



SAN RAFAEL CITY COUNCIL AGENDA REPORT

Department: City Manager's Office

**Prepared by: Cory Bytof,
Sustainability Program Manager**

City Manager Approval: _____

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TOPIC: ELECTRIC VEHICLE STRATEGY

SUBJECT: MARIN COUNTYWIDE ELECTRIC VEHICLE ACCELERATION STRATEGY AND CITY OF SAN RAFAEL DRAFT WORKPLAN

RECOMMENDATION:

Accept report and provide feedback on the City of San Rafael's Electric Vehicle Acceleration Strategy Draft Workplan.

BACKGROUND:

Climate Change Action Plan

San Rafael's first [Climate Change Action Plan \(CCAP\)](#) was developed by a 17-member Green Ribbon Committee in 2008 and adopted by the City Council in 2009. In 2017, the City developed a new community-based Climate Change Action Plan 2030 that built upon the original plan and included new greenhouse gas reduction (GHG) targets and programs to achieve 40% reductions from 1990 levels by 2030. Over 350 San Rafael residents and business representatives provided input on the plan, which was adopted by the City Council on May 19, 2019. In 2021 the City Council adopted a Climate Emergency Resolution committing the City to have net-zero GHG emissions by 2045.

Every two years staff identify key priorities to work on from our Climate Change Action Plan to be implemented during the year. The City Council Sustainability Liaison, Councilmember Llorens Gulati, reviews and provides input on the draft workplan. Additionally, feedback is sought at the Climate Change Action Plan quarterly community forum for review before finalizing and bringing to the City Council. The development of an electric vehicle strategy has been a priority due to the fact that over 60% of the City's in-boundary GHG emissions come from the transportation sector and over 30% of the estimated emissions reductions in the Climate Change Action Plan are projected to come from transitioning gas-powered vehicles to zero emission vehicles, typically in the form of electric vehicles (EVs).

Since many other jurisdictions in Marin have similar climate action plans and GHG reduction targets, the Marin Climate and Energy Partnership (MCEP) and Transportation Authority of Marin (TAM) saw an opportunity to develop a Countywide Electric Vehicle Acceleration Strategy that

FOR CITY CLERK ONLY

Council Meeting:

Disposition:

could be utilized by all cities and towns, including San Rafael (Attachment A). City staff helped develop and gave input on the countywide strategy throughout the process.

The work of developing and implementing an electric vehicle strategy aligns with the City Council's adopted fiscal year [2023-24 & 2024-25 goals and objectives](#). Specifically, one of the City Council's sustainability goals is to:

- Collaborate with Transportation Authority of Marin and other community partners to develop an electric vehicle strategy for San Rafael, including increasing electric vehicles and electric vehicle charging infrastructure at City facilities and in the community.

In addition, one of the City Council's Public Asset goals is to:

- Reduce the City's greenhouse gas emissions by transitioning, where feasible, diesel and gasoline-powered vehicles to electric vehicles.

ANALYSIS:

The Marin Climate and Energy Partnership developed the Countywide Electric Vehicle Acceleration Strategy over the course of two years and engaged numerous stakeholders including city and town staff, subject matter experts, local nonprofits and community groups, sustainability commissions, and others. The strategy provides background information to familiarize the reader with electric vehicles and charging terminology; existing electric vehicle charging conditions and projections; state and local legislation, policies, and actions aimed at increasing the number of electric vehicles on the road; and barriers to widespread electric vehicle adoption. The countywide strategy then identifies recommended actions that jurisdictions can take to address these barriers and accelerate electric vehicle adoption by both public agencies and community members. The countywide strategy also supports the State's goal to require all new light-duty vehicle sales in California to be zero emission vehicles by 2035.

Accompanying the Strategy and recommendations is a Workplan that cities and towns can customize for use. City staff worked with the Employee Green Team, consisting of members of several departments and met with Public Works to identify priorities for the Workplan. Sustainable San Rafael provided input as well. This City's Draft Workplan (Attachment B) identifies key activities the City will undertake in the next two years with columns that describe what initiatives are new, what the City is currently doing, the approximate staff workload level (low, medium, or high), and which departments are involved.

Given time and resource constraints, staff focused their selection of draft workplan items based on available resources as well as places where the City can make an impact in the most efficient way possible. The guiding principles identified in the countywide strategy were considered as well, which align with overall City priorities such as striving for equitable access, economic co-benefits, and countywide collaboration. The draft workplan focuses on near-term priorities with the understanding that future initiatives will be developed and refined to account for rapid developments in technology, consumer demand, and innovation, as well as the ability to leverage emerging funding opportunities.

Several items in the draft workplan such as developing a fleet replacement plan to transition the City to zero emission vehicles can be completed in the two-year time frame. Others like coordinating with public utilities to prepare the grid may begin in this time frame but will require a longer time frame to be completed. In some cases, recommendations in the countywide strategy have already been completed such as the adoption of [green building reach codes](#) requiring more electric vehicle charger installations in new construction, which the City Council adopted in November 2022.

There are thirty-six recommended actions in the countywide strategy, of which twenty are represented in the City's draft workplan. Of these twenty, nine are current City practices and eleven are new actions the City will undertake for this workplan period. Recommended actions from the countywide strategy not selected for this workplan period will be considered for incorporation into the next workplan.

Staff is requesting input from the City Council about the priorities staff selected to work on for this initial two-year draft workplan.

Next Steps

After receiving feedback from the City Council, staff will finalize the workplan, proceed with its implementation, and regularly update the City's Sustainability Liaison, Councilmember Llorens Gulati.

COMMUNITY OUTREACH:

City staff and members of the Marin Climate and Energy Partnership engaged numerous stakeholders including city and town staff, subject matter experts, local nonprofits and community groups, sustainability commissions, and others through surveys, meetings, presentations, and document sharing. Staff brought this item to the quarterly Climate Action Plan Community Forums for input as well.

FISCAL IMPACT:

There is no direct fiscal impact associated with consideration of the workplan, however the implementation of the action items listed in the strategy will require varying levels of funding. Many of the action items can be advanced within existing resources (ex. planning, outreach, and coordination), while others will require supplemental funding (ex. Electric vehicle charging infrastructure and City Fleet purchases). It is anticipated that the City will pursue funding support through grants and utility-sponsored programs, with potential General Fund support subject to future Council approval through the budget process.

RECOMMENDED ACTION:

Accept report and provide input on the Draft City of San Rafael Electric Vehicle Acceleration Strategy Workplan.

ATTACHMENTS:

Attachment A: Marin Countywide Electric Vehicle Acceleration Strategy

Attachment B: Draft City of San Rafael Electric Vehicle Acceleration Workplan



Marin Countywide Electric Vehicle Acceleration Strategy

February 2023

Marin Countywide Electric Vehicle Acceleration Strategy

Developed
by



With
funding by



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Outcome Statement for Marin County

Marin will be a thriving county where electric vehicles (EVs) are integrated with other options in a healthy, sustainable, and equitable transportation system. Marin jurisdictions will support a holistic approach to reducing and ultimately eliminating the use of fossil fuel-powered cars by residents, visitors, businesses, and organizations, and will encourage biking, micromobility, walking, shared transportation, and transit use and reduced dependence on the automobile. Marin jurisdictions will support programs that facilitate a transition toward EVs and ensure information is widely available about EV benefits, models, affordability, rebate and incentive opportunities, and associated infrastructure. Permitting and regulatory processes will be efficient and transparent, and charging infrastructure and parking will be abundant, highly visible, accessible, and available to all. Marin's local governments will lead the way, building and supporting a safe and well-connected bicycle, pedestrian, and transit network and encouraging alternative modes of transportation while transforming their public fleet to all-electric and providing EV chargers at public parking lots.

A Guide to Using this Strategy

This Strategy is intended to inform and support jurisdiction staff within Marin County to implement local Climate Action Plans, specifically in relation to accelerating the adoption of EVs in their respective communities.

The following sections are included:

- **The Executive Summary** provides decision-makers with a list of key actions that advance the community's readiness to adopt clean, EV technology.
- **The Introduction** orients the reader to the goals and guiding principles of this Strategy and why Marin cities, towns, and the County encourage the adoption of EVs within the context of state, regional, and local greenhouse gas emission reduction goals and plans. This section also contains definitions pertinent to zero-emission vehicles and infrastructure.
- **The Existing Conditions** section discusses both existing and projected numbers of EVs and EV chargers in the community and at the local government level, as well as building codes that require installation of EV infrastructure.
- **The Barriers to Adoption** section identifies existing barriers to the widespread adoption of EVs.
- **The Recommended EV Acceleration Strategies and Actions** section identifies strategies and recommended actions to overcome barriers and accelerate EV adoption in Marin.

EVs vs. ZEVs

This Strategy uses the term "electric vehicles" or "EVs" in reference to both fully electric vehicles and plug-in hybrid vehicles that have a battery and an internal combustion engine and can run solely on the battery for limited mileage. The term "zero emission vehicles" or "ZEVs" refers to these electric vehicles as well as fuel cell electric vehicles that run on hydrogen. There are very few fuel cell vehicles in Marin County. While this Strategy focuses on EVs, it recognizes that fuel cell vehicles may play a larger role in the future.

Executive Summary

By the end of 2021, Marin County was home to more than 12,360 zero-emission vehicles (ZEVs), over 930 public and shared private chargers (not including home chargers), and a growing number of electric bicycles and scooters, positioning the county as a leader in EV adoption in California and the United States. Citizens and local leaders recognize the urgent need for much higher electric vehicle adoption rates, in tandem with greater use of all forms of low-carbon transportation, if Marin's communities are to meet the long-term greenhouse gas reduction goals established in their local Climate Action Plans. The transportation sector currently contributes more than half of countywide greenhouse gas emissions, and light-duty vehicles represent 80% of those emissions. Success will not be possible without a transformative shift to EVs, which currently make up less than 6% of all light duty vehicles registered in the County.

Marin's local governments have incorporated the acceleration of EV adoption into their Climate Action Plans and are taking steps to integrate EVs into their fleets and facilitate EV adoption by the public. This Strategy lays the path forward to accelerate the use of EVs by both public agencies and community members.

The Strategy provides background information to familiarize the reader with EVs and EV charging terminology; existing EV and EV charging conditions and projections; state and local legislation, policies, and actions aimed at increasing the number of EVs on the road; and barriers to widespread EV adoption. The Strategy then identifies strategies and recommended actions that jurisdictions can take to address these barriers

Key actions include:

- Adopting a reach code that requires EV charging equipment installation for multi-family and non-residential developments above State building code requirements. The number of required 'EV Ready' spaces and chargers should support local EV targets.
- Facilitating the proliferation of EV charging stations in local shopping centers, large workplaces, and on well-traveled corridors by removing permitting obstacles, such as parking minimums or sign ordinances.
- Encouraging community members to drive EVs through awareness campaigns across multiple media platforms and outlets, public outreach, and events.
- Addressing perceived and real barriers to adoption.
- Ensuring equitable access to programs and outreach that includes all income levels and communities of color.

- Participating in regional and coordinated local procurement efforts, outreach campaigns, and planning efforts.
- Piloting cutting-edge EV solutions that showcase new technologies and have the potential to accelerate EV adoption.
- Advocating for and supporting regional, state, and federal legislation, policies, and funding to incentivize and facilitate the widespread availability of EVs and EV charging.
- Committing to achieving a 100% ZEV public agency fleet as technology improves and special-duty vehicles become available. Maintaining a pipeline of priority EV fleet conversions and regularly updating this list.
- Committing to expanding the availability of EV chargers on municipality-owned land and exploring partnerships with third-party vendors to reduce installation costs.



Belvedere, California

Introduction

Goal of the Strategy

The goal of this Strategy is to help Marin communities reduce greenhouse gas (GHG) emissions, lower vehicle operating and fuel costs, and improve air quality by encouraging the use of electric vehicles (EVs) in lieu of driving fossil fuel-powered vehicles and transforming municipal fleets to EVs. Fueling vehicles in Marin offers the potential to use 100% renewable electricity, an environmentally responsible fuel source. The widespread adoption of EVs by 2030 is a critical component of meeting individual jurisdictions' Climate Action Plan (CAP) goals and is an important step in achieving meaningful greenhouse gas reductions. The Strategy also supports the State's goal to require all new light-duty vehicle sales in California to be ZEVs by 2035.

Origins of the Strategy

The content of the Strategy, its guiding principles, and recommended actions, are the result of the planning process undertaken by the Marin Climate and Energy Partnership (MCEP), which is comprised of the eleven cities and towns of Marin, the County of Marin, MCE, the Transportation Authority of Marin, and the Marin Municipal Water District. Established in 2007, MCEP works to efficiently and cost-effectively implement mutual programs outlined in each agency's CAP. Funding for the Strategy was provided by the Transportation Authority of Marin through its Alternative Fuels Program.

Zero-Emission Vehicle Types

The State of California identifies three types of electric vehicles as Zero-Emission Vehicles, or ZEVs, as shown in Table 1 ^[1] In Marin County, most ZEVs are battery electric vehicles (BEVs), comprising two-thirds of the 12,369 ZEVs registered with the California Department of Motor Vehicles (DMV) in Marin County by the end of 2021. Plug-in hybrid electric vehicles (PHEVs) represent about one-third of all ZEVs, and there were 56 fuel cell electric vehicles (FCEVs) registered in Marin County in 2021. This Strategy uses the term electric vehicle (EV) to describe a BEV or PHEV.

[1]

California Energy Commission (2021), <https://www.energy.ca.gov/data-reports/energy-insights/zero-emission-vehicle-and-charger-statistics>. Although plug-in hybrid electric vehicles (PHEVs) have an internal combustion engine and use fossil fuels, the state includes them as zero-emission vehicles. This Strategy similarly includes PHEVs as zero-emission vehicles.

The term “Zero-Emission Vehicle” refers to emissions created from energy used to power the vehicle and does not include emissions generated over the course of the vehicle’s life cycle, including mining, manufacturing, and disposal. Despite these “embodied” or “life cycle” emissions, studies show that ZEVs have lower greenhouse gases over the course of their lifecycles than fossil fuel vehicles. [2] However, the embodied emissions can vary significantly





between different ZEV models, typically based on the size and weight of the vehicle and of the battery.

In addition to supporting the accelerated adoption of electric light, medium, and heavy-duty vehicles, this Strategy also supports the widespread use of electric bikes, scooters, and motorcycles.

[2]

Georg Bieker, “A Global Comparison of the Life-cycle Greenhouse Gas Emissions of Combustion Engine and Electric Passenger Cars,” July 2021.

TABLE 1: Zero-Emission Vehicle Types

Vehicle Type	Abbreviation	Description	Example
Battery Electric Vehicle	BEV	Runs fully on electricity (no internal combustion engine.)	Nissan Leaf 
Plug-In Hybrid Electric Vehicle	PHEV	Can operate on electricity alone but once the electric driving range is depleted, the internal combustion engine extends the driving range.	Ford Escape 
Fuel Cell Electric Vehicle	FCEV	Powered by hydrogen, which is converted to electricity in the fuel cell. Produces no tailpipe emissions, just water vapor and warm air.	Toyota Mirai 
Electric bikes and scooters	e-bike and e-scooter	Electric bikes and scooters are charged by plugging into a standard 110 outlet, and most are fully charged after 4 hours.	Trek e-bike 

Charging Infrastructure

Electric Vehicle Supply Equipment (EVSE) is available at three different power levels (Level 1, 2, and 3). Typical charging rates, applications, and installation for each type of charger are shown in Table 2. Fuel cell EVs charge at a dedicated hydrogen fueling station. Currently, there is one station located on Redwood Boulevard in Strawberry, which provides 67% fossil fuel-derived hydrogen and 33% renewable hydrogen. [3]

[3]

Currently, most hydrogen is produced from natural gas. Electricity can also be used to generate hydrogen through the process of electrolysis. Renewable hydrogen is produced from electricity that comes from renewable resources like solar, wind, geothermal, biomass, and small-scale hydropower. For more information, see <https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis>.



Marin Civic Center, San Rafael

TABLE 2: EV Charger Types

Type	Miles / Charge Time	Typical Applications	Equipment and Installation Costs ^[4]	Example
Level 1	≈5 miles per hour of charging ≈25 miles per hour of charging for an e-bike	Home, workplace, hotels, ferry terminals, and park and ride lots.	\$0 (existing outlet) \$Variable (commercial/ public station)	
Level 2	≈25 miles per hour of charging	Home, workplace, shopping centers, public parking lots	\$1,000-\$2,000 (residential station) \$5,000 - \$15,000 (commercial/ public station)	
Level 3	15 to 45 minutes for an 80% charge	Fast fueling at shopping centers, grocery stores, rest stops, and near restaurants and services	\$50,000+ (commercial station)	

[4]

Installation costs vary due to the need to upgrade electrical panels and/or capacity and the need to trench and/or install conduit from the power source to the charger.

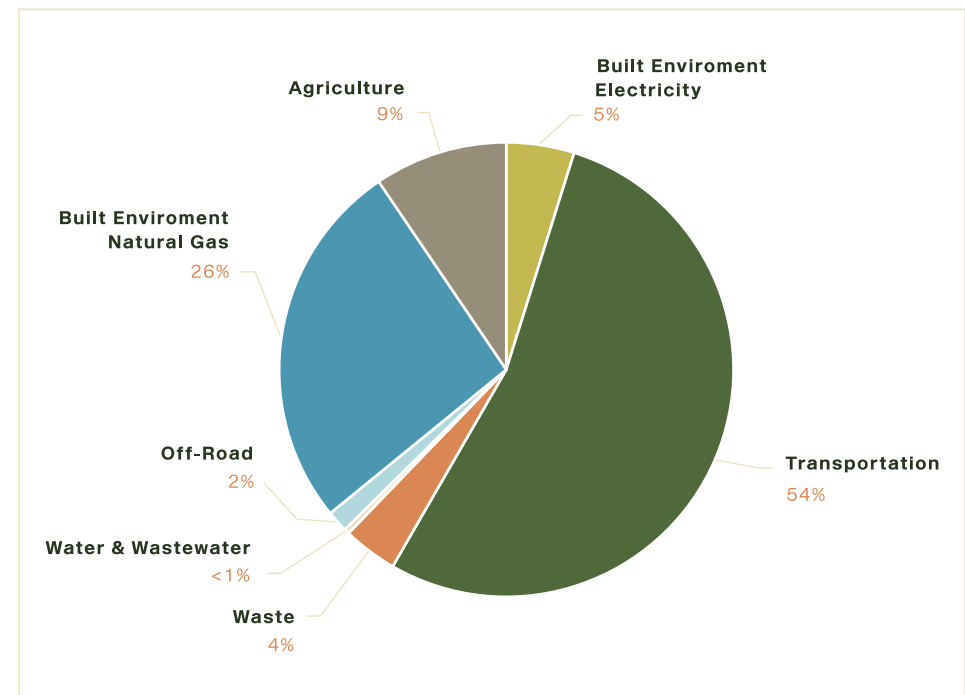
Transportation Emissions

Each year, [MCEP](#) prepares communitywide GHG emissions inventories for every Marin jurisdiction. Emissions are categorized according to eight sectors: Built Environment – Electricity; Built Environment – Natural Gas; Transportation; Off-Road Vehicles and Equipment; Waste; Water; Wastewater; and Agriculture.

The Transportation sector includes more than half of all communitywide emissions in Marin County (Figure 1), and is influenced by a wide range of factors, including vehicle ownership, land use, neighborhood design, housing availability and affordability, fleet composition, and vehicle speeds. This is true for all the individual towns and cities in Marin except Belvedere and Ross, where the Built Environment – Natural Gas sector leads, and the County of Marin, where the Agriculture sector is the largest source of emissions. The inventory represented in Figure 1 shows emissions in 2020, the latest year data for all eight sectors is available.

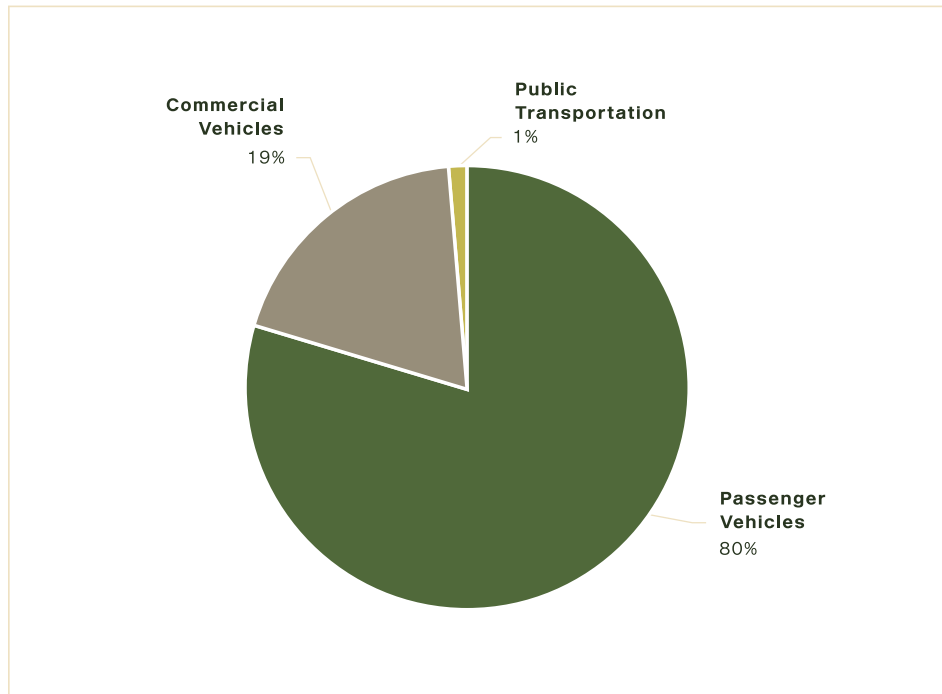
The Transportation sector includes tailpipe emissions from passenger vehicle trips originating and/or ending in Marin, as well as tailpipe emissions generated by medium and heavy-duty vehicles and buses traveling on Marin County roads. The sector

FIGURE 1: Marin Countywide Emissions by Sector, 2020



Source: MCEP

FIGURE 2: Marin Countywide Transportation Emissions by Vehicle Type, 2020



Source: MCEP

includes emissions from Marin Transit and Golden Gate Transit buses and the SMART train as these vehicles travel within Marin County and half of the emissions generated by Golden Gate ferries for trips that serve Marin ferry terminals. As shown in Figure 2, passenger vehicles represent 80% of transportation emissions, while commercial vehicles account for 19% of emissions, and public transportation just 1%.

Emissions from electricity used by EVs are embedded in the Built Environment – Electricity sector and vary according to the power content of electricity and, for plug-in hybrid vehicles, the number of miles driven using the vehicle's electric battery. While the electricity supplied in Marin County is some of the cleanest electricity in the nation, the only way to ensure that an EV is not generating emissions is to charge with MCE Deep Green electricity or a comparable 100% renewable electricity product such as PG&E 100% Solar, in addition to charging when there is ample renewable electricity on the grid, or using electricity being produced or stored on-site via a solar array and battery storage.

State and Regional ZEV Goals, Legislation, and Plans

The State of California has adopted legislation to reduce statewide emissions 40% below 1990 levels by 2030 (Senate Bill 32) and has set longer term goals to reduce emissions 85% below 1990 levels and achieve carbon neutrality by 2045 (Assembly Bill 1279).

To meet these goals, significant reductions in passenger vehicle travel through the use of walking, biking, public transportation, and shared transportation, along with wide-scale adoption of EVs, including e-bikes, and electrification of all types of transportation are required.

The State uses various regulations to reduce transportation emissions including increases in fuel economy standards, promotion of alternatives to vehicles with internal combustion engines (ICEs), and reduction in vehicle miles traveled (VMT) in passenger vehicles.

With the passage of SB 375, California established a planning process that coordinates land use planning, transportation plans, and air quality plans to support meeting its GHG reduction goals. One of the state's priorities is to reduce VMT by encourag-

ing the co-location of housing, jobs, services, and education so that people rely less on personal cars and trucks and more on transit, biking, walking, and micromobility options. Regional long-range transportation plans are required to reduce VMT to meet mandated GHG reductions and focus on the interrelated elements of housing, the economy, transportation, and the environment.

[Plan Bay Area 2050](#) is the Bay Area's regional transportation plan/Sustainable Communities Strategy and is required to meet a 19% reduction in GHG emissions. The plan identifies policies and investments over the next three decades to shape how Bay Area residents get around and to support land use policies that support multimodal transportation options. The transportation strategies outlined in Plan Bay Area 2050 maintain and optimize the existing transportation system, while creating healthy and safe streets and building a next-generation transit network.

SB 743 introduced changes to how transportation impacts are measured through the California Environmental Quality Act (CEQA), requiring new developments to reduce VMT by 15% per capita, reflecting the impact of land use decisions on the transportation system.

Micromobility

Micromobility refers to forms of transportation, human-powered or electric, that can occupy space alongside bicycles. It includes electric scooters and skateboards, docked and dockless shared bikes, and other forms of small, lightweight devices operating at speed typically below 20 mph. Micromobility devices do not have an internal combustion engine.

In addition to changes in mobility, the State has introduced the [Low Carbon Fuel Standard](#), designed to reduce the carbon intensity of transportation fuels in California, and the [Advanced Clean Cars Program](#) establishes fuel efficiency standards that require automobile manufacturers to produce a certain number of ZEVs each year based on the total number of cars sold in California by the manufacturer.

The State has also set specific targets for ZEV adoption. In January 2018, Governor Brown signed Executive Order B-48-18, setting a target of 250,000 electric vehicle chargers and 200 hydrogen fueling stations installed to support 1.5 million ZEVs on California roads by 2025, with a longer-term goal of 5 million ZEVs by 2030.

In September 2020, Governor Newsom issued Executive Order N-79-20, setting the following ZEV targets for California:

- 100% percent of in-state sales of new passenger cars and light-duty trucks to be ZEVs by 2035,
- 100% of medium- and heavy-duty vehicles operating in the State to be ZEVs by 2045 where feasible, and
- 100% zero-emission off-road vehicles and equipment operations by 2035, where feasible.

The California Governor's Office of Business and Economic Development's [California Zero-Emission Vehicle Development Strategy](#) (February 2021) presents a high-level roadmap to achieve these ambitious targets. The Strategy is centered on four market pillars – vehicles, infrastructure, end users, and workforce – and identifies the roles and responsibilities of each public and private market player. The Strategy identifies local governments' roles in permitting, code development and adoption, municipal fleets, planning (e.g., Climate Action Plans and EV Readiness Plans), directional charging signage, and vehicle and infrastructure incentives.

Regionally, the Bay Area Air Quality Management District (“Air District”) has set a target for 1.5 million ZEVs in the Bay Area by 2030 (equivalent to 27% of the 2020 registered vehicle population) and for 90% of vehicles in the Bay Area to be zero emissions by 2050. The Air District released a draft [Bay Area Electric Vehicle Acceleration Plan](#) in March 2021 that encourages local governments to enact EV ready reach codes by 2030, adopt EV charging station permitting and streamlining procedures and policies by 2022, and prioritize and empower low-income and communities of color that are disproportionately impacted by air pollution and climate change. The Air District's Plan details 23 specific actions that local governments can take. These

actions were considered in the development of this Strategy, along with the eleven local government strategies identified in the California Zero-Emission Vehicle Development Strategy discussed above.

Local Climate Action Plan Goals and Targets for ZEVs

The eleven cities and towns in Marin and the County of Marin have adopted Climate Action Plans that set long-term targets to reduce emissions within the communities they serve. Currently, ten of the twelve jurisdictions have adopted ZEV targets for the percentage of passenger vehicles registered in Marin County in their updated CAPs (Table 3) ^[5]. Meeting these ZEV targets is critical to achieving their overall GHG reduction goals for 2030.

[5]

Consistent with the way emissions reductions are calculated, this target applies to Marin-registered vehicles and trips that start and/or end within the jurisdiction.

TABLE 3: Local ZEV Goals

Jurisdiction	GHG Reduction Goal for 2030	ZEV registrations as % of total passenger vehicle registration by 2030
City of Belvedere	40% below 1990 level	35%
Town of Corte Madera	40% below 1990 level	25%
Town of Fairfax	Zero emissions	100%
City of Larkspur	40% below 1990 level	35%
County of Marin	40% below 1990 level (mitigation only)	45%
City of Mill Valley	47% below 1990 level	35%
Town of San Anselmo	45% below 1990 level	25%*
City of San Rafael	40% below 1990 level	25%
City of Sausalito	40% below 1990 level	30%
Town of Tiburon	50% below 1990 level	45%

*The Town of San Anselmo has also adopted a local target of 3,000 ZEVs registered in San Anselmo by 2030.

Existing Conditions

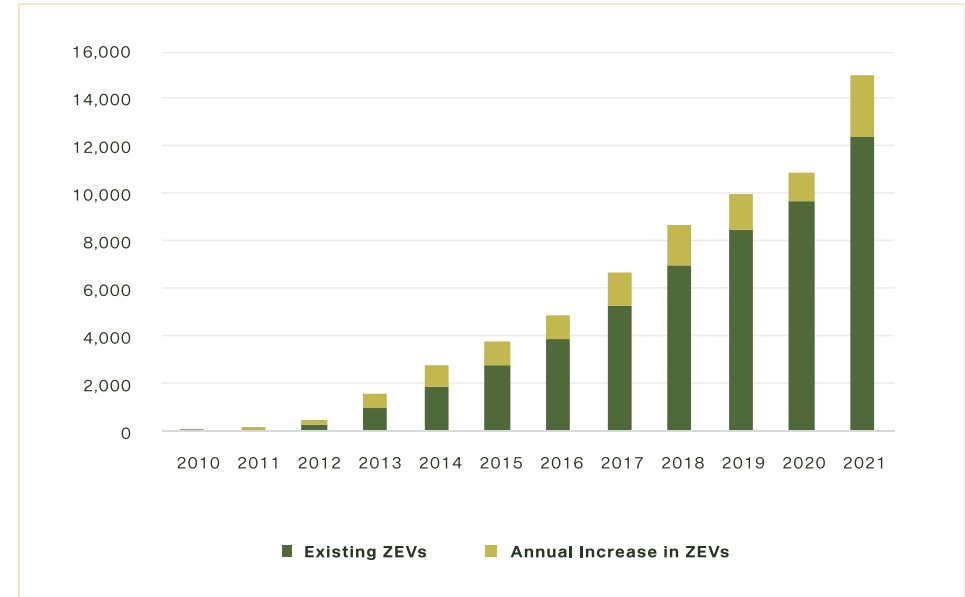
ZEV Adoption and Sales

While California’s ZEV goals are a huge challenge, they also offer an excellent opportunity. ZEVs were California’s number one export in 2020^[6] and approximately 43% of all ZEVs in the US are sold in California.^[7] With over 70,000 shared EV chargers and 45 hydrogen fueling stations, California is the country’s leader in ZEV infrastructure.

California DMV [registration data](#) shows that Marin had 12,369 ZEVs by end of 2021, representing 5.8% of the county’s light-duty vehicles (Figure 3). Of all counties in California, Marin County has one of the highest rates of adoption, second only to Santa Clara County at 6.0%. Within Marin County, ZEV registration rates range from a high of 10.5% for Ross to a low of 4.0% for Novato (Figure 4).

In 2021, BEVs accounted for 66% of all ZEVs registered in Marin County, PHEVs made up nearly 34%, and FCEVs less than 1%. Across the state, ZEVs made up 10.7% of new car sales in Q1-Q2 2021, with Tesla accounting for 47% of ZEV sales and the Model Y being the most popular EV. Auto manufacturers are currently producing 35 BEV models and 38 PHEV models, although availability has been

FIGURE 3: ZEV Registrations in Marin County



Source: MCEP

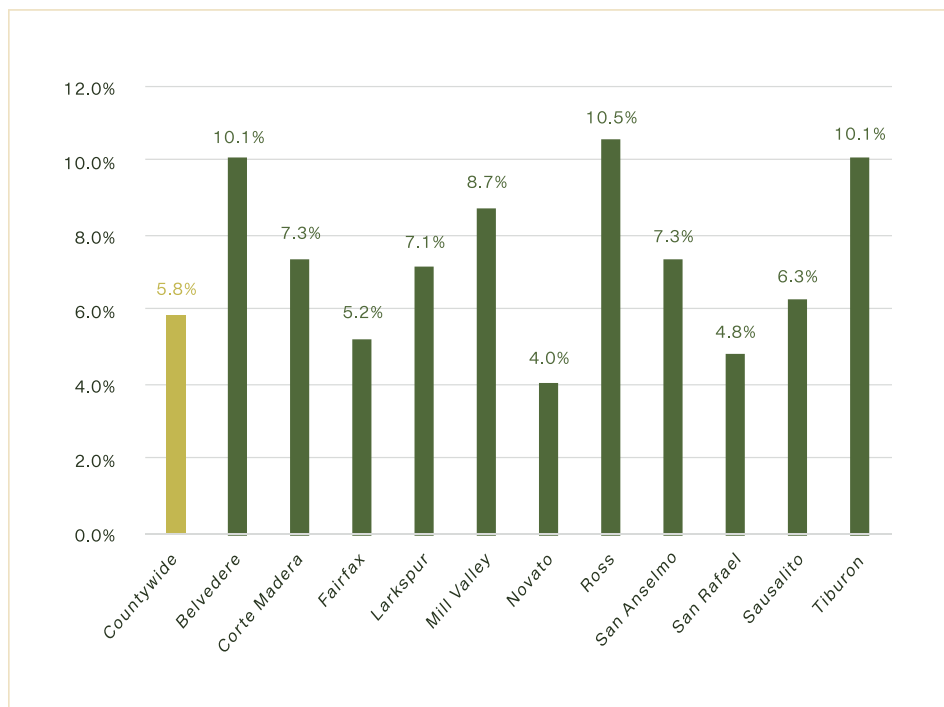
[6]

United States Census Bureau, “State Exports from California,” <https://www.census.gov/foreign-trade/statistics/state/data/ca.html>, accessed August 18, 2021.

[7]

VELOZ, <https://www.veloz.org/ev-market-report/>, accessed August 18, 2021.

FIGURE 4: ZEVs as a Percent of Light-Duty Vehicle Registrations by Jurisdiction by end of 2021



Source: California Energy Commission, Zero Emission Vehicle and Infrastructure Statistics. Note: Data is by zip code and includes unincorporated areas. Belvedere and Tiburon are under one zip code.

limited for many models.^[8] The emergence of new EV models at lower price points, in addition to the inclusion of popular models such as the Ford F-150 pickup truck, present an opportunity for increased conversion. Many automobile manufacturers have also announced plans to phase out and ultimately stop producing internal combustion engine vehicles, some as early as 2025.

It is important to note that EV adoption is significantly higher among Marin's more affluent communities and increasing equitable access to EV programs for lower-income communities in Marin County is a founding principle of this Strategy.

[8]

Drive Clean Bay Area, <https://drivecleanbayarea.org/electric-vehicle-makes-and-models/>, accessed 1/11/22.

While quantitative data does not exist, empirical data suggests that e-bikes and e-scooter adoption is rapidly growing throughout Marin, and they are providing an efficient and credible alternative for many local errands and commutes. Because 57% of daily trip lengths are 5 miles or less in Marin County (and another 20% between 5 and 10 miles),^[9] and because the starting cost of an e-bike is around \$1,000, e-bikes can eliminate greenhouse gas emissions for local trips in a way that is more affordable and accessible for people and families who are not yet able to access EVs. A study by the Transportation Authority of Marin in 2020, [Electric Bicycles in Marin](#), provides a comprehensive overview of the benefits and challenges to e-bike use, the role e-bikes can play as part of the transportation system in Marin County, and what public agencies and private entities can do to encourage their use.

EV Market Projections

For the past seven years, [BloombergNEF](#) has produced a [Long-Term Electric Vehicle Outlook](#) analysis. 2021 marked the first year the company forecasted a major increase in its EV adoption outlook, driven by rising policy support around the globe, increased commitments from automobile manufacturers, new battery technologies and lower expected costs, accelerated investment in infrastructure, and rising

consumer adoption. In its 2022 report, the company projects 23% of new passenger vehicle sales globally will be EVs in 2025, with three-quarters of those sales for BEVs. In that year, approximately 6% of the global passenger vehicle fleet will be EVs. BloombergNEF also asserts that internal combustion engine (ICE) passenger vehicle sales reached their peak in 2017 and now are in “permanent decline.”^[10] Unsubsidized price parity between ICE vehicles will be achieved by the late 2020s for most passenger and commercial end uses. The 2022 report also acknowledges, as one of its five key thematic highlights, the importance of reshaping mobility demand through modal shifts and names the public sector as uniquely positioned to drive demand reductions: “Governments should prioritize investments in these areas, many of which also have concurrent health benefits.”^[11]

In California, the Bay Area Air Quality Management District has developed two potential pathways to reaching its 2050 goal of EVs accounting for 90% of the fleet (or roughly 5 million EVs). Figure 5 shows historic share of EVs in the Bay Area based on DMV data through 2019, then charts two different trajectories (i.e., traditional and expedited) to reaching the 2050 goal. The projections assume EVs achieve cost parity with ICE vehicles in 2024, resulting in varying degrees of impact based on the projection

[9]

Fehr & Pehrs, “[TAM Origin and Destination Report](#),” April 3, 2018.

[10]

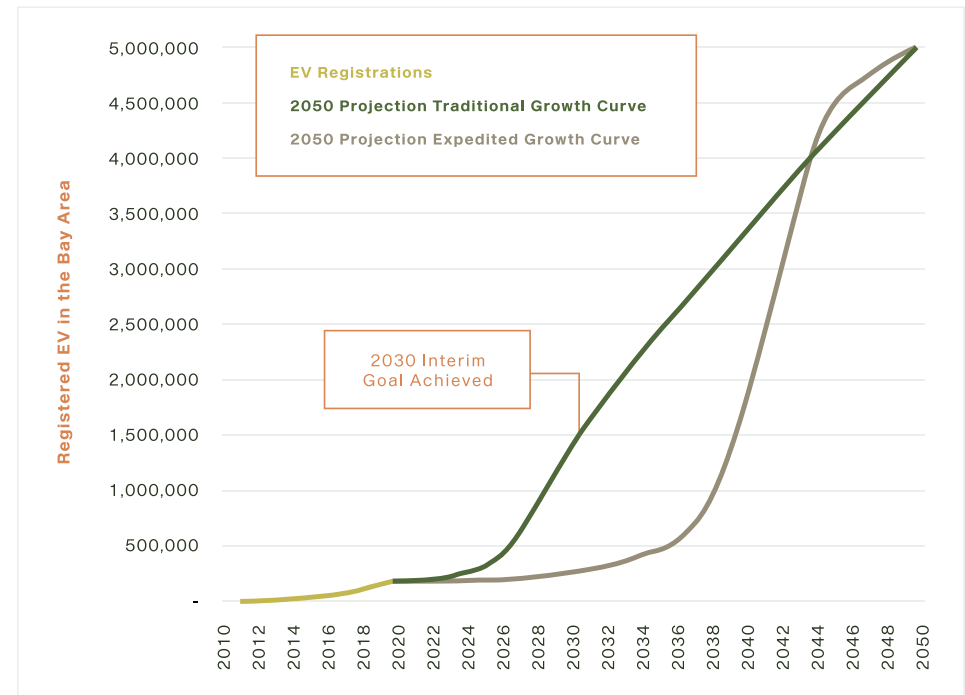
BloombergNEF, [Electric Vehicle Outlook 2022 Executive Summary](#).

[11]

Ibid.

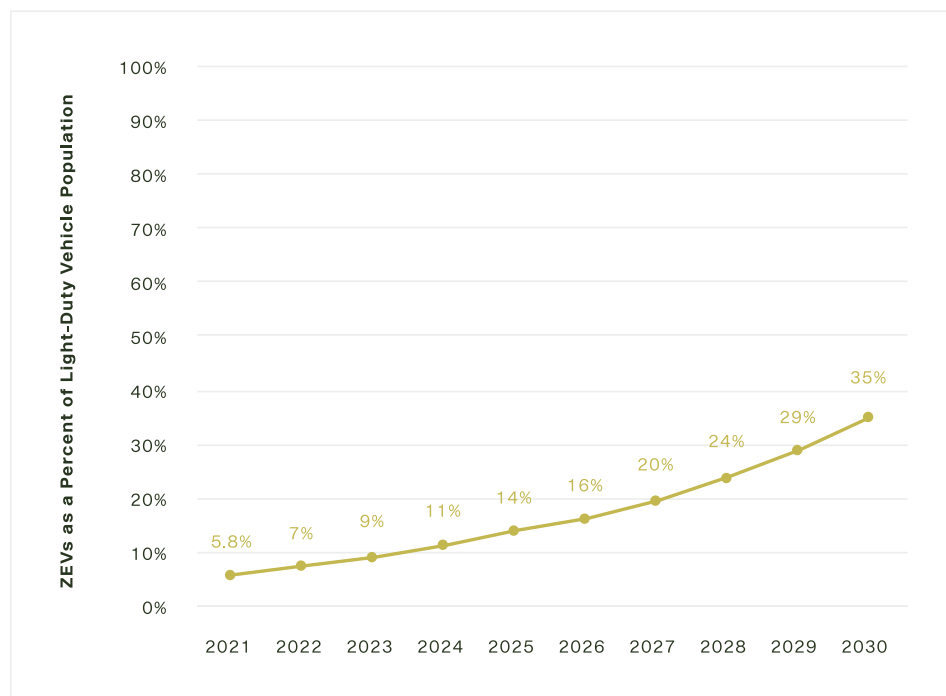
trajectory. The traditional trajectory assumes economic stagnation and only a slight uptick in new EV sales as range anxiety continues to be a large barrier to adoption, and the expedited trajectory assumes consumer demand increases as price outweighs range anxiety. The graph also considers the enactment of a ban on new ICE vehicle sales in 2035, as outlined in Executive Order N-79-20. While these projections use estimates for the actual EV share increases, they show two different paths the Bay Area EV market might take to 2050.

FIGURE 5: Bay Area EVs and Projected Increase to Meet Bay Area 2050 Goal



Source: Bay Area Air Quality District, Bay Area Electric Vehicle Acceleration Plan.

FIGURE 6: Projected Population of Marin EV's to Meet 35% Adoption Target

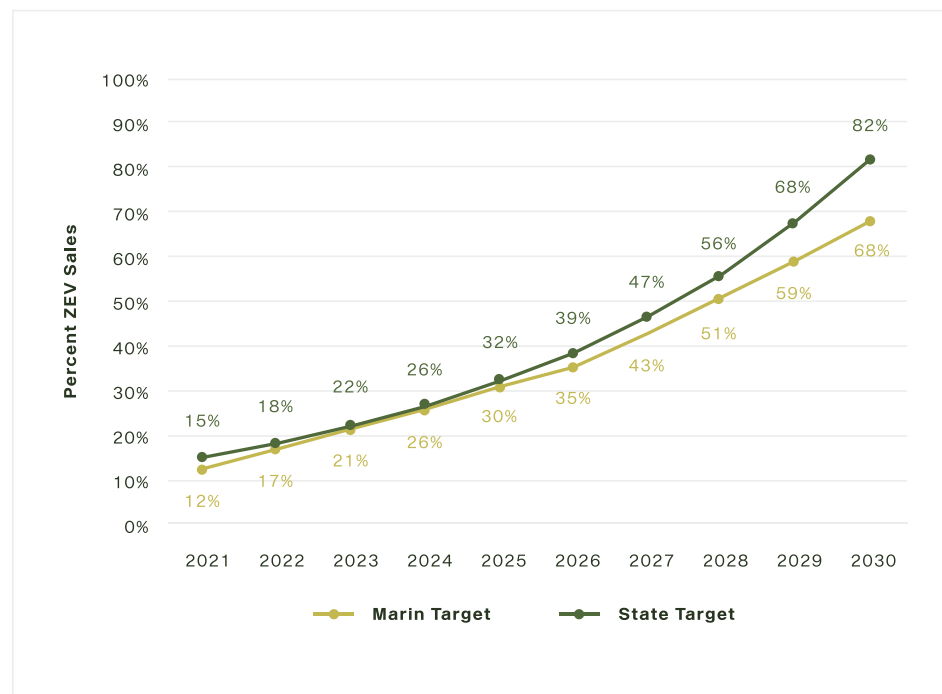


In Marin County, ZEV registrations will need to increase 14% annually to reach a ZEV penetration rate that is 25% of all passenger vehicles registered in Marin by 2030; an annual growth rate of 27% is needed to achieve a 45% adoption rate. Between 2019 and 2021, annual EV growth rates have averaged 21%. Assuming Marin can sustain a 21% EV growth rate, 35% of Marin's light-duty vehicle population will be ZEVs in 2030, as shown in Figure 6.

Figure 7 shows the percent of new ZEV registrations in Marin needed to achieve a 35% adoption rate in 2030. This is compared to Statewide targets for new ZEV sales. The Advanced Clean Cars II rule establishes a year-by-year roadmap so that by 2035 100% of new cars and light trucks sold in California will be ZEVs. The regulation realizes and codifies the light-duty vehicle goals set out in Governor Newsom's [Executive Order N-79-20](#), and establishes an increasing number of ZEVs beginning in model year 2026. Sales of new ZEVs will start with 35% that year, build to 68% in 2030, and reach 100% in 2035. The 2021 data point reflects actual sales, and the 2022-2025 data points are interpolated.

This analysis suggests that ambitious targets are achievable but will most likely require concerted and coordinated efforts among local governments, public agencies, and community partners, as well as a continuing expansion of EV programs and infrastructure that address existing barriers to widespread EV adoption.

FIGURE 7: Percent of New ZEV Registrations Needed to Reach 35% Adoption Target vs. State Sales Target



EV Charging Infrastructure

The California Energy Commission (CEC) tracks the number of public and shared private EV chargers in California counties. Public chargers are located at parking spaces available and accessible to the public. Shared chargers are located at parking spaces designated by a property owner or lessee to be available to employees, tenants, visitors, and residents, such as workplaces and shared parking at multifamily buildings.

According to CEC statistics, there were 739 public and shared private EV chargers in Marin as of January 2022. The majority of these are Level 2 chargers, representing 88% (or 650) of the total number of chargers. In addition, there were 88 Level 3 chargers and one Level 1 charger. Approximately 75% of the chargers were public, and 25% were shared private chargers. This data does not include private EV chargers installed in single family homes. Although the Marin jurisdictions do not track this data in a manner that allows robust analysis and aggregation, anecdotal evidence from Building Department staff indicates that private EV charging installation has been increasing rapidly. The number of private



EV chargers in single family homes is undoubtedly much higher than the number of public and shared private chargers in Marin County.

In recent years there has been a rapid proliferation of Level 3 charging equipment funded by private companies in commercial developments such as shopping centers, including Vintage Oaks in Novato, the Village in Corte Madera, and in Mill Valley. New business models have emerged to install Level 3 charging on commercial properties with leasing revenues for property owners and fees for consumers.

EV Charging Projections

The availability and accessibility of EV chargers is a factor in the number of people who switch to EVs.

^[12] Publicly accessible EV chargers are needed to support the growing number of EV drivers, especially for long-distance trips and for drivers that do not have access to private home chargers.

The [National Renewable Energy Laboratory](#) and the CEC have developed a computer simulation tool, [Electric Vehicle Infrastructure Projection](#) (EVI-Pro), which uses the results of a statewide transportation habits survey to quantify the charging infrastructure needed to ensure that future EV drivers can meet their transportation needs. This analysis

accounts for shifts in vehicle and charging technologies, user demographics, market adoption conditions, and shared use of chargers, as well as travel and charging preferences.

According to EVI-Pro, Marin needs approximately 4,000 charging ports to support the charging needs of 16,518 EVs by 2025 (914 Level 2 public charging ports, 600 Level 2 workplace charging ports, 316 Level 3 public charging ports, and up to 2,204 multi-family charging ports). According to the CEC, there are 551 public and 188 shared private chargers (workplace and multi-family) in Marin County as of March 2022. As shown in Figure 8, the greatest need is for shared private chargers.

An individual or household's need for public charging infrastructure is related to home type, with EV drivers in single-family homes being much more likely to have home charging than those in apartments or multi-unit dwellings. Since EV owners tend to live in single-family homes ^[13], extending the EV market beyond those living in single-family homes will require a substantial expansion of EV charging infrastructure at multi-unit dwellings, workplaces, and in public spaces.

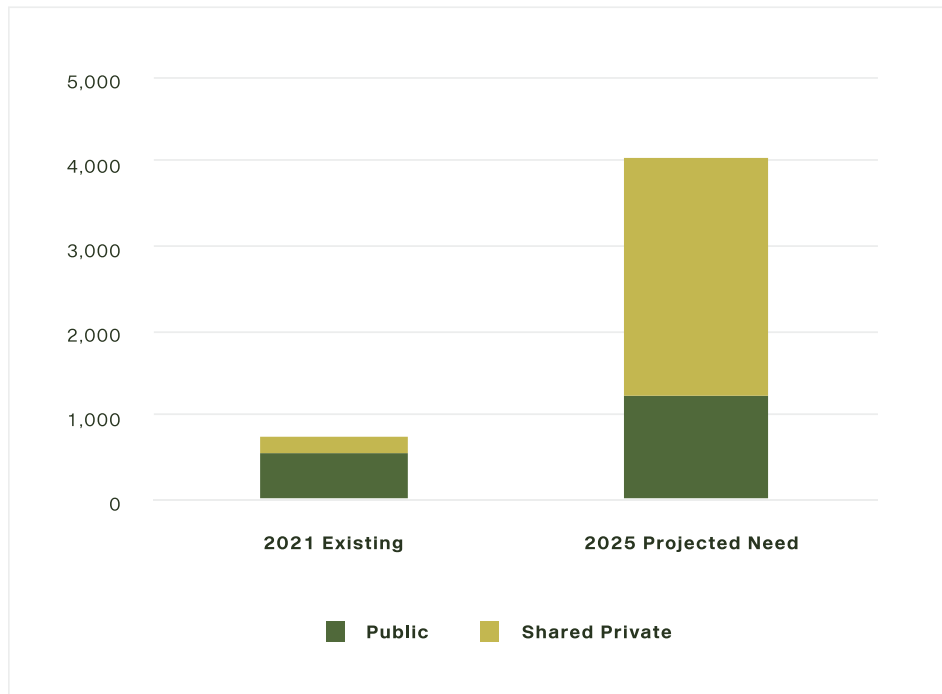
[12]

Hauke Engel, Russell Hensley, Stefan Knupfer, and Shivika Sahdev, McKinsey & Company, 2018, [Charging Ahead: Electric Vehicle Infrastructure Demand](#).

[13]

International Council on Clean Transportation, Quantifying the electric vehicle charging infrastructure gap across U.S. markets, January 2019.

FIGURE 8: Level 2 and Level 3 Chargers



In Marin County, approximately 27% of housing units are in multi-unit dwellings. ^[14] Installing charging infrastructure has been challenging for this segment of the housing stock, requiring EV owners living in multi-unit dwellings to charge their vehicles at public charging stations or work (if available). In addition, long distance driving also requires public charging.

[14]

Department of Finance, [E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2021 with 2010 Census Benchmark](#).

In 2019, TAM prepared the [Marin County Electric Vehicle Charging Station Siting Plan](#) (“Siting Plan”) which identifies opportunity sites for additional EV charging stations in Marin. Locations for Level 2 charging stations included:

- Southern Marin, especially around TAM junction, and in Mill Valley and Strawberry, where there is a limited supply of existing charging stations. Opportunities along frontage roads next to Highway 101, as well as Miller Avenue, Blithedale Avenue, Highway 1, Camino Alto, and other major road corridors.
- Shopping centers such as the Strawberry Shopping Center, The Village at Corte Madera, and Bon Aire Shopping Center in Larkspur, and an expansion of EV charging at Northgate Mall in Terra Linda.
- School parking lots that can be used by students and staff during the day and nearby residents overnight.
- SMART stations.
- Ferry terminals.
- Park and Ride lots.
- Marin City in Southern Marin and the Canal Neighborhood of San Rafael, where increasing EV infrastructure would support equitable EV access and adoption in Marin.



Vintage Oaks Shopping Center, Novato

The Siting Plan also describes priority locations for Level 3 fast charging as identified by [PG&E's Electric Program Investment Charge Program](#). These general locations include Terra Linda, downtown San Rafael, downtown Novato, Sausalito, Point Reyes Station, Larkspur/Corte Madera, and Mill Valley. Public utilities are coordinating closely with private Level 3 charging installations to support the grid upgrades for planned improvements.

Most Marin cities and towns prioritize purchasing and leasing of EVs over internal combustion engine vehicles for their public fleets, even if the electric version is more expensive. Several jurisdictions have transitioned passenger vehicles used for site inspections, code enforcement, police undercover work, off-site meetings, and commuting to EVs. However, these types of vehicles typically make up a small percentage of a municipal fleet. Mission critical and emergency response vehicles and trucks (e.g., police patrol cars) are difficult to convert due to the lack of electric models that can provide the necessary utility. In addition, some specialized heavy-duty public works trucks are used and replaced infrequently. As a greater range of EVs become available, most municipalities have policies – written or otherwise – to electrify their fleet. Table 4 lists EVs and e-bikes in the fleets of the various Marin jurisdictions as of the preparation of this Strategy.

TABLE 4: BEVs and E-Bikes in Marin Jurisdictions' Fleets, 2023

Jurisdiction	BEVs
City of Belvedere	2 passenger cars and 1 e-bike
Town of Corte Madera	3 passenger cars and 1 e-bike
Town of Fairfax	1 passenger car and 1 light truck (on order)
County of Marin	13 passenger cars
City of Larkspur	2 passenger cars
City of Mill Valley	6 passenger cars and electric utility carts
City of Novato	3 passenger cars and 5 e-bikes
Town of Ross	1 passenger car
Town of San Anselmo	3 passenger cars and 2 e-bikes
City of San Rafael	1 passenger vehicle, 3 parking service buggies, 2 pickup trucks, 1 utility vehicle, and 4 e-bikes
City of Sausalito	None
Town of Tiburon	3 passenger cars, 1 e-bike, and 1 utility cart



Public parking lot, San Rafael

Municipal fleets are eligible for a wide range of vehicle rebates from state, regional, and local funding sources. Locally, the Transportation Authority of Marin (TAM) provides funding and technical assistance for Marin's public agencies to electrify their fleet. Currently, [TAM](#) provides matching rebates for vehicles that qualify for a rebate from the [California Clean Vehicle Rebate Program](#). MCE and the Bay Area Air Quality Management District also provide rebates. TAM has prepared a [Toolkit for Electric Vehicles and Charging Infrastructure](#) for Marin public agencies that provides guidance on incorporating EVs into fleets and installing charging infrastructure.

The [Electrification Coalition](#) is a national nonprofit organization that provides service to members of the [Climate Mayors EV Purchasing Collaborative](#). The Coalition is free to join and provides assistance on grant funding, policy, fleet analysis, implementation, and procurement.

EV Charging Stations on Municipal-Owned Land

Nearly all Marin jurisdictions have installed EV chargers on land owned by the jurisdiction, as shown in Table 5. At the time this Strategy was prepared, several jurisdictions had plans in the pipeline to install additional chargers. However, a few jurisdictions have concerns about the cost effectiveness of installing chargers because the revenue generated from charging rarely covers the full cost of installation, subscription fees, electricity, maintenance, and depreciation. Installation costs for trenching and electrical capacity upgrades can be prohibitive.

TAM's Marin County Electric Vehicle Charging Station Siting Plan provides guidance on siting and placement principles for EV charging stations. In 2020, TAM prepared an analysis of public parking lot capacity for EV charging. The study identifies public parking lots in each jurisdiction, their size (small, medium, and large), and power availability based on the observation of nearby streetlights or overhead powerline. The study identifies far more capacity than currently utilized.

As discussed above, TAM's Toolkit for Electric Vehicles and Charging Infrastructure is a great resource

TABLE 5: EV Chargers Installed by Marin Jurisdictions

Jurisdiction	EV Chargers
City of Belvedere	4 ports, Level 2 chargers (City Hall parking lot)
Town of Corte Madera	1 port, Level 2 charger (Town Hall parking lot)
County of Marin	68 Level 2 charging ports at 7 County locations (Civic Center, Marin Center, Health and Wellness Campus, 20 North San Pedro, 1600 Los Gamos, West Marin Service Center, Tomales Fire Station) and 20 Level 2 ports for fleet vehicles
Town of Fairfax	6 ports, Level 2 chargers, some with Level 1 charging (Parkade parking lot) and 1 single-port Level 2 charger with a Level 1 port (Town Hall parking lot)
City of Larkspur	6 ports, Level 2 chargers (Piper Park parking lot and Police Station parking lot)
City of Mill Valley	2 port, Level 2 charger (Hauke Park parking lot)
City of Novato	24 -port, Level 2 chargers (various locations)
Town of Ross	4 ports, Level 2 Chargers (Town hall and Post Office)
Town of San Anselmo	8 ports, Level 2 chargers (Magnolia parking lot) and 2-port, Level 2 charger (Fire Department at Station 19)
City of San Rafael	28-port Level 2 chargers (various locations) and 6-port Level 2 chargers (City staff only)
City of Sausalito	None
Town of Tiburon	2 single-port, Level 2 chargers (Town staff only)

TABLE 6: Fees Charged by Marin Jurisdictions

Location	Pricing
Belvedere City Hall	\$0.25 /kWh
Corte Madera Town Hall	None
County of Marin	\$1/hour for public, \$0.50/hour for employees
Fairfax - Town Hall & Parkade	\$0.50/hour, \$12 max. for every 24 hours
Larkspur - Piper Park	\$1/hour, \$1 minimum
Mill Valley - Hauke Park	\$1/hour
City of Novato	First hour free, \$1.50/hour thereafter with 4-hour max. \$4/hour idle for exceeding 4-hour max.
San Rafael - Public Parking Lots	Free charging with paid parking
San Rafael - City Hall	\$1 per hour in free parking spaces for public, \$2 per hour after 2 hours; \$.50 per hour for employees, \$1 per hour after 2 hours
San Anselmo - Public Parking Lot	\$0.32/kWh and free parking while charging

for public agencies. Both [MCE](#) and [TAM](#) provide combined rebates up to \$6,500 per charging port, exceeding typical installation costs for most projects. [Air District](#) grants are also available.

EV Charging Pricing Policies

EV charging fees in the local region are varied and include both time-based and per kWh pricing structures. Examples of local per kWh fees include Tesla at \$0.28/kWh, San Rafael School District at \$0.23/kWh, and the City of Belvedere at \$0.25/kWh. Time-based EV charging rates vary considerably in Marin, ranging from \$0.50/hour to as much \$3/hour, which also reflects different charging levels. Fees charged by Marin jurisdictions are shown in Table 6.

In order to standardize methodologies used to determine EV charging rates and provide greater transparency for consumers, the California Office of Administrative Law has banned operators of electric vehicle charging stations from charging a time-based fee at Level 2 stations installed after January 1, 2021, and DC Fast Charging stations installed after January 1, 2023. Public agencies are exempt from the new rule.

CALGreen Requirements and Reach Codes in Marin

The California Green Building Standards Code or “CALGreen” (California Code of Regulations, Title 24, Part 11) currently requires EV capable spaces for new residential and non-residential development. “EV capable” means that electrical panel capacity must be allocated and conduit installed for a future Level 2 charger. The property owner would still need to run wiring from the electrical panel and install the charger at the parking space. 2022 CALGreen requirements are as follows for new construction:

- Single family, two-family, and townhouses with attached private garages: one EV capable space for each dwelling unit.
- Multifamily, hotels and motels: 25% of parking spaces must be EV ready with low power Level 2 receptacles; 10% of parking spaces must be EV capable; and 5% of parking spaces in building with 20 or more units must have Level 2 chargers installed. For existing buildings, 10% of new added parking spaces and 10% of altered spaces must be EV capable.
- Non-residential: No EV spaces are required for projects with fewer than 10 parking spaces. Over 10 spaces, four EV capable spaces are generally required for every 25 parking spaces (i.e., 10-25 spaces require four EV capable spaces, 26-50 spaces require eight EV capable spaces, etc.). Over 201 parking spaces, 20% of spaces must be EV capable. Approximately one-quarter of the

EV capable spaces must have EV chargers (depending on total number of spaces).

The County of Marin has developed and adopted a “reach code” that requires EV infrastructure above the base CALGreen code, including EV ready spaces for all new construction. “EV ready” means that wiring and a receptacle needs to be installed in addition to electrical panel capacity. In this case, “EV ready” means the resident could simply plug into a Level 2 charger. In general, the reach code requirements for new construction are as follows:

- Single family, two-family, townhomes with private garages, and ADUs with dedicated parking: one EV ready space.
- Multifamily: 85% of parking spaces are EV ready with low power Level 2 receptacles, and the remaining 15% of parking spaces must have Level 2 EV chargers installed.
- Hotels and motels: 35% of the parking spaces must be EV ready with low power Level 2 receptacles; 10% must be EV capable; and 10% must have level 2 EV chargers installed.
- Non-residential: 20-50% of parking spaces are EV capable depending on the number of spaces, and 7-33% of parking spaces must have EVSE installed depending on the number of spaces (same as CALGreen Tier 1).

For renovations of single family, two-family and townhomes with private garages, an EV ready parking space must be provided if the project is upgrading the main electrical service panel. Multifamily and nonresidential renovations require electrical capacity to be designated for 20% of onsite parking spaces to be Level 2 EV ready, if the service panel is modified. Raceway/conduit must be added for multifamily and nonresidential renovations if the parking lot surface is modified. For more details, see the [County of Marin's 2022 Green Building Model Reach Code and Development](#) webpage.

Permit Streamlining

In 2015, the State passed Assembly Bill 1236 with the objective of providing transparency, certainty, and uniformity in the permitting process for EV charging stations to support the rapid expansion of EV charging stations. AB 1236 requires all local jurisdictions to adopt an ordinance and checklist that provides an expedited, streamlined process for permits for EV charging stations. In 2020, MCEP vetted a streamlined checklist that is now used by several jurisdictions. All Marin jurisdictions have adopted a streamlining ordinance and checklist in compliance with AB 1236.



San Marin Plaza, Novato

Innovative Charging

Innovative charging solutions offer the potential to expand access to charging equipment, reduce site installation costs, and build more resilient communities. Below is a list of several technological advancements and innovative solutions that have the potential to transform the EV charging landscape:

- [Orange](#) provides a payment management system that tracks individual energy usage at shared outlets and chargers, allowing the user to pay the owner for the electricity used.
- Curbside charging on an existing streetlight system can expand charging access for multi-family neighborhoods, such as a project undertaken by the [City of Los Angeles](#).
- Pop-up chargers that rise up from the pavement when activated remotely using a smartphone app.
- Wireless charging that will allow electricity to be transferred from a magnetic coil underneath the pavement to a second magnetic coil fitted to the underside of the vehicle.
- Off-grid solar charging.
- EV batteries that can be used to power homes and businesses in the event of a power outage. The [Ford F-150 Lightning](#) claims it will be able to fully power a home for up to three days on a fully charged battery, and as long as 10 days, if rationing power.
- Bidirectional charging which allows electric vehicles to serve as “batteries on wheels” to send energy back to the grid and strengthen grid reliability. Emerging Vehicle-to-Everything (V2X) technologies can be used to power homes and businesses by using the batteries in electric vehicles when the grid goes down. These mobile energy sources could also be moved to where they’re needed most during power outages, like backing up medical centers, fire stations, and grocery stores.
- Energy management tools for chargers that optimize panel sharing and scheduled charging.

Barriers to EV Adoption

As part of the preparation of this Strategy, MCEP conducted a series of stakeholder interviews with local government staff, nonprofits, regional agencies, and community leaders to identify barriers to EV adoption. These, combined with selected barriers identified in the Bay Area Air Quality Management District's 'Bay Area Electric Vehicle Acceleration Plan', are listed in Table 7. The recommended strategies in the following section are designed to address these barriers to the greatest extent possible.

Recommended EV Acceleration Strategies and Actions

The following strategies represent an overall approach to addressing the barriers to EV adoption, along with the universe of local actions recommended as part of this EV Acceleration Strategy.



Fire Chief Darrin White and Administrative Analyst Thomas Wong, City of San Rafael

TABLE 7: Barriers to EV Adoption

Vehicle Technology	<ul style="list-style-type: none"> • EV range • Battery degradation (especially in the used EV market) • Lack of diversity in vehicle types (light/heavy duty trucks, police pursuit vehicles) and price points • Lack of vehicle availability
Charging	<ul style="list-style-type: none"> • Not enough publicly accessible charging locations, both Level 2 and 3 • Cost to install chargers, especially for trenching and getting electricity to site • Distribution capacity or connectivity in certain locations • Not enough wayfinding signage for EV charging locations • Difficult to retrofit existing multi-family buildings for EV chargers and lack of parking spaces for EVs • EV charging cost allocation to residents at multi-family buildings can be complicated with electricity meters • Cost and effort to upgrade electrical panel/install Level 2 charger at home • Reliability of public and shared private chargers
Economics	<ul style="list-style-type: none"> • Higher initial purchase or lease price of EVs compared to internal combustion engine vehicles • Complicated incentives (vehicles and EV chargers) • Revenue from public EV chargers does not cover cost of subscription, maintenance, electricity, and depreciation
Perception and Behavior	<ul style="list-style-type: none"> • Misinformation about EV models, range, charging, etc. • Resistance to change/fear of the unknown • Lack of EV knowledge at car dealerships • Lack of knowledge about best times to charge
E-bikes and E-scooters	<ul style="list-style-type: none"> • Higher purchase price • Limited rebates and incentives • Lack of secure parking • Lack of safe, protected cycling infrastructure

TABLE 8: Strategies to Address Barriers to EV Adoption

Barrier	Strategy
Vehicle Technology	<ul style="list-style-type: none"> • Support statewide actions to clean the vehicle fleet including increasing ZEV manufacturing and vehicle availability. • Pilot new technologies in municipal fleets to showcase new technologies, including bidirectional charging. • Convert public agency municipal fleets to 100% ZEV, when and where feasible. • Advocate for, support, and utilize regional, state, and federal funding to electrify public fleets.
Charging	<ul style="list-style-type: none"> • Adopt local policies that facilitate EV charging installations through reach codes, reduced parking requirements, etc. • Encourage regional, state, and federal funding to support local EV charging installations at multi-family residential developments and single family residential with significant upgrade costs. • Commit to maintaining a pipeline of priority EV charging installations and EV fleet conversions and commit to regular updates of these project lists, either as part of an adopted capital improvement plan, or other publicly available document. • Commit to reducing barriers in procurement and EV charging installations by participating in local joint procurement efforts and coordinated EV charging installations, fleet purchases, and outreach activities. • Explore bidirectional charging equipment.
Economics	<ul style="list-style-type: none"> • Advocate for, and support regional, state, and federal funding action to support local EV charging installations and electrify public fleets. • Support statewide and federal actions to support streamlined incentives and rebates at point of sale or other mechanisms to identify the true cost of vehicle ownership. • Support regional and state actions that ensure all income levels have access to EV technology.
Perception and Behavior	<ul style="list-style-type: none"> • Support coordinated regional or statewide actions to address public concerns including through e-bike share, public utilities, and MCE information on EV rates, TNC (Uber/Lyft) transition to EVs and streamlined information on EV benefits.
E-bikes and E-scooters*	<ul style="list-style-type: none"> • Promote available rebates and advocate for regional, state, and federal funding. • Develop e-bike support facilities, including chargers and secure lockers. • Incorporate e-bikes into municipal fleets.

*For additional strategies, see Transportation Authority of Marin [Electric Bicycle Bicycles in Marin](#) (September 2020).

The following actions build on the overarching strategies identified in Table 8. The actions are grouped into general themes to guide implementation of the Strategy. Actions listed under the heading Increase Municipal Fleet Electrification are geared to reducing emissions from local government operations, while all other actions are designed to reduce community emissions.

In order to accelerate EV adoption across the County, local jurisdictions are encouraged to identify and prioritize specific actions from this list for implementation. Appendix A contains a work plan template that could be used for this purpose.

Conduct Robust Community Outreach and Education

- OE-1** Conduct EV outreach and education utilizing City/Town newsletters, social media, traditional media, websites, webinars, and events.
- OE-2** Work with other jurisdictions to develop, implement, and support countywide EV acceleration marketing campaigns that address barriers to EV adoption and focus on the benefits of tran-

sitioning to clean, low-carbon transportation.

- OE-3** Support consumer awareness programs such as ride-and-drives and targeted outreach.
- OE-4** Promote the use of existing EV, e-bike, and charging infrastructure rebates, incentives, and technical support for multi-family development and workplaces.

Accelerate Public Charging Infrastructure

- PC-1** Update municipal capital improvement project plans to identify locations for public EV charging installations, including cost and time-frame for advancing installations.
 - a. Maintain an updated list of proposed EV charging infrastructure projects and indicate priority projects to advance.
 - b. Include EV charging installations in planning process for new public facilities and coordinate early with funding agencies to maximize funding opportunities and leveraging of local funds.

- PC-2** Direct municipal investment in EV charging infrastructure to frequently used municipal properties, prioritizing locations at high-use community centers and near multifamily buildings.
- PC-3** Adopt comprehensive building standards and reach codes that facilitate the transition to EVs, micro-mobility, and reduced car dependence, and ensure new construction can meet future demand to avoid unnecessary retrofitting costs. Continue to work with other Marin jurisdictions to develop model reach codes for EV charging requirements that go beyond State building code requirements.
- PC-4** Coordinate with local school districts to identify and plan for EV charging installations at school campuses to support workers and students. Promote access to overnight chargers to support neighbors' use of EVs.
- PC-5** Ensure equitable access to public EV charging infrastructure in low-income and/or underserved communities.
- PC-6** Utilize available assistance for municipal EV charging site analysis, equipment selection, financing, and installation.
- PC-7** Work with other Marin jurisdictions to develop a countywide model pricing policy for public charging that recovers operational/depreciation costs and encourages user turnover.
- PC-8** Identify electric bike support facilities, including Level 1 charging and lockers.
- PC-9** Coordinate with local public utilities to prepare the grid for more on-demand and consider the benefits of reverse charging.
- PC-10** Engage large employers and multifamily property owners to encourage EV charging infrastructure deployment.
- PC-11** Explore reducing parking requirements beyond current State law in exchange for EV charging infrastructure installation for new development.
- PC-12** Consider partnering with EV charging vendors to identify potential City/Town-owned locations for EV chargers that may be installed at a reduced cost. Include reliability requirements in any such agreements.

PC-13 Explore innovative opportunities to expand the City/Town EV charging network, such as wireless charging or curbside charging equipment.

PC-14 Support mobility hubs that co-locate electric bike charging facilities and micro-mobility services at existing transit locations including bus stops with electrical access.

PC-15 Consider revising the Town/City's sign ordinance to allow EV chargers that display advertising.

PC-16 Promote and/or incentivize use of 100% renewable energy for public charging sites.

Increase Municipal Fleet Electrification

MF-1 Adopt a model EV fleet replacement policy with the goal to convert 100% of municipal fleets to EVs by 2030.

MF-2 Develop a Fleet Replacement Plan that includes updating existing fleet management tracking, identifies vehicles with short haul or existing available ZEV replacement, a time-frame for replacement, and funding require-

ments to convert the public fleet to 100% ZEV, inclusive of anticipated charging needs to support fleet conversion. Consider bidirectional charging capability and lifecycle costs.

MF-3 Identify a fleet manager responsible for tracking and monitoring fleet procurement and coordinating with funding agencies for ZEV opportunities on an annual basis.

MF-4 Install municipal chargers in anticipation of 100% City/Town ZEV fleet.

MF-5 Identify opportunities for fleet conversion and charging infrastructure in the Capital improvement Plan (or other publicly available plan) and commit to implementation.

MF-6 Identify local fire and police conversion opportunities for mission critical and non-emergency fleet vehicles.

MF-7 Incorporate electric bicycles in the City/Town fleet, potentially replacing the use of other vehicles.

MF-8 Apply decals to City/Town EVs to promote the jurisdiction's use of ZEVs that utilize 100% renewable electricity.

MF-9 Support or advocate for countywide assistance to jurisdictions for fleet replacement analysis, purchase, and financing.

MF-10 Identify potential pilot projects to test new technology and demonstrate leadership in the conversion to EVs, such as bidirectional charging opportunities.

MF-11 Issue press releases on municipal EV purchases to encourage wider community EV adoption.

Support and Advocate for Policy and Funding that Accelerates EV Adoption

PL-1 Support and advocate for EV programs that focus investment in low-income and/or underserved communities.

PL-2 Support and/or advocate for increased funding for EV needs, including for emerging technologies, from regional, state, and federal funding programs.

PL-3 Consider revisions to procurement policies to allow for joint procurements for technical assistance, engineering, vehicles, and charging equipment across county jurisdictions and special districts including fire, police, and schools.

PL-4 Support and/or advocate for EV programs that provide equitable access to EVs and EV charging infrastructure rebates and incentives, such as deeper discounts and for income-qualified participants and Equity Priority Communities ^[15] or neighborhoods. This can include buy-back programs and vehicle replacement programs targeted to older polluting vehicles.

PL-5 Support and/or advocate for regional or state grants that provide rebates or incentives to lower the cost of single-family home EV charger installations.

[15]

Equity Priority Communities are census tracts that have a significant concentration of underserved populations, such as households with low incomes and people of color, as identified by the Metropolitan Transportation Commission. For more information see <https://mtc.ca.gov/planning/transportation/access-equity-mobility/equity-priority-communities>.

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Appendix A: Work Plan Template

The following work plan template can be used by jurisdiction to identify and prioritize actions within the Marin Countywide EV Acceleration Strategy that the jurisdiction will undertake. The headings included in the template are defined as follows:

Action ID:

Refers to the actions listed in the Recommended Actions section that have been selected by the jurisdiction for implementation.

Priority:

Actions are categorized as high, medium, and low priority to assist staff in prioritizing the most impactful and/or achievable actions.

Department:

The lead department which is responsible for implementing the action. Supporting departments may also be identified.

Timeframe:

The year by which an action should be effective by year's end. For an action to be effective, the neces-

sary programs and efforts should be active, and any infrastructure or other capital improvements should be in place. Once effective, many actions will continue through 2030, so they do not have end dates. Time frames for effectively setting up the actions may be described qualitatively as follows:

- Ongoing (continuation of an action that has been implemented since 2023)
- Near-Term (by 2025)
- Mid-Term (by 2027)
- Long-Term (by 2030)

Staff Time:

The estimated cost to the City/Town (in staff hours) to complete implementation of the action, identified as follows:

- Low (less than 80 hours)
- Medium (80–500 hours)
- High (more than 500 hours)

Funding Sources:

Actual and potential funding sources may include the General Fund, fee revenue, rebates, grants, and other agencies.

A-2

Action ID	Priority	Department	Timeframe	Staff Time	Funding Sources

Appendix B: Guiding Principles

The following principles served as the foundation for decision-making during the development of this Strategy and are intended to guide implementation efforts:

1. Align with and support local climate action plans.
2. Provide equitable access to EV programs and strive for equitable outcomes
3. Coordinate countywide for consistency, efficiency, and cost-effectiveness of program implementation.
4. Track and measure progress of EV Strategy actions and adoption rates.
5. Strive to capture local economic co-benefits whenever possible.
6. Focus government actions on those that most efficiently utilize public funds and resources.
7. Leverage regional, state, and federal funds to support EV deployment in Marin County.
6. Support acceleration of EV sales and charger installation by the private market.



Design:

Cole Short Design

www.colehshort.com



Electric Vehicle Acceleration Strategy Workplan

DRAFT September 5, 2023

Action ID	Action	Status	Department	Timeframe	Staff Time
OE-1	Conduct EV outreach and education utilizing City/Town newsletters, social media, traditional media, websites, webinars, and events.	Current Practice	Sustainability Digital Services	Near-Term (by 2025)	Low (less than 80 hours)
OE-2	Work with other jurisdictions to develop, implement, and support countywide EV acceleration marketing campaigns that address barriers to EV adoption and focus on the benefits of transitioning to clean, low-carbon transportation.	Current Practice	Sustainability Digital Services	Near-Term (by 2025)	
OE-3	Support consumer awareness programs such as ride-and-drives and targeted outreach.	Current Practice	Sustainability	Near-Term (by 2025)	Low (less than 80 hours)
OE-4	Promote the use of existing EV, e-bike, and charging infrastructure rebates, incentives, and technical support for multi-family development and workplaces.	Current Practice	Sustainability Community Development	Near-Term (by 2025)	Low (less than 80 hours)
PC-1	Update municipal capital improvement project plans to identify locations for public EV charging installations, including cost and timeframe for advancing installations. a. Maintain an updated list of proposed EV charging infrastructure projects and indicate priority projects to advance. b. Include EV charging installations in planning process for new public facilities and coordinate early with funding agencies to maximize funding opportunities and leveraging of local funds.	New	Sustainability Public Works Parking	Near-Term (by 2025)	Low (less than 80 hours)
PC-2	Direct municipal investment in EV charging infrastructure to frequently used municipal properties, prioritizing locations at high-use community centers and near multifamily buildings.	New	Sustainability Public Works Parking	Near-Term (by 2025)	Low (less than 80 hours)

Action ID	Action	Status	Department	Timeframe	Staff Time
PC-3	Adopt comprehensive building standards and reach codes that facilitate the transition to EVs, micro-mobility, and reduced car dependence, and ensure new construction can meet future demand to avoid unnecessary retrofitting costs. Work with other Marin jurisdictions to develop a model reach code for EV charging requirements that goes beyond State building code requirements.	Complete	Community Development	Near-Term (by 2025)	Low (less than 80 hours)
PC-5	Ensure equitable access to public EV charging infrastructure in low-income and/or underserved communities.	New	Sustainability Public Works Parking	Near-Term (by 2025)	Low (less than 80 hours)
PC-6	Utilize available assistance for municipal EV charging site analysis, equipment selection, financing, and installation.	Current Practice	Sustainability Public Works Parking	Near-Term (by 2025)	Low (less than 80 hours)
PC-9	Coordinate with local public utilities to prepare the grid for more on-demand and consider the benefits of reverse charging.	New	Sustainability	Near-Term (by 2025)	Low (less than 80 hours)
PC-10	Engage large employers and multifamily property owners to encourage EV charging infrastructure deployment.	New	Sustainability	Near-Term (by 2025)	Low (less than 80 hours)
PC-12	Consider partnering with EV charging vendors to identify potential City/Town-owned locations for EV chargers that may be installed at a reduced cost. Include reliability requirements in any such agreements.	New	Sustainability Public Works Parking	Near-Term (by 2025)	Low (less than 80 hours)
PC-16	Promote and/or incentivize use of 100% renewable energy for public charging sites.	Current Practice	Sustainability	Near-Term (by 2025)	Low (less than 80 hours)

Action ID	Action	Status	Department	Timeframe	Staff Time
MF-2	Develop a Fleet Replacement Plan that includes updating existing fleet management tracking, identifies vehicles with short haul or existing available ZEV replacement, a timeframe for replacement, and funding requirements to convert the public fleet to 100% ZEV, inclusive of anticipated charging needs to support fleet conversion. Consider bidirectional charging capability and lifecycle costs.	New	Sustainability Public Works Finance	Near-Term (by 2025)	Medium (80-500 hours)
MF-3	Identify a fleet manager responsible for tracking and monitoring fleet procurement and coordinating with funding agencies for ZEV opportunities on an annual basis.	Current Practice	Sustainability Public Works Finance	Near-Term (by 2025)	Low (less than 80 hours)
MF-6	Identify local fire and police conversion opportunities for mission critical and non-emergency fleet vehicles.	New	Sustainability Public Works Finance Police & Fire	Near-Term (by 2025)	Medium (80-500 hours)
MF-9	Support or advocate for countywide assistance to jurisdictions for fleet replacement analysis, purchase, and financing.	Current Practice	Sustainability	Near-Term (by 2025)	Low (less than 80 hours)
MF-11	Issue press releases on municipal EV purchases to encourage wider community EV adoption.	New	Sustainability Digital Services	Near-Term (by 2025)	Low (less than 80 hours)
PL-1	Support and advocate for EV programs that focus investment in low-income and/or underserved communities.	Current Practice	Sustainability	Near-Term (by 2025)	Low (less than 80 hours)
PL-3	Consider revisions to procurement policies to allow for joint procurements for technical assistance, engineering, vehicles, and charging equipment across county jurisdictions and special districts including fire, police, and schools.	New	Sustainability	Near-Term (by 2025)	Low (less than 80 hours)