ELECTRIC VEHICLE ACTION PLAN

CITY OF MOUNTAIN VIEW

DECEMBER 2021

ACKNOWLEDGEMENTS

This Electric Vehicle Action Plan was developed with assistance from the following individuals:

City Manager's Office
Steve Attinger, Sustainability Coordinator
Lauren Anderson, Sustainability Analyst II
Nancy Ducos, Community Outreach Coordinator
Sarah Lund, Sustainability Analyst II
Megan Schmiesing, Climate Corps Fellow
Lenka Wright, Chief Communications Officer

Community Development Department
John Carr, Senior Building Inspector
Soroush Aboutalebi, Assistant Planner

Community Services Department
Susannah Greenwood, Marketing Outreach Coordinator

Public Works Department
Erin Brewster, Solid Waste Analyst II
Damian Skinner, Assistant Public Works Director
Ria Lo, Transportation Manager

Silicon Valley Clean Energy
Zoe Elizabeth, Manager of Energy Services
Justin Zagunis, Manager of Decarbonization and Grid Innovation Programs
Rebecca Fang, Data Analyst
Peyton Parks, Energy Services Lead

TABLE OF CONTENTS

TERMS AND ABBREVIATIONS

AVs
Autonomous vehicles, also called driverless vehicles, operate and perform necessary functions without any human intervention.

CAP
Climate Action Plan.

CO2e
Carbon dioxide equivalent, a metric used to compare the emissions from various greenhouse gases based on their global-warming potential.

Commute Shed
A commute shed (or commuter shed) is the geographical area where most of an area's employees reside. This captures the broader region where most commute trips to Mountain View originate.

CPR (Climate Protection Roadmap)
The City of Mountain View Climate Protection Roadmap, a CAP adopted in 2015 that identifies strategies and mechanisms to reduce communitywide greenhouse gas emissions 80% by 2050.

DC Fast Charging (DCFC)
Direct current fast charging, or Level 3 charging.

DTNZ
Driving to Net Zero, a multi-jurisdictional project that provides resources to local governments who are seeking support in the deployment of plug-in electric vehicles (PEVs) and charging infrastructure.

EVSE
Electric vehicle supply equipment, which encompasses the conductors, the electric vehicle connectors, attachment plugs, and all other fittings, devices, and power outlets installed to deliver energy to an electric vehicle.

GHG
Greenhouse gas, a gas that contributes to the greenhouse effect by absorbing infrared radiation.

ICE
Internal combustion engine, or an engine that generates power by the burning of gasoline, oil, or other fuel with air inside the engine.

LCFS
California's Low Carbon Fuel Standard is a regulation designed to reduce greenhouse gas emissions by reducing the carbon intensity of transportation fuel sources.

MOCAP
Municipal Operations Climate Action Plan, a 2015 plan that identifies strategies and actions to reduce municipal operations greenhouse gas emissions 80% by 2050.

MUD
Multi-unit dwelling.

SAP-4
Sustainability Action Plan 4, Mountain View's three-year plan (for Fiscal Years 2019-20 through 2021-22) to operationalize actions related to the City's sustainability goals.

SEVI
Socioeconomic Vulnerability Index describes the relative socioeconomic characteristics of communities based on five indicators: educational attainment, housing burden, linguistic isolation, poverty, and unemployment.

SVCE
Silicon Valley Clean Energy, Mountain View's default Community Choice Energy electricity provider.

SVTEC
Silicon Valley Transportation Electrification Clearinghouse is a regional stakeholder group of EV and EV charging companies, local agencies, and employers that are interested in promoting EV adoption in fleets and workplace charging for employees.

VMT
Vehicle miles traveled, a metric used in transportation planning to measure the amount of travel for all vehicles in a geographic region over a given period of time.

ZEV
Zero emissions vehicle, defined by California as vehicles without tailpipe emissions. This includes both fully electric vehicles and hydrogen fuel cell vehicles.

EXECUTIVE SUMMARY

In 2009, the City of Mountain View adopted a goal to reduce greenhouse gas (GHG) emissions 80% below 2005 levels by 2050. The City Council has since added GHG reduction targets at five-year intervals and adopted a goal of becoming carbon-neutral by 2045.

Electric vehicles (EVs) will play a critical role in achieving the City's GHG reduction goals. In 2019, 65% of Mountain View's emissions were from transportation, and 79% of transportation emissions were from personal vehicles. Mountain View's approach to decarbonizing the transportation sector focuses on first reducing vehicle use and then electrifying the remaining vehicles on the road. Other City plans and projects focus on eliminating vehicle trips through land use and telecommuting and encouraging people to walk, bike, or take transit instead of driving. This Electric Vehicle Action Plan (EVAP) focuses on electrifying personal transportation.

More people are transitioning to electric vehicles (EVs) than ever before. Between 2018 and 2020, the number of EV registrations in Mountain View increased by 24%. EVs accounted for about 7.5% of registered vehicles by the end of 2020. Despite the growing EV market, many obstacles still prevent people from driving EVs. Affordability, range, and charging availability continue to be barriers to widespread EV adoption. Residents in low-income neighborhoods and communities of color have less access to the benefits of EVs, while those in wealthier neighborhoods have more charging access, higher rates of EV ownership, and more participation in financial incentive programs.

Deployment of public charging infrastructure has not kept pace with the region's rapid EV adoption. Meeting projected demand will require more Level 3 DC fast charging, more workplace charging at small and medium-sized businesses, and a combination of strategies to increase charging access in multi-unit dwellings (MUDs).

Mountain View can support equitable EV adoption through a combination of policies, programs, and infrastructure. Through these actions, the City aims to create a decarbonized system that supports equitable access to the benefits of clean transportation. The actions recommended within the EVAP are summarized below. These actions will be integrated into future planning, programming, and outreach.

A. PLANNING AND POLICY

A1 INTEGRATE EVS AND ELECTRIC MOBILITY DEVICES INTO CLIMATE ACTION AND SUSTAINABILITY PLANNING

- Develop an Electric Vehicle Action Plan identifying strategies, policies, and programs to support EV adoption and EV infrastructure deployment (T7.4)
- Identify programs, policies, and infrastructure projects that support EV Action Plan goals and integrate into future SAP planning processes
- Include EVs, e-bikes, and electric micromobility devices as part of the transportation section of CAP update (T1.5)
- Develop EV adoption targets as part of CAP update

A2 ENSURE ZONING REGULATIONS SUPPORT EV CHARGER DEPLOYMENT

- Review the Countywide “Driving to Net Zero” study and propose any zoning changes recommended by staff (T7.11)

A3 DEVELOP A FEE STRUCTURE THAT ENCOURAGES CHARGING AND MAINTAINS COST RECOVERY

- Evaluate pricing for EV charging at City-owned EV chargers (T7.2)
- Develop framework for ongoing analysis and adjustment of fees to maintain cost recovery, incentivize turnover, and improve affordability for low-income EV drivers
- Pilot policies such as waiving overstay fees to support overnight charging for residents and discounted charging rates for qualified low-income customers
- Determine appropriate routing of revenue to cover electricity costs or maintenance

A4 DEVELOP AN EV PARKING ENFORCEMENT STRATEGY

- Amend City Code to allow the City to designate EV charging spaces
- Adopt appropriate enforcement policy in consultation with departments
- Ensure that enforcement occurs throughout the City equitably in areas where EV parking restrictions exist, without over-surveilling areas where historically targeted communities reside or congregate

A5 ENCOURAGE ELECTRIFICATION OF SHARED MOBILITY PROGRAMS

- Continue to pursue shared e-bike and e-scooter services (T3.2 and T3.3)
- Expand public DCFC infrastructure to support electrification of ride-hailing vehicles
- Encourage new multi-family residential developments to include EV car share
- Explore public-private partnerships to support EV car share in the community

A6 ENSURE EQUITABLE ACCESS TO ELECTRIC MOBILITY OPTIONS

- Continue to ensure new EV charging infrastructure is accessible for those with different mobility needs
- Pursue discounts and/or subsidies for income-qualified customers for all shared electric mobility costs
- Work with vendors to develop accessible payment strategies for electric mobility options and charging infrastructure

A7 MONITOR TRENDS IN THE AV INDUSTRY AND EVALUATE OPPORTUNITIES TO ELECTRIFY AVS

- Monitor trends in the AV industry and evaluate opportunities to ensure AV deployment complements the City's climate goals
- Support policies that mandate or incentivize the electrification of AVs
- Designate EVSE for AVs

B. PUBLIC CHARGING INFRASTRUCTURE

B1 INSTALL PUBLIC EV CHARGING INFRASTRUCTURE AT CITY FACILITIES

- Add additional EV chargers to downtown parking garages, leveraging BAAQMD grant funds (T7.3)
- Evaluate opportunities to add EV chargers at City facilities and determine spending plan for $250,000 Council allocation (T7.5)
- Install additional EV chargers as necessary to support public, employee, and fleet charging at City facilities (T7.10)
- Evaluate vendor options for existing EV chargers at City facilities (T7.6)
- Identify roles and responsibilities for EV charger installation and operation

B2 DEVELOP GUIDANCE FOR CHARGING STATION SITING AND DESIGN AT CITY FACILITIES

- Identify best practices for siting EV chargers based on facility location and infrastructure
- Develop standards for public EV charger signage, including wayfinding signs where appropriate
- Create guidance on sub-metering and EV utility rates

B3 INTEGRATE EV CHARGING INFRASTRUCTURE INTO CAPITAL IMPROVEMENT PLANNING

- Identify opportunities to install EV chargers and/or supporting infrastructure in conjunction with capital improvements at City-owned facilities
- Include infrastructure for future expansion whenever EVSE is installed

B4 SUPPORT WORKPLACE EV CHARGING FOR CITY EMPLOYEES

- Evaluate City employee demand for EV charging at all City-owned worksites (T9.3)
- Revise employee commute survey to include EVs to keep track of demand for charging and better quantify employee commute GHG reduction from EV adoption (T9.2)

B5 EXPLORE WAYS TO PROVIDE CHARGING INFRASTRUCTURE FOR E-BIKES AND OTHER ELECTRIC MICROMOBILITY DEVICES

B6 DEVELOP A FRAMEWORK TO PERIODICALLY EVALUATE USE AND DEPLOYMENT OF EVSE COMPARED TO LOCAL DEMOGRAPHICS

C. PRIVATE CHARGING INFRASTRUCTURE

C1 INCLUDE APPROPRIATE EVSE REQUIREMENTS IN THE BUILDING CODE

- Develop above-code requirements for EV charger prewiring and/or installation in new residential and commercial development (T7.1)
- Revise EV charger installation requirements in the MVGBC based on updated CALGreen requirements and stakeholder feedback
- Explore charger installation requirements for major renovations

C2 IMPROVE THE PERMITTING PROCESS FOR EV CHARGER INSTALLATION

- Ensure compliance with AB 1236
- Examine opportunities to further streamline installations in single-family residences
- Develop an ongoing stakeholder outreach to assess barriers and opportunities for improvement in the permitting process
- Develop a utility notification protocol via the permitting process to mitigate grid impacts from residential charger installation

C3 WORK WITH LOCAL AGENCIES TO SUPPORT INSTALLATION OF EVSE FOR RESIDENTS OF MUDS

- Support the SVCE multi-unit residential charging technical assistance and incentive program (T7.8)
- Support the SVCE Priority Zone DCFC incentives to support MUDs (T7.8)
- Explore strategies to support affordable and equitable pricing for EV charging at multi-family properties

D. PROMOTING AND INCENTIVIZING EV ADOPTION

D1 WORK WITH PARTNERS TO DEVELOP INCENTIVE OR DISCOUNT PROGRAMS

- Facilitate an EV group buy or discount program, potentially in coordination with neighboring cities or other partners (T7.7)
- Evaluate gaps in rebate programs and consider targeted incentives for low-income households
- Develop an e-bike rebate program (T3.6)

D2 EDUCATE RESIDENTS ON AVAILABLE FINANCIAL INCENTIVES FOR VEHICLES

- Develop aggressive, multilingual informational campaign to educate residents and businesses about existing incentive programs
- Leverage SVCE's Customer Resource Center to help customers navigate available incentives for EVs and home charging
- Engage community-based organizations for outreach and optimal EV charging infrastructure locations

D3 LEVERAGE BUSINESS OUTREACH TO SUPPORT EV ADOPTION AND FACILITATE BEST PRACTICE SHARING

- Integrate information about EVs and EVSE into Sustainability Division's Business Outreach Program
- Work with SVCE to facilitate installation of EV chargers at workplaces in the City, with a focus on small and medium-sized businesses, through their incentive program (T7.9)
- Participate in the Silicon Valley Transportation Electrification Clearinghouse (SVTEC)

E. CITY FLEET

E1 SUPPORT FLEET ELECTRIFICATION THROUGH POLICY AND PLANNING

- Develop a Clean Fleets Policy (T8.1)
- Develop a Fleet Electrification Plan, including a site-by-site analysis of infrastructure needs, looking at fleet replacement schedule, and analyzing budget implications (T8.3)
- Develop electrification targets for City fleet
- Pilot shared parking for public and fleet charging

E2 IMPROVE EMPLOYEE AWARENESS OF EVS IN THE CITY FLEET

- Add e-bikes from employee commute pilot to fleet vehicle pool
- Develop informational resources for employees about EVs in fleet
- Facilitate training opportunities to inform staff of the latest electric options for fleet vehicles and off-road equipment

E3 ESTABLISH SYSTEM FOR MAINTAINING, OPERATING, AND BOOKING CITY-OWNED E-BIKES AND ASSOCIATED EQUIPMENT

- Integrate the e-bikes into the booking system for pool vehicles
- Evaluate where to stage each of the City's e-bikes and assess each facility's battery charging needs.
- Establish a system for maintaining and operating e-bikes

E4 EXPLORE OPPORTUNITIES TO PILOT OR TEST HEAVY-DUTY ELECTRIC VEHICLES (T8.5)

E5 EARN REVENUE BY GENERATING LCFS CREDITS FROM FLEET CHARGING

- Ensure proper metering of fleet chargers so LCFS credits can be claimed

BACKGROUND AND INTRODUCTION

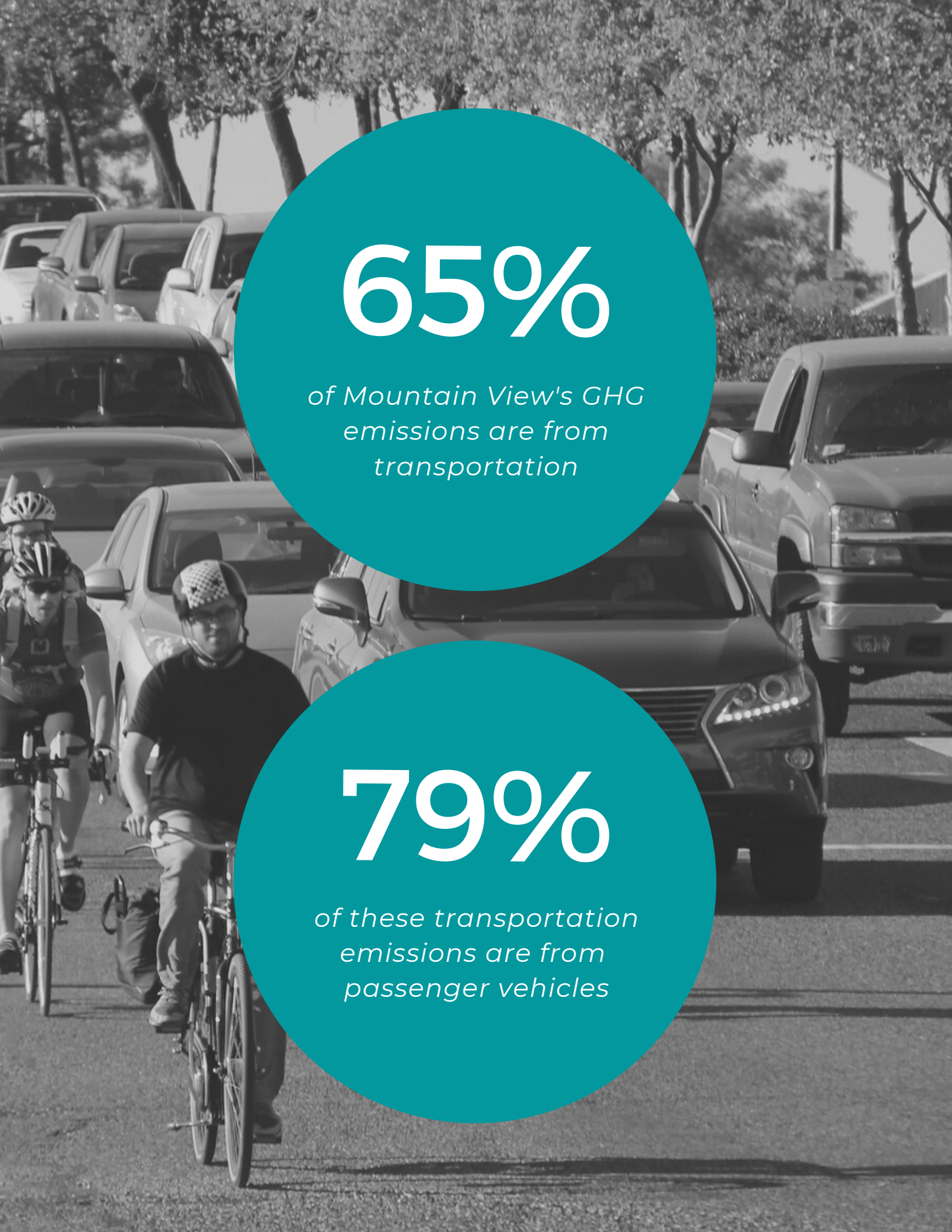
GHG EMISSIONS

The City of Mountain View adopted ambitious climate action goals in 2009, aiming to reduce greenhouse gas (GHG) emissions 80% below 2005 levels by 2050. These goals put the City on a trajectory consistent with California's landmark climate change legislation, AB 32. Since 2009, the City Council has amended the City's GHG reduction goals, adding interim targets at five-year intervals. In April 2020, the City adopted an additional goal of becoming carbon-neutral by 2045. Carbon neutrality means using a combination of GHG reduction and efforts to remove carbon dioxide from the air and store it (a process called carbon sequestration) to achieve "net zero" emissions.

Addressing GHG emissions from transportation will be critical to achieving the City's GHG reduction and carbon neutrality goals. The transportation sector has been responsible for the majority of Mountain View's GHG emissions since the baseline year of 2005 and has increased as a percentage of the total inventory over time. Transportation-related emissions comprised 65% of total community GHG emissions in 2019, by far the largest share, and 79% of those emissions were from passenger vehicles. In 2019, Mountain View residents were responsible for over 1 billion vehicle miles traveled (VMT), an increase of 4.4% from 2018. Achieving the City's GHG reduction and carbon neutrality goals will require a significant reduction in total VMT, as well as a shift to electric vehicles (EVs).

Table 1: Mountain View Community GHG Reduction Targets

Year	Reduction Target (% below 2005 level)
2012	5%
2015	10%
2020	15-20%
2025	33%
2030	47%
2035	59%
2040	68%
2045	75%
2050	80%



65%

of Mountain View's GHG emissions are from transportation

79%

of these transportation emissions are from passenger vehicles

The City's climate action plans (CAPs) highlight vehicle electrification as a key part of meeting adopted GHG reduction targets for both the community and municipal operations. Mountain View's community CAP, the Climate Protection Roadmap (CPR), summarizes the benefits of EV adoption for the general public, and migrating to EVs is anticipated to result in very large GHG reductions by 2050. The CPR transportation strategies outline the role the City can play in conducting outreach, installing public charging, and encouraging privately owned charging infrastructure to support EV adoption. The Municipal Operations Climate Action Plan (MOCAP) focuses on strategies to reduce GHG emissions associated with municipal operations, including electrification of City fleet vehicles. Since their adoption in 2015, the strategies outlined in the CPR and MOCAP have guided development of the City's Sustainability Action Plans. These action plans operationalize GHG reduction strategies across all sectors, including EV adoption, to address emissions from transportation in the community, City fleet vehicles, and employee commutes.

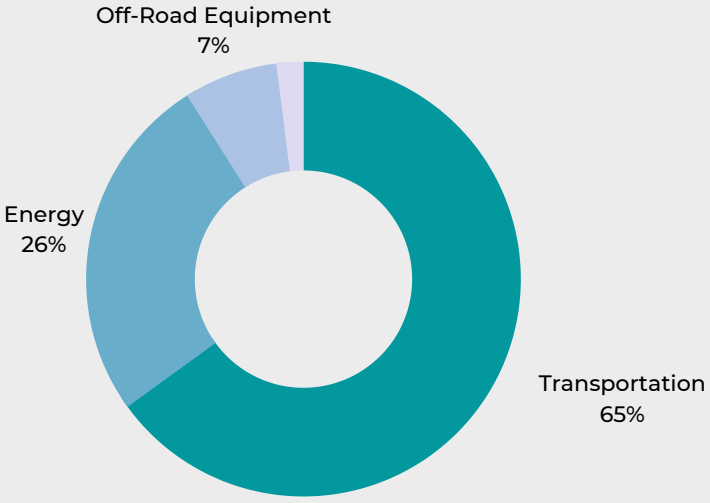


Figure 1: 2019 Community GHG Emissions

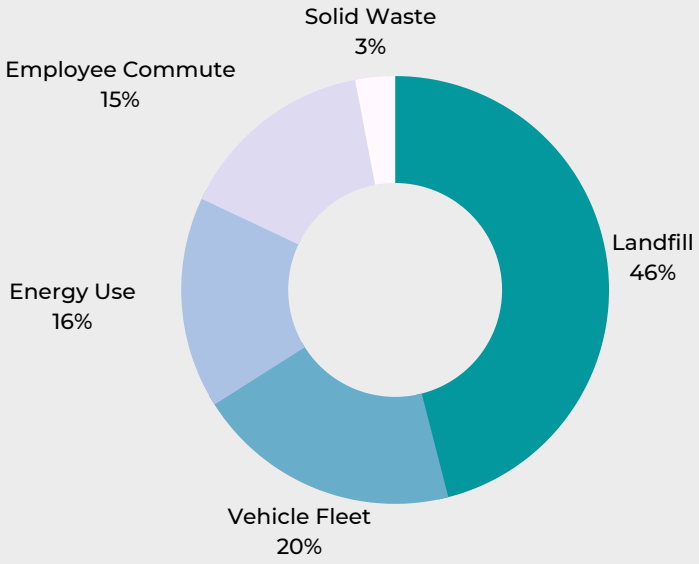


Figure 2: 2018 Government Operations Emissions

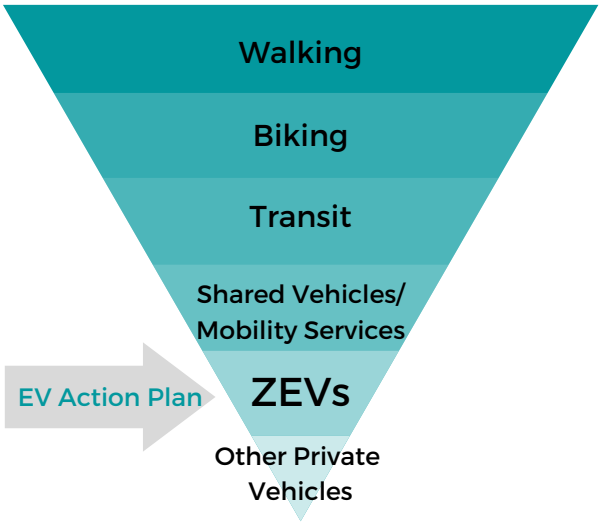
MOUNTAIN VIEW MOBILITY FRAMEWORK

Mountain View's approach to decarbonizing the transportation sector focuses on reducing vehicle use first, and then electrifying the remaining vehicles on the road. Successfully reducing GHG emissions from transportation will require prioritizing mode shift from vehicle use to active transportation, electric personal micromobility, and public transit, as well as eliminating many vehicle trips through mixed-use or transit-oriented developments and telecommuting. These strategies also improve safety for all road users, support the health of the community, improve air quality, reduce congestion, and boost the local economy.

Other City documents, including the North Bayshore and East Whisman Precise Plans, as well as AccessMV, Mountain View's Comprehensive Modal Plan, outline strategies to reduce VMT and support active transportation. This EV Action Plan (EVAP) is focused on electrifying personal transportation, which is not currently covered under any other City planning process. However, transportation electrification should not be considered the primary strategy for decarbonizing the transportation sector.

Electric bikes (e-bikes) and electrified personal micromobility (such as e-scooters and other transportation devices) are also a key part of Mountain View's plan to reduce transportation emissions and electrify remaining vehicles. Because the infrastructure for these types of devices (with the exception of charging) is largely covered by existing transportation planning activities, it is not a central focus of this document. However, some strategies related to these types of transportation devices are included in this EVAP if they are not covered by existing City plans.

Figure 3: Mountain View's "Triangle" of Mobility Hierachy



Electrifying freight and other medium/heavy-duty vehicles, which contributed about 21% of the City's transportation emissions in 2019, will also be important to achieving the City's climate goals. This report only addresses medium/heavy-duty vehicles in the context of City-owned fleet vehicles because their electrification is best handled at the regional and State levels.

Transit agencies such as the Santa Clara Valley Transportation Authority (VTA) and Caltrain are leading the development of electrification plans for public transit vehicles (such as buses, trains, and light rail cars). Through the CalMOD program, Caltrain is working to electrify the corridor from San Francisco's 4th and King Caltrain Station to the Tamien Caltrain Station in San Jose. This project will replace 75% of Caltrain's diesel service with electric, with the first electric train expected to arrive in 2022.[1] VTA has operated several zero-emission buses since 2018 and is currently preparing a Zero-Emission Bus Rollout Plan, which will establish a goal of 100% zero-emission buses by 2040.[2] The Mountain View Community Shuttle is the only transit service operated by the City, and all vehicles are electric. Mountain View will continue to support regional efforts to electrify freight, transit, and other medium/heavy-duty vehicles.

Automated vehicle technologies are evolving rapidly and will likely play a significant role in the future of transportation in Mountain View. Ranging from driver assistance applications to fully automated, driverless systems, these technologies have potential implications for sustainability, congestion, safety, and public health. Autonomous vehicles (AVs), autonomous air taxis, and personal delivery devices (PDDs) are all being tested in Mountain View. While the EVAP does not discuss these topics in detail, the City will continue to evaluate how AVs factor into the City's sustainability goals and how the City can positively influence them through policy, programming, and infrastructure.

BENEFITS OF EVs

EVs have many environmental and health benefits, including lower emissions of GHGs and other pollutants. Due to the high percentage of renewable energy and other carbon-free sources in California's electricity mix, the annual emissions from EV usage are about 50% of the national average, and only 17% of the annual GHG emissions from a similar gasoline-powered vehicle.

For purposes of this report, the term "electric vehicle" or "EV" generally refers to any type of plug-in electric vehicle. This includes battery electric vehicles that are fully electric, as well as plug-in hybrids that include an internal combustion engine. It does not include other types of hybrid vehicles that do not plug in to charge and are not capable of running in a fully electric mode.

EVs charged in Mountain View and 12 other local jurisdictions in Santa Clara County can take advantage of carbon-free electricity provided by Silicon Valley Clean Energy (SVCE) to further reduce

[1] Caltrain Modernization Project, accessed June 24, 2021, https://calmod.org.

[2] Valley Transportation Authority, accessed June 24, 2021, https://www.vta.org/blog/vta-unveils-most-comprehensive-sustainability-plan-yet.

GHG emissions. SVCE became the default electricity provider in the City in 2017 and currently also serves Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Saratoga, Sunnyvale, and unincorporated Santa Clara County.

In addition to lowering GHG emissions, EVs can provide significant health benefits for the local community. Tailpipe emissions from internal combustion engine (ICE) vehicles include particulate matter, volatile organic compounds, and ozone, which are linked to a variety of respiratory conditions and other health impacts. Reducing these emissions is linked to fewer asthma attacks and missed days of work, as well as reduced hospitalizations or premature deaths from heart or lung conditions exacerbated by air pollution

Benefits of EVs Compared to ICE Vehicles

- 83% lower GHG emissions in California
- Reduced air pollution due to zero tailpipe emissions
- Lower fuel costs compared to gasoline
- Lower maintenance costs

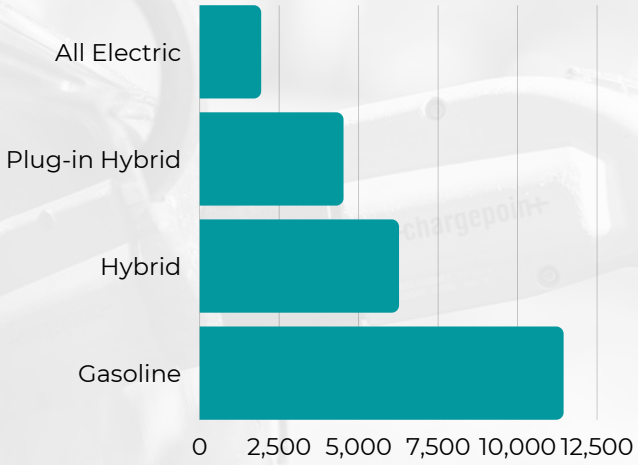


Figure 4: Annual lb CO2e per Vehicle in CA

Source: Alternative Fuels Data Center
https://afdc.energy.gov/vehicles/electric_emissions.html

MOUNTAIN VIEW EV VISION

Mountain View envisions a fully decarbonized transportation system in which people choose to walk, bike, and take transit, and, when driving, choose electric vehicles. With most of Mountain View's electricity carbon-free as a result of joining Silicon Valley Clean Energy, electrifying transportation has become increasingly important to achieving the City's climate goals. While EVs will play a key role in this transition, reducing vehicle use remains Mountain View's first priority. The Electric Vehicle Action Plan is designed to complement the City's work to improve active and public transportation options and eliminate vehicle trips via land use choices and telecommuting.

Historically, transportation investments have disproportionately burdened low-income communities and communities of color with air pollution and other negative impacts, while also failing to meet their transportation needs. Today, low-income communities, communities of color, and people with disabilities often experience the longest, most unreliable commutes, spend more of their income on transportation costs, and are unable to afford the high upfront costs of most electric mobility options. The Electric Vehicle Action Plan aims to address these structural and institutional inequities by supporting equitable access to the benefits of electric mobility options.

The guiding vision for the Electric Vehicle Action Plan is to create a **decarbonized transportation system** that integrates with the City's efforts to **reduce vehicle use** in Mountain View and supports **equitable access** to the benefits of clean transportation.

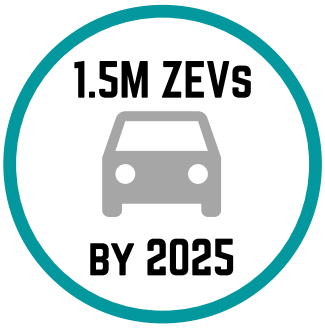
EV ADOPTION & CHARGING

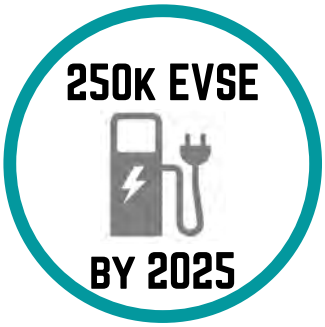
STATE EV GOALS

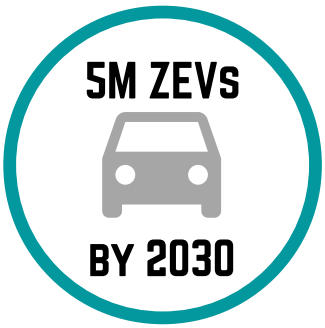
To reduce GHG emissions and air pollution, California has set ambitious goals for adoption of zero-emission vehicles (ZEVs), which include both EVs and hydrogen fuel cell vehicles. California first established targets for ZEVs in 1990 and has modified these regulations over time to reflect changes in ZEV technology. By 2025, these regulations will require 15% of new vehicle sales in California to be ZEVs.

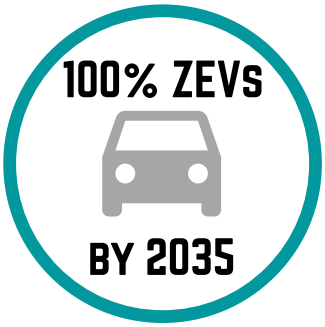
California's ZEV Action Plan outlines the strategy to reach Statewide goals for ZEV adoption: 1.5 million by 2025 and 5 million by 2030, established by Executive Orders B-16-12 and B-48-18 respectively. These Executive Orders also created targets for EV charging infrastructure: 250,000 EV charging stations statewide, including 10,000 DC Fast Charging stations, by 2025. State agencies and utilities have developed incentive programs for both vehicles and charging infrastructure to support these ambitious goals.

In September 2020, Governor Newsom signed Executive Order N-79-20, which establishes goals to phase out fossil-fuel use in the transportation sector. This order establishes the following goals for new vehicle sales in California:









- 100% of new passenger cars and trucks will be ZEVs by 2035
- 100% of off-road vehicles and equipment will be zero-emission by 2035
- 100% of medium-duty and heavy-duty vehicles will be ZEVs by 2045 (for all feasible applications)

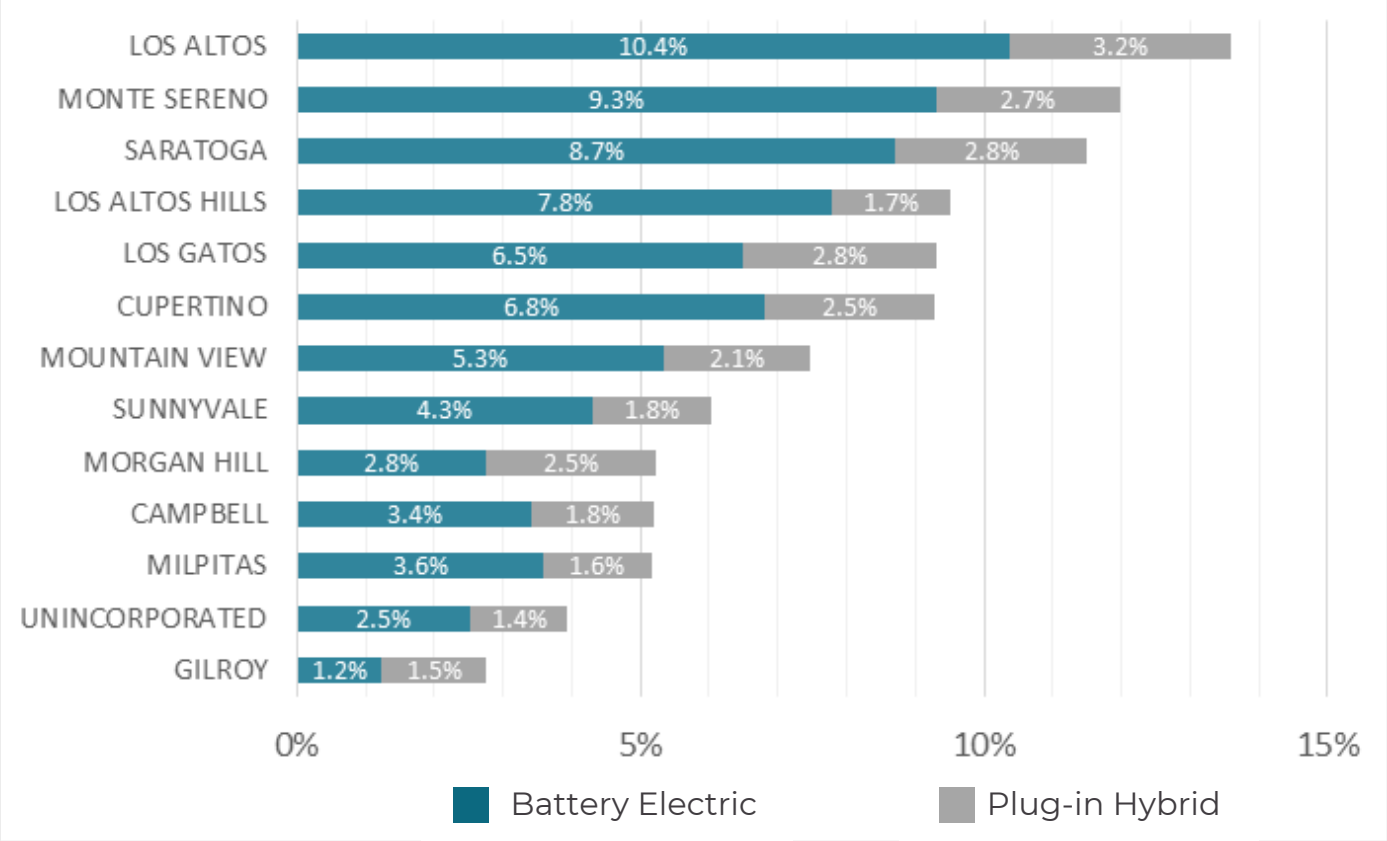
By setting a target date to end the sale of new ICE vehicles in California, the Governor sent a clear market signal to spur innovation and accelerate the transition away from fossil fuel use in the transportation sector. Achieving these targets will require supporting policies and programs across all levels of government, as well as deploying sufficient charging infrastructure for ZEVs.

EV ADOPTION

Silicon Valley cities are leading both California and the nation in adoption of electric vehicles. According to DMV data, Santa Clara County has the most plug-in EVs as a percentage of total registered vehicles of any county in California (5.5% as of the end of 2020).[3] EVs accounted for

[3] California Energy Commission (2021). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated: end of 2020. Retrieved 6/28/21 from https://www.energy.ca.gov/zevstats.

Figure 5: EVs as a Percentage of Total Registered Vehicles for Cities in SVCE Territory



Registration data from the CA Department of Motor Vehicles (January 2021).

nearly 7.5% of total vehicles registered in Mountain View. This puts Mountain View in the top 5% of all California cities for EV adoption, though several other cities in the region have even higher EV adoption rates.

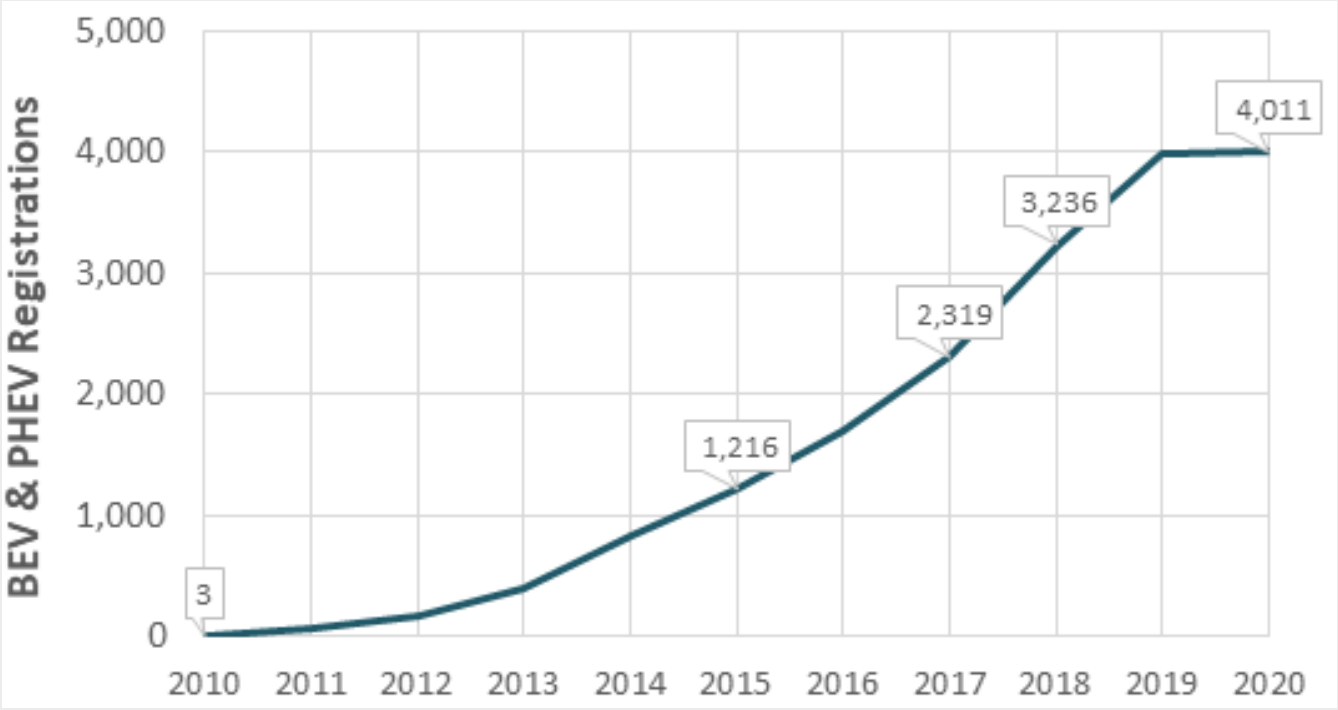
Rapidly increasing sales of new EVs over the past few years signal that EVs will comprise an increasingly large share of the vehicles owned and driven in Mountain View in the coming years. As shown in the Figure 6, registrations of EVs increased by 24% in Mountain View from 2018 to 2020, bringing the total number of EVs registered in the City to over 4,000.[4]

EV adoption is also strong regionally. Most of the top 20 California cities for EV market share of new vehicle sales are in the Bay Area. This means that in addition to high EV adoption by Mountain View residents, EV adoption is high across Mountain View's commute shed. As of the end of 2020, a total of 73,092 battery or plug-in hybrid EVs were registered in Santa Clara County, and projections suggest this number will increase to nearly 250,000 by 2025 and 450,000 by 2030.[5] Increased charging infrastructure will be required to support rapid EV adoption by Mountain View residents, employees, and visitors.

[4] California Energy Commission (2021). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated: end of 2020. Retrieved 6/28/21 from https://www.energy.ca.gov/zevstats

[5] County of Santa Clara Driving to Net Zero, Local Government EV Charging Siting Toolkit and Reference Guide https://www.sccgov.org/sites/dnz/Documents/Task-2A+3A-Local-Government-EV-Charging-Station-Siting-Toolkit-+-Reference-Guide.pdf

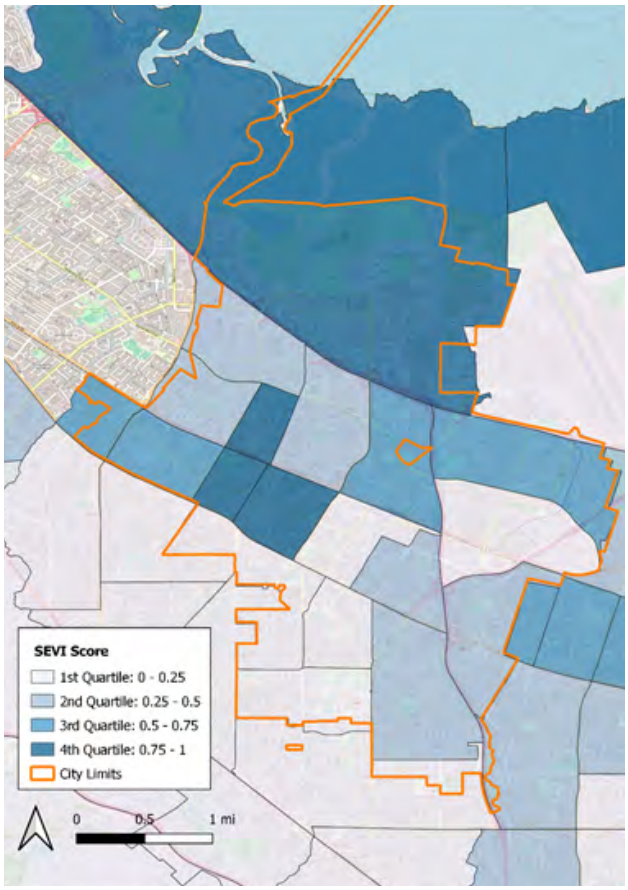
Figure 6: EV Registrations in Mountain View from 2010 to 2020



Registration Data from the California Energy Commission (2020).

While the County's overall EV adoption rate is high, each city or neighborhood's EV adoption rate differs and is associated with its socioeconomic status. EVs comprise a greater portion of the vehicles registered in wealthier neighborhoods than they do in low-income ones. SVCE developed a regionalized ranking system for census tracts within its service territory based on the SocioEconomic Vulnerability Index (SEVI), which compares communities based on five socioeconomic indicators: educational attainment, housing burden, linguistic isolation, poverty, and unemployment. Higher SEVI scores reflect a higher level of disadvantage (1 = low disadvantage, 4 = high disadvantage). As shown in Figure 7, some of the census tracts with SEVI scores in the fourth quartile are located within Mountain View's North Bayshore and central neighborhoods west of Shoreline Boulevard. Census tracts with first-quartile SEVI scores have three times as many registered electric vehicles as those in the fourth SEVI quartile (see Figure 8). Low-income households have been less likely to purchase EVs because of the upfront cost of buying a new car (EV or otherwise), the limited availability of used EVs, and lack of charging access in their neighborhoods. According to a study by the California Energy Commission, low-income communities on average have the fewest public Level 2 and total chargers per capita.[6] Subsidies and financial incentives to encourage EV adoption have historically targeted "early adopters," who tend to be wealthier individuals. To advance equity, Mountain View should prioritize distributing investments to disadvantaged neighborhoods that often lack access to clean transportation.

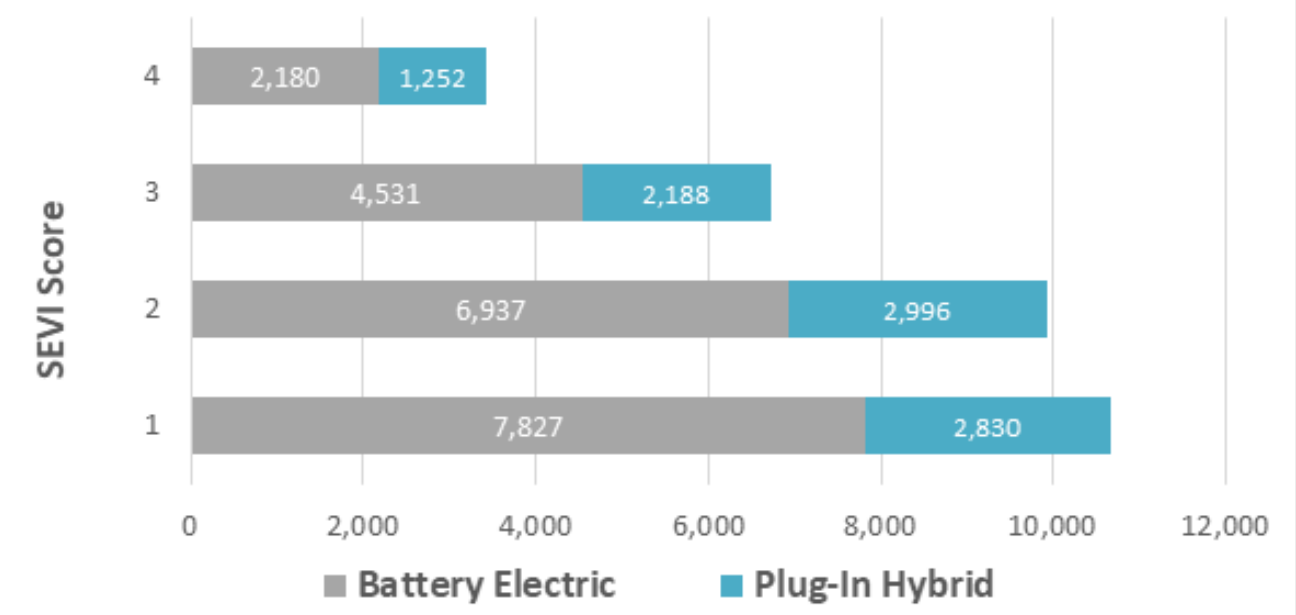
Figure 7: Regionalized SEVI Scores for Census Tracts in Mountain View



Data obtained from SVCE in July 2021.

[6] California Energy Commission, California Electric Vehicle Infrastructure Deployment Assessment Senate Bill 1000 Report, December 21, 2020.

Figure 8: EVs Registered in the SVCE Territory by SEVI Quartile



Data obtained from SVCE, DMV data (January 2021)

BARRIERS TO EV OWNERSHIP

The most cited barriers to purchasing an EV are price, driving range, and charging availability.[7] A Santa Clara County transportation survey confirmed affordability as the largest perceived barrier to EV ownership in the region.

As EV prices continue to decline and average driving range continues to increase, access to charging infrastructure has the potential to become the most significant barrier to widespread EV adoption. Traditionally, the deployment of EV charging infrastructure has followed a hierarchy of home first, then workplace, then public charging.

This "home-first" approach primarily reflects the needs of single-family homeowners, who have better access to home charging and were the main early adopters of EVs. This approach does not serve the needs of many other potential EV owners, including renters, who comprise about 60% of Mountain View households.[8]

Publicly accessible chargers are necessary to support residents without home charging opportunities, such as most

[7] McKinsey & Company, Electrifying insights: How automakers can drive electrified vehicle sales and profitability, 2017.

[8] Demographic characteristics for occupied housing units, U.S. Census Bureau, 2019 American Community Survey 1-Year Estimates.

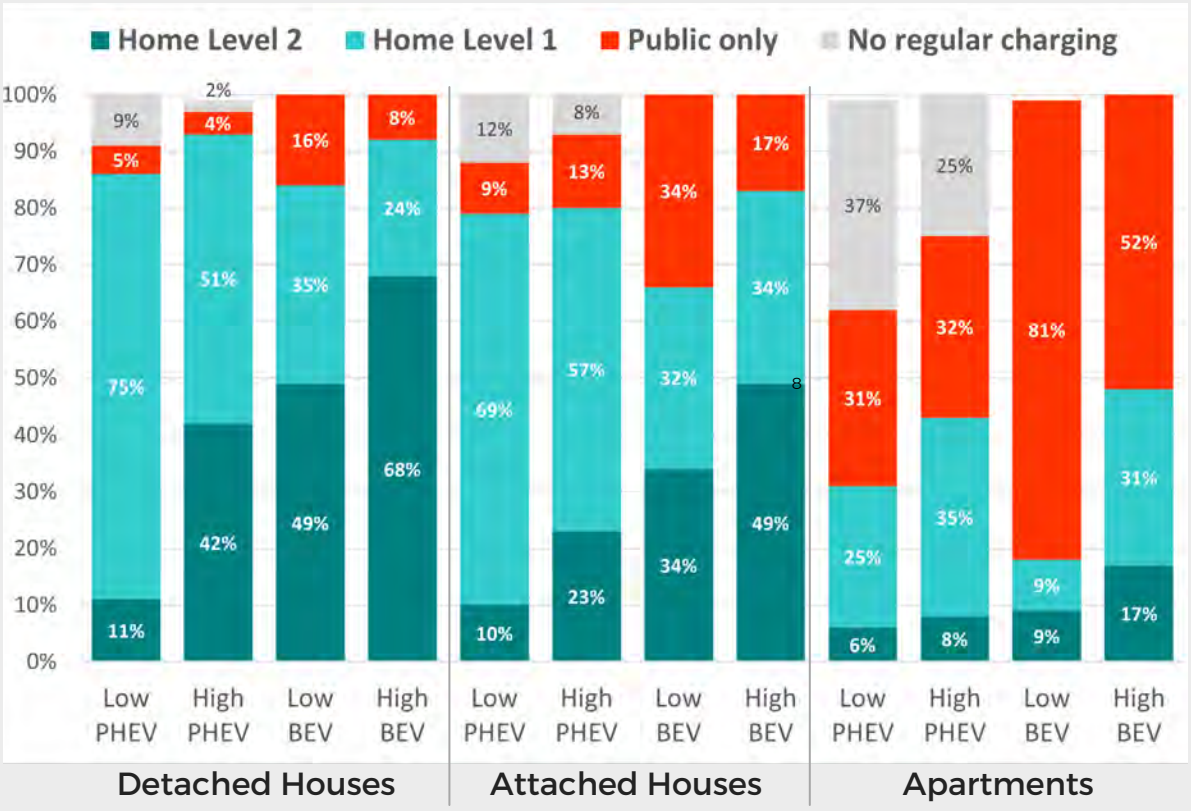
residents of multi-unit dwellings (MUDs), as well as those with longer commutes. A robust public charging network can also help ease concerns over driving range (often called "range anxiety") for prospective EV buyers and make renters more confident in finding charging opportunities even if they do not plan to stay in their current residence over the long term. Even for residents of single-family homes, public charging accounts for up to 34% of regular charging for EV owners that own low-range EVs which charge much more frequently.[9] Low-range EVs comprise most used EV sales and represent a more affordable EV ownership option for many households.

While EV owners in single-family housing (either detached or attached) do most of their charging at home, that is not the case in MUDs. Public charging comprises up to 81% of regular charging for apartment-dwelling EV owners.[10] Supporting an expanded public charging network is important to ensure MUD residents have access to sufficient charging opportunities to consider EV

[9] Quantifying the electric vehicle charging infrastructure gap across U.S. markets https://theicct.org/publications/charging-gap-US

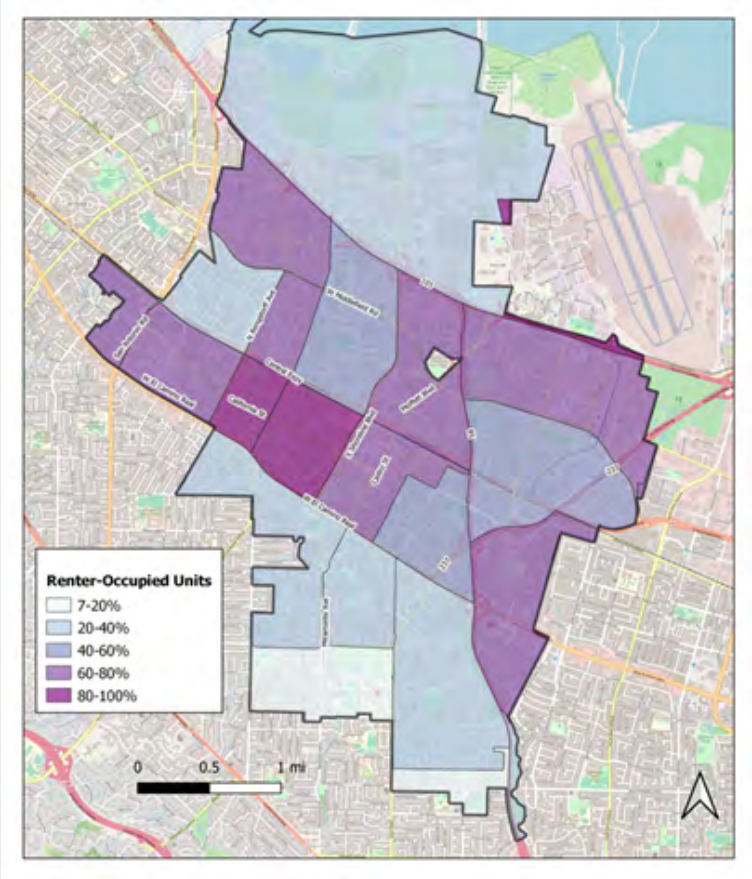
[10] Quantifying the electric vehicle charging infrastructure gap across U.S. markets https://theicct.org/publications/charging-gap-US

Figure 9: Percentage of electric vehicle households that use home and public charging in detached homes, attached homes, and apartments by vehicle type



Data source: ICCT report "Quantifying the electric vehicle charging infrastructure gap across U.S. markets"

Figure 10: Percent of Housing Units Per Census Tract that were Occupied by Renters in 2019



Data source: ACS 5-Year Estimates, 2019

ownership. With the shift to increased telecommuting and remote work due to the COVID-19 pandemic, public charging networks are more important than ever as many EV owners no longer have daily access to workplace chargers.

EVSE BASICS

Electric vehicles require charging infrastructure, generally referred to as electric vehicle supply equipment (EVSE). EVSE includes the supporting electrical infrastructure as well as the charging equipment. Different types of EVSE charge vehicles at different speeds and have varying equipment and installation requirements. Considerations in determining the appropriate EVSE for a location include the number of different EV drivers the site is expected to serve, the available electrical capacity, and the "dwell time," which is the amount of time an EV is likely to be parked at the site. Applications such as residential charging, with a dedicated parking space where vehicles can be left overnight, can use slower charging EVSE. Faster charging speeds are generally preferable for "opportunity charging" applications, such as retail or dining, where customers are parked for shorter periods of time.

TABLE 2: TYPES OF EVSE

	Level 1 Alternating Current	Level 2 Alternating Current	Level 3/DC Fast Direct Current
Description	Uses a standard plug	• Used specifically for EV charging • ~240 V AC service	• Used specifically for EV charging • Requires dedicated circuit & 480 V service
Use	Residential or workplace charging	Residential, workplace, or opportunity charging	Rapid charging along major travel corridors, short-stay retail
Limitations	Low power delivery, slow charging times	Requires additional infrastructure and wiring	Can only be used by newer EVs (no plug-in hybrids). More expensive to deploy and operate.
Time to charge	2-5 miles per hour	10-25 miles per hour	50-70 miles per hour

Data source: Santa Clara County Driving to Net Zero White Paper

CURRENT EV CHARGERS AND FUTURE DEMAND

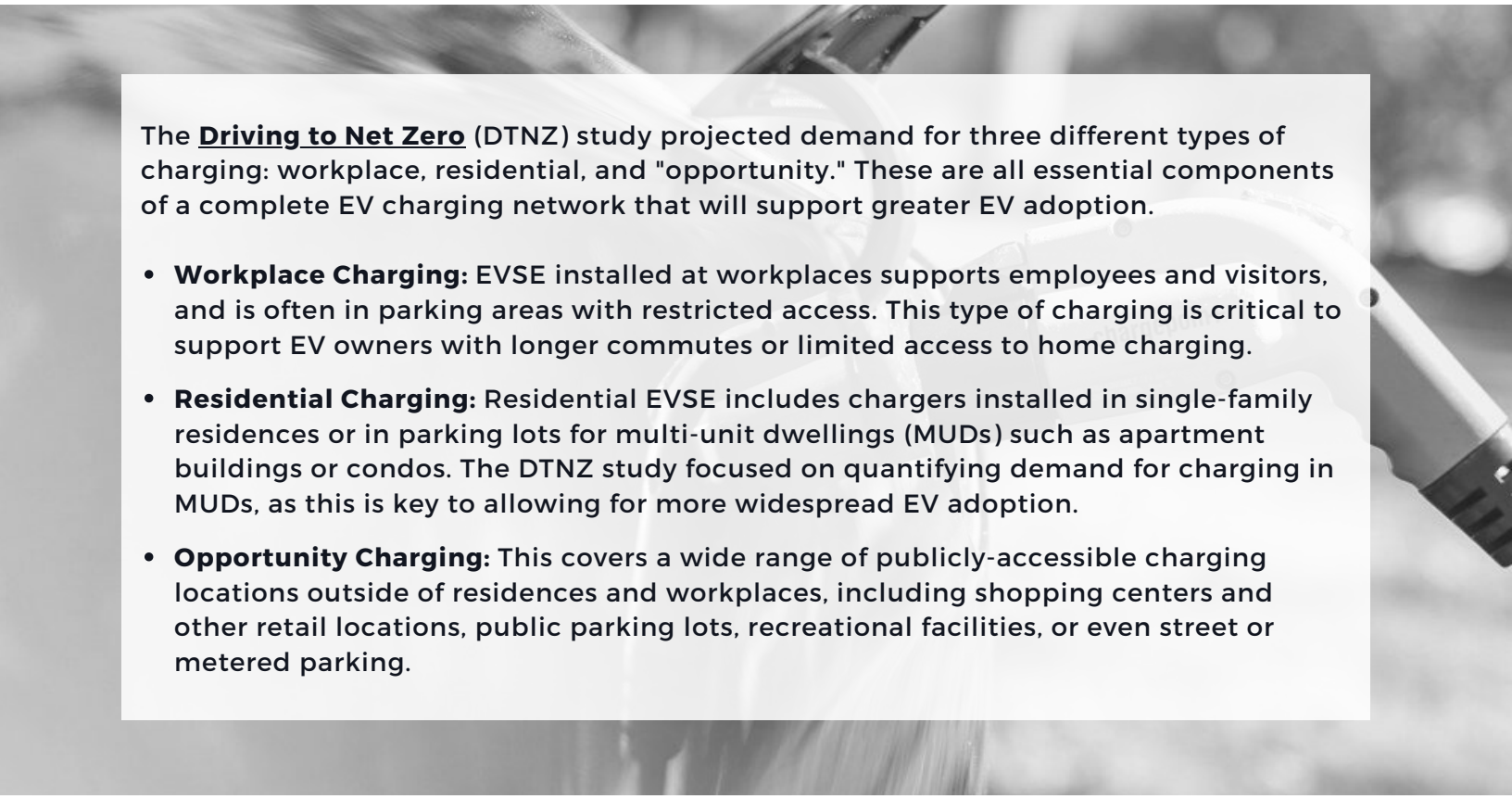
Deployment of public charging infrastructure has not kept pace with the rapid EV adoption in the region. Current EVSE in Mountain View includes 195 publicly accessible and 14 restricted-access Level 2 chargers registered with the U.S. Department of Energy (DOE) Alternative Fuels Data Center. This DOE resource also lists 30 Level 3/DC Fast Chargers in the City. Many restricted-access workplace chargers are not listed publicly in the DOE resource, making it difficult to accurately estimate the total quantity of EV chargers in Mountain View. Some of these restricted-access EV chargers are displayed on resources such as Plugshare.

Santa Clara County's Driving to Net Zero (DTNZ) study estimates that the County will need between 50,200 and 78,400 Level 2 charge ports at workplaces, MUDs, and public "opportunity" charging sites by 2025 to support demand.[11] The study analyzed predicted EVSE demand at the scale of traffic analysis zones, giving specific estimates for neighborhood-scale areas of Mountain View. The DTNZ report indicates that some of the predicted demand for charging, especially for opportunity charging and MUDs, may be met by Level 3/DCFC, but the majority of EVSE will likely be Level 2. The analysis includes an interactive mapping tool that projects the locations of highest demand for each type of charging under eight different scenarios for future EV ownership. Higher demand is indicated by darker colors.

Mountain View will need to increase the amount of EVSE Citywide to meet projected demand through 2025. As shown in Figure 11, the DTNZ mapping tool identifies many areas of the City with high projected demand for EVSE that have relatively few EV chargers currently installed. Darker shading indicates higher demand for EV charging. Regarding specific gaps between existing infrastructure and projected needs in Mountain View, several trends emerge:

- DC Fast Charging: There are very few Level 3/DC Fast Chargers in Mountain View, and all but two are located in the

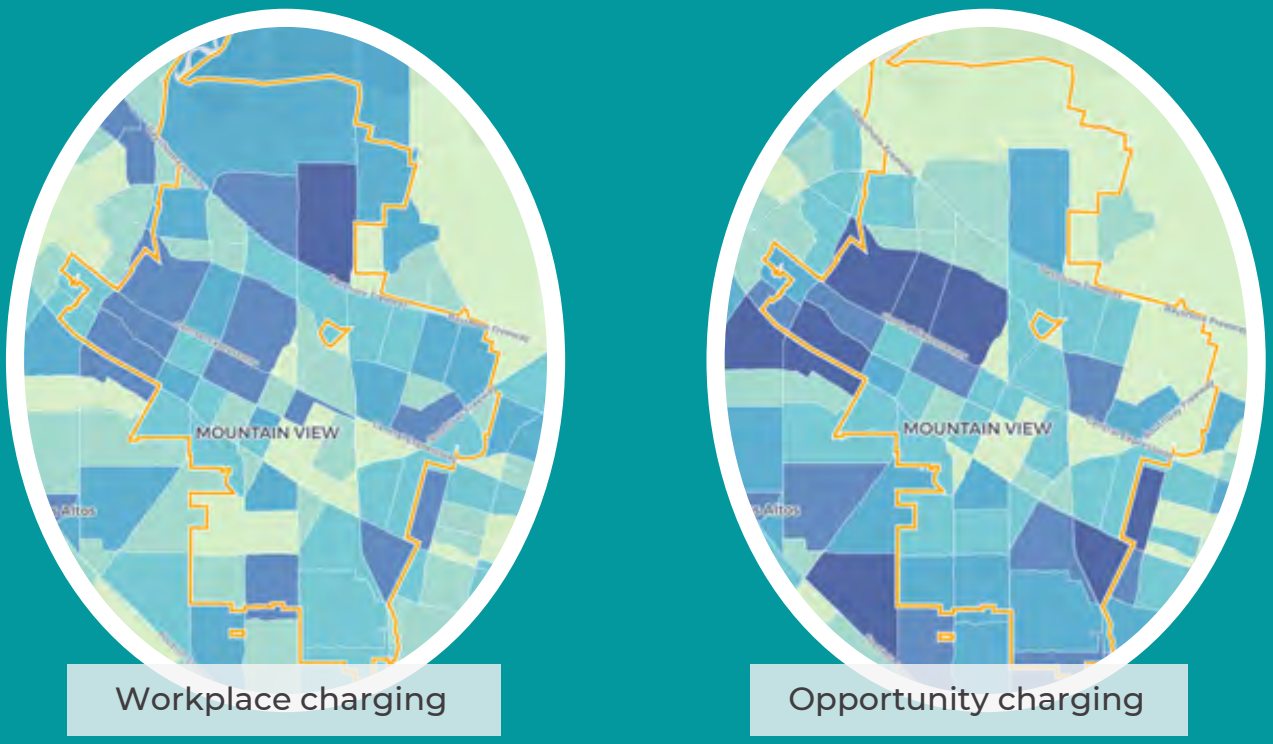
[11] Full details on the methodology used to estimate EV charger demand can be found in the Driving to Net Zero "Local Government Electric Vehicle Charging Station Siting Toolkit & Reference Guide"



The **Driving to Net Zero** (DTNZ) study projected demand for three different types of charging: workplace, residential, and "opportunity." These are all essential components of a complete EV charging network that will support greater EV adoption.

- **Workplace Charging:** EVSE installed at workplaces supports employees and visitors, and is often in parking areas with restricted access. This type of charging is critical to support EV owners with longer commutes or limited access to home charging.
- **Residential Charging:** Residential EVSE includes chargers installed in single-family residences or in parking lots for multi-unit dwellings (MUDs) such as apartment buildings or condos. The DTNZ study focused on quantifying demand for charging in MUDs, as this is key to allowing for more widespread EV adoption.
- **Opportunity Charging:** This covers a wide range of publicly-accessible charging locations outside of residences and workplaces, including shopping centers and other retail locations, public parking lots, recreational facilities, or even street or metered parking.

FIGURE 11: PREDICTED DEMAND FOR DIFFERENT TYPES OF EV CHARGING IN MOUNTAIN VIEW



Workplace charging

Opportunity charging

MF residential charging *(Likely EV Buyers)*

MF residential charging *(Low Income)*

Data source: Santa Clara County Electric Vehicle Charging Demand Siting Analysis Mapping Tool

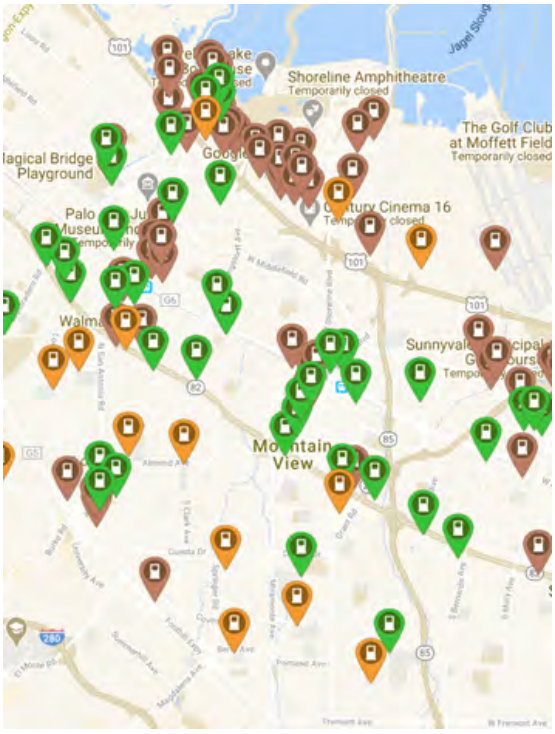
the North Bayshore Area. The DTNZ study identified several areas of the City with high projected demand for opportunity or MUD charging that would be good sites for DCFC. The City-owned public parking facilities in downtown would also be good candidates.

- Workplace Charging: Mountain View's workplace EVSE is currently concentrated in North Bayshore. Access to workplace charging is best at the City's largest employers, but small and medium-sized businesses often lack charging opportunities for employees.
- Multi-Unit Dwellings: Mountain View, like most cities, has many MUDs that do not have on-site residential charging or nearby public charging opportunities. The need for EVSE to support residents of MUDs can be met through a combination of on-site residential charging, public Level 2 chargers and DCFC, and workplace charging. This comprehensive approach ensures more universal access to charging for MUD residents, especially in places where residential charging is impractical or infeasible, and can make renters feel more secure in purchasing EVs.

BARRIERS TO EV CHARGER DEPLOYMENT

Silicon Valley Clean Energy (SVCE) conducted a regional survey to identify specific barriers associated with EVSE deployment in different types of usage. These barriers include:

Figure 12: Plugshare Map of EV Charger Locations in Mountain View



Publicly accessible Level 2 (green) and DCFC (orange) stations, as well as restricted-access workplace charging (brown) in the Mountain View area.

- High upfront costs and site-specific electrical needs
- Knowledge gaps about charging options and incentives
- Concerns about recovering costs due to low tenant demand
- Performance assurance for installed equipment
- Siting, permitting, and service upgrade challenges
- Uncertainty over utilization/demand

SVCE analyzed these barriers in detail as part of their EV Infrastructure Joint Action Plan. Table 3 summarizes the key barriers to EVSE adoption by use case.

Table 3: Summary of Key Barriers to EVSE Adoption, By Use

USE CASE	CHARGER LEVEL	EASE OF DEPLOYMENT	BARRIERS		
Corridor Charging	Level 2 Level 3	Low	Upfront Costs	Siting Permitting, Service upgrades & Interconnection	Interconnection & Demand Charge Management
Destination/ Retail	Level 2 Level 3	Med	Siting and Owner Permission, Permitting	Utilization Certainty	Sustainable Business Models
Fleets	Level 2 Level 3	Low	Upfront Costs	Site Specific Electrical Needs	Performance Assurance
Large Workplace	Level 2 Level 3	Med/Low	Upfront Costs	Site Specific Electrical Needs	Charger Oversubscription
Small/Med Workplace	Level 2 Level 3	Low	Upfront Costs	Lack of Planning Capacity	Technology Selection/ Knowledge Gaps
MUDs	Level 1 Level 2	Very Low	Site Specific Electrical Needs	Knowledge Gaps	Lack of Financial Incentives & Tenant Demand
Single Fam	Level 1 Level 2	Very High	Technology Selection/ Knowledge Gaps	Contracting & Install Management	Accessing Incentives & EV Rates

Data Source: *SVCE EV Infrastructure Joint Action Plan.*

FINANCIAL INCENTIVES

Offering financial incentives towards the purchase of EVs or EVSE is an important strategy to accelerate adoption of vehicles and the supporting charging infrastructure. These incentives can take the form of rebates, grants, tax credits, or low-interest financing. Currently, there are a variety of incentives available to Mountain View residents and businesses offered by electric utilities and Federal, State, and regional agencies. This section focuses on incentives for passenger vehicles and their supporting charging infrastructure that are available to the general public. Electrifying passenger vehicles is a priority for reducing Mountain View's community-wide GHG emissions, as these vehicles account for 79% of total Citywide transportation sector emissions.

VEHICLE INCENTIVES

EVs offer ongoing savings on fuel and maintenance costs compared to gasoline vehicles, typically translating into lower cost of ownership. The initial purchase price of EVs is higher than comparable gasoline vehicles, largely due to the cost of the battery pack. In 2018, the difference in purchase price between EVs and their ICE counterparts ranged from $8,000 for a short-range car to $21,000 for a long-range SUV.[12] EVs are expected to achieve

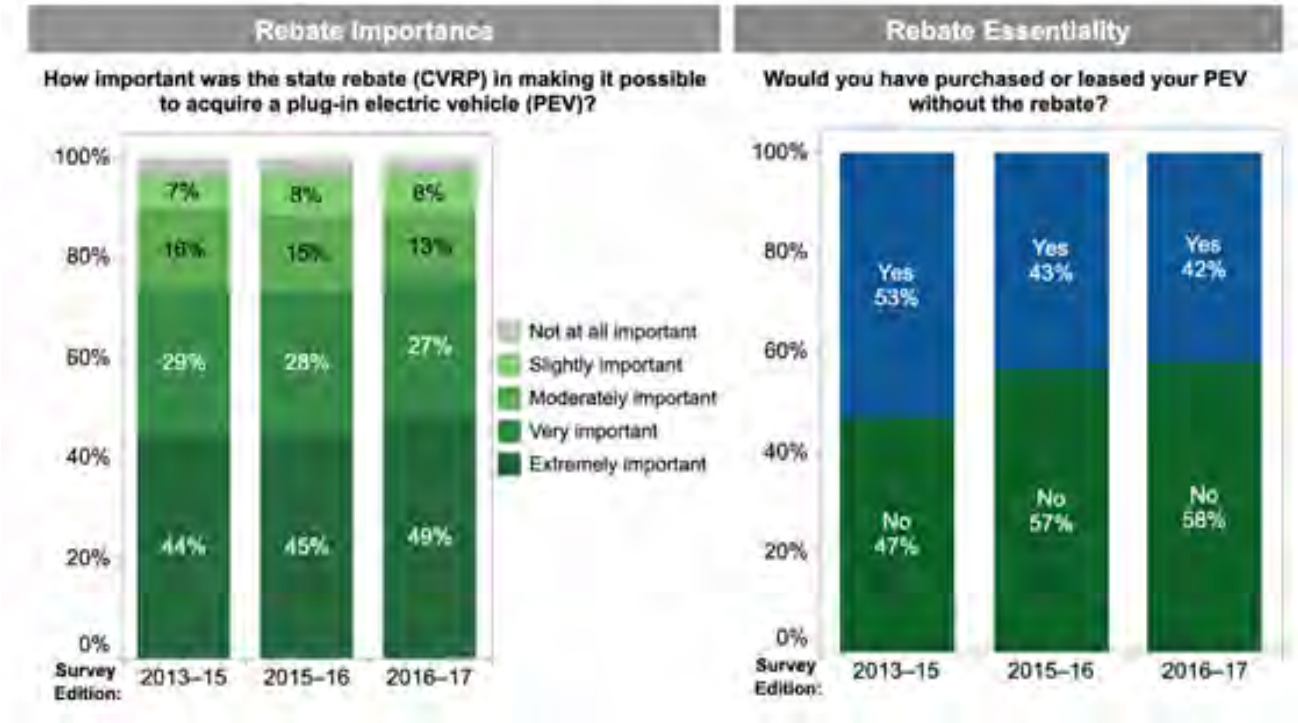
[12] ICCT, Update on electric vehicle costs in the United States through 2030 White Paper

price parity with conventional vehicles by approximately 2024 through 2028, depending on battery range.[13] In the meantime, higher cost remains a barrier to more widespread EV adoption. In a 2017 transportation survey, only 46% of Santa Clara County residents considered EVs to be an affordable option for their household.[14] Financial incentives address this barrier by offsetting a portion of the purchase price to make EVs more cost-competitive.

Data from California's Clean Vehicle Rebate Project (CVRP) shows that this incentive has been very effective at increasing EV adoption. In Santa Clara County, 76% of recent EV buyers surveyed said the CVRP was extremely or very important in making it possible to purchase or lease an EV, and 58% said they would not have purchased an EV without the CVRP.[15] By the end of 2019, Mountain View residents had claimed 2,214 CVRP rebates, worth a total of $5,158,381. The CVRP is just one of many incentive programs available to eligible Mountain View residents for the purchase or lease of EVs.

[13] ICCT, Update on electric vehicle costs in the United States through 2030 White Paper
[14] ICCT, Update on electric vehicle costs in the United States through 2030 White Paper
[15] Clean Vehicle Rebate Project, EV Consumer Survey Dashboard

Figure 13: Importance of rebates in EV purchases



Data source: California Vehicle Rebate Project (CVRP)

TABLE 4: INCENTIVE PROGRAMS FOR EVS AND E-BIKES

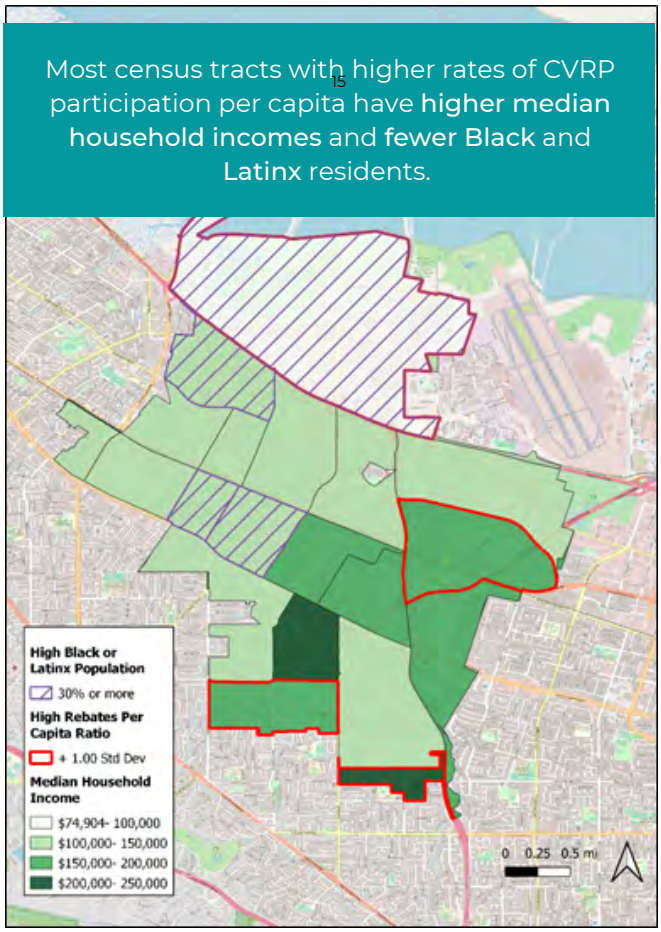
Name	Administering Agency	Description
Federal Tax Credit	Internal Revenue Service	Tax credit of up to $7,500 for purchase of new EVs depending on vehicle type and model
Clean Vehicle Rebate Project+	California Air Resources Board (CARB)	Rebate of up to $4,500 for purchase or lease of a new EV
Clean Vehicle Assistance Program*	CARB	Point-of-sale grants of up to $5,000 for income-qualified applicants, as well as a $1,000 prepaid card for use at EVgo public chargers
Driving Clean Assistance Program*	CARB/Community Housing Development Corp	Up to $20,000 in low-interest loans toward the purchase of new or used EVs for income-qualified applicants
Clean Cars for All*	Bay Area Air Quality Management District (BAAQMD)	Up to $9,500 for income-qualified applicants for purchase of a new or used EV or up to $7,500 for an electric bike or prepaid card for public transit. An older gasoline vehicle must be retired.
Clean Fuel Rebate+	Pacific Gas & Electric (PG&E)	$800 for PG&E account holders that purchase or lease new EVs to offset cost of charging
Electric Bike Incentive Program Pilot Project *(coming in July 2022)*	CARB	AB 117 provides $10 million in subsidies to help people buy e-bikes. Program details are not yet available.

** indicates incentive is available for used EVs*
+ indicates incentive is available for leased EVs

Uptake of income-restricted EV incentives has been low in Mountain View. Of the 2,214 CVRP rebates claimed by residents, only 40 (less than 2%) were awarded to low-income households. As shown in the map below, Mountain View census tracts with high participation rates in CVRP are more likely to have higher median household incomes and fewer Black or Latinx residents. The North Bayshore neighborhood is an exception to this trend as it has a lower median household income and higher rates of rebate applications per capita. BAAQMD's Clean Cars for All program, which is only available to income-qualified households, reports 12 applications from Mountain View residents as of September 2020, of which 8 had purchased vehicles.

This trend is also seen at the State level. According to research by UC Berkeley, 83% of people that received rebates from the CVRP for battery or plug-in hybrid electric vehicles between 2010 and early 2015 had annual incomes of more than $100,000.[16] Even when income was held constant, people living in neighborhoods with a majority Latinx or Black population were less likely to have applied for rebates.[17] This demonstrates that despite the availability of incentives, EVs remain less accessible to lower-income households.

Figure 14: Distribution of Clean Vehicle Rebate Project rebates per census tract



Data source: CVRP data from the Center for Sustainable Energy (2021). California Air Resources Board Clean Vehicle Rebate Project, CVRP Rebate Map. Data last updated April 14, 2021. Retrieved June 30, 2021. Income and demographic data from the US Census Bureau, American Community Survey, 2019 5-Year Estimates.

[16] Kathleen Maclay, Clean vehicle rebates benefit wealthy, white Californians, study finds, *Berkeley News*, November 7, 2016.

[17] Kathleen Maclay, Clean vehicle rebates benefit wealthy, white Californians, study finds, Berkeley News, November 7, 2016.

EVSE INCENTIVES

The capital cost of installing EVSE in existing parking facilities presents a barrier to more widespread deployment of chargers. As shown in Table 5, these costs include hardware, permitting, and installation, and can vary significantly depending on the type of charging hardware and site characteristics. Higher charging levels, especially DCFC, can have very high costs due to electrical service upgrades and hardware needs.

Financial incentives have proven to be an effective way to address these infrastructure costs and expand EVSE deployment in Mountain View. One recent program, PG&E's Charge Network, funded construction of an estimated 127 new charging ports in Mountain View. This includes 77 chargers at six different MUDs and 50 new chargers at one workplace. There are several open and planned incentive programs for EVSE deployment available to eligible Mountain View residents and businesses.

SVCE has multiple incentives designed to address gaps in existing programs, which focused on high-volume installations in large workplaces and MUDs. Table 6 displays currently available EVSE incentive programs. While not currently active, incentive programs offered by PG&E and BAAQMD may provide additional funding in the future.

TABLE 5: COSTS FOR SINGLE PORT EV CHARGING STATIONS IN NON-RESIDENTIAL APPLICATIONS

Cost Element	Level 1		Level 2		DCFC	
	Low	High	Low	High	Low	High
Hardware	$300	$1,500	$400	$6,500	$10,000	$40,000
Permitting	$100	$500	$100	$1,000	$500	$1,000
Installation	$0*	$3,000	$600	$12,700	$8,500	$51,000
TOTAL	**$400**	**$5,000**	**$1,100**	**$20,200**	**$19,000**	**$92,000**

*The $0 installation cost assumes the site host is offering an outlet for EV users to plug in their Level 1

Data source: U.S. Department of Energy, Costs Associated With Non-Residential Electric Vehicle Supply Equipment, November 2015.

TABLE 6: CURRENT EVSE INCENTIVES

EVSE Use Case	Name	Administering Agency	Description
Single-Family Homes	Federal Tax Credit	Internal Revenue Service	Tax credit of 30% of cost up to $1,000 for installation of residential EV charger
	Clean Cars for All*	BAAQMD	Rebate of up to $2,000 towards installation of home charger with the purchase of an EV
	Clean Vehicle Assistance Program*	CARB	Grants of up to $2,000 for a Level 2 home charging station
Multi-Unit Dwellings (MUDs)	EV Fast Charging Near Multifamily Housing	SVCE	Rebate of $10,000 per port for DCFC in "priority zones" that serve nearby MUDs. Intended to be stacked with CALeVIP incentives. This program is currently closed but may reopen in the future.
	Multi-Unit Residential Charging Technical Assistance	SVCE	SVCE offers technical assistance for MUDs planning to install EVSE. SVCE is also operating a pilot with EVmatch that will include direct installs at participating MUDs.
	Light Duty EV Infrastructure	VW Mitigation Trust	Up to 60% of eligible costs for MUD charging; details TBD
Businesses/ Workplaces	Federal Tax Credit	Internal Revenue Service	Tax credit of up to $30,000 for commercial EV chargers
	Workplace Charging Rebates	SVCE	Technical assistance for chargers at small and medium businesses
	Light Duty EV Infrastructure	VW Mitigation Trust	Up to 60% of eligible costs for workplace charging; program details TBD
Other Public Charging	Light Duty EV Infrastructure	VW Mitigation Trust	Up to 100% of eligible costs for publicly accessible charging; program details TBD
	CALeVIP Level 2	California Energy Commission	Rebate for Level 2 chargers; up to $6,000 per connector.
	CALeVIP DCFC	California Energy Commission	Rebate for public DCFC chargers; up to $80,000 per charger.

** indicates program is restricted to income-qualified applicants*

EV ACTION PLAN

Local governments have an important role to play in supporting EV adoption through policies, programs, and infrastructure. Mountain View has incorporated several initiatives into its sustainability program to support adoption of EVs and installation of EVSE. The most recent Sustainability Action Plan 4 (SAP-4), adopted in October 2019, includes three goals related to EVs:

- T7: Accelerate the electrification of vehicles
- T8: Reduce GHG emissions from city-owned fleet vehicles and equipment
- T9: Reduce GHG emissions associated with city employee commutes

These goals include 15 actions to support EV adoption by the community, City fleet staff, and other City employees, which are detailed later in this report. This EVAP outlines strategies for Mountain View to accelerate EV adoption in five key areas:

A. Planning and Policy: Ensure the city's plans, policies, and codes support EVSE deployment in the community.

B. Public Charging Infrastructure: Install EVSE at city facilities to support both the public and city employees.

C. Private Charging Infrastructure: Support the deployment of privately-owned EVSE, especially in Multi-Unit Dwellings.

D. Promoting and Incentivizing EV Adoption: Improve understanding of EVs and supporting programs through targeted events, workshops, social media, and other community engagement channels. Fill the gaps in state and federal incentive programs for EVs and charging infrastructure by working with SVCE or developing city-led programs.

E. City Fleet: Advance the electrification of city fleet vehicles.

The following sections outline the actions Mountain View can take in each of these five areas. Each section includes any relevant actions the City has already implemented, actions currently under development or planned, and recommendations for new initiatives. Collectively, these actions comprise Mountain View's strategy to catalyze local EV adoption.

The EVAP is an internal plan meant to lay the groundwork for future planning efforts. Staff will solicit community feedback and share strategies with the City Council when actions from the EVAP are integrated into future Sustainability Action Plans and Climate Action Plans.

A. PLANNING AND POLICY

Mountain View can influence EV adoption and EV infrastructure deployment through City policies and plans. This includes ensuring that all the City's long-range planning processes support both State EV goals and Mountain View's EV Vision.

A1 INTEGRATE EVS AND ELECTRIC MOBILITY DEVICES INTO CLIMATE ACTION AND SUSTAINABILITY PLANNING

A2 ENSURE ZONING REGULATIONS SUPPORT EV CHARGER DEPLOYMENT

A3 DEVELOP A FEE STRUCTURE THAT ENCOURAGES CHARGING AND MAINTAINS COST RECOVERY

A4 DEVELOP AN EV PARKING ENFORCEMENT STRATEGY

A5 ENCOURAGE ELECTRIFICATION OF SHARED MOBILITY PRORAMS

A6 ENSURE EQUITABLE ACCESS TO ELECTRIC MOBILITY OPTIONS

A7 MONITOR TRENDS IN THE AV INDUSTRY AND EVALUATE OPPORTUNITIES TO ELECTRIFY AVS

A1. INTEGRATE EVS INTO CLIMATE ACTION AND SUSTAINABILITY PLANNING

Planning for vehicle electrification must be fully incorporated into climate action and sustainability planning processes in coordination with other transportation sector goals. The first step in this process is **developing this Electric Vehicle Action Plan** to identify strategies, policies, and programs to support EV adoption and EV infrastructure deployment (SAP-4, Task T7.4). This document will serve as a cohesive framework for the relevant strategies that should be integrated into future planning processes. These EV Action Plan strategies should be operationalized through **programs, policies, and infrastructure projects included in future Sustainability Action Plans and capital improvement projects**. The Sustainability Action Plan process is the primary way of operationalizing the City's long-term sustainability goals and strategies across multiple sectors and City departments.

The planned update to Mountain View's climate action plan represents an opportunity to consider the specific role of EVs in achieving the City's adopted GHG reduction and carbon neutrality goals. This plan should include **EVs and electric micromobility devices as part of a comprehensive transportation strategy** to reduce GHGs. It is important to examine vehicle electrification in the broader context of overall transportation sector goals such as increasing the use of active transportation, reducing VMT, and reducing congestion. As part of this effort, the City should **develop targets for adoption of EVs and installation of EV chargers** to help the City benchmark its progress. These components of the climate action plan will inform the transportation strategy operationalized in future Sustainability Action Plans.

A2. ENSURE ZONING REGULATIONS SUPPORT EV CHARGER DEPLOYMENT

Local governments can also regulate or incentivize EVSE deployment through zoning ordinances and development guidelines or standards. The Santa Clara Countywide DTNZ study on EVs analyzed Mountain View's codes and made several recommendations for changes to better support EVSE installation in the community. Staff should **review the DTNZ study and propose any zoning changes recommended by staff** (SAP-4, Task T7.11). These might include measures such as language clarifying that EV charging spaces count towards minimum parking requirements and EV charging stations are a permitted use in all zoning districts, per Municipal Code Section 36.06.50. Zoning ordinances or Precise Plans can also require or incentivize DCFC installations in high-priority locations such as retail centers or areas that support nearby MUDs. Staff will review all relevant recommendations and decide which changes are most appropriate for Mountain View.

A3. DEVELOP A FEE STRUCTURE THAT ENCOURAGES CHARGING AND MAINTAINS COST RECOVERY

Staff recently **evaluated the fees for EV charging at City-owned EV chargers** (SAP-4, Task T7.2) and proposed a more equitable fee structure based on per-kWh rather than per-hour fees. This new fee structure ensures that all EV drivers pay the same fee to receive the same amount of electricity, regardless of how fast their EVs charge. It will be important to **develop a framework for ongoing analysis and adjustment of fees**. This framework will allow the City to maintain cost recovery in response to changing electricity rates or network fees and adjust fees to continue to discourage overstays and other undesirable behavior. The goal is to keep fees affordable for users while achieving cost recovery for the City. The impact of these fees on vehicle miles traveled should also be considered. Costs that are too low could induce more vehicle travel and impact congestion and the electricity grid.

The City can **pilot policies such as waiving overstay fees to support overnight charging for residents**. This can provide easier charging opportunities for nearby residents without access to charging at home. City facilities located near clusters of MUDs would be good candidates to pilot this type of policy, such as the Community Center, where this practice is currently being tested. The City can also implement pilot programs that provide discounted charging rates for qualified low-income customers.

In order to properly support ongoing operational costs of City-owned EVSE, staff should also **determine appropriate routing of revenue from EV charger fees** to ensure it is available to cover utility costs, maintenance expenses, and network fees. Staff will need to review the accounts associated with expenses for each facility with EV charging to determine the most appropriate division of revenue from the EV chargers.

A4. DEVELOP AN EV PARKING ENFORCEMENT STRATEGY

The City's EV charging spaces are intended to be used exclusively for charging electric vehicles. This means that non-EVs are prohibited from parking in these spaces at any time, and EVs must be plugged in to the charger while parked. The **Mountain View City Code was recently amended to allow the City to restrict use of parking spaces for charging EVs** and to enforce violations of these restrictions, if necessary. Sustainability staff should coordinate with the Mountain View Police Department and City departments that manage facilities with EVSE to **develop an appropriate enforcement policy for EV charger spaces**. This would include general restrictions limiting use of these parking spaces to EVs that are plugged in to the chargers, as well as any posted time limits. Any policy should ensure that enforcement occurs throughout the City equitability in areas where EV parking restrictions exist, without oversurveilling areas where historically targeted communities reside or congregate. The goal is to ensure that EV chargers are available for users when needed, and staff can determine what level of enforcement, if any, is necessary to achieve this outcome. As e-bike charging becomes available, the City should similarly protect and accommodate e-bike charging facilities.

A5. ENCOURAGE ELECTRIFICATION OF SHARED MOBILITY PROGRAMS

Shared mobility can provide alternatives to driving and car ownership as well as provide critical first- and last-mile connections to transit. To support a variety of shared mobility options for residents, the City should **continue to evaluate ways to offer shared e-bike and e-scooter services in Mountain View** (SAP-4 Tasks T3.2 and T3.3). Possibilities include permit systems, in which participating vendors pay a fee to operate e-mobility services within the City, or contracts with e-mobility vendors. In addition to providing alternatives to driving, shared mobility systems allow residents to try e-bikes or e-scooters at relatively low cost, helping support increased use of these devices over the long term.

The City recognizes the potential of car share to reduce the need for personal vehicle ownership. Staff can explore ways to support the electrification of vehicles used by car sharing services. **New multi-family residential developments could be encouraged to include EV car share** to meet their transportation demand management requirements. EV car share also represents an important way to make EVs more accessible to lower-income households and reduce the need for car ownership overall. Mountain View can also **explore public-private partnerships to support EV carshare in the community**, such as the BlueLA Carshare in Los Angeles, which offers discounted EV car share rates for income-qualified households.

As use of ride-hailing services increases, the City should explore ways to support the electrification of these vehicles, which tend to be more reliant on DC Fast Charging. **Expanding public DCFC infrastructure** will make it easier for electric ride-hailing vehicles to find charging opportunities in Mountain View.

A6. ENSURE EQUITABLE ACCESS TO ELECTRIC MOBILITY OPTIONS

It is important for the City to support electric transportation infrastructure that is physically and financially accessible to all Mountain View residents and employees. The City should **continue to ensure new EV charging infrastructure is accessible to those with different mobility needs** in accordance with the requirements of the California Building Standards Code.

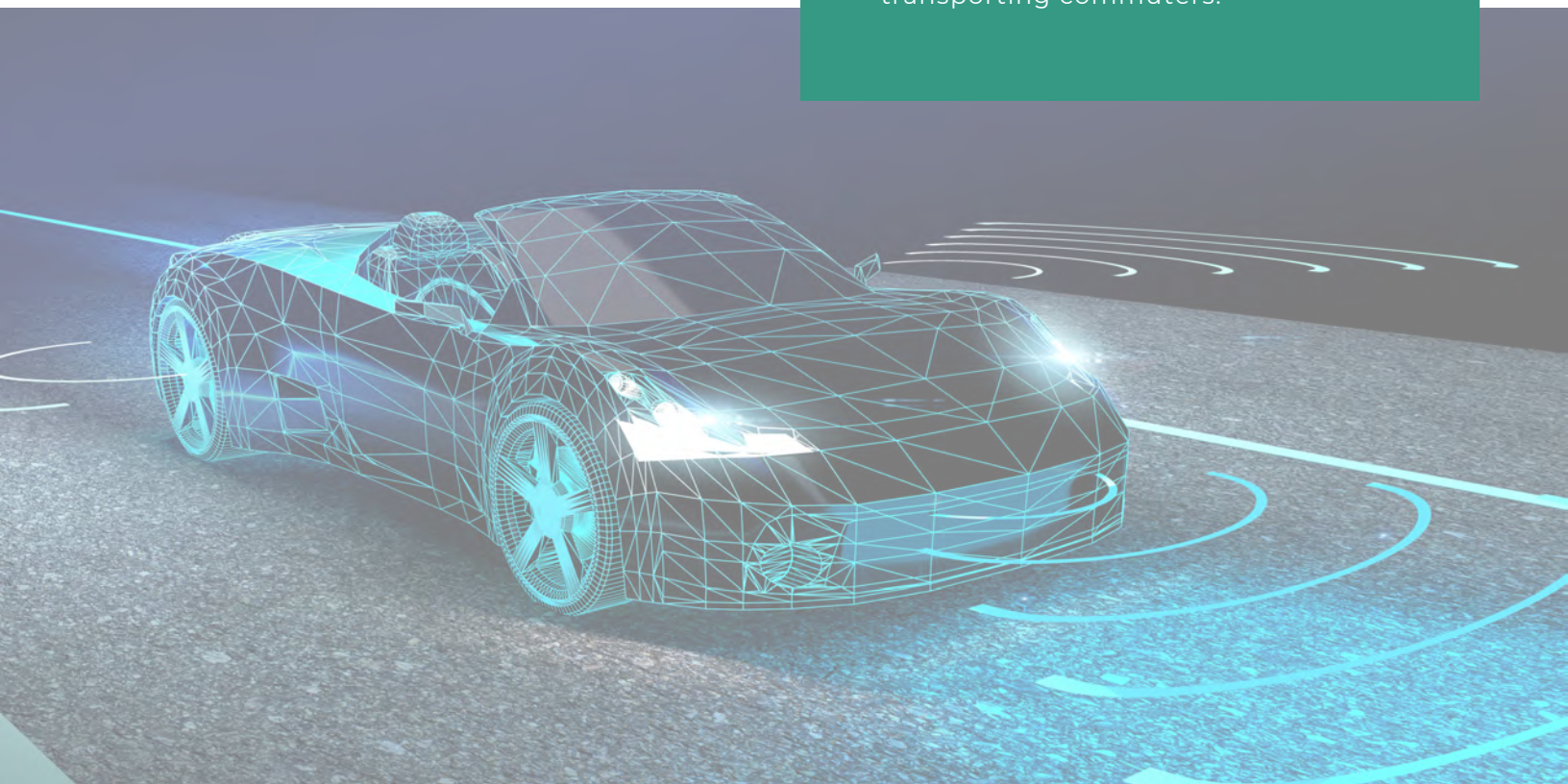
The City can also **pursue discounts and/or subsidies for income-qualified customers for all shared electric mobility services** supported by the City, such as shared e-bike or electric scooter services authorized to operate in Mountain View or potential future EV car share. In addition to discounted pricing, it is important to make sure that payment methods accepted by these vendors do not exclude those without access to credit cards. The City should **work with vendors to develop accessible payment strategies for electric mobility options and charger infrastructure**. This would include supporting cash payments or other alternatives to credit cards. Additionally, supporting payments for individual trips or charging sessions rather than requiring large up-front prepayments for services (creating a deposit on an account from which to draw down) can help make these services more accessible to lower-income households.

A7. MONITOR TRENDS IN THE AV INDUSTRY AND EVALUATE OPPORTUNITIES TO ELECTRIFY AVS

Automated vehicle technologies are evolving rapidly, and autonomous vehicles (AVs), personal delivery devices (PDDs), and autonomous air taxis are already being tested in Mountain View. Mountain View will **continue to monitor trends in the AV industry and evaluate opportunities to ensure AV deployment complements the City's climate goals**. This could include supporting policies that mandate or incentivize the electrification of AVs, piloting on-demand electric autonomous vehicle or shuttle programs, and designating specific EVSE for AVs.

AV TECHNOLOGIES

- Autonomous Vehicles: A driverless vehicle that is able to operate itself and perform necessary functions without any human intervention
- Personal Delivery Devices (PDDs): Autonomous robots powered by an electric motor and designed to deliver goods to customers, typically via public rights-of-way.
- Autonomous Air Taxis: Flying, pilotless taxis that can be used for carrying cargo, delivering goods, and transporting commuters.



B. PUBLIC CHARGING INFRASTRUCTURE

EVSE at city facilities can provide opportunity charging for residents and visitors, support residents without access to charging at home, and provide workplace charging for employees.

B1 INSTALL PUBLIC EVSE AT CITY FACILITIES

B2 DEVELOP GUIDANCE FOR CHARGING STATION SITING AND DESIGN AT CITY FACILITIES

B3 INTEGRATE EV CHARGING INFRASTRUCTURE INTO CAPITAL PROJECT PLANNING

B4 SUPPORT WORKPLACE CHARGING FOR CITY EMPLOYEES

B5 EXPLORE WAYS TO PROVIDE CHARGING INFRASTRUCTURE FOR E-BIKES AND OTHER ELECTRIC MICROMOBILITY DEVICES

B6 DEVELOP A FRAMEWORK TO PERIODICALLY EVALUATE USE, ACCESSIBILITY, AND DEPLOYMENT OF PUBLIC EVSE

B1. INSTALL PUBLIC EVSE AT CITY FACILITIES

The City owns and operates many facilities with public parking that are good potential sites for EVSE, including over 1,500 public parking spaces in downtown Mountain View. Currently, there is EVSE with 27 operational charging ports at City facilities: eight in the Civic Center parking garage, 10 at the parking structure at 850 California Street in downtown, and nine at the Community Center. The City is in the process of **installing additional EV chargers in the downtown parking structures** and lots (SAP-4, Task T7.3), which will bring the total to 99 publicly accessible City-owned charging ports. These totals do not include restricted-access chargers for City fleet vehicles.

Additionally, **staff will evaluate opportunities to add EV chargers to other City facilities** and determine a spending plan for the remaining funds from the $250,000 allocated by the City Council for

EV charging (SAP-4, Task T7.5). As part of this effort, staff should explore opportunities to install Level 3/DCFC infrastructure where appropriate and feasible. These can provide an important complement to the City's existing Level 2 chargers. Once priority sites for EVSE have been identified, staff can install additional **EV chargers as necessary to support public, employee, and fleet charging at City facilities** (SAP-4, Task T7.10). Staff is also currently **evaluating vendor options for the existing EV chargers at City facilities** to ensure they are providing appropriate levels of service at reasonable cost (SAP-4, Task T7.6). As the AV industry grows, the City should consider the needs of electric AVs when planning new EVSE installations. The City may need to designate specific charging facilities for AVs in the future.

TABLE 7: NUMBER AND LOCATIONS OF CITY-OWNED EV CHARGING PORTS

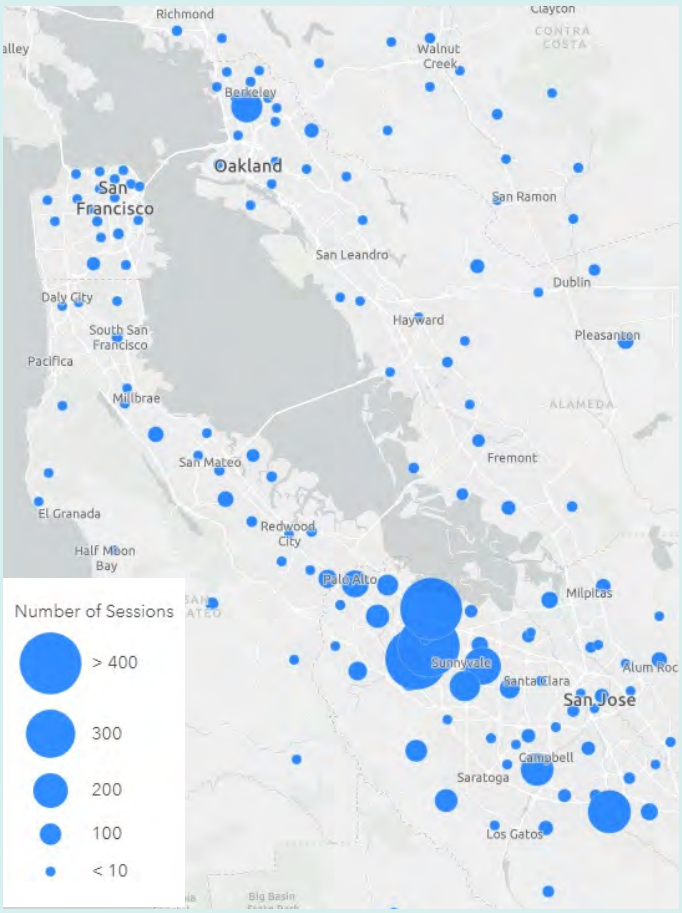
City Facility	Number of Charging Ports	Status
Civic Center	8	Operational
Downtown Parking Garage: 850 California Street	34 Level 2 1 Level 3	10 Operational 25 Planned
Downtown Parking Garage: 135 Bryant Street	10	Planned
Community Center	9	Operational
Downtown Parking Lot 2*	17	Planned
Downtown Parking Lot 9*	17	Planned

**Projects on hold until PG&E lifts their moratorium on service upgrades in downtown parking lots.*

The City currently owns and operates 27 EV charging ports across three different facilities, with an additional 38 chargers planned for installation in 2021. This map shows the billing zip code for users of the city's EV charging stations. The size of the circle indicates the number of sessions.

The greatest number of charging sessions were from users with billing zip codes relatively close to Mountain View. This suggests many local EV drivers may not have access to home charging, or have short-range EVs that need to charge more often. However, it is clear that these chargers also serve visitors and employees from around the Bay Area.

Figure 15: Charging sessions in Mountain View by billing zip code



As the City expands its public EVSE network, it will be important to streamline internal management of EV charger installation, repairs, and ongoing operations. Operational responsibilities may need to shift as the City moves from operating 27 charging ports to a network of over 65 ports operated by different vendors. Staff should **identify department roles and responsibilities for EV charger installation and operation** to ensure that the City's EVSE network can be efficiently maintained and expanded. This will clarify which departments and/or staff are responsible for identifying new sites for EVSE, overseeing vendor contracting, processing user feedback, interfacing with the vendors, and conducting necessary maintenance and repairs.

B2. DEVELOP GUIDANCE FOR CHARGING STATION SITING AND DESIGN AT CITY FACILITIES

As part of evaluating City facilities for potential EVSE installation sites, staff should **develop guidance on best practices for siting EV chargers** within a parking facility based on location of infrastructure, facility layout, and other considerations such as accessibility. Due to the interdepartmental nature of EVSE installation projects, it would be helpful to have standardized guidance as a reference for all departments to streamline the process for future installations at City-owned sites. This could be adapted from the best practices compiled in the County's DTNZ study, as well as lessons learned from past installations at City facilities.

As part of this guidance, the City should **develop standards for public EV charger signage, including wayfinding signage where appropriate**. Having uniform signage across different City facilities will help provide a more consistent user experience, and staff can ensure the signage clearly states the relevant restrictions for EV charging spaces. Wayfinding signage can help direct EV drivers to charging opportunities in off-street parking facilities and helps alert residents considering purchasing an EV that there are public charging opportunities nearby.

Another important component is **guidance on utility metering, submetering, and choosing an appropriate electricity rate schedule,** which is important to manage the City's costs and revenue from EVSE. Choosing to separately meter EV chargers allows the City to take advantage of special EV rate schedules offered by utilities, which can reduce electricity costs. This may not be appropriate for all EVSE installations, so guidance can help staff and vendors make the best choice in each situation. If EVSE is not installed on a separate utility meter, adding a submeter or using networked EV chargers that meter usage allows the City to claim credits through California's Low Carbon Fuel Standard (LCFS) program, which can provide a source of revenue to cover costs associated with operating EVSE.

B3. INTEGRATE EV CHARGING INFRASTRUCTURE INTO CAPITAL IMPROVEMENT PLANNING

Most of the cost of installing EV chargers is from the supporting electrical infrastructure and associated construction, rather than the charger itself. These costs can be minimized by integrating some of this infrastructure into the planning process for capital improvements, especially those involving City parking facilities. The City should **identify opportunities to install EV chargers and/or supporting infrastructure in conjunction with capital improvements at City-owned facilities.** For example, this could include adding a conduit run for future EVSE if unrelated trenching occurs at a City-owned parking lot, or adding electrical capacity to accommodate charging if panels or transformers are being replaced. The incremental cost of adding these measures to the scope of a capital project is significantly lower than pursuing EVSE installation as a separate project.

In addition to being a relatively small percentage of the overall installation cost, the EV charger itself is the only cost element that does not get cheaper on a per-unit basis with an increased number of installations. This means that prewiring or running conduit to additional spaces identified for future chargers during installation of EVSE is more cost-effective in the long run. Sites should be prepared for future demand by **including supporting infrastructure for expansion whenever EVSE is installed** at City facilities. This allows for easy, gradual expansion of charging as demand increases and is less costly than installing the supporting infrastructure through multiple, separate construction projects.

B4. SUPPORT WORKPLACE EV CHARGING FOR CITY EMPLOYEES

Supporting EV adoption by City employees helps reduce GHG emissions from employee commutes. While the EV chargers in the Civic Center parking garage are available for employee use, many other City facilities do not have workplace charging available. Staff plans to **evaluate employee demand for EV charging at all City-owned worksites** (SAP-4, Task T9.3). Currently, the City does not have data on the number of employees that commute via EV. Staff plans to **revise the employee commute survey** to include this information in order to track demand for charging and better quantify employee commute GHG reduction from EV adoption (SAP-4, Task T9.2).

B5. EXPLORE WAYS TO PROVIDE CHARGING INFRASTRUCTURE FOR E-BIKES AND OTHER ELECTRIC DEVICES

To encourage the use of e-bikes and electric micromobility devices (e.g., electric scooters) over private vehicles, the City can explore ways to provide supporting infrastructure for these devices. This could include initiatives such as piloting e-bike and/or e-scooter charging near bicycle racks in downtown Mountain View.

B6. DEVELOP A FRAMEWORK TO PERIODICALLY EVALUATE USE, ACCESSIBILITY, AND DEPLOYMENT OF PUBLIC EVSE

To make clean transportation initiatives more equitable, the City should continue evaluating the equity of EV charging within Mountain View. In addition to being well-distributed geographically, EV charging should be accessible and regularly used by multi-family residents, people of color, low-income households, people with disabilities, and other underserved populations. To support this goal, the City could develop a framework to periodically evaluate the use, accessibility, and deployment of EVSE in comparison to local demographics.

C. PRIVATE CHARGING INFRASTRUCTURE

Mountain View can support development of EVSE in privately owned residential and commercial facilities through the building code, permitting process, and coordination with local agencies to incentivize EVSE installation in existing buildings.

C1 INCLUDE APPROPRIATE EVSE REQUIREMENTS IN THE BUILDING CODE

C2 IMPROVE THE PERMITTING PROCESS FOR EV CHARGER INSTALLATION

C3 WORK WITH LOCAL AGENCIES TO SUPPORT INSTALLATION OF EVSE IN MUDS

C1. INCLUDE APPROPRIATE EVSE REQUIREMENTS IN THE BUILDING CODE

The building code is the most powerful tool local governments have to require EVSE in privately owned buildings. Local building codes should require sufficient installation of EV chargers in new construction to meet current demand and prewiring or running conduit to accommodate future EV adoption. The incremental cost of adding EV charging is approximately three to four times lower at time of initial construction compared to a later retrofit.

In November 2019, Mountain View adopted **requirements for EVSE installation in new residential and commercial development** (SAP-4, Task T7.1). This local amendment to CALGreen requires installation of EVSE in all building types, as well as prewiring of additional spaces. It will be important to continue to **evaluate and revise these requirements as part of each triennial code adoption cycle**, based on EV ownership projections, revisions to CALGreen, changes in charging technology, and stakeholder input.

2019 MVGBC EVSE REQUIREMENTS

SINGLE-FAMILY/DUPLEX

- (1) Level 2 Ready
- (1) Level 1 Installed

MUDS (3 OR MORE UNITS)

- 15% Level 2 Installed
- (1) Level 3/DC Fast Charger for every 100 spaces

COMMERCIAL BUILDINGS

- 0-9 spaces: (1) Level 2 Installed
- 10 or more spaces: 15% Level 2 Installed
- 100 or more spaces: (1) Level 3/DC Fast Charger for every 100 spaces

Additionally, as demand for EV charging increases, the City can **explore charger installation requirements for major renovations.** The City and County of San Francisco adopted an ordinance that requires installation of EV charging infrastructure not only in new construction but also in major renovations. In San Francisco, any alterations or additions of 25,000 square feet or more that include significant upgrades to structural components or major building systems must meet the requirements for EV charger infrastructure that apply to new construction.

Adopting a similar requirement in Mountain View could help improve access to EV charging in existing buildings. This should be done through an extensive stakeholder engagement process to determine the appropriate extent of these requirements and balance cost as well as current and projected demand for EVSE in each building type. This is key to ensuring EV charger requirements do not further exacerbate housing unaffordability or enhance dependency on single-occupancy vehicles.

C2. IMPROVE THE PERMITTING PROCESS FOR EV CHARGER INSTALLATION

Streamlining the permitting process is an important step to ensure local regulations support installation of EVSE in the community, especially in existing buildings. The County's DTNZ study analyzed Mountain View's permitting process and made several recommendations to improve the process to make it easier for residents and businesses to add EVSE. Most importantly, the City should **ensure compliance with AB 1236**, a California law requiring streamlining of permitting for EVSE.

Staff should also examine opportunities to implement additional optional measures to improve the permitting process, many of which are outlined in the Electric Vehicle Charging Station Permitting Guidebook developed by the California Governor's Office of Business and Economic Development. These recommendations include **further streamlining installations in single-family residences** by reducing application materials. This could include measures such as eliminating site plan requirements, limiting the permit to one inspection, and requiring the installer to provide manufacturer specifications and approved equipment testing certification at the time of inspection. The majority of EV owners live in single-family residences, which house approximately 46% of Mountain View's population.[18] **Conducting ongoing stakeholder outreach to assess barriers and opportunities for improvements in the permitting process** will also help Mountain View support EVSE installation in the community.

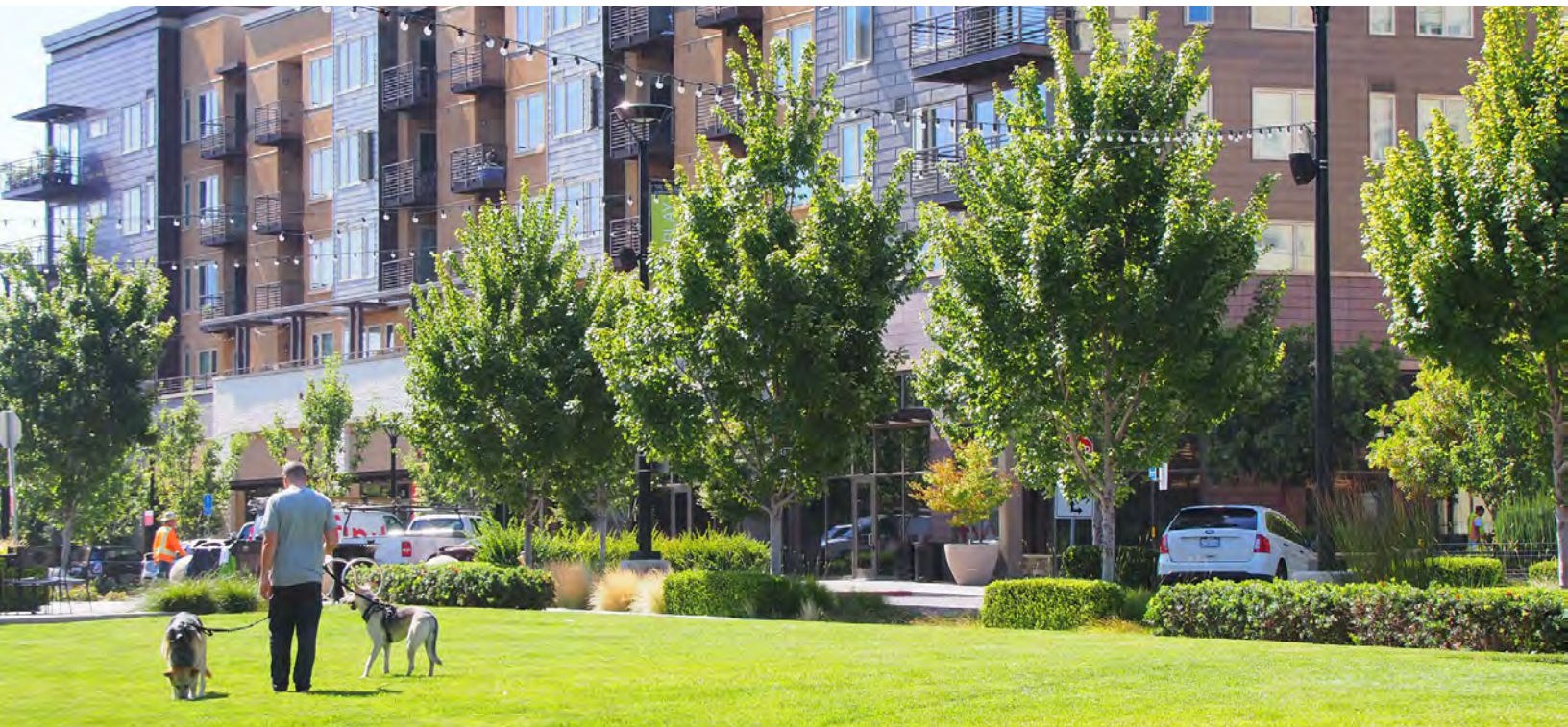
Another recommendation from the DTNZ study is to **develop a utility notification protocol via the permitting process to mitigate grid impacts from residential charger installation.** This involves developing a standardized process to notify the utility of relevant information when a resident requests a permit for EV charger installation, helping utilities accommodate the necessary electricity demand from rapidly increasing installation of residential chargers. The Silicon Valley Transportation Electrification Clearinghouse (SVTEC) group also plans to interface with PG&E to streamline the utility interconnection process for EV charging, which will further improve this aspect of EVSE development for larger installations, such as those at multifamily and commercial properties.

[18] Census Bureau, 2019 ACS 1-Year Estimates Detailed Tables: Total Population in Occupied Housing Units by Tenure by Units in Structure (TableID: B25033)

C3. WORK WITH LOCAL AGENCIES TO SUPPORT INSTALLATION OF EVSE FOR RESIDENTS OF MUDS

Most housing units in Mountain View are multi-family residences, which are less likely to have on-site EVSE. Increasing charging access for residents of multi-family housing is a key part of expanding access to EV ownership in the City, though there are significant barriers to installing EVSE in existing MUDs. Local government can play a role in providing outreach and education to homeowner associations, developers, and building owners.

Mountain View should continue to work with SVCE and other regional partners to develop and support incentives and technical assistance for EV charging that serves residents of MUDs. This includes supporting **SVCE's multi-unit residential charging technical assistance and incentive program**, as well as the **Priority Zone DCFC incentives to support MUDs** (SAP-4, Task T7.8). Over 34% of Mountain View's residences are in structures with 20 or more units and providing access to charging at or near these facilities can serve large numbers of residents. City staff can leverage existing outreach channels to inform property owners of available programs and provide key input into the development of new incentive and assistance programs to serve residents and businesses in Mountain View. The City can also work with SVCE to encourage MUDs to offer fair and equitable pricing for private EV charging.



D. PROMOTING & INCENTIVIZING EV ADOPTION

Mountain View can help improve understanding of EVs through targeted outreach, events, workshops, social media, and other channels. The City can also fill in gaps in State and Federal incentive programs for EVs and charging infrastructure by working with SVCE or developing City-led programs.

D1 WORK WITH PARTNERS TO DEVELOP INCENTIVE OR DISCOUNT PROGRAMS

D2 EDUCATE RESIDENTS ON BENEFITS OF EVS AND AVAILABLE FINANCIAL INCENTIVES

D3 LEVERAGE BUSINESS OUTREACH TO SUPPORT EV ADOPTION AND FACILITATE BEST PRACTICE SHARING

D1. WORK WITH PARTNERS TO DEVELOP INCENTIVE OR DISCOUNT PROGRAMS

Different types of financial incentives are received by the consumer at different times: grants are generally applied at point-of-sale, rebates are generally received within a few months of purchase, and tax credits are received the next year upon filing taxes. Research shows that the timing of these incentives significantly impacts their effectiveness in motivating consumers to purchase EVs; incentives applied at the time of purchase have a greater impact than rebates or tax credits received later, even if the value of the point-of-sale incentive is lower.[19] Most existing incentive programs available to the general public are rebates or tax credits.

To increase the effectiveness of existing incentive programs, the City can work with partners to **negotiate a supplemental discount available at the time of purchase through a group-buy or discount program** (SAP-4, Task T7.7). Mountain View residents have also previously been eligible for discounts on EVs from select dealerships through Bay Area SunShares, a regional group-buy program for solar panels and EVs. Point-of-sale discounts or incentives can be especially important to make EVs more accessible for lower-income households who have lower tax liability and may not be as able to wait for rebate reimbursements.

The City should also **evaluate gaps in existing rebate programs and consider targeted incentives for low-income households**. While there are a variety of existing incentives available for EVs, these programs are overwhelmingly targeted at new EVs, which are not affordable for many households. Half of the EVs or hybrids purchased through BAAQMD's income-restricted Clean Cars for All program were used vehicles, which are not eligible for most incentive programs. Developing incentive programs for used EVs, especially those that are redeemed at the point of sale, could help make EVs an affordable option for more households.

[19] Zifei Yang, Peter Slowik, Nic Lutsey, Stephanie Searle, *Principles for Effective Electric Vehicle Incentive Design*, the International Council on on Clean Transportation, June 2016.

Another approach to supporting more sustainable electric mobility options is to **develop an e-bike rebate program** (SAP-4, Task T3.6). Research has shown that e-bikes replace car trips at a high rate (up to 67%) and help achieve mode shift away from vehicle use at greater rates than regular bicycles.[20] Since there are currently no incentives available to Mountain View residents for the purchase of e-bikes, staff can develop a City-run program to encourage adoption. This program should include increased point-of-sale rebates for income-qualified households and targeted engagement with residents of affordable housing and other low-income communities.

D2. EDUCATE RESIDENTS ABOUT EVS AND AVAILABLE FINANCIAL INCENTIVES

Mountain View can support EV adoption by leveraging community engagement to address key perceived barriers to EV ownership in the region. Most residents understand the benefits of EVs but are concerned about up-front cost, performance, and safety. Key concerns among potential vehicle owners in Santa Clara County were safety, brand reliability, fuel efficiency, and price.[21] Perceptions of EVs are lowest in terms of affordability, performance, and safety, which can be addressed through targeted messaging that provides consumers with better information about EVs and available financial incentives.

The County's Driving to Net Zero study offers detailed community engagement recommendations to accomplish this type of educational campaign. Mountain View's approach could include:

- Social media testimonials from EV owners in Mountain View
- Social media messaging focused on financial incentives, including cross-promotion of posts from other agencies such as SVCE or PG&E
- Local media outreach and op-eds
- Community events (pop-ups, booths, online webinars)
- Posters in City facilities
- Partnerships with community-based organizations
- Multilingual and culturally relevant outreach to the Spanish, Mandarin, and Russian-speaking communities

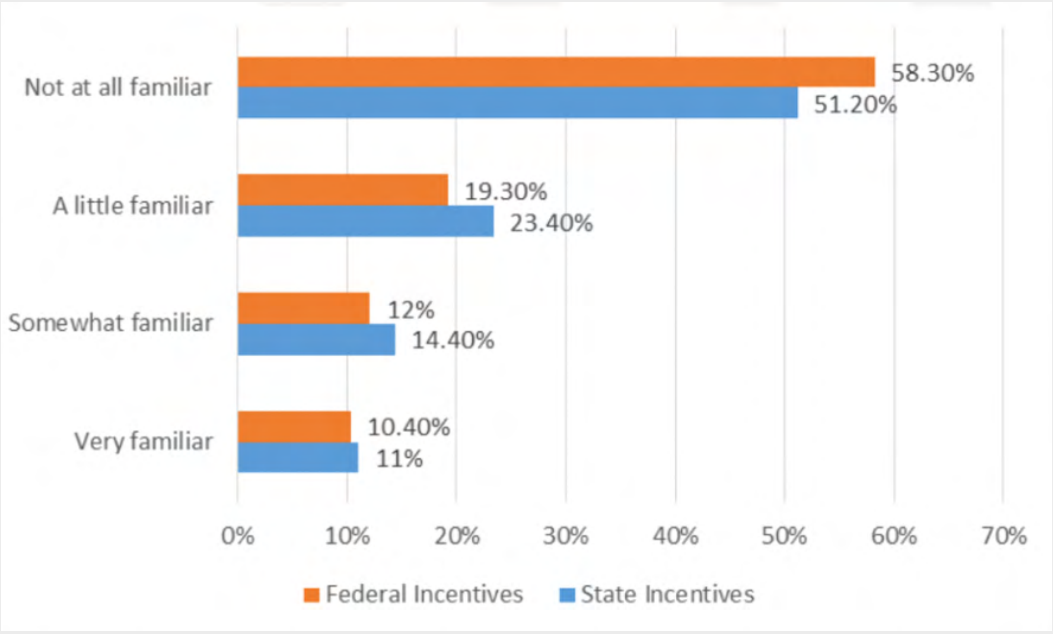
[20] Michael McQueen John MacArthur Christopher Cherry, PhD, The E-Bike Potential: Estimating the Effect of E-Bikes on Person Miles Travelled and Greenhouse Gas Emissions, Transportation Research and Education Center, May 2019.

[21] Santa Clara Transportation Survey: Findings Report, Santa Clara County Driving to Net Zero, March 2018.

As part of its education campaign, Sustainability Division staff can provide information about available financial incentives to help improve awareness. The many incentives available, especially for lower-income households, make EVs significantly more price competitive with conventional vehicles. However, a 2017 transportation survey suggests that most Santa Clara County residents are unaware of both State and Federal financial incentives for EVs. Only 25% of County residents reported being "very" or "somewhat" familiar with available incentives, which suggests a key role for the City in educating residents about these programs.

The City should **leverage SVCE's online EV Assistant tool to help residents navigate available incentives for EVs and home charging equipment**. Each incentive program has different eligibility requirements for both applicants and vehicles, which can be confusing for potential EV buyers. The incentive amount can vary depending on vehicle make, model, and year, as well as household income. Some incentive programs can be combined, while others cannot. SVCE's EV Assistant tool, part of the eHub online resource center, is designed to streamline the process for customers and assist them in easily comparing the price and features of different vehicles, including any applicable incentives.

Figure 16: Results from survey question on respondent's familiarity with EV incentives



D3. LEVERAGE BUSINESS OUTREACH TO SUPPORT EV ADOPTION AND FACILITATE BEST PRACTICE SHARING

To facilitate both workplace charging and EV adoption in commercial fleets, Mountain View should **integrate information about EVs and EVSE into the Sustainability Division's business outreach program**. SAP-4 includes Goal S5: Engage businesses to educate, share best practices, and pilot new sustainability initiatives, and the related SAP-4 actions can be utilized to support EV adoption in the commercial sector.

While several of Mountain View's larger businesses have installed many EV chargers for employee and/or fleet use, access to workplace charging is still low for employees of smaller businesses. These businesses have often been ineligible for previous incentive programs for workplace EVSE, which required large numbers of chargers to be installed. City staff should **work with SVCE and other partners to facilitate installation of** EV **chargers at workplaces in the City, with a focus on small and medium-sized businesses, through incentive and technical assistance programs** (SAP-4, Task T7.9).

The City should also continue to **participate in the Silicon Valley Transportation Electrification Clearinghouse (SVTEC)**, a regional group of key stakeholders in the EV/EVSE industry, public agencies, employers, and other local organizations. This group provides a key forum for best-practice sharing and collaboration for supporting EV adoption in the commercial and public sectors. Mountain View can also promote SVTEC programs, such as the Electrification Pledge for fleets and the Regional Recognition Program, through the City's business outreach to highlight successful examples of EV adoption by Mountain View businesses.

E. CITY FLEET

In 2018, Mountain View's fleet vehicles were responsible for over 20% of the total GHG emissions from City operations. The following actions can advance the electrification of City fleet vehicles through policies and infrastructure.

E1 SUPPORT FLEET ELECTRIFICATION THROUGH POLICY AND PLANNING

E2 IMPROVE EMPLOYEE AWARENESS OF EVS IN THE CITY FLEET

E3 ESTABLISH SYSTEM FOR MAINTAINING, OPERATING, AND BOOKING CITY-OWNED E-BIKES AND ASSOCIATED EQUIPMENT

E4 EXPLORE OPPORTUNITIES TO PILOT OR TEST HEAVY-DUTY ELECTRIC VEHICLES

E5 EARN REVENUE BY GENERATING LCFS CREDITS FROM FLEET CHARGING

E1. SUPPORT FLEET ELECTRIFICATION THROUGH POLICY AND PLANNING

As a first step, Mountain View plans to **develop a Clean Fleets Policy** to provide high-level guidance on reducing GHG emissions in new fleet vehicles (SAP-4, Task T8.1). This policy will outline the decision-making process for purchase of new fleet vehicles to prioritize electric or hybrid vehicles whenever appropriate. The City also plans to **develop a Fleet Electrification Plan, including a site-by-site analysis of infrastructure needs, looking at the fleet replacement schedule, and analyzing budget implications** (SAP-4, Task T8.3). This plan should leverage any available incentives and technical assistance, such as SVCE's Fleet Electrification Grants for planning and site upgrades. As part of the plan, Mountain View should **develop electrification targets for the City fleet** based on municipal operations GHG reduction goals and State EV targets. These targets will assist staff in benchmarking progress towards the long-term GHG reduction goals in the MOCAP.

The City can take near-term action to improve access to charging facilities for fleet EVs. To ease already constrained parking and reduce the need for new EVSE, the City can **pilot shared parking for public and fleet charging** at sites such as the City Hall garage. This would be appropriate for fleet EVs that are generally only parked overnight but in use during business hours, freeing those chargers for use by the public during the day.

E2. IMPROVE EMPLOYEE AWARENESS OF EVS IN THE CITY FLEET

Mountain View currently has several plug-in EVs in the fleet, mostly "pool vehicles" that can be reserved by any employee for official business. It is important to **develop informational resources for employees** to understand what electric vehicle options are available, instruct them on how to reserve and use these vehicles, and address any concerns by employees who may be less familiar with EVs (vehicle range, how to charge etc.). This will ensure that all electric vehicles and bicycles in the City's fleet are better utilized, returned to the correct parking areas, and kept properly charged.

In addition to resources developed for general employees (who likely only occasionally use City pool vehicles), more advanced training and resources should be explored for employees that drive specialized fleet vehicles. The City should **develop or participate in training programs to inform staff of the latest electric options for fleet vehicles and off-road equipment** and address negative perceptions of EVs. This could include forums to meet with staff at other public agencies who have already integrated EVs into their fleet for more specialized applications. As this is an area where technology is rapidly changing, access to ongoing training and updated resources is important.

E3. ESTABLISH SYSTEM FOR MAINTAINING, OPERATING, AND BOOKING CITY-OWNED E-BIKES AND ASSOCIATED EQUIPMENT

The City has several e-bikes purchased for the employee commute pilot that can be added to the fleet as pool vehicles. These e-bikes are currently underutilized, and no process is in place to ensure they remain in good repair. The City should include the e-bikes in the booking system for pool vehicles, allowing staff to check out e-bikes and helmets for work-related trips. Staff should also evaluate where to stage each of the City's e-bikes (i.e. Municipal Operations Center, Shoreline at Mountain View, Community Center, City Hall) and assess each facility's battery charging needs and capabilities. The City should also establish a system for maintaining and operating e-bikes. Mountain View could hire or train a fleet mechanic with experience in e-bike repair or contract with a local vendor that offers e-bike maintenance services.

E4. EXPLORE OPPORTUNITIES TO PILOT OR TEST HEAVY-DUTY EVS

Heavy-duty and medium-duty vehicles in the City's fleet perform more specialized functions and can be more challenging to electrify than passenger vehicles. The Governor recently signed Executive Order N-79-20, which requires all new heavy-duty and medium-duty vehicles to be zero emissions by 2045 for all feasible applications. Mountain View can help advance the electrification of its heavier-duty fleet vehicles ahead of the State's goals by pursuing opportunities to pilot or test heavy-duty EVs and take advantage of available funding programs for these vehicle types (SAP-4, Task T8.5).

E5. EARN REVENUE BY GENERATING LCFS CREDITS FROM FLEET CHARGING

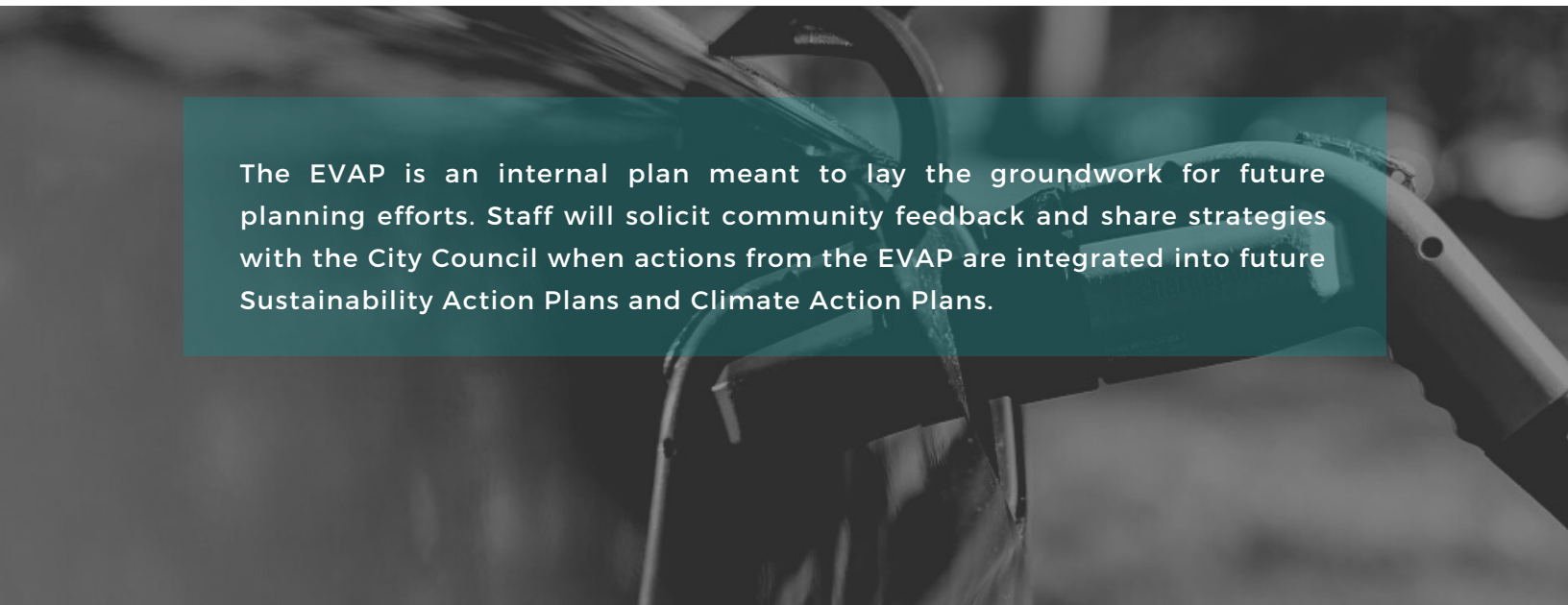
California's Low Carbon Fuel Standard program offers charging station owners an opportunity to generate credits that have monetary value by providing electricity as a vehicle fuel. In order to claim these credits, stations need to be metered to measure the amount of electricity dispensed. So far, Mountain View has not submetered the electricity provided to nonnetworked chargers for fleet vehicles. **Ensuring proper metering of fleet chargers so LCFS credits can be claimed** will provide the City with revenue to help offset the incremental cost of electrifying the vehicle fleet.

NEXT STEPS & CONCLUSION

While Mountain View's approach to decarbonizing the transportation sector focuses on reducing vehicle use first, electrifying the remaining vehicles on the road will be critical to achieving the City's climate goals. The EVAP outlines strategies and actions to accelerate EV adoption and support equitable access to the benefits of clean transportation within Mountain View.

This plan is meant to guide the City to integrate EVs and EVSE into future planning and programming. This may include the following steps:

- Evaluate all strategies and integrate appropriate actions into the next Sustainability Action Plan (i.e., SAP-5)
    - Estimate the cost, potential GHG reduction, equity impact, and co-benefits of each strategy
    - Establish department lead and project time frame of each strategy
    - Evaluate and prioritize strategies based on cost-benefit and co-benefits
- Incorporate findings and strategies into the next Climate Action Plan
- Identify funding for EV programs and projects
- Develop framework for monitoring progress, measuring success, and periodically updating the EVAP
- Continue to engage the community on EV programs and projects



The EVAP is an internal plan meant to lay the groundwork for future planning efforts. Staff will solicit community feedback and share strategies with the City Council when actions from the EVAP are integrated into future Sustainability Action Plans and Climate Action Plans.