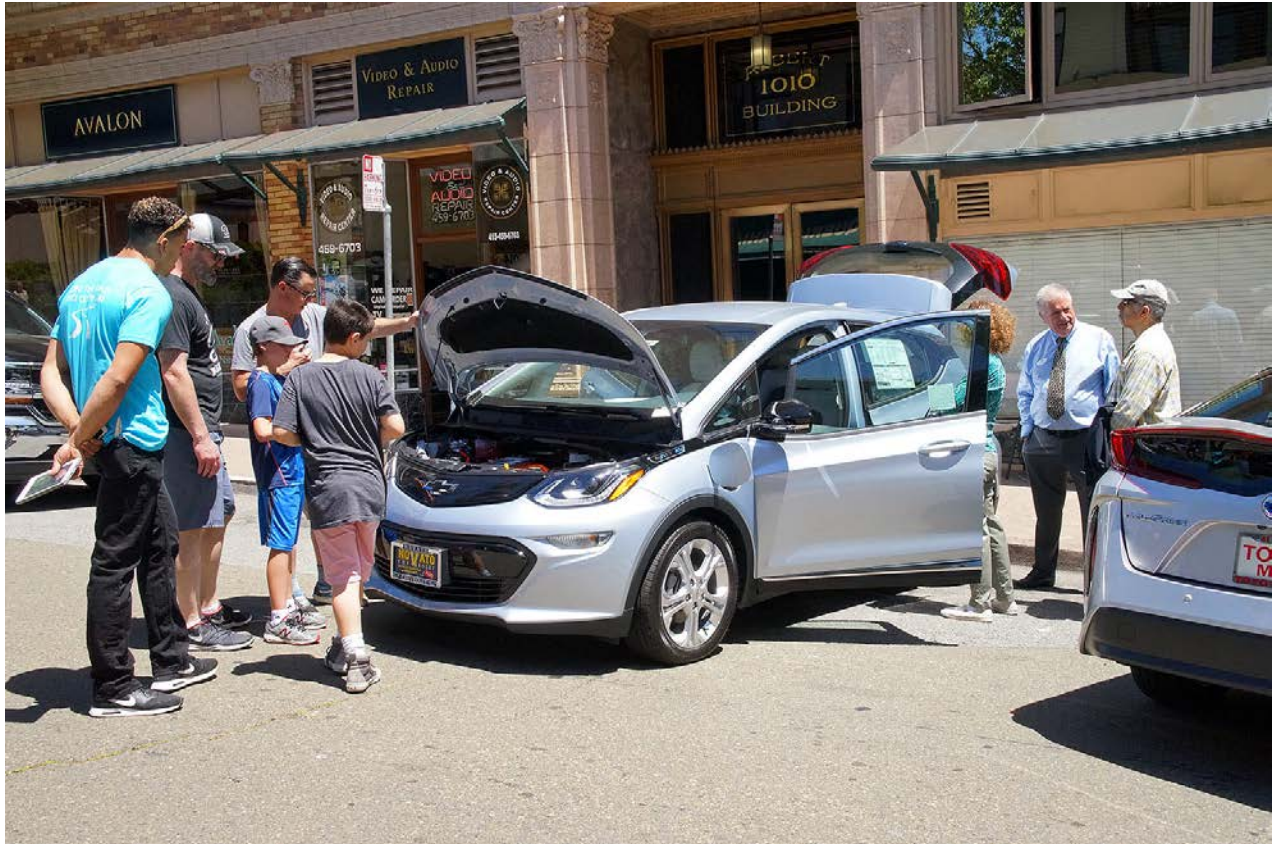
Widespread adoption of large number of elective vehicles offers a range of benefits for Marin County and Jurisdictions throughout the state, including public health improvements, clean air and GHG reductions<sup>4</sup>. Electric vehicles have the potential to address critical public health and environmental challenges in our cities and are critical for California to meet its climate goals described in detail below. Electric vehicles are far less polluting than gasoline-powered cars, emitting no tailpipe emissions while driving thereby reducing smog and particulate matter, the leading causes of respiratory illnesses like asthma<sup>5</sup>.

<sup>3</sup> <http://marinclimate.org/results/greenhouse-gas-inventories>

<sup>4</sup> <https://environmentcalifornia.org/sites/environment/files/reports/Plugging%20In%20-%20Environment%20California%20-%20Feb%202018.pdf>

<sup>5</sup> Kim Reynolds, "2018 Motor Trend Car of the Year Introduction," Motor Trend, 16 November 2017, archived at [web.archive.org/web/20171127235252/http://www.motortrend.com/news/2018-motor-trend-car-of-the-year-introduction](http://web.archive.org/web/20171127235252/http://www.motortrend.com/news/2018-motor-trend-car-of-the-year-introduction)

Additionally, EVs offer lower fuel costs and lower maintenance costs. At time of publication EVs offer on average roughly 50% lower fuel costs, saving households over \$600 per year on average<sup>6</sup>. Maintenance costs are drastically reduced due to fewer engine parts and no need for oil changes required for internal combustion engines. Maintenance cost reductions from 35% to 61% are achievable when purchasing an EV. And finally, commuters in EV often have access to HOV lanes in Marin County, providing travel time savings as well.



*TAM's May 2018 DriveClean Outreach Event showcasing BEV and ZEVs*

### **State Mandates for Zero Emission Vehicles**

In order to reduce GHG emissions from passenger vehicles, the largest source of transportation emissions, the state has passed increasing aggressive ZEV goals for the state, starting with Executive Order B-16-2012 which set a target of 1.5 million ZEVs by 2025. This goal was increased in 2018 to 5 million ZEVs by 2030 under executive order B-48-18.

<sup>6</sup> <https://www.energysage.com/electric-vehicles/advantages-of-evs/do-electric-cars-save-money/>

Bay Area Transportation Emissions Detail, 2015.<sup>7</sup>

**Figure 3-7. 2015 Bay Area GHG Emissions: Transportation (Total = 37 MMT CO<sub>2</sub>e)**

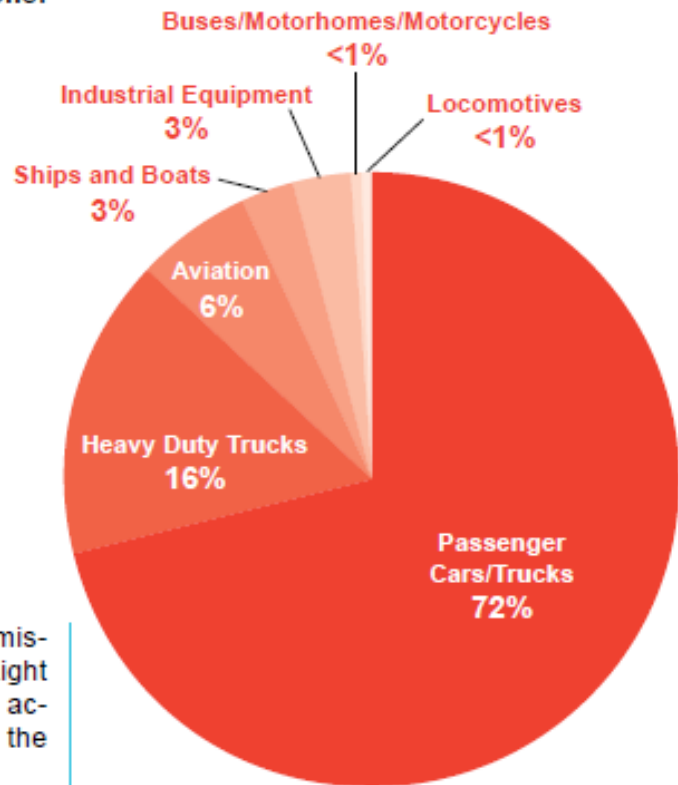


Figure 3-7 shows a breakdown of GHG emissions from transportation by vehicle type. Light and medium-duty cars and trucks currently account for 72 percent of GHG emissions from the transportation sector.

### The Rise of the EV Market

Increasing EV adoption requires a wide range of EV vehicles to be available<sup>8</sup>. As EV costs have decreased, more vehicle options have become available, driving an increase in demand of EVs. During the development of the previous 2011 site plan in 2010, there was a limited number of BEV's in the market, primarily the Nissan Leaf (with a US EPA range of 100 miles) and one choice of commercially available plug in hybrid, the Chevy Volt (with an electric range of 40 miles.)

In 2018, there are now 22 BEV's with ranges extending well over 200 miles<sup>9</sup>. During the next couple of years, auto manufacturers are expected to develop an additional 127 electric Vehicles<sup>10</sup>. SUV's and trucks remain the most purchased vehicles in the US<sup>11</sup>, and as EV options for these vehicles are released to market, EV adoption is expected to rise. Additionally, as vehicle options have increased, battery ranges have jumped dramatically.

<sup>7</sup> Source: Bay Area Air Quality Management District Clean Air Plan 2017

<sup>8</sup> Expanding the Electric Vehicle Market in US Cities, International Council on Clean Transportation, July 2017

<sup>9</sup> <https://evrater.com/evs#ev-list>

<sup>10</sup> <https://www.bloomberg.com/news/features/2017-12-19/the-near-future-of-electric-cars-many-models-few-buyers>

<sup>11</sup> <https://www.businessinsider.com/best-selling-cars-and-trucks-in-us-2017-2018-1>

## EV Charging Basics

There are three levels of EV chargers, which charge at different rates depending on the voltage:

- **Level 1 chargers (120V)** are standard electrical outlets, and are the slowest and least expensive option. They provide 2-5 miles of charge per hour of charging time. Level 1 chargers are not typically considered acceptable for publicly accessible EV charger installation but can be used at home or as a last resort for EV charging.
- **Level 2 chargers (240V)** add about 10-20 miles of range per hour of charging time. This is a “standard” EV charger for most publicly available charging stations.
- **DC Fast chargers or Level 3 chargers (480V)** are the fastest charging option available and will add 50-70 miles of range in about 20-30 minutes.

There are a range of charging systems depending on level of charging, vehicle manufacturer and charging network. Level 2 chargers primarily use the Combined Charging System (CCS) J1772 Combo. Level 3 or DC fast chargers include CCS/SAE, ChaDeMo, and Tesla Superchargers.

The term “smart charger” refers to chargers with network connectivity, allowing for payment collection, demand or electric grid management and maintenance alerts for station hosts. Smart chargers make up the largest percentage of public Marin charging stations. “Dumb chargers” are also available in Marin County, typically utilized in private lots or locations, or when no fee is required for parking or charging, or when running communications to the charger is cost prohibitive.



*Level 2 (j-1772) Public Charging Stations in Marin*

### **Charging Behavior**

According to recent reports, 80% of current electric vehicle charging is done at home. EV owners typically charge at home and, if offered, the workplace. If neither option is available, drivers rely on public charging infrastructure.<sup>12</sup>

As BEV'S become more prevalent and range increases due to new innovations, it is currently unclear what the likely effect will be on public chargers in Marin County. Some reports note that longer BEV range requires less public chargers to sufficiently support EV's in an area, however shorter ranged EV's available on the used EV car market may require more public chargers.<sup>13</sup> Additionally, many earlier models which shorter ranges are not capable of utilizing current Level 3 fast charging. Home chargers will likely always be the primary charging location (especially for single family homes) but as BEV range increases, and workplace and Level 3 fast charging infrastructure proliferates, it is reasonable to assume that a greater percentage of charging will be done away from the home. For most PEV owners—if only because this is where most vehicles spend the majority of their time.

While there is qualitative data on the correlation between the availability of public charging and ownership of electric vehicles, there is limited cause and effect data that shows that an increase in public chargers is the factor increasing the ownership of electric vehicles.<sup>14</sup> However, public chargers provide alternative charging locations for owners, remind people that electric cars are on the market are often supported within their communities, and demonstrate that local government is dedicated to support GHG reduction (even if proving GHG reduction from publicly available charging equipment is limited.)

### **EV Incentive Programs**

There are various incentives valuable to support electric vehicle adoption. These range from:

- Financial incentives on the purchase of new vehicles administered by utility providers, the State Clean Vehicle Rebate Program (CVRP) and the federal tax credit that provide financial incentives for the purchase (or lease) of new EVs,
- Travel time incentives provided by the state in providing access to High Occupancy Vehicle (HOV) Lanes,
- Charging infrastructure grants administered by local agencies such as TAM, air districts, energy providers and state agencies.
- Preferential parking locations
- Free parking at charging locations in some jurisdictions

### **EV Charging Infrastructure Programs**

TAM currently administers a public agency specific grant providing up to \$3,000 per charging

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<sup>12</sup>Accelerating Investment in Electric Vehicle Charging, Ceres, March 2018

<sup>13</sup> Reoccurring and Indirect Incentives for Plug-in Electric Vehicles – A Review of the Evidence, UC Davis, September 2017

<sup>14</sup> Reoccurring and Indirect Incentives for Plug-in Electric Vehicles – A Review of the Evidence, UC Davis, September 2017

head for public agencies in Marin County. Regionally, the Bay Area Air Quality Management District (BAAQMD) has implemented its Charge! Program and PG&E has launched a charging infrastructure program in its service area along with EV rate programs. In August of 2018, MCE launched their EV charging program for its service area as well. The state provides financing programs, and CARB has allocated \$800 million of VW settlement funds to charging infrastructure throughout the State. The table below describes these programs and their applicability to respective land use types.

Land Use Type	Governance Level	Funding/Incentive Program
Residential	<ul style="list-style-type: none"> <li>• Local Jurisdictions</li> <li>• Utility Providers</li> <li>• Air Districts</li> <li>• CCA's</li> </ul>	<ul style="list-style-type: none"> <li>• BAAQMD Charge! Rebate,</li> <li>• PG&amp;E EV Charge Rebate (Multi Unit Dwellings only) &amp; Rate Discounts</li> <li>• MCE Charger Rebate (Multi Unit Dwellings only)</li> <li>• Property Assessed Clean Energy (PACE) Financing</li> </ul>
Commercial/ Business	<ul style="list-style-type: none"> <li>• Local Jurisdictions</li> <li>• Utility Providers</li> <li>• Air Districts</li> <li>• CCA's</li> </ul>	<ul style="list-style-type: none"> <li>• BAAQMD Charge! Rebate,</li> <li>• PG&amp;E EV Charge Rebate</li> <li>• MCE Charger Rebate</li> <li>• CalCAP Financing</li> <li>• Property Assessed Clean Energy (PACE) Financing</li> </ul>
Public Infrastructure	<ul style="list-style-type: none"> <li>• Local Jurisdictions</li> <li>• Air Districts</li> <li>• CMAs</li> <li>• CCAs</li> <li>• Utility Providers</li> </ul>	<ul style="list-style-type: none"> <li>• TAM Public Charger Rebate</li> <li>• PG&amp;E EV Charge Rebate</li> <li>• MCE Charger Rebate</li> <li>• BAAQMD Charge! Rebate</li> <li>• CARB VW Settlement Program</li> </ul>

### Equity of EVs

Approximately one-fifth of the Bay Area's total population live in areas with large numbers of low-income and minority populations. Promoting access to transportation for these residents helps advance equity in the region. The definition of "communities of concern" is intended to represent a diverse cross-section of populations and communities that could be considered disadvantaged or vulnerable in terms of both current conditions and potential impacts of future growth. MTC, the regional transportation planning agency, defines communities of concern as census tracts that have a concentration of BOTH minority AND low-income households. In Marin County, these areas include the Canal Neighborhood of San Rafael and Marin City in Southern Marin.

Additionally, while overall air pollution continues to decrease in the Bay Area, some communities still experience higher pollution levels than others. These communities are generally near pollution sources (such as freeways, busy distribution centers, and large industrial facilities) and negative impacts on public health in these areas are greater. BAAQMD's Community Air Risk Evaluation (CARE) Program identifies where air pollution contributes most to health impacts and where populations are most vulnerable to air pollution. CARE locations in Marin County, include the area around downtown and East San Rafael, encompassing the "Community of Concern" area of the Canal neighborhood.

Advancing equity for EV access in low income communities and households remains a focus of many financial incentives available. These include CVRP, BAAQMD, and MCE rebates among others.

### **Grid Considerations**

Growing EV adoption will result in changes to demand loads on the electric utility grid, with the potential for higher demand at peak hours. MCE and PGE offer incentive process structures or demand management programs known as time of use rates to encourage charging when generation is high and overall usage is low. Additionally, car charging times can be set in vehicle to offset these hours. Furthering this concept with smart chargers that can monitor grid demands in real time and adjust charging rates accordingly.<sup>15</sup>

Additionally, Marin County's options for renewable energy and GHG-free sources can increase the GHG reduction potential of EV vehicles. MCE and PG&E estimate that 78% and 80% of its 2017 energy mix is GHG free, and both PG&E<sup>16</sup> and MCE<sup>17</sup> offer 100% renewable energy options for consumers.

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<sup>15</sup> <https://www.fleetcarma.com/impact-growing-electric-vehicle-adoption-electric-utility-grids/>

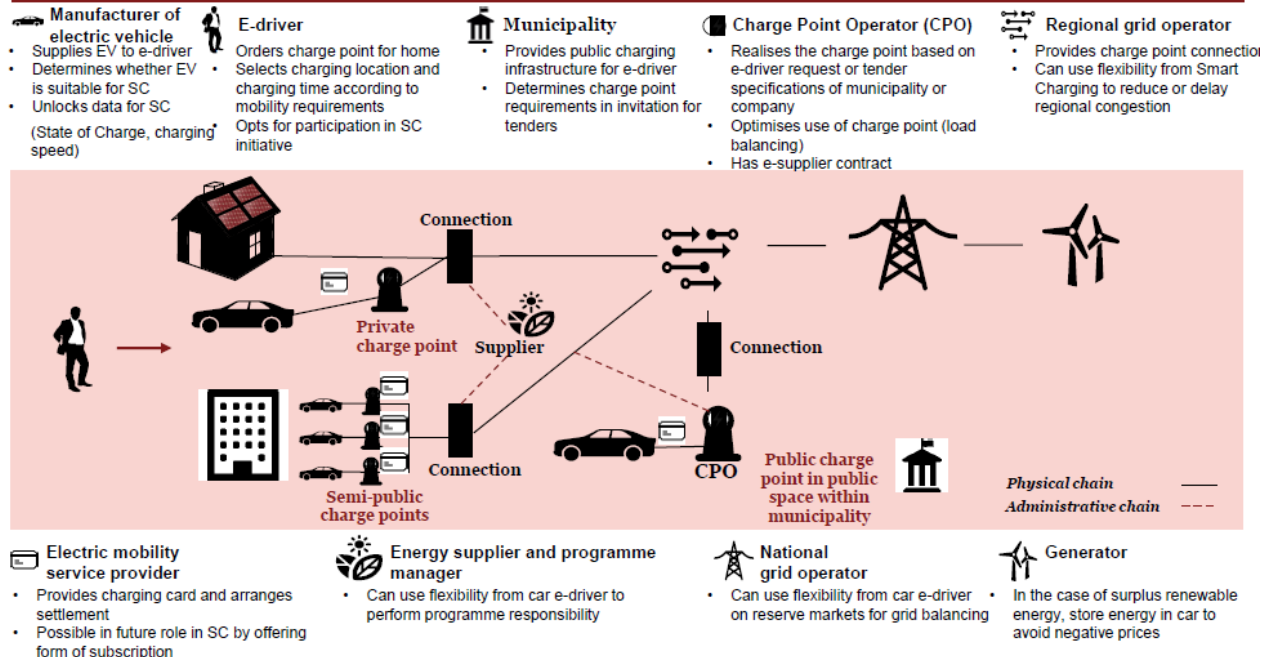
<sup>16</sup> [https://www.pge.com/en\\_US/residential/rate-plans/rate-plan-options/solar-and-renewable-energy-plans/solar-and-renewable-energy-plans.page](https://www.pge.com/en_US/residential/rate-plans/rate-plan-options/solar-and-renewable-energy-plans/solar-and-renewable-energy-plans.page)

<sup>17</sup> <https://www.mcecleanenergy.org/100-renewable/>



**In order for Smart Charging ('SC') to work in practice, the various stakeholders in the chain must work together**

**The Smart Charging chain:**



EV Grid Integration Chain<sup>18</sup>

<sup>18</sup> SMART Charging of electric Vehicles, PWC, October 2017

## V. Existing EV Charging in Marin

Since the development of the 2011 EV Siting Plan, Marin County has developed a network of charging stations for EVs. As this plan looks to develop future locations of charging stations an assessment of the location and patterns of existing charging stations supports thoughtful and strategic locating of future chargers.

As of September 2018, there are 58 charging locations in Marin County available to the public and shown on online resources, namely [plugshare.com](http://plugshare.com). In addition to these public locations are private charging locations at residences and work locations that are not available for public use and not included in this analysis. These 58 charging locations provide a total of 201 charging ports, or approximately 1 public charging head for every 1,000 residents in Marin.

Included as part of the 201 charging locations are 10 level 3 DC fast charger, and 154 level 2 charger heads. The remaining charging locations are primarily pedestal wall outlets available to the public (referred to as level 1 chargers.)

Level 1 Charger Heads	37
Level 2 Charger Heads	154
Level 3 or DCFC Charger Heads	10
<b>Total Charging Heads in Marin County</b>	<b>201</b>

### Existing Charging Locations in Marin

Based on data gathered from [plugshare.com](http://plugshare.com) and TAM funding programs, TAM staff conducted an existing conditions analysis of chargers in Marin County to determine trends associated with existing charger locations.

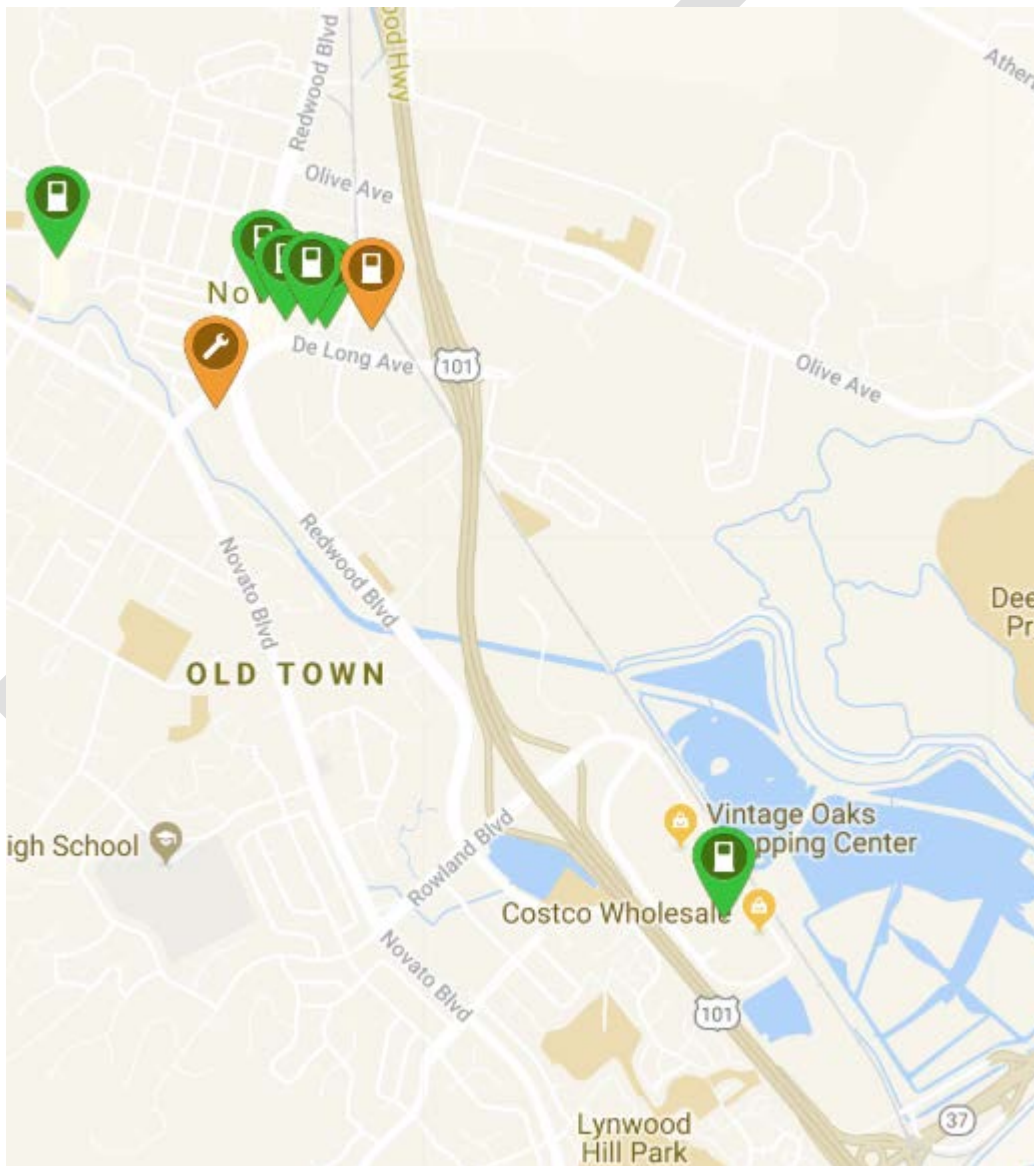
Public charging is available in off-street lots, parking structures, and on-street parking facilities and represents the largest amount of public charging available in Marin County. Commercial and retail locations represent the next largest land use followed by business parks in Marin County.

Public Property	78
Commercial and Retail	72
Schools (Private and Public)	8
Business Parks	21
Automotive Dealers	11
Medical Facilities	11
<b>Total Charging Heads in Marin County</b>	<b>201</b>

The top 3 largest locations of charging heads are in San Rafael and are as follows:

Location	Jurisdiction	Charging Heads
Target	San Rafael	20
Kaiser Permanente	San Rafael	11
Autodesk	San Rafael	8

Charging in Marin is often provided in large shopping centers, located along the Highway 101 corridor. These shopping centers provide access for commuters and attracts shoppers to locations like vintage oaks in Novato, Northgate Mall in Terra Linda, the Village in Corte Madera and the Gateway Shopping Center in Marin City.



*Charging Locations along US 101 in Novato*

Of public property, public parking lots and garages provide approximately 28 charging stations in Marin county, with 78 level 2 charging heads. There are no level 3 chargers located within the

public right of way in Marin County. When free parking is provided, charging at these sites usually requires a fee. Regardless of the location, restrictions on time and length of use are often implemented to ensure turnover, prevent abuse of the system and enforce facility operating hours. Public charging facilities can be utilized by neighborhood residents who lack access to charging in their buildings.



*Workplace Public Charging Station at MarinCommons*

Charging equipment at transit facilities are limited in Marin County. With Highway 101 providing north-south connectivity for transit services within the county, there are currently no EV charging locations within Caltrans park and ride facilities in the county. The Bettini Transit Center in Downtown San Rafael has no dedicated parking, and thus no ability to provide EV charging directly. Where ROW does exist close to transit services, such as the Larkspur Ferry Terminal, there is limited charging equipment available and these spots are often filled. The Tiburon and Sausalito ferries do not have EV charging equipment located in nearby lots adjacent to these facilities. TAM has funded make-ready charging infrastructure at SMART stations, however chargers have not been installed yet.



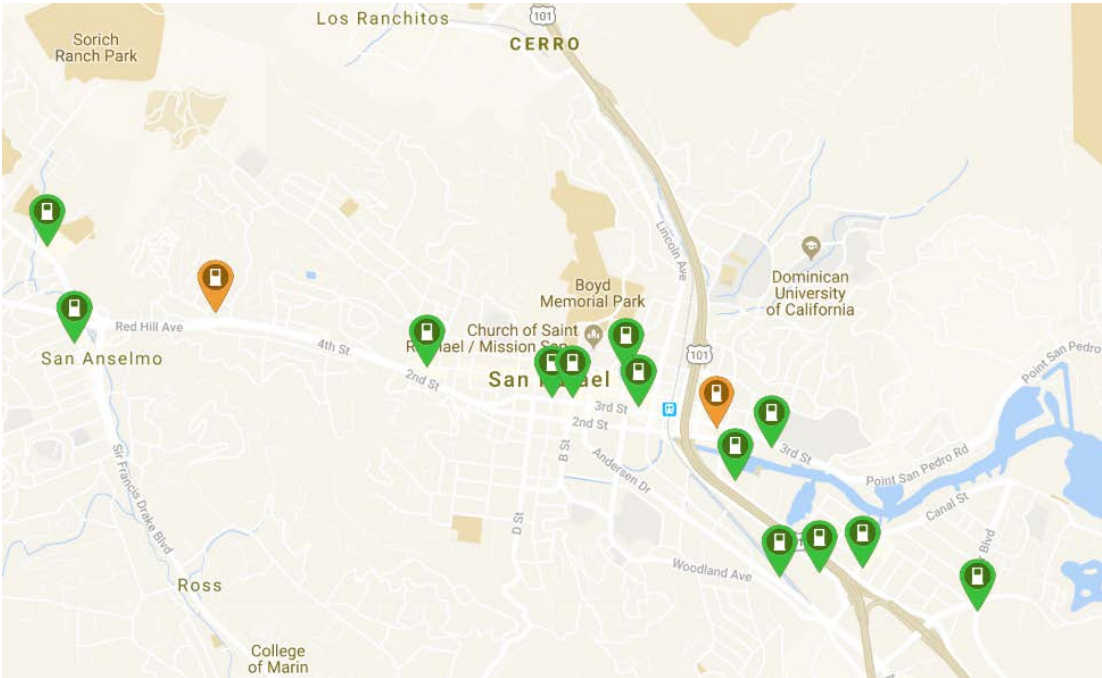
*Outdated Equipment and Limited Availability of Public Charging at the Larkspur Terminal<sup>19</sup>*

Redwood High is the only public school with charging equipment in Marin County, and Dominican University and Mark Day private schools provide public charging equipment.

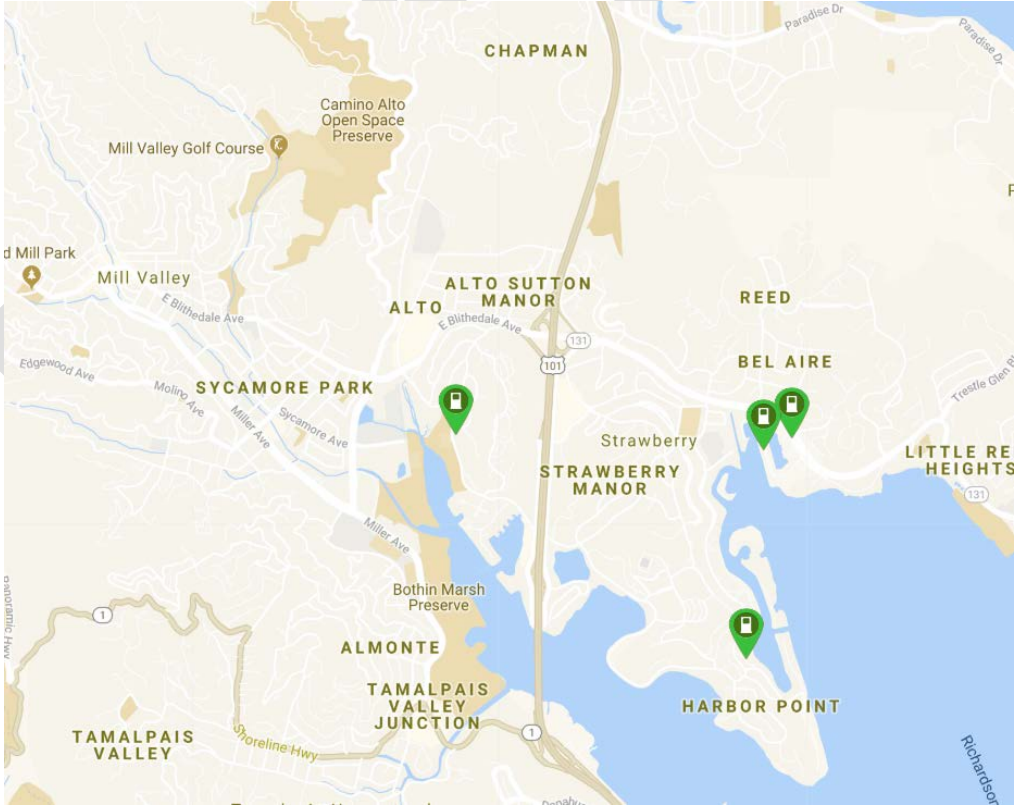
The city of San Rafael currently has the most charging locations with 21 charging locations providing 76 level 2 charging ports and 90 charging ports overall. There are 5 DCFC level 3 fast chargers in the city, however one is located at an automotive dealer potentially limiting the public use of the charger.

Southern Marin has a limited number of publicly available charging locations with gaps in coverage near the Strawberry and Mill Valley areas. West Marin along with Muir Woods and the Golden Gate National Recreation area has chargers available for trips to Marin County recreation areas, including Point Cavallo.

<sup>19</sup> Photo Courtesy Plugshare.com, accessed September 2018



*Charging Locations in Downtown San Rafael*



*Limited Charging Locations between Corte Madera and Marin City in Southern Marin*

**TAM Funding in Use**

Since 2011, TAM has funded 60 charging locations primarily within the public right of way with one location on public property for agency use only. Marin County has installed the most chargers of any jurisdiction, while Sausalito, Corte Madera and special districts have not applied for any TAM grants to date. Some of these chargers are no longer in use due to age and maintenance issues. *These figures do not reflect recent rebate investments made this year.*

<b>Agency</b>	<b># Charging Spots and replacements Funded by TAM</b>
Belvedere	4
Mill Valley	3
Fairfax	4
Larkspur	6
Novato	8
San Anselmo	4
San Rafael	8
Marin County	16
Kentfield School District	2
Tiburon	2
Pt. Reyes Nat'l Seashore - Bear Valley lot	3
<b>Total</b>	<b>60</b>

The exact locations of the publicly accessible chargers are below.

<b>Company/Station Name</b>	<b>Location of charging stations</b>	<b># of Ports</b>
City of Belvedere - 1	450 San Rafael Ave. Belvedere	2
City of Belvedere - 2	450 San Rafael Ave. Belvedere	2
Marin Health & Wellness Campus	3240 Kerner Blvd, San Rafael	2
Civic Center	3501 Civic Center Drive, San Rafael	2
Marin Center	10 Avenue of the Flags, San Rafael	2
Piper Park - 1	250 Doherty Drive, Larkspur	2
Piper Park - 2	250 Doherty Drive, Larkspur	2
Central Marin Police Authority	250 Doherty Drive, Larkspur	2
City Council Chambers	901 Sherman Avenue, Novato	2
Gymnastic Teen Center	950 7th Street, Novato	2
Hamilton Community Center	503 S. Palm Drive, Novato	2
Zenk Parking Lot - 1	913 Reichert Ave, Novato	2
Zenk Parking Lot - 2	913 Reichert Ave, Novato	2

Company/Station Name	Location of charging stations	# of Ports
Zenk Parking Lot - 3	913 Reichert Ave, Novato	2
City Hall Parking Lot	142 Bolinas Road, Fairfax	2
Parkade Parking Lot-1	9 Broadway Ave, Fairfax	2
Parkade Parking Lot-3	9 Broadway Ave, Fairfax	2
Magnolia Lot - 1	San Anselmo Ave	2
Magnolia Lot - 2	San Anselmo Ave	2
Magnolia Lot - 3	San Anselmo Ave	2
Magnolia Lot - 4	San Anselmo Ave	2
Public Safety Building	1 Hamilton Drive, Mill Valley	2

### Electrify America / VW Settlement

In June 2016, California and the federal government reached a settlement with Volkswagen stemming from Volkswagen's violations of emission control requirements. To mitigate in part for the environmental harms from the violations, Volkswagen agreed to invest \$800 million in California in zero-emission infrastructure and access over a ten-year period. Eligible investments include fueling infrastructure, public education and marketing programs, efforts to increase access among consumers to ZEVs and creation of "Green City Programs." Investments must be brand neutral. Under the settlement, Volkswagen will submit ZEV investment plans every 30 months; the California Air Resources Board will provide comments and approve each plan after those comments are addressed.

Called Electrify America, the first phase — installing over 2,000 chargers at 484 stations — will be completed by 2027 nationwide. Installations are being planned at apartment complexes, workplaces, shopping malls and hotel parking lots, plus existing fuel stations and on the street side in some areas. This program is teaming with retail property owners like Walmart and Target aiming for a "retail, convenience and refueling strategy" for EV drivers.<sup>20</sup>

### PGEs EV Charge Network

In January 2018, PG&E launched its EV charge Network pilot program to install 7,500 chargers in the PG&E service area over northern and Central California. With a budget of approximately \$130 Million, PGEs investment in EV charging covers all of the cost of the infrastructure (excluding the charging equipment) and will own and maintain the infrastructure (unless the site host purchases the chargers). The program is limiting to multi-unit dwellings and workplaces with a minimum of 10 charging heads per location.<sup>21</sup>

<sup>20</sup> <https://www.engadget.com/2018/04/23/target-and-electrify-america-ev-charger-expansion/>

<sup>21</sup> [https://www.pge.com/en\\_US/business/solar-and-vehicles/your-options/clean-vehicles/charging-stations/program-participants/about-the-program.page](https://www.pge.com/en_US/business/solar-and-vehicles/your-options/clean-vehicles/charging-stations/program-participants/about-the-program.page)



**MCE Charging Station Program**

MCE launched a program in August 2018 to provide additional for EV charging infrastructure in MCE’s service area. The first is ensuring their customers maximize the benefit of PG&E’s EV Charge network by providing a supplemental rebate of up to \$1,134 per port. The second offer builds on the understanding and needs not met by EV Charge Network given the high minimum threshold of 10 contiguous port projects. MCEv Charging, their stand-alone rebate program, offers \$2,500 per port for workplaces and multi-family properties on projects ranging from 2 to 2 ports per site.<sup>22</sup>

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<sup>22</sup> [https://www.mcecleanenergy.org/wp-content/uploads/2018/08/EVSE-overview-flyer\\_FINAL.pdf](https://www.mcecleanenergy.org/wp-content/uploads/2018/08/EVSE-overview-flyer_FINAL.pdf)

## VI. Siting and Placement Principles

Prior to determining specific locations for the siting and placement of EV chargers, it is essential to identify key principles or considerations that impact the success of an EV charging unit. Through the development of TAMs Electric Vehicle Supply Equipment (EVSE) program and local jurisdictions installations the following EV infrastructure design principles and priorities are presented.

As the industry standard, this section is geared towards level 2 chargers, except when noted. Level 2 chargers require 240 volt installation, which is wired to most buildings in Marin County. All electric cars on the road today can accept level 2 charging. In some cases, Level 1 charging may be appropriate and encouraged to provide additional charging ports at low costs. Level 1 charging or wall outlets, use standard 120v wiring and can provide charging at lower rates, appropriate for longer duration charging locations.

In other cases, level 3 or DC fast charging may also be appropriate. As a quick charge, these chargers can provide 80% of a full charge in 30 minutes. Appropriate siting locations including along major roadway corridors where convenient refueling is required, similar to gasoline refueling. However this equipment can be expensive to install and may not be necessary where EV drivers will spend a significant amount of time, and thus a level 2 would be appropriate.

Considerations relating to cost, safety, and other issues have been well-researched in various reports. Based on this research and feedback from Marin local government staff, TAM identified the following principles to guide EV charger installation in Marin:

- (1) Primary Global Principles – Those factors that are of highest importance when deciding on overall sites to locate EV charging stations.
- (2) Secondary Global Principles – Additional factors of secondary importance to consider when selecting overall locations for EV charging stations.
- (3) Site Specific Principles – Priority factors to consider when determining the specific location within a general site where the EV charging station(s) will be installed.

Please note that some criteria are listed both under global principles and under site specific principles. In the case of global principles, it is a question of whether the overall location meets the principle. In the case of site specific principles, it is a question of which particular spot at that overall location will best meet the principle.

### Primary Global Principles

1. **Location:** Select a high-impact, visible location (especially for the first few chargers)
2. **Electricity:** Select a location where Level 2 (240V/40A) electrical supply is or can be made available with relative ease and minimal cost. (See Appendix C for descriptions of EV charger levels.)
3. **Access:** Consider and comply with ADA guidelines for disabled access, and take precautions

to ensure that chargers are placed with the user's convenience in mind (avoiding injury from tripping on cords and cables, etc.)

4. **Security:** Select a secure location with adequate lighting to enhance security and provide the customer with a good charging experience.
5. **Signage:** Provide enforcement and other signs that comply with the Manual on Uniform Traffic Control Devices (MUTCD) and California Vehicle Codes (CVC), ensuring that signs are high enough, easily visible, and provide clear and accurate information.
6. **Equipment Protection:** EV chargers should be placed where they can be best protected from physical damage by such measures as curbs, wheel stops, setbacks, bumper guards, and concrete-filled steel bollards, while simultaneously taking into consideration ease of access to the charger, mobility of users, and foot traffic in the area.
7. **Fleet Use:** Consider "dual purpose" sites that could also benefit the jurisdiction's fleet vehicles, as well as the general public, where feasible and appropriate.

### Secondary Global Principles

While the principles above received the highest priority ratings from Marin jurisdictions, many other criteria are also to be considered in the siting of EV chargers:

- **Diversity of Intended Users:** EV chargers should (progressively) be located in sites that will appeal to the diversity of users (e.g., local residents, visitors and tourists, and fleet drivers)
- **Public Safety:** Chargers should be located in areas with proper ventilation and away from potential hazards including traffic, explosive materials, flammable vapors, liquids and gases, combustible dust or fibers, materials that ignite spontaneously on contact with air, flood-prone areas, and away from areas that might be prone to vandalism.
- **Duration of Use:** Level 2 Charger sites should focus on locations where EV owners will be parked for a significant period of time (e.g., one to three hours). DC Fast Chargers sites should focus on locations where the EV owner will be parked for a relatively short period of time (e.g., 15 minutes).
- **Economics:** The costs of charger installation and potential loss of parking space revenue should be weighed against the benefits of projected revenues, positive publicity, and increased visitor spending in the jurisdiction, as well as the broader societal benefits of spurring the transition to clean, low-carbon transportation.
- **Location Markings:** Indication of parking spaces, striping, driveways, and walkways.
- **Cord Management:** To avoid injury from tripping, cords should not cross sidewalks or pedestrian traffic patterns.
- **Shelter:** When possible, utilizing existing shelters is desirable to protect users from weather when connecting their vehicle to the charger. (However, chargers are designed to be safely operated in exposed locations in the rain, with no danger of electrical shock.)
- **Aesthetics:** Some areas benefit from the installation of landscaping or screening walls to shield the electrical transformer, panel, or other equipment from the public eye.
- **Solar Power:** Some jurisdictions may choose sites where solar panels can provide energy

to power the charging unit.

- **Other EVs:** Locations may be chosen to cater not only to freeway-capable battery-powered
- **EVs (BEVs) and plug-in hybrid EVs (PHEVs)** – which typically utilize the 240 volt “Level 2” connections for faster charging – but also to electric bicycles, electric scooters, and electric motorcycles – which typically utilize a 110 volt electrical connection.

### Site Specific Principles

Furthermore, when developing Site plans, the following site-specific principles should be considered:

- **Accessibility:** EV charger location within a site should comply with ADA access requirements. Specifically, the first two EV chargers installed in any one location should take into consideration requirements in California Building Code Chapter 11C and DSA 97-03.
- **Electrical Supply:** Select a location where it is as inexpensive as possible to provide Level 2 (240V/40A) electrical supply.
- **Benefits vs. Loss of Revenue:** When selecting the specific location of an EV charger at a particular site, a jurisdiction should consider the balance of anticipated benefits (including “EV readiness,” revenue potential, and increased patronage of nearby business) versus potentially negative aspects of taking an available parking space (including negative impact on conventional vehicle drivers and lost revenue).
- **Cord Management:** When determining where to install an EV charger, a location should be selected where cords will not interfere with the path of travel of the user or other pedestrians in the vicinity.
- **Security:** A location should be selected that is secure for users at all times of day and night and relatively secure from vandalism (e.g., in well-lighted areas and in well-travelled areas).



### Networked Versus Non-Networked EVSEs

Networked or “Smart” charging technology provides the ability to connect EV charging stations to a network, allowing for a variety of benefits for site hosts. These benefits include the remote monitoring of stations, ability to set charging costs, allow for payment collection, and provide maintenance alerts. Networking also allows access to data for demand management, enforcement, operations, utilization and grid management. However, in some locations, network access can increase installation costs and non-networked charging equipment may be preferred. These include private or controlled access lots, or remote locations where extensive costs may be incurred to connect to the grid.

Networked chargers provide a mechanism for cost recovery, providing a means of ensuring turnover so that there can be adequate charging access for all drivers. Charging a nominal fee for electricity, time or some combination thereof, disincentivizes “accessory charging”, or charging vehicles simply because the service is available, rather than a necessity.

Tracking energy usage is also necessary to analyze electricity usage and costs, observe charging behavior, and collect payment. Monitoring capabilities allow station managers to quickly identify operations and maintenance requirements and monetize the emissions-reduction benefit through the State’s Low Carbon Fuel Standard program, which can reduce costs. Non-networked (“dumb”) charging stations cannot earn revenue because they cannot track energy usage required for reporting.

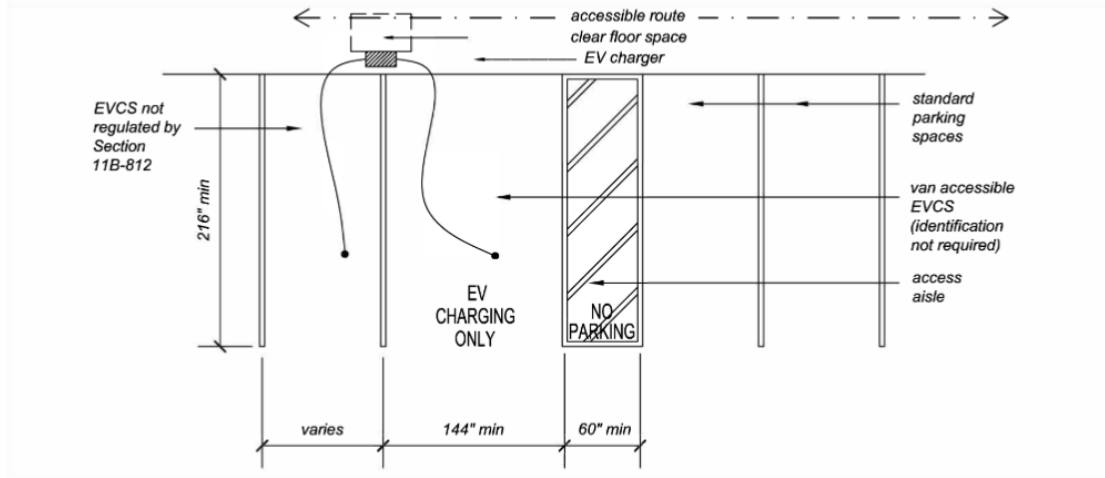
Smart charging stations are also capable of managing electrical loads to prevent strain on the grid and mitigate peak demand charges. Some smart charging technologies can determine when stations are not in use and divert the power to occupied stations, rather than blocking the amperage when not in use. Additionally, charging rates decrease when multiple vehicles are plugged in at the same time, however smart systems can detect when a battery is fully charged and will begin delivering full power to another vehicle.

#### **ADA Requirements and Standard Site Plans**

Physical accessibility standards for EVSEs play a large role in the siting of EV charging stations. The Americans with Disabilities Act (ADA) requires that EVSEs must be accessible to and useable by individuals with disabilities. In practice, these requirements influence site design in public parking lots and on street parking and introduce risk and liability concerns on public agency partners. Planning for accessible design is an important element of EVSE infrastructure development, and sample layouts are provided by the California Department of General Services Below.

# EV Charging Stations

## Sample Layout (1 of 3)

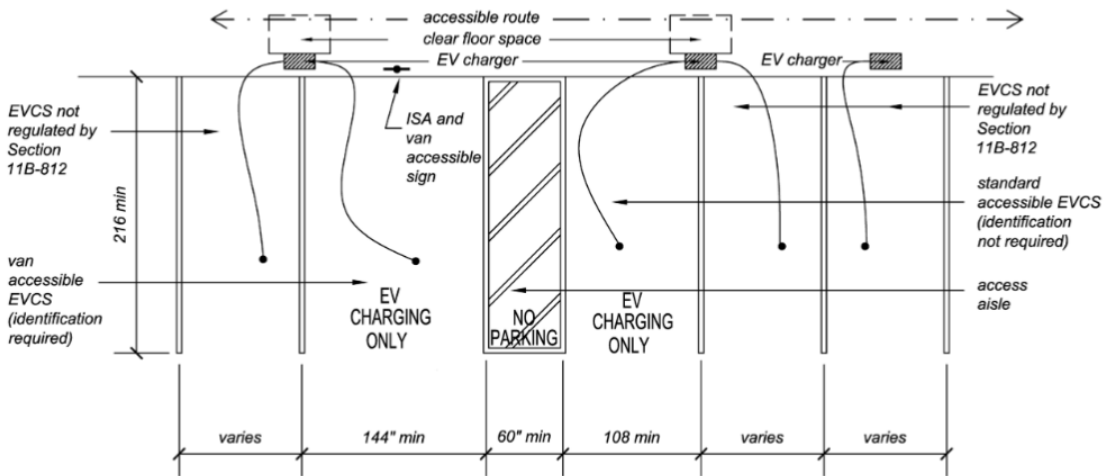


Two EVCS: one van accessible EV spaces required



# EV Charging Stations

## Sample Layout (2 of 3)

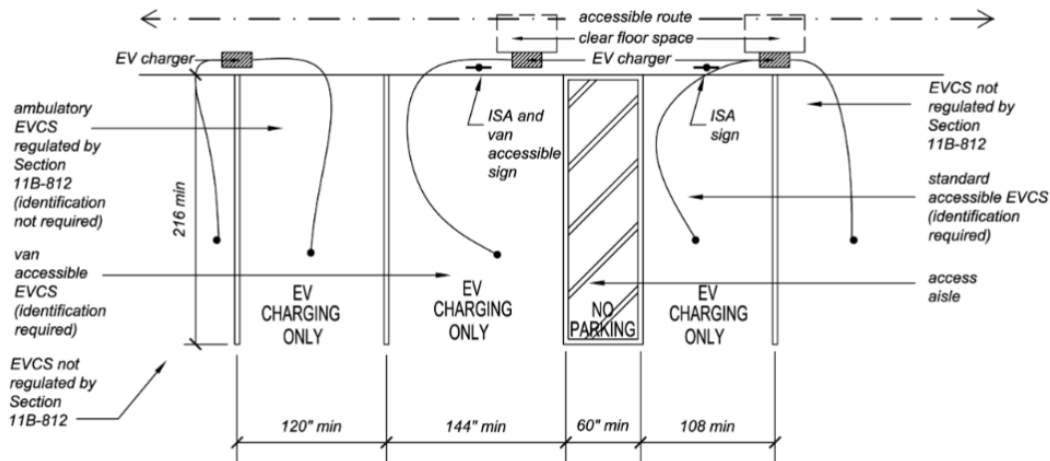


Five EVCS: two accessible EV spaces required



# EV Charging Stations

## Sample Layout (3 of 3)



### 26 EVCS: three accessible EV spaces required



#### Maintenance/Replacement of Existing Chargers

Since the development of the 2011 site plan, various brands and models of chargers have been provided in Marin County. Property hosts determine the charging equipment to install and are responsible for coordinating the maintenance of this equipment. As technology has advanced the need for maintenance and replacement of existing chargers has also grown. In most cases, the installation costs to replace existing stations will be significantly lower than at new sites without the electrical wiring and conduit already in place. However, the costs to replace the existing EVSE and add new stations are largely dependent on the extent of electrical services needed. Dual-port charging units are preferred to single-port units due to lower installation and maintenance costs and smaller space requirements.

## VII. LOCATIONS FOR EV CHARGING INFRASTRUCTURE

Since the development of the 2011 EVSE Siting Plan, Marin County has advanced its EVSE public infrastructure through a robust program designed to accelerate publicly accessible EVSEs in publicly owned right of way and parking lots. By working closely with local agencies, TAM has helped accelerate EVSE installations in the county. This section describes initial sites identified through TAM-sponsored education and outreach. In this effort, a few key factors merit highlighting.

### Preliminary Plan

The identification of these sites constitutes a preliminary list and starting point for planning efforts. It is anticipated that the list will be further refined as jurisdictions review current sites and gain experience in delivering sites, and as program eligibility rules and requirements change. It is important to also note that this list of sites are dependent on demand, which changes based on vehicle availability, public mandates, and funding eligibility and availability. TAM is a single entity but not the sole agency supporting EVSE installation, and partners with a wide range of local agencies, including local jurisdictions, air districts, public utilities and Community Choice aggregates, and other transportation agencies.

### Municipal Versus Private

The primary focus of TAM has been identification of “publicly-accessible charging stations” planned for installation by municipalities and public agencies in the county. Charging stations accessible to the public may be installed on either public property or private property generally accessible to the public (e.g., in mall parking lots and major office complexes). With growing public utility and other agencies’ EVSE programs focusing on private property, this section addresses areas of needs that may require private property site hosts.

Additionally, since 2011 private enterprises have matured and networks such as Chargepoint, Blink and Tesla have developed siting plans specific to their business needs. Determining these exact locations is not possible at this time, nor required for this analysis.

### Level 2 Charging Locations – In Progress

The following locations for Level 2 EV chargers in Marin County have been developed based on discussions with member agencies and public entities in Marin County. As an initial list, this section reflects desired charging equipment and will be subject to changes as needed through the site planning and development process and may be updated as needed based on new information and locations. It is important to distinguish between the number of “chargers” and the number of “charge points” for this effort:

Location	Sponsor	Number of Charging Heads
Marin County Civic Center	Marin County	41
San Rafael Schools (multiple locations)	San Rafael School District	32



Magnolia Parking Lot, 8-20 Magnolia Ave, San Rafael, CA 94901	Town of San Anselmo	8
Various Locations in Novato	City of Novato	14
College of Marin, 835 College Avenue, Kentfield CA, 94904	College of Marin	36
1125 Tamalpais Ave, San Rafael, CA 94901	MCE	10
<i>In Progress Level 2 Charging Heads</i>		<i>141</i>
<i>Existing Level 2 Charging Heads</i>		<i>154</i>
<b>Total Level 2 Charging Heads (In Progress + Existing)</b>		<b>305</b>

As noted in Section 4, there are 154 existing level 2 chargers in Marin County. The In-Progress list would add 141 level 2 chargers, providing an increase of approximately 92% of the level 2 charge points in Marin County.

At the time of this report, TAM is updating eligibility requirements of its EVSE charge program, to encourage the growth of EVSE equipment in Marin county and improve the project delivery process for implementing agencies. These changes to streamline eligibility are likely to grow the pool of potential chargers in Marin County even further than in progress sites identified above.

### **Level 2 Charging Locations – Opportunity Sites**

With recent state goals to increase EV adoption, expansion of charging locations will be necessary to support these goals. As private enterprise, utility providers, air districts and Electrify America Program's develop and deliver more charging locations over the next few years, this section details opportunity sites to support charging network development. These locations are identified below. In order to advance these locations, site plans will need to be developed and site hosts must be identified to facilitate the project development, operations and maintenance of these sites. These sites are expected to qualify for a range of public grants, including from BAAQMD, MCE, PG&E and TAM, as well as private investment or as part of a development agreement. Facilitating the development of these sites will require cooperation and funding from a range of agencies based on program eligibility requirements and available resources.

Based on the existing conditions analysis in section 4, opportunity areas for charger installations exist throughout Marin County. These locations include:

- Southern Marin** – Based on a review of the existing charging locations in Marin County, there is a limited supply of publicly available EV charging stations in Southern Marin County, namely around the TAM junction, Mill Valley and Strawberry communities. Recent tenant changes at the Marin Gateway shopping Center have increased the supply of EVSE equipment in Marin City for residents and commuters on Highway 101, however focus should be provided on expansion of EV charging locations in Southern Marin to

support residents, commuters, recreational visitors, the business community and transportation hubs. Public Facilities in these areas, including school parking lots, community centers and on-street locations should be considered for EV charging installations. Opportunities along frontage roads next to Highway 101, Miller Avenue, Blithedale Ave, Highway 1, Camino Alto and other major road corridors should be considered for charging locations.

- **Shopping Centers** – Electrify America is currently building out its EV charging infrastructure network focusing on large retail property owners like Target and Walmart and these efforts should be supported for large scale deployments of EV charging stations. A similar approach is being undertaken by Tesla, that would allow piggyback opportunities at these sites for additional EV charging equipment for non-tesla EVs. With PG&E and BAAQMD grants available, private shopping center locations in Marin County that are good opportunities include the Strawberry shopping center, the Town Center in Corte Madera, Bon Aire shopping center and an expansion of EV charging at Northgate Mall in Terra Linda.
- **School Locations** – School parking lots provide an opportunity for EV charging station expansion to support teachers and school officials but can also serve to support evening and nighttime charging for local residents. Parking at school locations throughout Marin is often impacted, however where space is available EV chargers can provide employees encouragement to switch from gas powered vehicles to EVs.
- **SMART Stations** – With the Launch of SMART service in 2017, TAM has provided funding for “make ready” EV infrastructure at the San Marin and Hamilton SMART parking lots in Novato. Providing EV chargers at these locations may be a cost-effective opportunity to support commuters and increase EV charging supply. Providing EV infrastructure at other Marin SMART stations poses more challenges with determining site locations, however nearby parking lots either private or public should be considered for expansion of EV charging supply.
- **Ferry Terminals** – Larkspur Ferry terminal currently provides 2 EV charging spaces to support commuters into San Francisco. As one of the most heavily impacted parking locations in Marin County, parking management is a challenge at this site, however expansion of EVSE equipment would demonstrate Golden Gate Ferry’s commitment to GHG reduction and support clean transportation to this site. Other ferry locations in Marin County including Sausalito and Tiburon, parking lots are provided by the local jurisdiction and these lots should be considered to support commuters along with private parking locations in the immediate location.
- **Park and Rides / Caltrans facilities** - Park and Ride locations owned by Caltrans are important mobility hubs for Marin County and can serve to demonstrate Caltrans commitment to supporting ZEV goals set by the state. These locations are often parking

impacted, especially in southern Marin, and Caltrans policies regarding right of way and operations and maintenance often limiting practical locations of EVSE in Caltrans ROW. However, the opportunity to support Caltrans in this effort may be supported by TAM funding of public agency chargers.

- **Marin General Hospital** – the renovation of the Marin General Hospital currently underway includes installations of EVSE equipment within the parking structure. As construction proceeds, these publicly available EVSE sites are expected to serve employees and hospital visitors.
- **Communities of Concern** - Marin’s two designated communities of concern include Marin City in Southern Marin and the Canal Neighborhood of San Rafael. Increasing EV infrastructure in these communities supports access and EV adoption for all residents in Marin. With 5 existing chargers in Marin City, increasing the number of these chargers, or identifying another potential location in Marin City, perhaps as part of redevelopment efforts could promote EV adoption in Marin City. The Canal Neighborhood currently has access to a charge port at the Marin County Health and Human Services building on Kerner, and limited access to chargers located as part of automotive dealers in the area. Providing additional charging infrastructure directly for residents at locations like Pickleweed Park or on street would support EV users in this community.

### Level 3 or DCFC Charging Locations

In order to reach the state ZEV goals and increase the range of EV’s, public fast charging allows more gasoline miles to be converted to electric miles. Public DCFC is also critical to reducing range anxiety and meet consumers expectations and preference for faster public charging. Recognizing these needs, PGE has developed a mapping tool under the Electric Program Investment Charge (EPIC) program to identify locations where DCFC siting best promote EV adoption<sup>23</sup>.

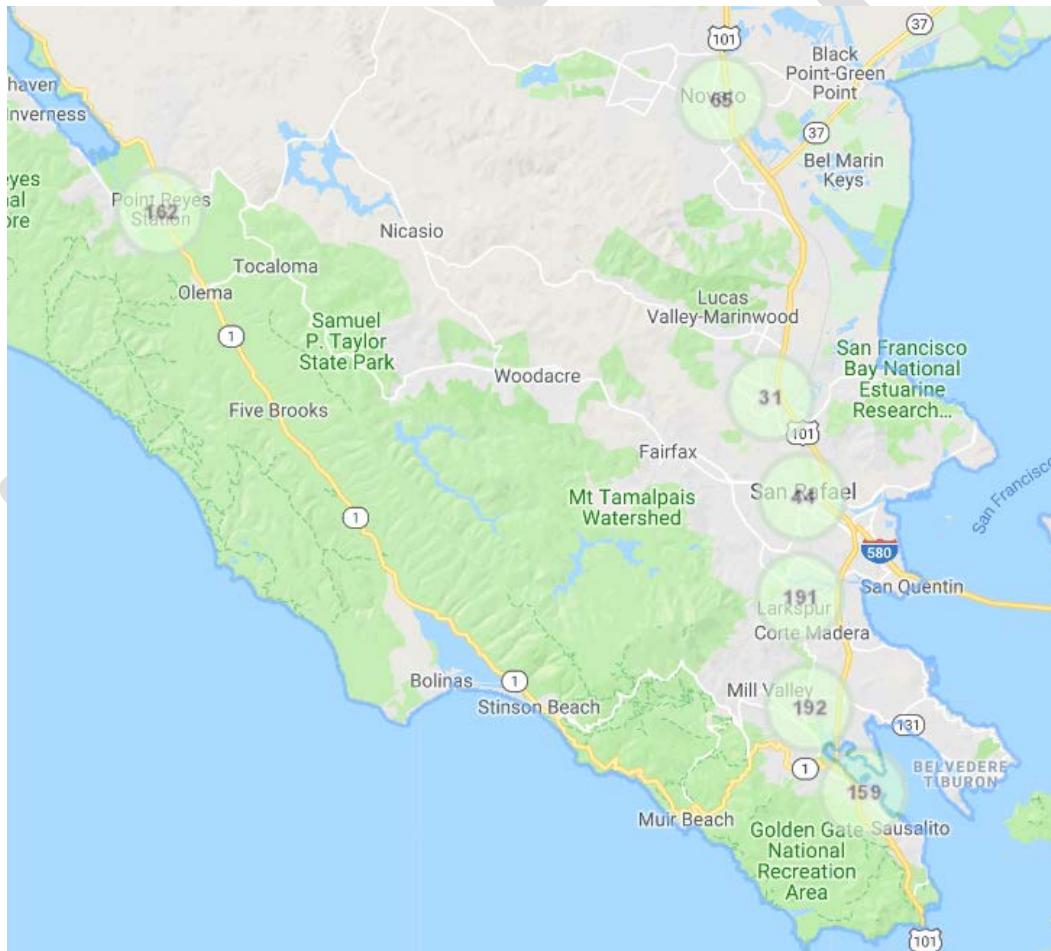
The EPIC DCFC mapping tool using forecasts of EV adoption, locations of existing DCFCs, locations with available distribution capacity and siting factors to map out 300 general locations for DCFCs in PGEs service area and 14,616 potential individual site hosts within the 300 general locations.<sup>24</sup> Of the 300 locations in PGE’s service area, the mapping tool ranks locations based on unmet demand. This ranking excludes factors like costs, or increasing EV adoption, or supporting disadvantaged communities. Based on this ranking (1-300) the tool identified identifies 7 general locations in Marin County, and the additional new DCFCs needed by 2025 including:

<sup>23</sup> [https://www.pge.com/pge\\_global/common/pdfs/about-pge/environment/what-we-are-doing/electric-program-investment-charge/EPIC-1.25.pdf](https://www.pge.com/pge_global/common/pdfs/about-pge/environment/what-we-are-doing/electric-program-investment-charge/EPIC-1.25.pdf)

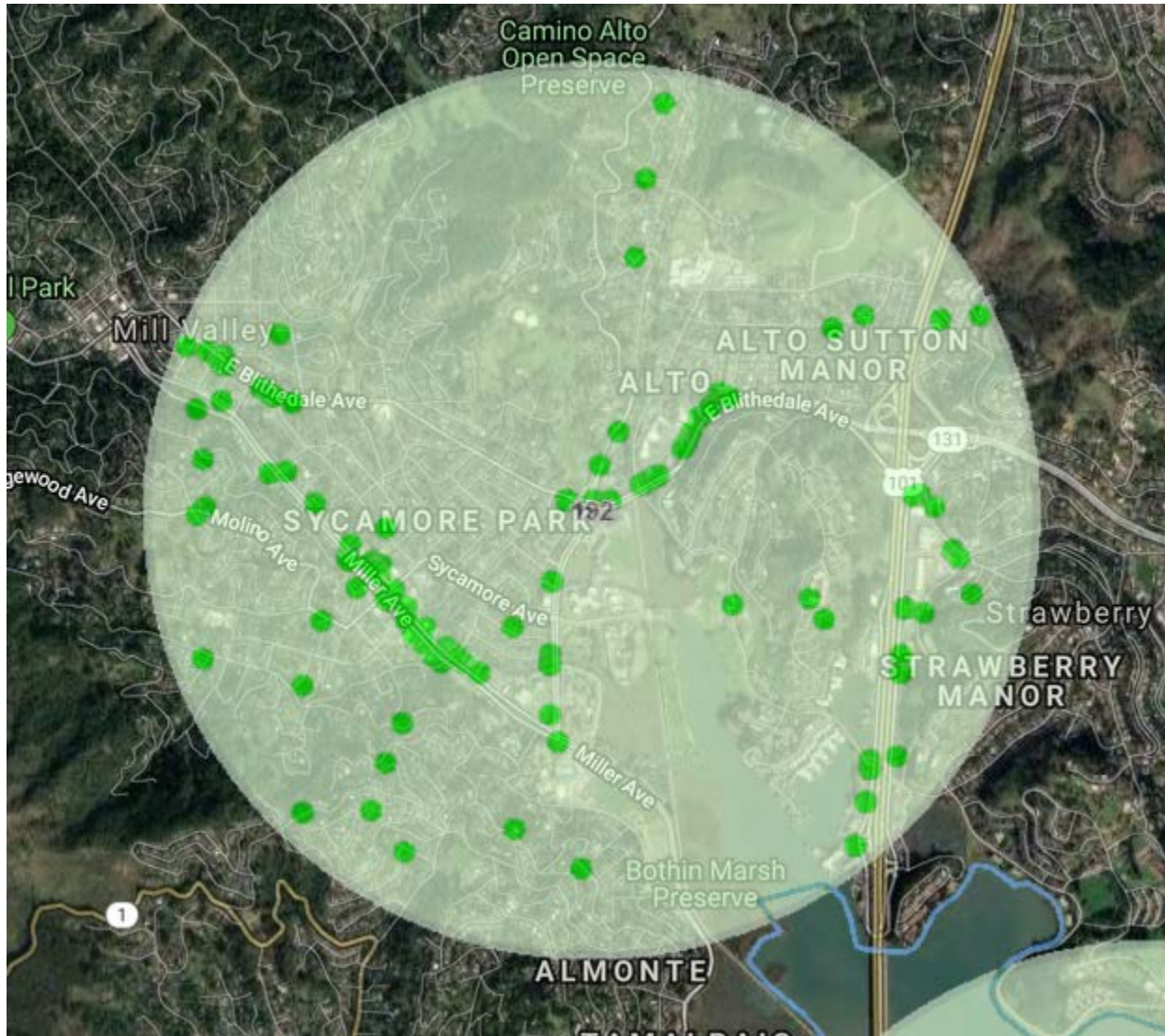
<sup>24</sup> <https://www.pge.com/b2b/energysupply/wholesaleelectricssuppliersolicitation/PVRFO/ev.html>

Site Number	Location		New DCFCs
33	Terra Linda		3
44	Downtown San Rafael		3
65	Downtown Novato		2
159	Sausalito		1
162	Point Reyes Station		1
191	Larkspur/Corte Madera		1
192	Mill Valley		1
<i>Total New DCFCs</i>			<b>13</b>
Existing DCFCs			10
<b>Potential DCFCs in Marin County</b>			<b>23</b>

These locations are shown in the map below:



*PGE EPIC Program DCFC Fast Charging locations in Marin County*



*PGE EPIC Program Site Specific Locations for DCFCs in Mill Valley*

### **Innovative Charging Opportunities**

Innovative charging solutions offer the potential to reduce site installation costs, expand access to charging equipment, and support the next generation of EV charging infrastructure. TAM has supported the county of Marin in the purchase of an off-grid solar car charger for its public fleet to reduce trenching cost, that may be applicable for use in other off-grid locations such as portions of west Marin or remote recreational areas.

Providing resources and options to support innovative charging throughout Marin county could also support the expansion of EV equipment throughout the county. Recent technological advancements such as wireless charging, solar power, and grid and fleet management advancements may reduce costs and provide site hosts benefits beyond traditional charging equipment. Additionally, for public fleets that may need sources of power during emergencies, battery storage and off-grid or solar chargers may support fleet conversion. Applications of

innovative approaches can be explored for potential applications by interested site hosts. Site conditions like access to power, ADA considerations and enforcement all would need to be addressed to support innovative approaches, however pilot programs could be considered to investigate feasibility.

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## VIII. CONCLUSIONS

Given the growth in EV infrastructure since the development of the 2011 Site Plan, this update lays forth a path for the rapid deployment of EVSE equipment in Marin County. This update also supports site hosts and jurisdictions to identify potential locations to further grow the EVSE supply in Marin County. It is reasonable to expect that these sites will grow in number with changes to funding eligibility requirements and continued support from a wide range of funding partners.

Growing the pool of candidate locations also requires additional efforts to enable the development of these sites. These include potential modifications to incentives administered by TAM, permit streamlining for EVSE installation by local jurisdictions and project delivery assistance to streamline site planning and installation. TAM and local agencies will continue to partner to implement this site plan and will provide regular updates to this plan as appropriate.

Growth in EV charging availability has occurred at a rapid pace since the development of the last plan in 2011. As EV charging technologies mature, and EV charging business models develop further, this sector will remain a vibrant and changing landscape requiring support in the forms of technical assistance, funding and management. Additionally, as EV adoption becomes mainstream, private business models, grid management and air quality concerns are beginning to dominate the EV landscape. As EVs becomes normalized trends, TAM's role as seeding advancements in green transportation technology will need to be balanced, providing ongoing rebates with funding for new technology and mobility options.

**Appendix A: TAM EV Charging Inventory**

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	Type of Charger	Public Stations	Location	Generalized		Level 1/	Level 2	Level 3/	Total	Network	Parking Detail
				Land Use	Jurisdiction	Wall Outlet	Chargers	Fast Chargers	Charge Points		
1	3 EV Plug (J1772)s,	1	1 Bear Valley Road Point Reyes Station, Bear Valley Visitor Ctr	Public	Unincorporated	1	3		4	N/A	free
2	EV Plug (J1772), 2 Tesla HPWC (Model S)s	1	Cavallo Point, 601 Murray Circle, Sausalito	Public	Unincorporated		3		3	Tesla	pay, private
3	3 EV Plug (J1772)s	1	2000 Bunker Road, Sausalito, CA 94965, Marin Mammal Center	Public	Unincorporated		3		3	Blink	free
4	3 EV Plug (J1772)s	1	21 Marine Way, Stinson Beach Central Parking	Public	Unincorporated		3		3	N/A	free
5	Wall Outlet (120v)	1	1390 Limantour Spit Rd, Point Reyes Station	Public	Unincorporated	1			1	N/A	n/a
6	Wall Outlet (120v)	1	12938 Sir Francis Drake Blvd, Inverness, The Cottages at Pt. Reyes Seashore	Commercial	Unincorporated	1			1	tesla/ N/A	private
7	Wall Outlet (120v), EV Plug (J1772)	1	2330 Marinship Way, Sausalito, Marina Office Plaza	Business Park	Sausalito	1	1		2	Chargepoint	pay, private
8	2 EV Plug (J1772)s		Marin Gateway Shopping Center, 190 Donahue St, Sausalito	Commercial	Sausalito		2		2	Chargepoint	private
9	2 EV Plug (J1772)s	1	100 Harbor Dr, Sausalito, Molly Stone's	Commercial	Sausalito		2		2	Chargepoint	private
10	Tesla		Casa Madrona 801 Bridgeway, Sausalito, Calif	Commercial	Sausalito		1		1	Tesla	private
11	Wall Outlet (120v)	1	300 Spencer Avenue, Sausalito, Former Fire Station	Public	Sausalito	1			1	N/A	n/a
12	Wall Outlet (120v)	1	2-150 Ebbtide Ave, Sausalito, Remington Dog	Public	Sausalito	1			1	N/A	free
13	20 EV Plug (J1772)s	1	125 Shoreline Pkwy, San Rafael, Target	Commercial	San Rafael		20		20	Chargepoint	private
14	10 EV Plug (J1772)s, CHAdeMO DCFE	1	99 Montecillo Rd, San Rafael, Kaiser Permanente	Medical	San Rafael		10	1	11	eVgo	private
15	8 EV Plug (J1772)s	1	111 McInnis Pkwy, San Rafael, Autodesk	Business Park	San Rafael		8		8	Chargepoint	private
16	EV Plug (J1772), 2 CHAdeMO DCFEs, CCS DCFE	1	5800 Northgate Mall, San Rafael	Commercial	San Rafael	1	2	1	4	eVgo	private
17	Tesla HPWC (Roadster), 3 Tesla	0	470 DuBois Street, San Rafael, CA	Automotive	San Rafael		4		4	Tesla	private
18	EV Plug (J1772), 2 CHAdeMO DCFEs	1	515 Third St., San Rafael, United Markets	Commercial	San Rafael		1	2	3	Blink	private
19	2 EV Plug (J1772)s, CHAdeMO DCFE	0	511 Francisco Blvd E, San Rafael, Nissan of Marin	Automotive	San Rafael		2	1	3	N/A	private
20	Wall Outlet (120v), 2 EV Plug (J1772)s	1	3501 Civic Center Drive, San Rafael, Civic Center	Public	San Rafael	1	2		3	Chargepoint	free
21	Wall Outlet (120v), 2 EV Plug (J1772)s	1	39 Trellis Dr, San Rafael, Mark Day School	Private School	San Rafael	1	2		3	N/A	private
22	2 EV Plug (J1772)s	1	1116 3rd St, San Rafael, 3rd Street Garage	Public	San Rafael		3		3	Chargepoint	pay, public
23	EV Plug (J1772)	1	3240 Kerner Blvd, San Rafael, Marin Health & Wellness	Public	San Rafael	1	1		2	Chargepoint	private
24	Wall Outlet (120v), EV Plug (J1772)	1	10 Avenue of The Flags, Marin Center Exhibit Hall	Public	San Rafael	1	1		2	Chargepoint	free
25	2 EV Plug (J1772)s	1	315 3rd St, San Rafael, Montecito Plaza/Redwood Credit Union	Commercial	San Rafael		2		2	Chargepoint	private
26	2 EV Plug (J1772)s	1	900-948 Cijos St San Rafael, Parking Lot	Public	San Rafael		2		2	Chargepoint	pay, public
27	2 EV Plug (J1772)s	1	900 C Street, San Rafael, 3rd and C St Public Parking	Public	San Rafael		2		2	Chargepoint	pay, public
28	Wall Outlet (120v), EV Plug (J1772)	1	1815 4th St, San Rafael, West End Center	Commercial	San Rafael	0	2		2	Chargepoint	pay, private
29	2 EV Plug (J1772)s	1	20 North San Pedro Road, Marin County Health & Human Services	Public	San Rafael		2		2	Chargepoint	free
30	2 EV Plug (J1772)s	1	9000 Northgate Dr, Sears Automotive Center	Commercial	San Rafael		2		2	Blink	private
31	2 EV Plug (J1772)s	1	4040 Civic Center Dr, San Rafael, CA 94903, USA	Business Park	San Rafael		2		2	Chargepoint	pay, private
32	2 EV Plug (J1772)s	1	1600 Los Gamos Drive, San Rafael, County of Marin	Public/ Business	San Rafael		2		2	Chargepoint	free

Item 12 - Attachment C - Appendix A

33	2 Wall Outlets (120v)	1	890 Belle Avenue, San Rafael, Marin Shakespeare Ct	Private School	San Rafael	2			2	N/A	private
34	EV Plug (J1772)	0	1599 Francisco Blvd E, San Rafael, BMW	Automotive	San Rafael		1		1	Chargepoint	private
35	EV Plug (J1772)	0	807 Francisco Blvd E, San Rafael, SR Mitsubishi	Automotive	San Rafael		1		1	N/A	private
36	EV Plug (J1772)	0	540 Francisco Blvd. West, San Rafael, RAB Motors	Automotive	San Rafael		1		1	N/A	private
37	EV Plug (J1772)	0	445 Francisco Blvd. E., San Rafael, Toyota Marin	Automotive	San Rafael		1		1	N/A	private
38	Wall Outlet (120v)	1	201-299 Magnolia Ave San Rafael Dominican	Private School	San Rafael	1			1	N/A	private
39	Wall Outlet (120v)	1	5800 Northgate Dr, San Rafael Kohls	Commercial	San Rafael	1			1	N/A	private
40	4 Wall Outlet (120v)s, 4 EV Plug (J1772)s	1	22 Magnolia Ave, San Anselmo, Magnolia parking lot	Public	San Anselmo	4	4		8	Chargepoint	pay, private
41	3 EV Plug (J1772)s	1	800-900 Sir Francis Drake Blvd., San Anselmo, Redhill Shop, Ctr	Commercial	San Anselmo		3		3	N/A	private
42	2 CHADEMO DCFs	1	100 Red Hill Rd., San Anselmo, United Market	Commercial	San Anselmo			2	2	Blink	private
43	4 Wall Outlet (120v)s, 4 EV Plug (J1772)s	1	913 Reichert Ave, Novato, CA, Zenk Parking Lot	Public	Novato	4	4		8	Chargepoint	free
44	6 EV Plug (J1772)s	1	5 Hamilton Landing, Novato, Field Hanger 3, 5, 7	Business Park	Novato		6		6	Chargepoint	free
45	2 Wall Outlet (120v)s, 2 EV Plug (J1772)s	1	999 Grant Avenue, Novato, Umpqua Bank	Commercial	Novato	2	2		4	N/A	private
46	3 EV Plug (J1772)s	1	922 Machin Ave, Novato, City Offices	Public	Novato		3		3	Chargepoint	free
47	Wall Outlet (120v), EV Plug (J1772)	1	503 S Palm Dr Novato, Hamilton Community Center	Public	Novato	1	1		2	Chargepoint	free
48	Wall Outlet (120v), EV Plug (J1772)	1	250 Entrada Drive, Novato, Inn Marin	Commercial	Novato	1	1		2	Chargepoint	private
49	EV Plug (J1772), 2 CHADEMO DCFs, CCS DCF	1	790 De Long Ave, Novato, Whole Foods	Commercial	Novato		1	1	2	eVgo	private
50	Wall Outlet (120v), EV Plug (J1772)	1	901 Sherman Ave, Novato, Town Hall	Public	Novato	1	1		2	Chargepoint	free
51	Wall Outlet (120v), EV Plug (J1772)	1	950 7th Street, Novato, CA, 94945, Novato Gymnastics Center	Commercial	Novato	1	1		2	Chargepoint	free
52	2 EV Plug (J1772)s	1	300 Vintage Way, Novato, Vintage Oaks	Commercial	Novato		2		2	Volta	private
53	EV Plug (J1772), Nema 14-50	1	896 Sutro Ave., Novato, CA, 94947, Paul Schaffer DDS	Commercial	Novato		1		1	N/A	private
54	2 Wall Outlet (120v)s, 2 EV Plug (J1772)s	1	475 E Strawberry Dr, Mill Valley The Club at H	Commercial	Mill Valley	2	2		4	Chargepoint	private
55	Wall Outlet (120v), EV Plug (J1772)	1	1 Hamilton Drive, Mill Valley, Hauke Park	Public	Mill Valley	1	1		2	Chargepoint	free
56	Wall Outlet (120v), EV Plug (J1772)	1	Muir Woods Rd, Mill Valley, Muir Woods Visito	Public	Mill Valley	1	1		2	N/A	pay, public
57	2 EV Plug (J1772)s	1	700 Lincoln Village Circle, Larkspur, Serenity	Commercial	Larkspur		2		2	Chargepoint	private
58	2 EV Plug (J1772)s	1	Doherty Drive, Piper Park (250 Doherty Drive)	Public	Larkspur		4		4	Chargepoint	free
59	2 EV Plug (J1772)s	1	395 Doherty Dr, Larkspur, CA 94939	school	Larkspur		2		2	N/A	free
60	2 EV Plug (J1772)s	1	250 Doherty Drive, Central Marin Police Authority	Public	Larkspur		2		2	Chargepoint	private
61	2 EV Plug (J1772)s	1	1400 Lincoln Village Cir Larkspur, CA	Public	Larkspur		2		2	Chargepoint	private
62	EV Plug (J1772)	1	50 Drakes Landing Road, Greenbrae, Marin F	Business Park	Larkspur		1		1	N/A	private
63	EV Plug (J1772)	1	101 East Sir Francis Drake Blvd, Larkspur, Golden Gate Ferry	Public	Larkspur		1		1	N/A	pay, public
64	2 EV Plug (J1772)s	1	1942 Sir Francis Drake Blvd, Fairfax, Parkade* (in the parking lot that bisects Sir Francis Drake Blvd and Broadway	Public	Fairfax	1	3		4	Chargepoint	free
65	Wall Outlet (120v), EV Plug (J1772)	1	142 Bolinas Road Fairfax, Town Hall	Public	Fairfax	1	1		2	Chargepoint	free

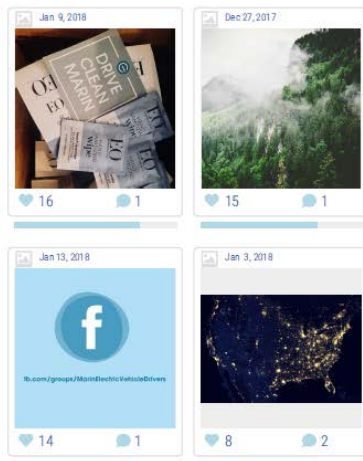
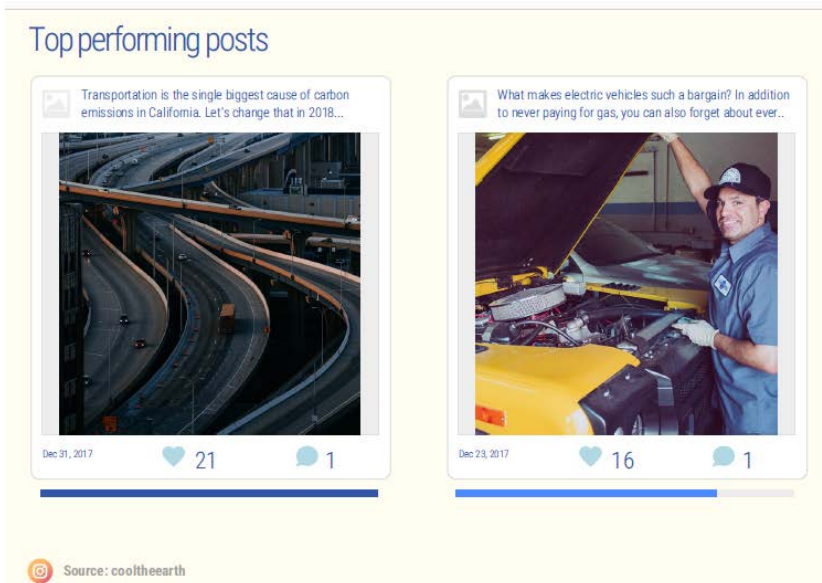
66	2 CHAdeMO DCFCs	1	720 Center Blvd., Fairfax, CA, The Good Earth	Commercial	Fairfax			2	2	Blink private
67	6 Tesla HPWC (Model S)s	0	1616 Redwood Highway Corte Madera, Tesla	Commercial	Corte Madera		6		6	Tesla private
68	2 Wall Outlet (120v)s, 2 EV Plug (11772)s	1	450 San Rafael Ave, Belvedere City Hall	Public	Belvedere	2	2		4	Chargepoint free
						<b>37</b>	<b>154</b>	<b>10</b>	<b>201</b>	

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## Attachment D

### Proposed Public Outreach and Education Elements

1. Toolkits of information will be developed and provided on EV Fleet Conversion and Charging Infrastructure installation.
2. Increased hands-on outreach using consulting support to public agencies focusing on first time installations and providing technical assistance for agencies considering EV fleet conversion or charging equipment.
3. Marketing and promotion – Continue to coordinate with EV partners (MCE, BAAQMD and PG&E), stakeholders and advocates on promotion and messaging via traditional and online media, and develop plans and resources to do so. Last year TAM partnered with Cool The Earth to develop and support a “Drive Clean Marin” social media marketing campaign.



- 4. EV Ride and Drive events with increased feedback and follow-up targeted promotions.



- 5. Coordinated marketing with TAM's new MarinCommutes website and messaging.

**TAM - EV&AF PROGRAM (ACTIVE)**

SPONSOR	PROJECT DESCRIPTION	BUY OR LEASE	QUANTITY	STATUS	TAM MAX COMMITMENT	NOTES	PROJECT VITALS
Marin Transit	Zero Emission Bus	BUY	2	Completed	\$75,000.00	Buses in service	
San Rafael School District	EVSE (Charger Heads)	BUY	42	Completed	\$126,000.00	SRCS Board Approved (12/17/18) & TFCA \$60K grant	
Marin County	EVSE (Charger Heads)	BUY	47	Completed	\$22,118.00	Operational	
Marin County	EVSE (Charger Heads)	BUY	24	In Progress	\$72,000.00	TAM Funds Reserved	
Marin County	Zero Emission Vehicles	BUY	4	Completed	\$10,000.00	Operational	
City of Larkspur	EVSE (Charger Heads)	BUY	6	Completed	\$10,230.00	Operational	
City of Mill Valley	EVSE (Charger Heads)	BUY	2	Completed	\$3,414.00	Operational	
Town of San Anselmo	EVSE (Charger Heads)	BUY	8	Completed	\$23,981.00	Operational	
Town of San Anselmo	Zero Emission Vehicles	LEASE	3	In Progress	\$7,500.00	Agency Staff Researching Options	
Marin County Office of Education	Zero Emission Vehicles	BUY	4	In Progress	\$10,000.00	Agency Staff Researching Options	
College of Marin	EVSE (Charger Heads)	BUY	36	In Progress	\$108,000.00	Active Project	
City of Novato	EVSE (Charger Heads)	BUY	14	Planning	\$42,000.00	Waiting for Scope	
City of Novato	Zero Emission Vehicles	LEASE	5	Planning	TBD	Waiting for Scope	
City of San Rafael	EVSE (Charger Heads)	BUY	TBD	Planning	TBD	Waiting for Scope	
City of San Rafael	Zero Emission Vehicles	LEASE	TBD	Planning	TBD	Waiting for Scope	
Town of Ross	EVSE (Charger Heads)	BUY	2	Planning	\$6,000.00	TAM Funds Reserved	
Town of Ross	Zero Emission Vehicles	LEASE	1	Planning	\$2,500.00	TAM Funds Reserved	
Marin Clean Energy	EVSE (Charger Heads)	BUY	10	In Progress	\$30,000.00	TAM funds reserved / Under construction	
Tamalpais Community Services District	EVSE (Charger Heads)	BUY	2	In Progress	\$6,000.00	TAM Funds Reserved	
Golden Gate	EVSE (Charger Heads)	BUY	2	Planning	TBD	Staff Researching Options	
Town of Corte Madera	Zero Emission Vehicles	LEASE	1	Planning	TBD	Staff Researching Options	
Town of Fairfax	EVSE (Charger Heads)	BUY	2	Planning	TBD	Staff Researching Options	195

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## Early Alternative Fuel Promotion Funding Opportunities

Approved by the Board on July 26, 2018 – Total Amount: \$517,600 (Actual contributions will depend on final recipient requests)

1. Marin Transit: TAM previously committed \$75,000 to help with the purchase of two electric buses. Delivery of two BYD-brand electric buses has been delayed to Fall 2018. > Done - \$75,000 contributed
2. Marin County: 41 EV charging heads are being pursued by Marin County through PG&E's charger rebate program. TAM program contribution: Up to \$123,000. > Done - \$22,118 contributed
3. San Rafael School District: 32 EV charging heads were requested for grant funding by the District for their various school sites. TAM program contribution: Up to \$96,000.
4. Town of San Anselmo: 8 EV charging heads were requested for grant funding by the Town in the prior fiscal year, but presently are still under construction. TAM program contribution: Up to \$24,000. > Done - \$24,000 contributed
5. Marin County Office of Education: The agency submitted a grant rebate application for four EVs in the prior fiscal year and has not completed its purchase and replacement of existing fleet vehicles. TAM program contribution: Up to \$10,000.
6. City of Novato: 14 EV charging heads were requested for grant funding by the City in the prior fiscal year, but presently are still under final evaluation. TAM program contribution: Up to \$42,000.
7. City of Novato: The City is pursuing the replacement of five older fleet vehicles with EVs in this fiscal year and plans to submit its application during the first quarter of the fiscal year. TAM program contribution: Up to \$12,500.
8. College of Marin: 36 EV charging heads are being pursued by the College through PG&E's charger rebate program where PG&E leads the construction and installation effort. TAM program contribution: Up to \$108,000.
9. MCE Clean Energy: MCE applied for a TAM rebate to install five chargers at its headquarter parking lot in downtown San Rafael three years ago. TAM program contribution: Up to \$15,000.
10. Cool The Earth has sought funding to promote EV ownership during various Marin parades and events through their own "Drive Clean Marin" banner, flags and stickers material. TAM will provide matching fund support. TAM program contribution: \$2,100. > Done - \$2,100 contributed
11. Golden Gate EV Association (GGEVA) is seeking grant funding to support their National Drive Electric Week test drive event, typically held annually during late summer. TAM program contribution: \$10,000. > Done - \$10,000 contributed

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