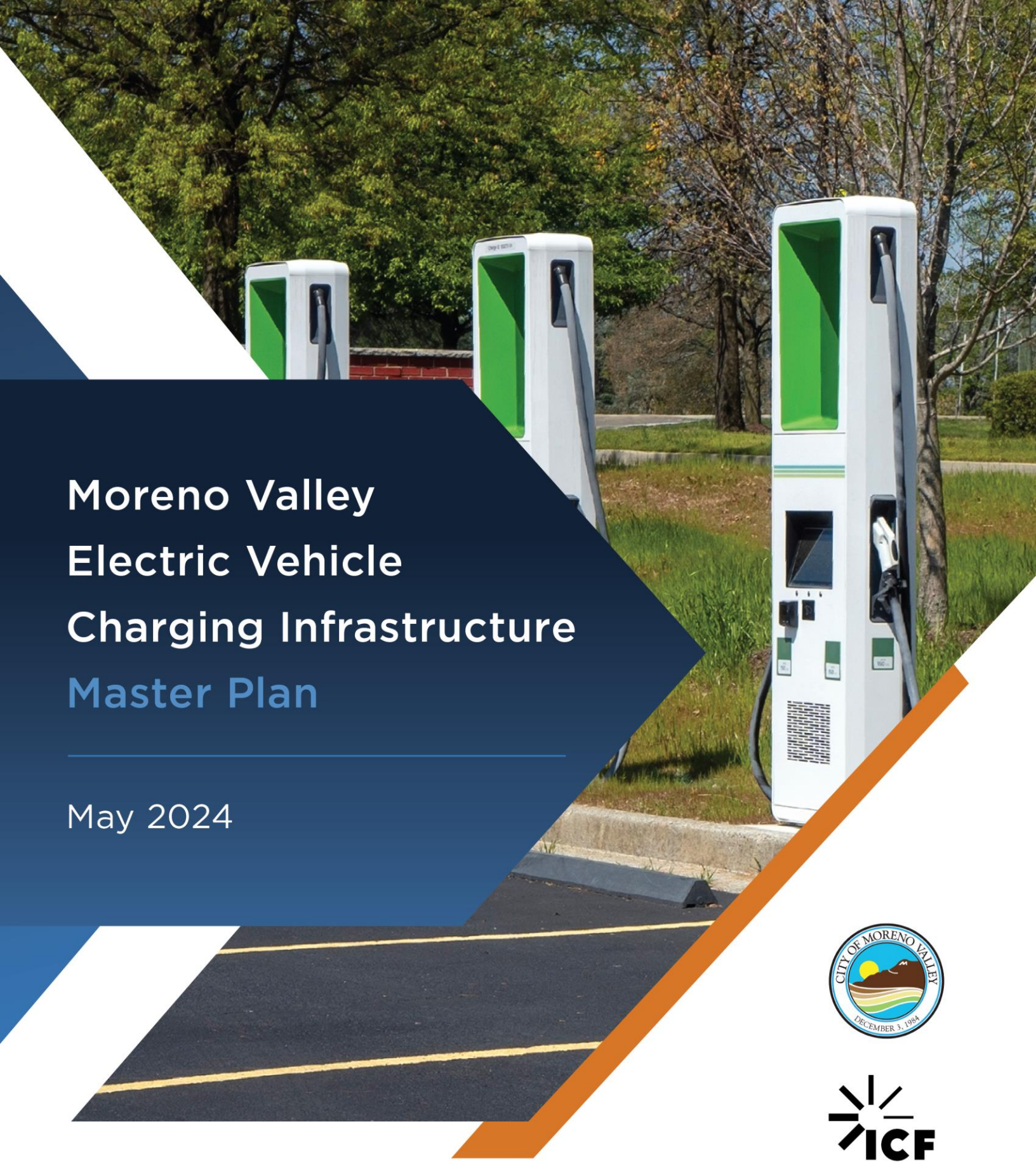

Moreno Valley Electric Vehicle Charging Infrastructure Master Plan

May 2024

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Executive Summary

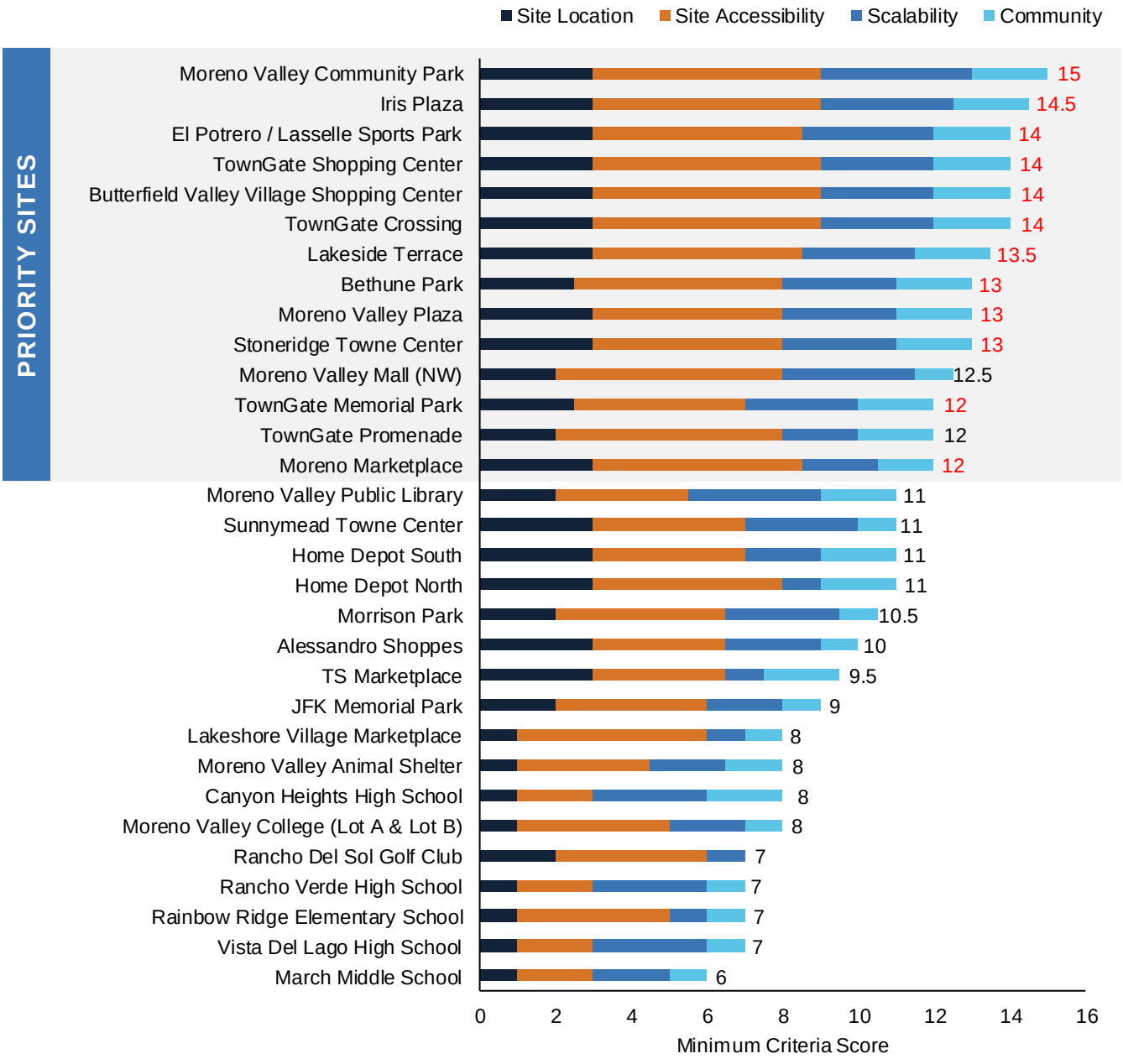
The City of Moreno Valley, the second largest city in Riverside County in the State of California, is planning for long-term transportation electrification. To this end, the City of Moreno Valley sought to establish a comprehensive electric vehicle (EV) charging infrastructure plan that provides a well-informed and systemic approach to building a network of publicly accessible EV charging stations. This project was conducted to assess the City of Moreno Valley's viable pathway toward supporting zero-emission vehicle (ZEV) adoption and EV charging infrastructure.

This report begins with an exploratory discussion that sets the stage for anticipated significant transformations within the transportation sector in the city. The report first describes the principal regional drivers and barriers associated with the electrification of transportation, alongside a comprehensive analysis of the City of Moreno Valley's existing on-road ZEV adoption status. This existing condition evaluation delves deeply into the regional transportation network, land use patterns, and the context of disadvantaged communities—all of which are critical components in strategizing for EV charging infrastructure development. Following the assessment of the current condition, the report provides a vehicle fleet analysis that utilizes vehicle statistics databases and forecasting techniques to predict regional EV trends and requirements. A pivotal outcome of this research is the projection of the vehicle technology mix (i.e., the anticipated number of ZEVs by calendar year), informed by state vehicle electrification policies. This projection serves as a foundation for estimating the quantity of EV chargers and the anticipated power demand needed to be deployed within the city to support the upcoming wave of EVs. Augmenting the projections of the vehicle technology mix, the report offers details on available infrastructure technologies, provides recommendations on incentive programs, outlines opportunities for public-private partnerships, and proposes marketing strategies aimed at educating and engaging the public and key regional stakeholders.

The key findings from the fleet and infrastructure analysis underscore the anticipated evolution in vehicle technology mix and the corresponding needs for light-duty charging infrastructure. The project team forecasts that by 2030, the City of Moreno Valley is expected to host upward of 18,000 EVs. This number is projected to increase substantially, reaching beyond 96,000 by 2050. To support this significant uptick in EV adoption, the city will need to deploy more than 400 public and shared private charging ports by 2030. This requirement is projected to expand fivefold, exceeding 2,100 ports by 2050. These projections highlight the vital role of a well-developed EV charging infrastructure in supporting the city's shift toward sustainable transportation.

Following the fleet and infrastructure analysis, the project team embarked on an in-depth siting analysis to identify potential locations for the deployment of charging infrastructure. Utilizing representative regional trip data, the team developed travel demand scores for three distinct scenarios to determine the most appropriate type of chargers for each site—whether Level 2 or direct current fast charging (DCFC). These scores facilitated the selection of specific parcels throughout the City of Moreno Valley that would serve as ideal spots for public charger installation. The report includes detailed documentation of the site visit process and the evaluation checklists used for each location within the appendices. Based on the insights garnered from each site assessment, all potential locations were ranked, culminating in a prioritized list of top choices for charger deployment, alongside an extensive array of backup locations, as indicated in Figure ES1.

Figure ES1. Proposed Charging Infrastructure Locations and Backup Sites

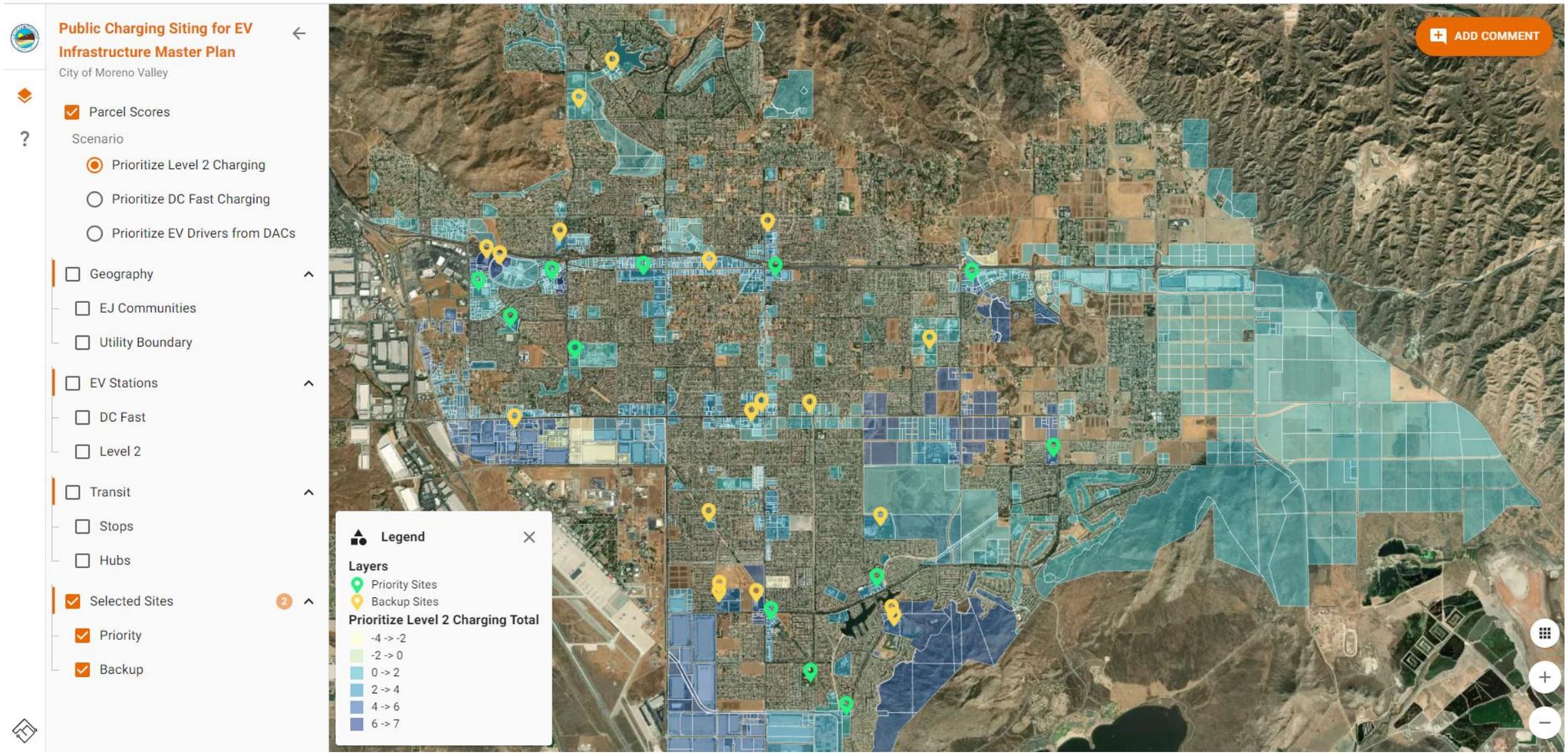


To enrich the understanding of public and stakeholder reception toward the City of Moreno Valley's planning for EV charging infrastructure, additional input was actively sought. Through the organization of a series of Project Taskforce and stakeholder group meetings, the project team was able to gather community-specific insights on the development of EV charging infrastructure and potential sites within the city. These engagements not only facilitated a platform for soliciting feedback but also opened dialogue with property owners to discuss the hurdles associated with adopting EV and charging infrastructure. Furthermore, the project team released a public survey to solicit public feedback and community sentiments regarding the Electric Vehicle (EV) Charging Infrastructure Master Plan. The survey launched on January 11, 2024, garnered 257 responses, primarily from Moreno Valley residents. The findings indicate that 64% of respondents do not own an EV, citing high vehicle costs, range concerns, and charging costs as major barriers. There is a notable lack of awareness about existing public charging locations, with many stating that the nearest charging site is more than a mile away. Respondents emphasized the need for more publicly accessible charging sites, pointing out that the current ones are often full. As for the future development of EV charging infrastructure, the survey indicated a strong preference for real-time information on charger availability, a mix of Level 2 and DCFC chargers, and prioritizing locations near shopping areas and workplaces. Safety, security, and charging speed emerged as top priorities for public EV sites, highlighting the community's emphasis on accessibility and convenience in the EV Charging Infrastructure Master Plan.

The project team also initiated outreach to the property owners of 18 privately owned sites that were deemed suitable for charger installation. This proactive engagement aimed to gauge property owners' openness to hosting publicly accessible EV chargers and to explore potential collaborations, emphasizing that the outreach was an initial step without confirmed funding or timelines for charger installation. The outreach process involved contacting property owners through letters, emails, and phone calls, based on contact information provided by the city or obtained through research. The effort revealed a positive inclination toward future collaboration, with no property owners outright rejecting the proposal and five properties expressing explicit interest in working with the city to facilitate the deployment of EV charging infrastructure. To enhance communication and disseminate the findings of the study, as well as to distribute the public survey, the project team established a dedicated website, as well as social media accounts on Facebook, Instagram, and X. This digital presence was strategically developed to engage with the community, provide easy access to the study's results, and facilitate the collection of public input through the survey. The website and social media platforms served as dynamic channels for the project team to share updates, foster public awareness, and encourage active participation in the development of the City of Moreno Valley's EV charging infrastructure plan. Additionally, the project team developed an innovative online mapping tool designed to visually represent the areas within the City of Moreno Valley that exhibit the highest demand for EV chargers, alongside illustrating the existing charging infrastructure and proposing specific sites for the deployment of new charging facilities. This interactive tool was created to assist in the strategic planning of EV charger distribution, enabling stakeholders, decision makers, and the general public to gain a comprehensive understanding of the current EV charging landscape and the rationale behind the proposed locations for infrastructure expansion. By integrating real-time data and predictive analytics, the mapping tool serves as a valuable resource for optimizing the placement of EV chargers to meet future demand effectively, ensuring that the city's charging network evolves in alignment with its residents' needs and the broader goals of sustainable transportation.

Overall, the City of Moreno Valley's EV Charging Infrastructure Master Plan serves as a strategic blueprint, positioning the city to effectively tap into upcoming federal, state, and regional funding programs dedicated to the expansion of the public EV charging network. It lays out a clear blueprint for the city's development of EV infrastructure over the next 5 to 10 years, guiding decisions on strategic investments and infrastructure placement to meet the anticipated growth in EV use. By aligning with the plan's insights and recommendations, Moreno Valley is setting a course toward a sustainable, efficient, and accessible charging infrastructure network that will support the city's environmental goals and its residents' evolving transportation needs.

Figure ES2. City of Moreno Valley Interactive Mapping Tool (https://moreno-valley-ev.azurewebsites.net/)

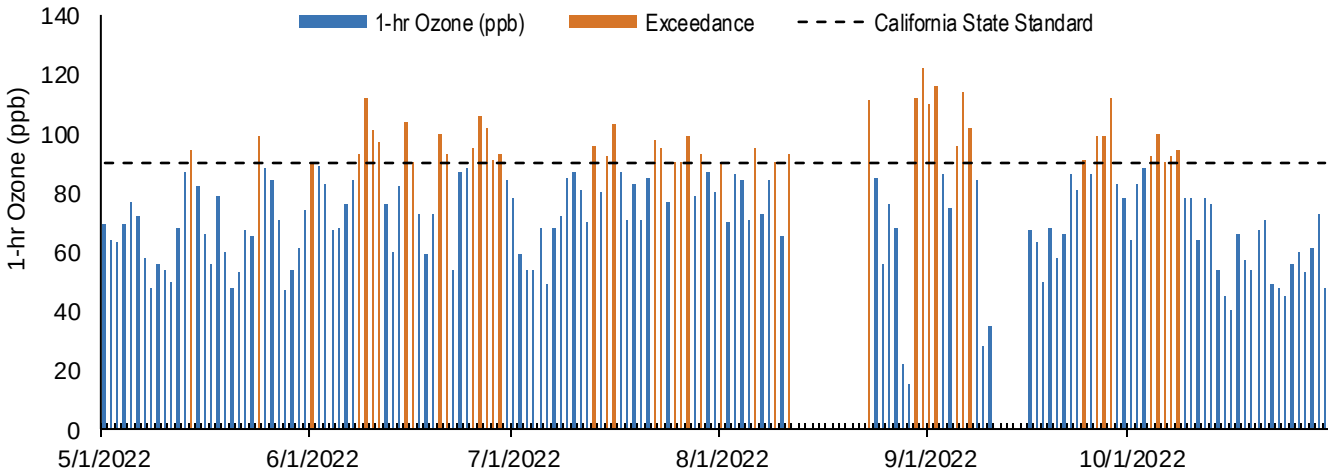


1. Introduction

Nationally, the transportation sector is a major source of greenhouse gas (GHG) emissions. In California, transportation accounts for approximately 38% of GHG emissions in the state.[1] The City of Moreno Valley, the second largest city in Riverside County, with a population of more than 214,000 people spread over 51.5 square miles and a region booming with economic growth, is no exception. Moreno Valley has approximately 57,000 households, with a 64% homeownership rate and a workforce population of 104,000. The median age is 32.6 and median household income is approximately $73,635, with about 13.5% of individuals experiencing poverty. About 78% of the city's population has a high school education and 47% have a college degree, with three prominent colleges nearby (University of California, Riverside; California Baptist University; and Moreno Valley College).[2] Moreno Valley has a diverse demographic with 28.7% identifying as White, 60.4% Hispanic or Latino, 17.9% African American, 9.5% as two or more races, 5.3% Asian, and 0.7% American Indian or Alaska Native.[3] Within the city, transportation accounts for more than 50% of total emissions, which is a much larger share than the state's contribution from the sector, thus highlighting the need to cut transportation emissions at the local level.[4]

Located within the South Coast Air Basin, Moreno Valley is positioned amid a network of major highways, including I-215 and I-60. The city serves as a significant logistics hub in Southern California, with several large-scale distribution centers, thanks to its proximity to major highways and ports. This geographical positioning within one of the most populous industrial regions of California inevitably subjects the city to the environmental complexities associated with air quality management. Specifically, the city is notably affected by the high levels of ozone pollution that persist within the South Coast Air Basin. As indicated in Figure 1, during summer months, Riverside County, including the City of Moreno Valley, experiences high levels of ozone air pollution that often exceeds the state and national ozone standards.

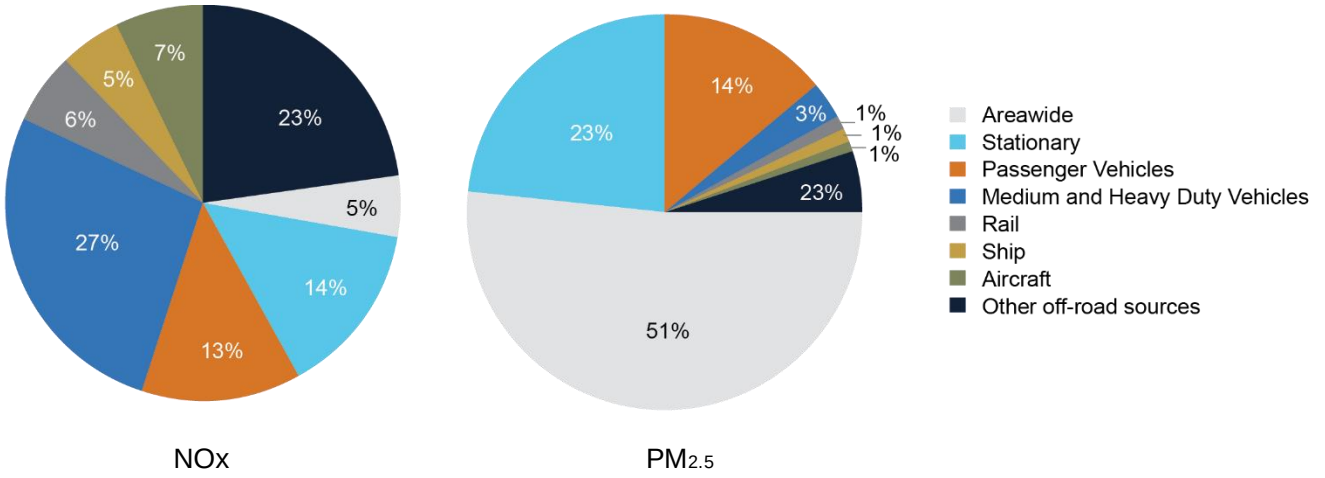
Figure 1. 1-Hour Ozone Concentration at Rubidoux Riverside Station Near the City of Moreno Valley, California[5]



[1] https://ww2.arb.ca.gov/ghg-inventory-data.
[2] About Moreno Valley (moval.gov)
[3] U.S. Census Bureau QuickFacts: Moreno Valley City, California.
[4] MV-CAP.pdf (moval.org).
[5] Data retrieved from the South Coast Air Quality Management District, AQ Details – Current Monitor Data (aqmd.gov).

This pervasive issue is primarily driven by the region's high vehicular traffic, industrial processes, and weather patterns, which can trap pollutants close to the ground. As estimated for 2022, the transportation sector is projected to account for 81% of nitrogen oxide (NOx) emissions and 25% of fine particulate matter ($PM_{2.5}$) emissions in the South Coast Air Basin.[6] The presence of criteria pollutants, such as NOx and $PM_{2.5}$, pose a threat to public health, while GHGs lead to climate change, which worsens extreme heat days, droughts, and wildfires in Southern California. This exacerbates the vulnerability of already susceptible populations, furthering inequities, and posing a threat to economic resilience. Figure 2 shows the contribution of mobile sources to NOx and $PM_{2.5}$ emissions in the South Coast Air Basin.

Figure 2. 2022 NOx and $PM_{2.5}$ Emissions Contribution of Mobile Sources in the South Coast Air Basin[7]



To address the air quality and climate change challenges associated with the transportation sector, several initiatives are currently being implemented to encourage the adoption of zero-emission vehicles (ZEVs) in the region. ZEVs and near-zero-emission vehicles are a strong technological solution for achieving significant emissions reductions in the transportation sector. ZEVs, including battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell electric vehicles (FCEVs), have significant potential for reducing both air pollution and GHG emissions. Using electricity or hydrogen as a transportation fuel, especially in California, can significantly reduce overall vehicle emissions and eliminate tailpipe emissions.

To effectively support the anticipated surge in BEVs and PHEVs in line with state and local climate objectives, careful consideration must be given to the planning and implementation of the necessary charging infrastructure. The successful shift from fossil fuel-powered vehicles to electric vehicles (EVs) largely depends on the widespread availability and accessibility of charging stations. This requires strategic placement of charging stations, not just in terms of quantity, but also in terms of equitable distribution across residential, commercial, and public spaces. Thoughtful urban and regional planning is required to identify optimal locations and prevent potential charging congestion. In addition, the local electrical grid must be prepared to handle the increased load from the growing number of EVs. This includes considering the need for fast-charging stations and ensuring that charging solutions are available for residents without access to home charging, such as those living in multifamily dwellings.

[6] https://ww2.arb.ca.gov/applications/cepam2019v103-standard-emission-tool.
[7] Emissions from ocean-going vessels are only out to 3 nautical miles. California Criteria Pollutant Emission Inventory Data. https://ww2.arb.ca.gov/criteria-pollutant-emission-inventory-data.

In response to this need, the City of Moreno Valley developed an Electric Vehicle (EV) Charging Infrastructure Master Plan designed to establish a blueprint for the deployment of the EV charging infrastructure network within the city. The project starts with an analysis of the current state of ZEV adoption and the regional transportation network, identifying key drivers and barriers to EV charging infrastructure development. It progresses with a detailed vehicle fleet analysis, leveraging statistical data and forecasting methods to project future EV needs and the corresponding requirement for charging infrastructure. This includes the estimation of EV charger quantities and power demands based on projected ZEV adoption rates that are informed by state policies. Furthermore, the report outlines available infrastructure technologies, incentive programs, public-private partnership opportunities, and marketing strategies for public engagement.

To refine these projections and plan for infrastructure deployment, the project team conducted a siting analysis, held public and stakeholder engagement activities, and developed digital tools for community involvement. An online mapping tool was introduced to visualize high-demand areas for EV chargers, existing infrastructure, and proposed deployment sites, facilitating strategic planning and public insight into the infrastructure expansion rationale. The project also included a proactive outreach to property owners of potential charger installation sites and extensive public outreach through a dedicated website, social media, and a public survey to gauge community preferences and concerns regarding EV charging. These efforts culminated in a strategic blueprint that positions Moreno Valley to capitalize on upcoming funding opportunities for public EV charging network expansion, providing a blueprint for infrastructure development over the next 5 to 10 years.

Chapter 2 of the report delves into the primary drivers propelling and impeding the transition to EVs, laying the groundwork for understanding the broader context of transportation electrification. **Chapter 3** shifts the focus to a comprehensive market assessment of existing EVs and EV infrastructure technologies, offering insights into the current landscape. The narrative continues in **Chapter 4**, which evaluates the current state of EVs and EV infrastructure adoption within the City of Moreno Valley, setting the stage for forward-looking analysis. **Chapters 5 and 6** are dedicated to forecasting the future of EV adoption and the consequent demand for charging infrastructure, using data-driven projections to anticipate growth and infrastructure needs. **Chapter 7** presents a thorough examination of the methodology and findings from the siting analysis for EV charging stations, detailing the strategic approach to infrastructure placement. Following this, **Chapter 8** recounts the extensive public outreach and engagement efforts undertaken by the project team to refine and finalize site selection, emphasizing the importance of community input in the planning process. **Chapter 9** tackles the financial aspects and barriers associated with EV charging infrastructure development, while **Chapter 10** explores potential funding sources that could support these initiatives. Finally, **Chapter 11** offers a high-level summary of educational outreach and marketing strategies proposed to support EV adoption, providing a blueprint for the city to enhance public awareness and accelerate the transition to electric transportation.

2. Major Drivers and Challenges

The policy and regulatory environment—established by federal, state, and local agencies—aims to reduce GHG emissions and improve air quality through the accelerated deployment of ZEVs. These policies also have resulted in the adoption of stricter vehicle emission standards and greater investment in public charging infrastructure to support zero-emission transportation. Although the city is obligated to consider these policy factors, the need for clean air in the local region is arguably the stronger major driver for transportation electrification. As discussed in Chapter 1, the City of Moreno Valley is burdened by major public health concerns that are attributable to high levels of particulate matter and ozone from on-road mobile emissions. Supporting ZEV adoption and public charging infrastructure will not only alleviate public health concerns from vehicle pollutant emissions but also enable environmental justice engagement that will result in healthier and more resilient communities.

Thus, the transition to a zero-emission transportation system in the City of Moreno Valley is both policy driven and health driven, with a focus on reducing emissions and improving air quality for a sustainable future. In the following sections, the policies and priorities established at the federal, state, and local levels are outlined to provide the requisite background for the city's EV Charging Infrastructure Master Plan.

2.1. State Policies and Incentives

The State of California is a strong leader in the transition to cleaner transportation technologies and the phasing out of fossil fuel-powered vehicles through its passage of ambitious policies and regulations that serve as a blueprint for other states to follow. Early state policies focused on GHG and pollutant emissions reduction, which have served as the precedent for subsequent policies that focus on reducing transportation sector emissions. The policies directed at reducing transportation sector emissions have resulted in effective programs, such as the Low Carbon Fuel Standard (LCFS) credit program that has been amended to include ZEV charging and hydrogen infrastructure. More recently, the California Air Resources Board (CARB) developed the state's ZEV Market Development Strategy to facilitate the newly adopted 100% ZEV regulations for various fleets in the transportation sector. A summary of the state's regulatory achievements in support of ZEV adoption is provided in Table 1.

Table 1. California Regulations Supporting ZEV Deployment

Regulation	Description
Advanced Clean Cars II	Built on the foundation of Advanced Clean Cars I (2012), which established increasingly stringent emissions allowances for vehicle-emitted criteria air pollutants and GHGs, the Advanced Clean Cars II regulations (2022) will reduce light-duty passenger car, pickup truck, and sports utility vehicle emissions from the 2026 model year through 2035. The regulations amend the ZEV regulation to require an increasing number of ZEVs, including battery electric, hydrogen fuel cell electric, and plug-in hybrid electric vehicles.[8] By 2035, the regulation requires 100% of new passenger vehicles sold in the state to be ZEVs. These amendments support California Governor Newsom's Executive Order that all new passenger vehicles sold in California must be zero-emission by 2035. The Low-Emission Vehicle regulations also were amended to include increasingly stringent standards for gasoline-powered cars and heavier passenger trucks.
Advanced Clean Trucks (ACT) Regulation	The ACT regulation (2020) requires manufacturers of medium- and heavy-duty vehicles to sell increasing percentages of ZEVs in California, culminating in a requirement for 100% ZEV sales by 2045. Projections related to this regulation estimate that zero-emission trucks in the state will grow to 100,000 by 2030 and 300,000 by 2035.[9]
Advanced Clean Fleets (ACF) Regulation	The ACF regulation complements the ACT regulation (see above). Starting in 2024, the regulation requires fleets of vehicles (with a gross vehicle weight rating [GVWR] greater than 8,500 pounds) operating in California to transition to zero-emission technology with the goal of transitioning all drayage trucks to zero-emission by 2035 and the rest of the medium- and heavy-duty vehicles to zero-emission by 2045.[10] Specifically related to public fleets, 50% of new purchases between 2024 and 2026, and 100% of new purchases in 2027 and beyond should be zero-emission.
Innovative Clean Transit (ICT) Regulation	The ICT regulation, adopted in December 2018, requires public transit agencies to transition to a 100% zero-emission bus fleet by 2040. All transit agencies that own, operate, or lease buses with a GVWR greater than 14,000 pounds must comply with the regulation. The zero-emission bus purchase requirements vary, depending on the transit agency's size.
Zero-Emission Truck Measure	This measure, as proposed in the 2022 State Strategy for the State Implementation Plan, would seek to accelerate the number of zero-emission trucks (ZETs) beyond existing measures (including the proposed ACF regulation. The measure seeks to upgrade the remaining heavy-duty combustion engine trucks to new or used ZETs rather than cleaner combustion engines. CARB has committed to implementing regulatory strategies to achieve this goal, such as differentiated registration fees, restrictions and fees for combustion engine trucks entering low- and zero-emission zones, or indirect source rules. Alternatively the measure could require combustion engine truck fleets to be scrapped and replaced with ZETs at the end of their useful lives. The measure would potentially be heard by CARB in 2028 as part of the comprehensive strategy to achieve zero-emission medium- and heavy-duty vehicles by 2045.
Clean Miles Standard	Adopted in 2021, the Clean Miles Standard regulates GHG emissions emitted by passenger ride-hailing services/transportation network companies (TNCs), such as Uber and Lyft. This ruling stipulates that each TNC would develop a GHG emissions reduction plan beginning in 2022 and requires 90% of vehicle-miles traveled in ride-hailing fleets to be zero-emission by 2030.[11]

[8] Advanced Clean Cars Program, California Air Resources Board.
[9] Advanced Clean Trucks, California Air Resources Board.
[10] Advanced Clean Fleets, California Air Resources Board.
[11] Clean Miles Standard, California Air Resources Board.

In order to facilitate the transition of California's on-road transportation to zero- and near-zero-emission, the state also has implemented a number of incentive programs. These include rebate programs, vehicle replacement programs, point-of-sale incentives, and infrastructure incentives. Some of the prominent incentive programs that are currently in effect and are directly supporting the expansion of ZEVs and infrastructure throughout the state are shown in Table 2.

Table 2. California Incentive Programs for Clean Technology Adoption

Incentive Program	Description
Clean Vehicle Rebate Project (CVRP)	Previously, CVRP provided rebates to Californians who purchased or leased eligible clean vehicles. The rebate offered by CVRP varied, depending on the type of vehicle and its all-electric range, generally ranging from $1,500 to $7,000 for most eligible vehicles. The CVRP rebate can be combined with federal, state, or local agency incentives, as well as CVRP program Administrator matching funds, if available, to help further buy down an eligible vehicle's cost. As of the end of 2023, CVRP is transitioning to focus on low-income Californians in the state's five largest regional air districts, offering up to $9,500 toward a new clean vehicle (or as much as $7,500 toward transit or other shared mobility options).
California Electric Vehicle Infrastructure Project (CALeVIP)	Administered by the Center for Sustainable Energy on behalf of the California Energy Commission (CEC), CALeVIP offers incentives for the deployment of publicly available EV chargers. This program is funded through the CEC Clean Transportation Program (see below) and offers incentives through regional allotments or projects, such as the Golden State Priority Project and the Southern California Incentive Project. CALeVIP 1.0, which ran from 2017 through 2022, issued $186 million in rebates for Level 2 and direct current fast charging (DCFC) stations in 36 California counties. CALeVIP 2.0 is a second phase, which offers up to $100,000 rebates per active connector for DCFC stations only. Fifty percent of CALeVIP 2.0 funding is offered for projects in disadvantaged communities (DACs). For example, the Southern California Incentive Project[12] offered rebates between $40,000 and $70,000 for new or replacement DCFC station sites, with those located in DACs able to qualify for up to $80,000 (the funds are currently exhausted until further notice). Although funding from the Eastern and Central Regions closed in March 2023, funding may become available in the future.
Clean Cars 4 All	Clean Cars 4 All provides incentives to low-income individuals living in or near DACs to retire their older, high-emitting vehicles and replace them with clean, electric, or hybrid vehicles. The amount of funding that applicants receive varies, depending on the individual's income, the type of vehicle being purchased or leased, and other factors; however, it generally ranges from $2,500 to $9,500 per participant. Funding is available in select air districts because they are administrators of the program and additional incentives may become available in the future.

[12] Southern California Incentive Project (SCIP), CALeVIP.

Incentive Program	Description
California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)	Administered by CALSTART on behalf of CARB, HVIP is a point-of-sale incentive program that provides a voucher for up to $120,000 for medium- and heavy-duty zero-emission trucks and buses, with larger incentives offered to fleets domiciled in DACs. At the time of this report, the program has supported the purchase of 2,580 hybrid and 5,838 battery electric vehicles since 2010 (out of 8,570 redeemed vouchers), and more than half of all voucher requests have come from DACs seeking a reduction of diesel particulate matter.
CEC Clean Transportation Program	This program provides funding for a range of projects, including research and development, pilot projects, and infrastructure deployment. The amount of funding that each applicant receives varies, depending on the specific project and the type of funding requested. Generally, applicants can receive funding for up to 100% of their project costs, although some funding programs require cost sharing or matching funds from the applicant. The maximum award for some programs can be up to several million dollars, while others may provide smaller grants or loans. The amount of funding for each project is determined through a competitive application process, with awards granted based on project feasibility, environmental benefits, and other factors.
Low Carbon Fuel Standard (LCFS)	LCFS is a California regulation which creates a market mechanism that incentivizes low-carbon fuels. The regulation requires that the carbon intensity of California's transportation fuels decreases by 20% through the 2030 timeframe and maintains the standard afterwards. The number of credits that a fleet generates is based on the amount of electricity used to charge and the carbon intensity of that electricity. Fleets that strategically use renewable electricity for charging or purchase renewable energy certificates, can further increase their LCFS revenue streams. In addition to generating LCFS credits for dispensed fuel, the eligible hydrogen station, or DCFC charger, can generate infrastructure credits based on the capacity of the station or the charger minus the quantity of dispensed fuel. Currently, stations intended for light-duty vehicles (< 1,200 kg/day for hydrogen stations and < 350 kW per charger for charging stations) are eligible for the capacity credits. As more ZEVs use the station and station utilization increases, the site will generate more LCFS credits and fewer infrastructure credits.
California Capital Access Program (CalCAP)	Qualified borrowers (e.g., businesses requesting loans) may access loans of up to $500,000 for the purpose of designing, developing, purchasing, and installing EV charging stations at small business locations across California. The program is funded by the California Energy Commission.

In the following subsections, more details about the state's major air quality and transportation electrification policies and regulations are provided. Additionally, an overview of the state's updated building codes to accommodate charging infrastructure is provided.

Precedent State Policy

The passage of the 2006 Global Warming Solutions Act (Assembly Bill [AB] 32) marked a watershed moment for the state. Global warming was officially recognized as a significant threat to public health, the economy, and the natural resources of the state, resulting in the requirement to reduce GHG emissions to 1990 levels by 2020.[13] This law established the California Air Resources Board (CARB) as the lead implementor of a Scoping Plan (initially approved in 2008) and strategies to meet this goal, including the launch of a statewide, market-based Cap-and-Trade Program.[14] AB 32 was later amended in 2016 to reflect an updated target of 40% GHG emission reductions from 1990 levels by 2030. In the years since AB 32, multiple Executive Orders have paved the way for a rapid transition to ZEVs.

Executive Orders (EOs)

EO S-1-07 established the state's LCFS program, effective as of 2011. LCFS is a market-based program designed to ramp down transportation GHG emissions through the application of increasingly stringent fuel standards and implementation alongside other climate-focused programs. The goal of LCFS is to reduce the carbon intensity of fuels, defined as "the life cycle greenhouse gas emissions per unit of transportation energy delivered,"[15] meaning that emissions from fuel production, conversion, and use are factored into the calculation. The GHGs analyzed in Argonne National Laboratory's Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) model include carbon dioxide, methane, and nitrous oxide, among others. CARB then sets a carbon intensity benchmark (which is steadily lowered over time) where producers of fuels (e.g., petroleum refineries) that are lower than the carbon intensity target generate deficits and producers of fuels with higher carbon intensity (e.g., ethanol, biodiesel, renewable diesel, compressed natural gas, liquefied natural gas, hydrogen, electricity for EVs) are given credits that can be sold to producers with deficits.

As part of a 2018 amendment, the LCFS credit-generating pathways now include ZEV infrastructure, which refers to hydrogen refueling stations and direct current fast charging (DCFC) infrastructure.[16] For EV chargers, the credits are generated based on the dispensing capacity of electricity when considered fully utilized. In the case of public, workplace, and fleet EV charging, LCFS credits may be claimed by the station site host/operator or are streamlined to the local utility by default.

EO B-16-12 established more targets to facilitate the growth of ZEV adoption and infrastructure, with a target of deploying sufficient EV charging to support up to 1 million vehicles on the road by 2020 and a projection of more than 1.5 million ZEVs on the road by 2025. Furthermore, the EO dictates an 80% reduction in GHG emissions from 1990 levels by 2050 and requires vehicle fleets to make 25% of new vehicle purchases zero-emission by 2020.[17] This EO prompted CARB, the California Energy Commission (CEC), and the California Public Utilities Commission to develop benchmarking procedures to enable the rapid commercialization of ZEVs and ensure that major metropolitan areas are prepared for the projected demand.

[13] AB 32 Global Warming Solutions Act of 2006, California Air Resources Board.
[14] Cap-and-Trade Program, California Air Resources Board.
[15] Low Carbon Fuel Standard, California Air Resources Board.
[16] LCFS ZEV Infrastructure Crediting, California Air Resources Board.
[17] Executive Order B-16-2012, Office of Governor Edmund G. Brown Jr.

In 2015, EO B-30-15 was signed to further tighten the existing GHG reduction targets and create an interim benchmark to support progress toward the 2050 target laid out in EO B-16-12. Therefore, the state must reduce GHG emissions to 40% below 1990 levels by 2030.[18] Not long after this EO, the 2017 approval of AB 398 authorized CARB to operate the Cap-and-Trade Program to meet these emission reduction requirements. In 2020, the signing of EO N-79-20 solidified the state's lead in ZEV regulations globally by requiring that all new passenger car and light-duty truck purchases are zero-emission by 2035, all drayage trucks and off-road vehicles and equipment are zero-emission by 2035, and all medium- and heavy-duty vehicles are zero-emission by 2045, where feasible (see Table 1).[19]

Electric Vehicle Supply Equipment (EVSE) Standards and Regulations

In addition to laws and incentives directed at increasing ZEV adoption, California has adopted standards and regulations related to the deployment of EV chargers, also referred to as EVSE. The purpose of these standards is to create uniform and streamlined permitting, installation, and use of EVSE statewide to bolster EV motorists' confidence in the charging network. For example, the 2019 California Green Building Standards Code (Part 11, Title 24, California Code of Regulations), also known as CALGreen, became the first U.S. green building standards code and includes provisions for EV charger installations.[20] CALGreen sets the standard that all new residential construction must be made ready for future electric vehicle charging station (EVCS) installations and meet required Americans with Disabilities Act (ADA) and accessibility requirements to clearly indicate an EV parking space.

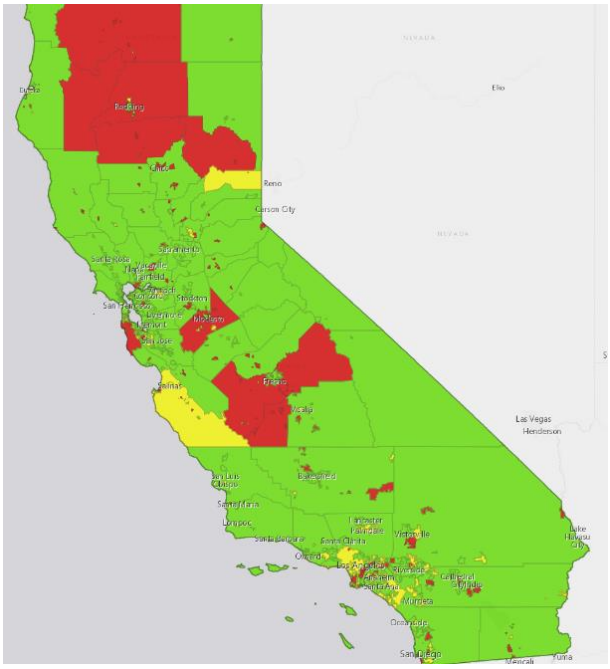
As of January 2023, CALGreen was updated to increase the required number of EV-ready and installed EVCS spaces. Notably, multi-unit dwellings and hotels with 20 or more units must allocate 10% of available parking spaces to EV "capable" spots (e.g., conduit and panel capacity for future EVCS), 25% of parking spaces to EV "ready" spots (e.g., compatible with a future Level 2 charger installation), and 5% of parking spaces must have EV charging equipment installed. This extends to commercial EV parking spaces as well. To support the adoption of zero-emission medium- and heavy-duty vehicles (MHDVs), the code also mandates the installation of EVCS at warehouses, grocery stores, and retail buildings with off-street loading zones.

The state also signed AB 1236 (adopted in 2015) and AB 970 (adopted in 2021) to address EVSE permitting.[21] AB 1236 requires municipalities to streamline the permitting process (consisting of an ordinance and checklist) for the installation of EVCS. AB 970 enhances these requirements by establishing specific timeframes for the permit review process, contingent upon the project size and parking availability. For example, permit applications for projects incorporating 1 to 25 EV chargers must be recognized as complete within 5 business days and approved 20 days post-completion. Permits for projects encompassing 26 or more stations should be deemed complete within 10 business days and granted approval 40 days subsequently. Unless the permitting agency reports any qualifying deficiencies, all applications not yet approved will be automatically sanctioned as per the guidelines of AB 970. All stations must pass a final inspection by the utility and permitting agency before EV chargers are commissioned for use. These requirements apply to all EVCS installations (public or private Level 1, Level 2, and DCFC stations serving light-, medium-, or heavy-duty vehicles) in all cities and counties across the state.

[18] https://www.ca.gov/archive/gov39/2015/04/29/news18938/.
[19] https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-drastically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/.
[20] CALGreen.
[21] EV Charter Permit Streamlining, AB 1236 and AB 970.

The EVCS Permit Streamlining Compliance Map[22] shown in Figure 3 displays the statewide compliance status of jurisdictions based on the Permitting Electric Vehicle Charging Stations Scorecard.[23] The scorecard evaluates each city and county based on several criteria—whether they have an ordinance for expedited, streamlined EVCS permitting; the availability of easily accessible permitting checklists on their websites; administrative approval for EVCS projects meeting expedited checklist requirements; limiting EVCS project review to health and safety requirements; acceptance of electronic signatures on permit applications; no requirement for association approval for EVCS permits; and a commitment to issuing a comprehensive written correction notice detailing all deficiencies in an incomplete application, thereby helping to expedite permit issuance. The City of Moreno Valley follows the current permit guidelines and has integrated EVCS installation language into its Municipal Code, and also has developed its publicly available permitting checklist. This is discussed in greater detail in the following section.

Figure 3. California EVCS Permit Streamlining Compliance Mapping Tool

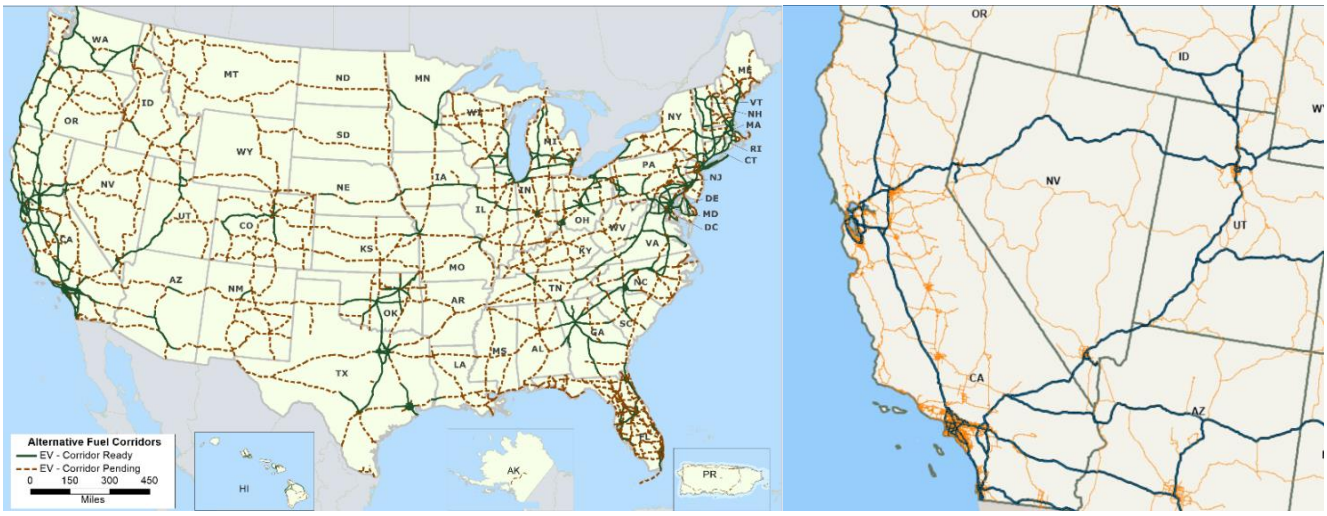


2.2. Federal Policies and Incentives

Recent policy and regulatory achievements at the federal level have introduced landmark support toward climate change mitigation. The federal government has granted substantial funding and made commitments to enhance private sector investments in a nationwide EV charging network. This initiative aims to expedite the adoption of ZEVs across the country and mitigate GHG emissions in the transportation sector. Notably, the $1.2 trillion Bipartisan Infrastructure Law (BIL)—also known as the Infrastructure Investment and Jobs Act—was signed into law on November 15, 2021, by President Biden. BIL established an investment of $660 billion into transportation initiatives over the next 5 years and is the first infrastructure law in U.S. history to address climate change on this scale.[24] One of the programs created through BIL was the National Electric Vehicle Infrastructure Formula Program (NEVI Formula Program), with $5 billion allocated to the development of the nationwide EV charging network along U.S. Department of Transportation (USDOT)-designated Alternative Fuel Corridors (AFCs) to meet the goal of deploying at least 500,000 EVCS by 2030.[25] Figure 4 displays maps of the AFCs across the country and within California.[26]

[22] CA Electric Vehicle Charging Station Permit Streamlining Map (arcgis.com).
[23] Permitting-Electric-Vehicle-Charging-Stations-Scorecard_Updated_8-12-2022.pdf.
[24] A Guidebook to the Bipartisan Infrastructure Law, Build.gov, The White House.
[25] National Electric Vehicle Infrastructure (NEVI) Program, FHWA.
[26] National Highway System, FHWA HEPGIS Maps (dot.gov).

Figure 4. Federal Highway Administration Alternative Fuel Corridor Designations



California's share of NEVI Formula Program funding is estimated to include $384 million over the 5-year period, and the California Department of Transportation (Caltrans) and CEC are leading NEVI development in California. NEVI Formula Program Guidance requires the development of the State Electric Vehicle Infrastructure Deployment Plan,[27] and NEVI Formula Program funds can only be used on designated AFCs initially.[28] Recently updated guidance states that 10% of each fiscal year of NEVI Formula Program funding will be set aside for discretionary grants to address missing links in the network, with more information on that process forthcoming. According to California's NEVI plan, the charging stations funded by this program must be non-proprietary, allow open-access payment, be publicly accessible or available to authorized commercial motor vehicle operators from various companies, and must be located along the designated AFCs. However, it is important to note that NEVI Formula Program grants can only be applied for by private entities, and the project team must include an experienced charging network provider, which means that public entities, such as cities, cannot apply.

Complementing the NEVI Formula Program is the Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program), which aims to deploy public EV charging infrastructure and alternative fueling stations in communities along AFCs.[29] The CFI Program consists of $2.5 billion over 5 years dedicated to two funding categories—Corridor Grants and Community Grants. Corridor Grants (a minimum of $1 million per award) will fund the buildout of EV charging networks along AFCs, which must be within 1 mile of highway exits and intersections. Community Grants (an award range of $500,000 to $15 million) are intended to support the installation of public EV chargers in local neighborhoods and downtown areas, with an emphasis on serving disadvantaged communities (DACs). Eligible applicants encompass a wide range of entities, including states, metropolitan planning organizations, local government units, public authorities with a transportation function, and Native American tribes, among others. In its first round, the CFI Program has allocated $622.57 million in grants to 47 recipients, aiming for a strategic expansion of publicly accessible EVCS and alternative fuel infrastructure. This initiative targets a wide array of locations where people reside and work, encompassing both urban and rural communities, as well as along designated AFCs. The grants were distributed across 22 states and Puerto Rico, with two awards specifically directed toward tribal communities.

[27] https://dot.ca.gov/-/media/dot-media/programs/sustainability/documents/nevi/2022-ca-nevi-deployment-plan-a11y.pdf.
[28] https://highways.dot.gov/newsroom/president-biden-usdot-and-usdoe-announce-5-billion-over-five-years-national-ev-charging.
[29] Charging and Fueling Infrastructure Discretionary Grant Program, FHWA.

In California, grant recipients from the CFI Program have been awarded a total of more than $167 million to bolster sustainable mobility and energy resilience through the deployment of EV charging and hydrogen fueling infrastructure. These projects span various communities and corridors, aiming to enhance accessibility to alternative fuel options. Notable initiatives include Ventura County's Powering Progress, with a $12 million investment in community EV charging; the San Francisco Bay Area's $15 million project for EV charging; and the San Joaquin Valley's ambitious $56 million I-5 Electric Freight Corridor project. Other significant grants support EV charging at Contra Costa County libraries, the expansion of electrification in San Joaquin County, and a unique initiative in the City of Blythe for an I-10 truck charging terminal. Additionally, projects such as Pathway to the Future in Barstow and efforts by California State University, Los Angeles, focus on integrating hydrogen fueling alongside EV charging.

Within the CFI Program, municipalities are eligible to apply for up to 80% of the proposed project cost (with 20% cost sharing). Projects funded by the CFI Program should be situated on public roads or in publicly accessible locations, such as public buildings, parking facilities, schools, parks, or privately owned or managed parking facilities. In contrast with the NEVI Formula Program, which exclusively accommodates applications from private entities, the City of Moreno Valley is eligible to apply for funding within the CFI Program toward the development of its charging infrastructure.

Another major milestone, the Inflation Reduction Act (IRA), signed on August 16, 2022, introduced a number of tax credits and incentive programs to support the growth of ZEVs and related infrastructure at the federal level. One of the main incentives is the Alternative Fuel Infrastructure Tax Credit, which provides a tax credit for 30% of the cost of alternative fuel vehicle refueling infrastructure, including EVCS. Another incentive is the commercial EV and FCEV tax credit, which provides a tax credit of up to $40,000 for the purchase of new all-electric or fuel cell vehicles. Additionally, the Clean Heavy-Duty Vehicles Program provides funding for the replacement or retrofitting of old heavy-duty vehicles with newer, cleaner models. These incentives are intended to encourage the growth of the ZEV market, making it easier for individuals and businesses to transition to cleaner transportation options. Table 3 provides more information on the programs offered through the IRA.

Table 3. Tax Credits and Incentive Programs Offered Through BIL and the IRA

Incentive Program	Description
National Electric Vehicle Infrastructure (NEVI) Formula Program	The NEVI Formula Program is a $5 billion federal program aimed at reducing GHG emissions by funding clean transportation and energy programs across the United States. California's Department of Transportation (Caltrans) and CEC created a deployment plan for the NEVI Formula Program, which will allocate $384 million in federal funds to build a network of modern, high-powered DCFC chargers along Interstates and national highways throughout California. The deployment plan was submitted in August 2022. NEVI Formula Program-funded charging stations will have a minimum of four 150-kW Combined Charging System (CCS) connectors and total station power of 600 kW, located no more than 50 miles apart and no more than 1 mile from a freeway exit or highway roadway. At least 40% of NEVI Formula Program benefits will go to disadvantaged, low-income, rural, and tribal communities, and CEC will manage funding solicitations on behalf of the state.

Incentive Program	Description
Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program)	The CFI Program offers $2.5 billion in competitive grant funding for the deployment of public EV charging and alternative fueling infrastructure in communities and along AFCs. The CFI Program offers grants through two funding sources—the Community Program and the Corridor Program, which emphasize the placement of vehicles in highly trafficked downtown areas and along major highways. Eligible applicants include local governments, Native American tribes, and metropolitan planning organizations.
Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit	The Inflation Reduction Act of 2022 has updated the Clean Vehicle Credit, formerly known as the Qualified Plug-in Electric Drive Motor Vehicle Credit, effective August 17, 2022, with additional requirements starting January 1, 2023. The Clean Vehicle Credit now includes both EVs and FCEVs; requires a traction battery with at least 7 kWh; and establishes sourcing requirements for critical mineral extraction, processing and recycling, and battery component manufacturing and assembly. Vehicles meeting these requirements are eligible for a tax credit of up to $7,500. The percentage of the battery's critical minerals and components that are extracted, processed, recycled, manufactured, or assembled in North America must increase annually to qualify for the tax credit. Eligibility also is subject to a final manufacturer's suggested retail price limit and modified adjusted gross income threshold.
Alternative Fuel Infrastructure Tax Credit	Alternative Fueling equipment for various fuels can receive a tax credit of 30% of the cost up to $30,000 until December 31, 2022, and after that date, the credit is 30% or 6% for depreciable property up to $100,000, with specific requirements. Additionally, residential fueling equipment purchased between January 1, 2023 and December 31, 2032 can receive up to a $1,000 tax credit.
Commercial Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit	Starting on January 1, 2023, businesses can receive a tax credit for purchasing new electric or fuel cell vehicles, with amounts based on the vehicle's battery capacity and purchase price, not to exceed $7,500 for vehicles less than 14,000 pounds and $40,000 for vehicles greater than 14,000 pounds. The tax credit cannot be combined with the Clean Vehicle Tax Credit.
Clean Heavy-Duty Vehicles Program	The Inflation Reduction Act allocated $1 billion toward replacing polluting heavy-duty vehicles with clean ZEVs, supporting ZEV infrastructure, and providing workforce development and training. Additionally, funds will be provided for planning and technical activities to promote the adoption and deployment of ZEVs. The U.S. Environmental Protection Agency will distribute the funding between now and 2031, with $400 million going to communities in nonattainment areas.

The IRA and BIL, combined, are projected to lower economy-wide emissions by more than 40% by 2030 and position the United States to achieve a 50% to 52% emissions reduction by the end of the decade. The transportation sector will receive historic levels of funding for transit, rail, and active transportation, as well as buildouts of EV charging and sustainable fuel infrastructure, tax credits, rebates, clean ports, and investments along the EV and battery supply chains.

In addition to the incentive programs being offered through BIL and the IRA, the federal government also has recently enacted several key regulations that promote the adoption of clean technologies. The U.S. Environmental Protection Agency (EPA) recently proposed new historic emissions standards for light-, medium-, and heavy-duty vehicles, taking a significant step toward meeting the goals of the Paris Climate

Accords.[30] These standards, aimed at phasing out the sale of new gas-powered cars by 2035, represent the strongest emissions regulations ever proposed by EPA. Under the Clean Air Act, EPA released two sets of proposed standards for different vehicle types. For light- and medium-duty vehicles, the standards would apply to model years 2027 through 2032, necessitating rapid vehicle electrification due to the aggressive emissions reduction targets. Heavy-duty vehicles also have proposed standards[31] for model years 2027 through 2032, focusing on GHG emissions. These standards, in conjunction with federal tax credits for EV purchases and significant investment in charging infrastructure, are expected to accelerate the transition to EVs, particularly as the pace of change typically accelerates as the transition progresses. According to estimates by EPA, the proposed regulation would necessitate that 54% to 60% of new vehicles sold in 2030 and 67% of those sold in 2032 be zero-emission vehicles.

2.3. Local Efforts and Regional Policies

Regional Representation in Government

The City of Moreno Valley is a part of the Southern California Association of Governments (SCAG),[32] which is the designated metropolitan planning organization and serves as a regional transportation planning agency. SCAG convenes to address regional issues across Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties, which encompass 191 cities across 38,000 square miles. Beginning as early as its 2012 Southern California Plug-in Electric Vehicle (PEV) Readiness Plan,[33] SCAG has advocated for EV readiness issues and concerns, including the need to evaluate land use opportunities for EVCS installations; plan for retail and public charging; and create policies for pricing, zoning, permitting, parking guidelines, utility involvement, and more. It consistently demonstrates leadership in coordinating the development of EV planning and policy across its member counties, serving as a blueprint for other metropolitan planning organizations to follow. Coinciding with SCAG, Moreno Valley also is an active member of the Western Riverside Council of Governments (WRCOG).[34] Like SCAG, WRCOG represents the voices of local jurisdictions and advocates on behalf of its member agencies. Within the structure of WRCOG operates the Western Riverside County Clean Cities Coalition, a U.S. Department of Energy (USDOE)-funded advocacy organization that works alongside transportation electrification stakeholders to promote and advance the industry. The city participates in quarterly meetings with these groups to discuss key issues and develop roadmaps for the path forward.

In 2021, the City of Moreno Valley released its first Climate Action Plan (CAP),[35] which lays out its strategy for complying with California's GHG reduction requirements and assesses its GHG emissions inventory and forecasted emissions. Not surprisingly, transportation is among the greatest sources of emissions, accounting for more than 50% of the emissions share by sector (according to the 2018 CAP emissions inventory). The CAP's transportation strategy includes measure TR-7 to "secure funding to install electric vehicle recharging stations or other alternative fuel vehicle support infrastructure in existing public and private parking lots," which signals support for a public charging program. The CAP also references other regional and local emission reduction strategies, including the SCAG Regional Transportation Plan, SCAG Regional Climate Adaptation Framework, WRCOG Subregional Climate Action Plan, Riverside County Climate Action Plan, and the Moreno Valley Utility Integrated Resource Plan and Transportation Electrification Roadmap.

[30] https://www.epa.gov/regulations-emissions-vehicles-and-engines/proposed-rule-multi-pollutant-emissions-standards-model.
[31] https://www.epa.gov/regulations-emissions-vehicles-and-engines/proposed-rule-greenhouse-gas-emissions-standards-heavy.
[32] Southern California Association of Governments.
[33] scag-southern_ca_pev_readiness_plan.pdf.
[34] WRCOG.
[35] City of Moreno Valley Climate Action Plan.

Moreno Valley General Plan 2040 was prepared concurrently with the CAP and covers the physical development elements of the city's long-term vision for the future.[36] Several of the goals outlined in the General Plan relate to the development of a robust EV ecosystem to support local businesses, optimize the transportation network, upgrade infrastructure, and reduce overall pollution to improve public health outcomes. An example includes environmental justice goal EJ-1, which encourages "[studying] the feasibility of measures to promote the use of electric vehicles, including the feasibility of offering incentives such as priority parking for EVs at public facilities and the feasibility of requiring a minimum number of EV-ready parking spaces in new commercial, industrial, and multi-unit residential projects."

Utility Efforts

The role of utilities is pivotal in accelerating the adoption of EVs. As the primary providers of electricity, utilities not only ensure the necessary infrastructure for EV charging, but also can influence pricing models, making EV operations more cost-effective for consumers. Moreover, they can support the deployment of smart grid technologies, allowing off-peak charging and mitigating potential grid strain from increased EV use. One of the city's closest and key partners is Moreno Valley Utility,[37] a small city-owned electric utility serving more than 6,800 residential and commercial customers within the city. As a publicly owned, not-for-profit operation, Moreno Valley Utility tailors its services and programs toward the most immediate needs of the local community, hence its growing focus on transportation electrification initiatives. In 2017, Moreno Valley Utility initiated a venture to amplify municipal transportation electrification, leading to the formulation of a comprehensive 5-year strategy known as the Moreno Valley Utility Transportation Electrification Roadmap (2020).[38] This roadmap embodies Moreno Valley Utility's vision and ambitions, with a prominent focus on marketing and educational endeavors tailored to broaden public perception and foster mainstream acceptance of EVs.

Notably, the roadmap capitalizes on the prevailing financial incentives in the EV sector, targeting both infrastructure development and vehicle acquisition to stimulate customer adoption. Serving as a strategic guide for the future, the Moreno Valley Utility Transportation Electrification Roadmap is poised to direct the expansion of EV infrastructure and expedite the surge of EV adoption within the local market, reflecting Moreno Valley Utility's commitment to a sustainable transportation future. Specifically, the roadmap harnesses the pillars of California's statewide policies, such as the 2016 ZEV Action Plan from the Governor's Office. This plan outlines six strategies for progression: promoting extensive awareness of ZEV technology and its benefits, reducing the initial costs of ZEVs for consumers, establishing reliable charging options, prioritizing ZEV workforce development, encouraging market growth beyond California, and facilitating the transition of government fleets to ZEVs.

These strategies serve as a robust foundation upon which the Moreno Valley Utility roadmap builds its approach to accelerating EV adoption. Furthermore, the roadmap proposes that Moreno Valley Utility join forces with larger investor-owned utilities, such as neighboring Southern California Edison, to coordinate infrastructure buildout and incentives. High-level recommendations for the City of Moreno Valley in this effort include developing streamlined permitting processes, integrating EV policies into building codes and parking rules, tracking the impact of EV charger installations on the grid, creating EV rate structures, and staying current on transportation electrification technology trends and programs. The Transportation Electrification Roadmap offers more granular goals and guidance for the city's role in the acceleration of EV adoption and the deployment of charging infrastructure within its territory. To increase the ZEV value proposition within the city, the roadmap emphasizes the importance of a strong network of residential, commercial, and workplace chargers and highlights existing programs that offer financial incentives to offset the cost burden. In addition to the existing state and regional incentives or financing options, as

[36] City of Moreno Valley Community Development, 2040 General Plan Update Documents (moreno-valley.ca.us).
[37] Moreno Valley Utility (MVU) home page (moval.org).
[38] Moreno Valley Utility, Transportation Electrification Assessment and Roadmap, AESC, Inc. (aesc-inc.com).

discussed in previous sections, the roadmap recommends that Moreno Valley Utility offer rebates of up to $5,000 to offset the installation costs of Level 2 public chargers, with an optional $1,000 add-on for dual port chargers. The rebates should be applied to projects with a minimum of five Level 2 chargers and where vehicles are generally parked for at least 4 hours at a time. Additionally, the roadmap recommends that Moreno Valley Utility match Southern California Edison's vehicle rebate program, which offers $1,000 toward the purchase of new or used EVs.

In preparation for the expected ZEV demand in Moreno Valley, Moreno Valley Utility has put EV-specific measures in place. First, it released an EV Public Schedule, which applies to public charging infrastructure. The electric rates include $0.21/kWh for a 240V Level 2 charger and $0.35/kWh for a 480V DCFC station. Individual charging sessions should not exceed the 4-hour time limit and a 30-minute grace period, after which the EV motorist will be charged a penalty of $1/hour up to a maximum of $30.[39] The penalty would provide some cost recovery for the charging equipment. Although not currently available in Moreno Valley, Moreno Valley Utility is exploring residential and commercial EV rate plans that could be modeled after time-of-use (TOU) offerings in San Diego Gas & Electric, Pacific Gas & Electric Company, and Southern California Edison territories. To enable customers to switch to a future TOU rate, the utility has begun installing smart meters throughout its service territory.

Table 4. Moreno Valley Utility's Electric Vehicle Public Charging Rates

Level 2 City-Owned Charging Station	$0.21 per kWh
DCFC City-Owned Charging Station	$0.35 per kWh

New EVSE Policies and Programs

In addition to the efforts undertaken by Moreno Valley Utility, Southern California Edison also has created its Charge Ready Transport Program,[40] which gives businesses resources to lease or purchase medium- and heavy-duty EVs and pays for grid-level infrastructure upgrades (e.g., upgrading the transformers), as well as installing approved charging infrastructure. The program is designed to support the growth of EV adoption and increase the availability of charging stations, which, in turn, can help reduce GHG emissions from transportation. It should be noted that the Southern California Edison Charge Ready Transport Program is only available to Moreno Valley customers within the Southern California Edison service territory.

To support emerging EV rates, Moreno Valley also has integrated EVs into its Municipal Code. Chapter 8.42: Electric Vehicle Charging Station Review Process outlines protocols for streamlined permitting of EVCS installations in the city. These include the duties of the building safety division and building official (8.42.030) and the application, permit, and inspection requirements (8.42.040).[41] This language is in accordance with California state laws AB 1236 and AB 970, and Moreno Valley has posted an Eligibility Checklist for Expedited Electric Vehicle Charging Station Non-Residential Permitting on its website.[42] Furthermore, Chapter 12.45: Parking Regulations for Vehicles Connected for Electric Charging Purposes in the Municipal Code seeks to promote the safe and easy use of EVs in the city.[43] Sections 12.45.040, 12.45.050, and 12.45.060 prohibit the blocking or misuse of reserved EV charging parking spaces and reinforce the 4-hour charging time limit.

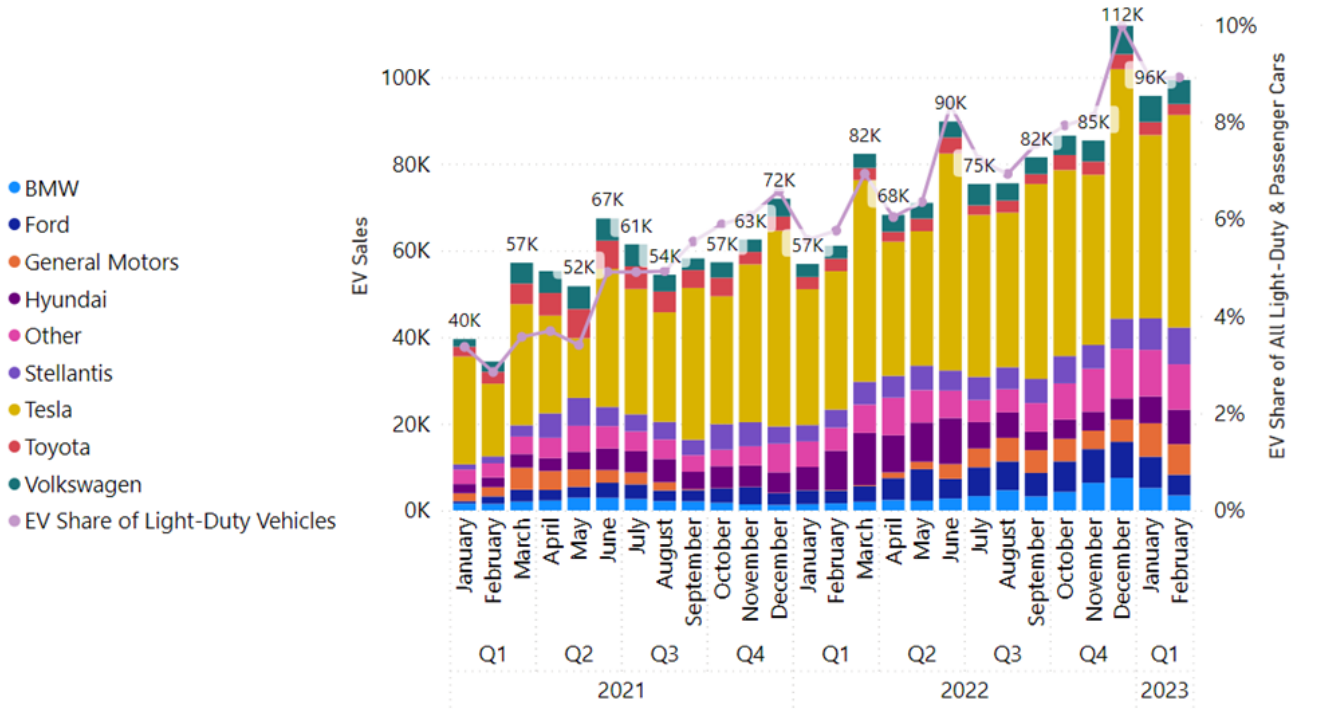
[39] MVU_Rates.pdf (moval.gov).
[40] Charge Ready Transport Program (sce.com).
[41] Chapter 8.42: ELECTRIC VEHICLE CHARGING STATION REVIEW PROCESS (qcode.us).
[42] Non-ResEVCSExpeditedChecklist.pdf (moval.gov).
[43] Chapter 12.45: PARKING REGULATIONS FOR VEHICLES CONNECTED FOR ELECTRIC CHARGING PURPOSES (qcode.us).

3. EV and EVSE Technology Options

3.1. EV Market Overview

EVs represent a small but fast-growing share of total vehicle sales in the United States. In 2023, 1.4 million EVs were sold in the United States, a 50 percent increase as compared to 2022.[44] EV sales in 2023 represented approximately 10% of the passenger vehicle market in the United States.[45] Now there are more than 3 million EVs on the road and more than 165,000 public EV chargers nationwide.[46,47] EV sales are expected to continue growing throughout the United States as vehicle manufacturers recognize the importance of electrification and take steps toward this transition. The Biden Administration announced a goal of building 500,000 EVCS across the country by 2030.[48] Since 2021, companies in the United States have invested around $85 billion in EV manufacturing, and sales of EVs have tripled. This coincides with major auto manufacturers' commitments to electrify, such as General Motors pledging to transition to a full electric fleet by 2035. Similarly, Toyota is planning to have 15 dedicated BEVs in the market by 2025.[49]

Figure 5. EV Sales and Market Share (January 2021 Through February 2023)[50]



[44] USDOE. New Plug-in Electric Vehicle Sales in the United States Nearly Doubled from 2020 to 2021. https://www.energy.gov/energysaver/articles/new-plug-electric-vehicle-sales-united-states-nearly-doubled-2020-2021.
[45] U.S. EIA Today in Energy. https://www.eia.gov/todayinenergy/detail.php?id=61344
[46] The White House. Fact Sheet: Biden-Harris Administration Announces New Private and Public Sector Investments for Affordable Electric Vehicles. https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/17/fact-sheet-biden-harris-administration-announces-new-private-and-public-sector-investments-for-affordable-electric-vehicles/.
[47] The White House. Full Charge: The Economics of Building a National EV Charging Network. https://www.whitehouse.gov/briefing-room/blog/2023/12/11/full-charge-the-economics-of-building-a-national-ev-charging-network/#:~:text=As%20of%20December%202023%2C%20the,by%20more%20than%2070%20percen
[48] USDOE. 5 Clean Energy Moments From President Biden's State of the Union Address. https://www.energy.gov/articles/5-clean-energy-moments-president-bidens-state-union-address.
[49] Motavalli, Jim. Every Automaker's EV Plan Through 2035 and Beyond. Forbes. https://www.forbes.com/wheels/news/automaker-ev-plans/.
[50] Atlas Public Policy. EV Sales and Market Share (January 2021 through February 2023). https://www.atlasevhub.com/materials/automakers-dashboard/.

3.2. EVSE Standards and Options

Today's EV charging market also has witnessed rapid growth and diversification in charging standards, equipment and software offerings, and infrastructure types. This section provides an overview of these topics to assist the City of Moreno Valley in navigating the complex array of options currently available.

The EV industry utilizes a variety of charging connectors to accommodate different charging levels, vehicle types, and regional requirements. It is important to keep in mind that only specific EV makes and models can accommodate each connector type due to charging speed capacity and vehicle plug design. Charge cord adapters are available to accommodate plug design differences in some cases. Table 5 presents an overview of the most prevalent connector standards, including their maximum output power applicable to public and private charging use cases.

Table 5. Existing and Upcoming Charging Connector Standards

Diagram	Connector Standard	Maximum Output Power	Application Notes
	SAE J1772	19.2 kW AC	Used for Level 1 and Level 2 charging in North America. Commonly found at home, workplace, and public chargers.
	CCS[51]	450 kW DC	Used for DC fast charging most vehicle models in North America. Generally installed at public charging stations.[52]
	CHAdeMO	400 kW DC	Used for DC fast charging select vehicles models in North America. Generally installed at public charging stations.
	North American Charging Standard (NACS) Previously a Tesla-exclusive standard.	22 kW AC 250 kW DC	Used for both AC and DC fast charging. Previously available for Tesla use only; however, as of the Summer 2023 announcement, it will become available for all EVs with appropriate charger cord adapters.
	SAE J2954	22 kW light-duty, 200 kW MDHD	Wireless power transfer. The standard for MDHD vehicles is under development.
	SAE J3068	133 kW to 166 kW DC	Developed for three-phase charging, whereas the SAE J1772 and J1772 combo can only accommodate single-phase charging.
	SAE J3105	> 1 MW	Automated connection device to charge MDHD vehicles. Variants include pantograph "up" or "down" and pin-and-socket. The Los Angeles County Metro has already deployed this technology on the G Line (formerly the Orange Line).
	CharIN Megawatt Charging System	4 MW	Conductive megawatt-level charging for MDHD road vehicles, ships, and planes. The technical specification is expected in 2024.

[51] The North American CCS standard is referred to as Type 1; CCS 2.0 is typically found in Europe.
[52] Incentive funding provided by the federal government via the National Electric Vehicle Infrastructure (NEVI) Formula Program is contingent upon certain requirements, including that the chargers must include at least four 150-kW plugs with CCS ports. This requirement, however, is only to receive federal funding through the NEVI Formula Program. Anyone can deploy CHAdeMO charger ports if they want, they just will not qualify for federal NEVI Formula Program funding. See NEVI Formula Program Guidance at https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/nominations/90d_nevi_formula_program_guidance.pdf.

Conventional Connector Standards for Light-Duty Vehicles

The SAE J1772 connector is widely used in North America for Level 1 and Level 2 charging at homes, workplaces, and public EVCS. The connector is designed for charging at a maximum of 240V and 80 amps for Level 2 charging and up to 120V for Level 1 charging. In contrast, the Combined Charging System (CCS) enables fast charging for a broader range of vehicle models at private and public charging stations. CCS connectors use a single plug that combines both alternating current (AC) and direct current (DC) charging and can dispense up to 350 kW, enabling 15- to 20-minute charging times under the right conditions. CCS connectors are designed to be compatible with all types of EVs; many EVs manufactured today are equipped with CCS ports for fast charging, and CCS charging infrastructure is rapidly expanding.

CHAdeMO is another type of fast-charging connector, initially adopted in Japan. The CHAdeMO connector uses lower power connectors for DCFC and AC charging, providing up to 62.5 kW of charging power. Nevertheless, CHAdeMO chargers are significantly faster than Level 1 and Level 2 chargers. Like CCS chargers, CHAdeMO also supports bidirectional charging.[53] One of the challenges with CHAdeMO is that it is not as widely available as other types of connectors, particularly outside of Japan. This can make it more difficult for motorists with CHAdeMO-equipped vehicles to find charging stations when on the road. As of 2020, Nissan has abandoned the CHAdeMO DCFC standard in favor of the CCS standard, leaving the Mitsubishi Outlander PHEV and some older Nissan and Kia EVs as the only models that use CHAdeMO. Electrify America, an EV charging company, also has decided to phase out CHAdeMO support at its stations outside of California beginning in January 2022.[54]

Tesla produces another set of connectors previously designed for Tesla vehicles only. The connector is a modified version of the SAE J1772 connector and was called the Tesla Connector or Tesla Charge Port. It features a unique pin configuration and a liquid-cooled cable that enables faster charging speeds compared with standard EV connectors. In summer 2023, the Tesla Charge Port was renamed the North American Charging Standard (NACS).[55] Although initially designed as a Tesla-exclusive charging network, Tesla EV chargers will now be available for use by all EVs through the provision of a charge cord adapter. Since this decision was made public, several American auto manufacturers, such as General Motors and Ford, have announced partnerships with Tesla to adopt NACS charging for their vehicles. Many prominent charging networks and equipment providers have similarly followed suit (e.g., ABB, Blink Charging, ChargePoint, EVgo, FLO, Freewire, Tritium, Wallbox). Although the SAE Combo is still the preeminent standard in North America, there may be a shift in the coming years as equipment manufacturers move to NACS.[56] On June 27, 2023, SAE International has announced its intention to standardize the NACS connector for EVs.

Emerging Connector Standards

As the EV industry continues to evolve, new technologies and standards are being developed to address specific applications and needs. Emerging technologies, such as SAE J2954, J3068, and J3105, and the CharIN Megawatt Charging System (MCS), are designed to address specific applications and needs, such as wireless power transfer, three-phase charging, and high-power charging for medium- and heavy-duty vehicles. Wireless charging, also known as inductive charging, is a technology that allows EVs to charge without the need for a physical connection between the charging station and the vehicle. Instead, the charging station uses an electromagnetic field to transfer energy to the vehicle's battery through a receiver coil. MCS is a high-powered charging connector designed for large-battery EVs. Developed by CharIN, the connector is rated for a maximum charging rate of 3.75 MW, with the aim of becoming a worldwide

[53] Note that not all CHAdeMo-compatible EVs are V2G capable. V2G capability depends on the EV's onboard hardware and software.
[54] Electrify America Will Begin to Phase Out CHAdeMO in 2022 (insideevs.com).
[55] FAQs: The North American Charging Standard (NACS) (electrek.co).
[56] SAE International Announces Standard for NACS Connector, Charging PKI and Infrastructure Reliability.

standard for charging large- and medium-sized commercial vehicles. The standards for this technology are still under development.

Hardware and Installation Costs

Over the past 3 years, there have been multiple studies conducted by various nonprofit organizations, such as the International Council on Clean Transportation (ICCT),[57] National Renewable Energy Laboratory (NREL),[58] Rocky Mountain Institute (RMI),[59] and the Environmental Defense Fund (EDF),[60] to estimate the cost of EV charging infrastructure deployment, including the cost of equipment, installation, and needed utility upgrades (e.g., grid interconnections). Considering the known challenges with EV infrastructure deployment, it was no surprise to see significant cost variability across these studies. While these studies provided similar estimates for the equipment costs, the installation and utility upgrade costs varied significantly. A list of estimates provided by these studies are shown in Table 6.

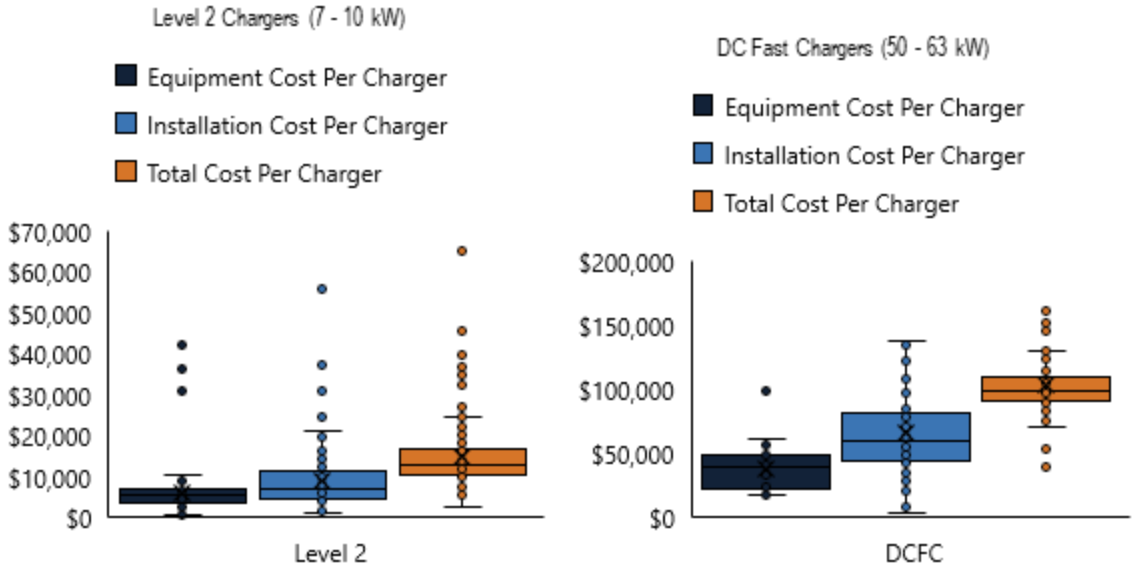
Table 6. Equipment and Installation Cost Data from the Literature for Level 2 and DCFC Chargers

			DCFC			
Cost Elements	**Study**	**Level 2**	**50 kW**	**150 kW**	**350 kW**	**800 kW**
Equipment Cost	ICCT (2019)	$3,000	$28,000	$75,000	$140,000	
	NREL (2020)	$3,500	$38,000	$90,000		
	RMI (2020)	$2,500–$4,900	$20,000–$36,000	$76,000–$100,000	$128,000–$150,000	
	EDF & GNA (2021)			$137,000		$481,000
Installation Cost	ICCT (2019)	$3,000–$4,000	$18,000–$46,000	$19,000–$48,000	$26,000–$66,000	
	NREL (2020)	$2,500	$20,000	$60,000		
	RMI (2020)	$7,000	$63,000	$76,000	$138,000	
	EDF & GNA (2021)			$35,000		$175,000

To further elaborate on the variability of EV infrastructure cost, ICF recently acquired EV charging infrastructure cost data associated with projects funded by CEC[61] through the California Electric Vehicle Infrastructure Project (CALeVIP). CALeVIP, implemented by the Center for Sustainable Energy, provides incentives for EV charger installations, and works with local partners on projects that support regional EV needs for Level 2 and DCFC units. Between December 2017 and October 2021, the program has funded 244 projects to deploy more than 500 Level 2 chargers with charging capacities ranging from 7 kW to 10 kW, and approximately 300 DCFC chargers with charging capacities ranging from 50 kW to 63 kW. The cost data from CALeVIP projects are summarized in the two diagrams shown in Figure 6.

[57] https://theicct.org/sites/default/files/publications/ICCT_EV_Charging_Cost_20190813.pdf.
[58] https://www.sciencedirect.com/science/article/pii/S2542435120302312.
[59] https://rmi.org/wp-content/uploads/2020/01/RMI-EV-Charging-Infrastructure-Costs.pdf.
[60] http://blogs.edf.org/energyexchange/files/2021/03/EDF-GNA-Final-March-2021.pdf.
[61] https://www.energy.ca.gov/.

Figure 6. CALeVIP Charging Infrastructure Cost Data



While, on average, the equipment and installation costs for both Level 2 and DCFC chargers line up with the recently published studies, this dataset clearly shows significant variability across different projects. For Level 2 chargers, the total cost of EV charger deployment can vary between $2,700 and $24,000 per charger (excluding outliers), and for DCFC chargers, it can range from $70,000 to $130,000. It is apparent that while there is some variability across equipment cost, the cost of installation is what mainly drives the variability for the total cost of deployment. For example, for the DCFC chargers, while the equipment cost varies from $18,000 to $61,000 (excluding outliers), the installation cost ranges from as low as $4,000 to as high as $137,000. The variability of installation cost is an inherent challenge to EV charging infrastructure deployment. This is mainly because there are several variables involved in determining the total cost of installing a charger, including the number of chargers per site, permitting/code requirements, site preparation cost, the availability of grid interconnection, grid capacity, utility upgrades (e.g., transformers/switchgears), parking availability, and the level of construction needed.

Networked and Non-Networked Charging Technology

EV chargers are typically configured to have either networked or non-networked ports. Non-networked, or basic, charging stations dispense power at one rate set by the operator, whereas networked, or smart, charging stations optimize charging profiles by enabling vehicle-to-grid communication. Smart charging systems can automatically adjust charging rates based on factors such as grid demand, energy prices, and vehicle usage patterns. For example, during peak demand periods when electricity rates are high, the smart charging system can slow down or stop charging to prevent overloading the grid. Conversely, during off-peak periods, the system can increase the charging speed to take advantage of lower electricity prices. The advantage of smart charging stations is their ability to learn over time in conjunction with charging management platforms. This learning capability uses advanced algorithms and artificial intelligence to analyze historical charging data, grid conditions, and user behavior. As the system gathers more data, it becomes more efficient in predicting and adapting to users' charging patterns, energy prices, and grid demands. Data from smart chargers also can provide valuable insight into issues such as malfunctioning equipment or maintenance needs. Figure 7 offers an overview of the charging station spectrum, highlighting the increasing "intelligence" and feature sets available to operators.

Figure 7. Spectrum of Basic and Smart Charging Options[62]

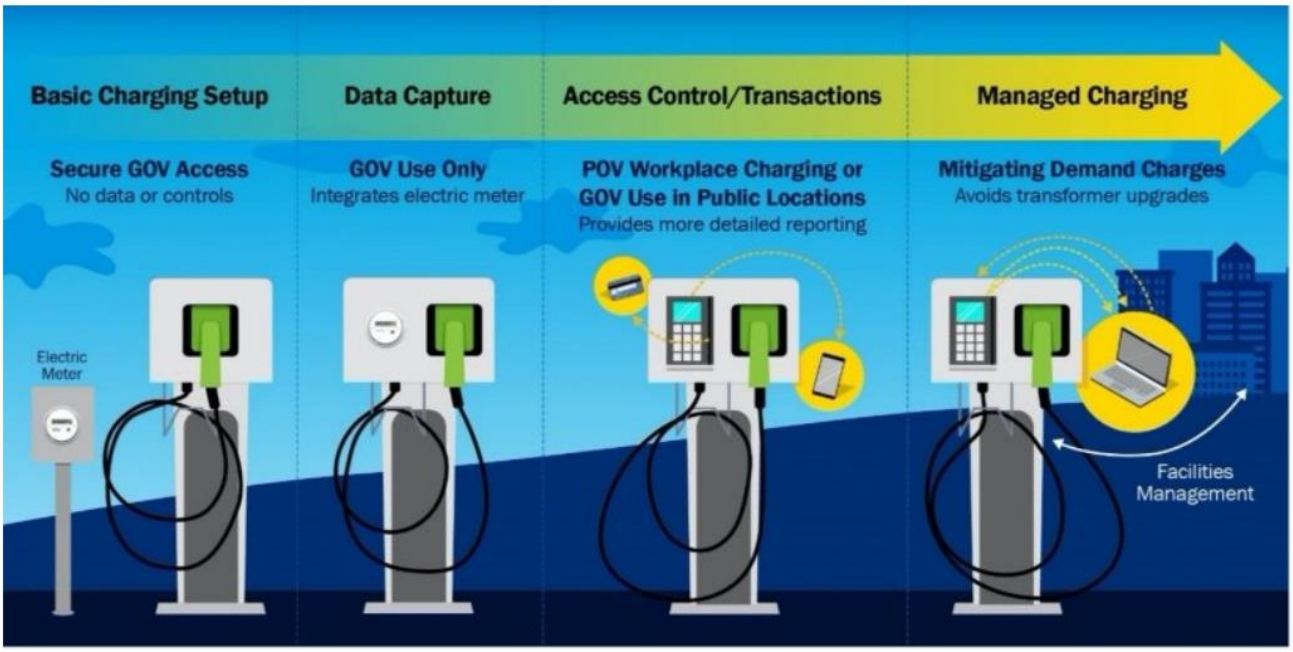


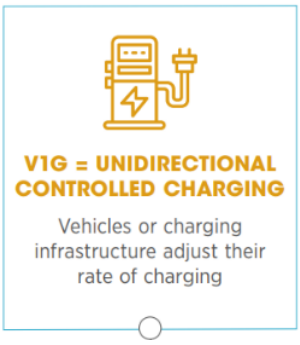
Table 7 provides a side-by-side comparison of the features of basic charging stations and smart charging stations. As shown below, basic charging stations typically provide a fixed charging rate and schedule, while smart chargers offer greater flexibility and control over charging operations, with the ability to adjust the charging rate and schedule based on various factors, such as energy prices, grid stability, and the state of charge of the EV battery. Smart chargers also offer advanced monitoring and data analysis capabilities, as well as the ability to communicate with the power grid and adjust charging rates based on the aforementioned factors. While smart chargers are typically more expensive than basic charging stations, they can optimize charging operations and reduce costs over the long term.

Table 7. Comparison of Basic and Smart EV Chargers

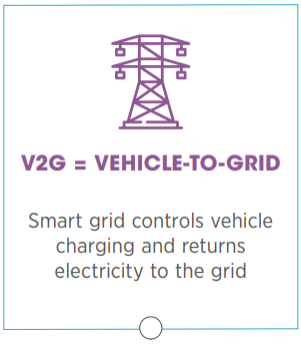
EVSE Capability/Feature	Basic Charging Stations	Smart Charging Stations
Charging Rate	Remains constant unless the operator manually modifies it.	Charging rate can vary based on energy prices and other factors.
Timing/Schedule		A changing charging schedule is based on a vehicle's state of charge and other factors.
Monitoring and Data Analysis	Does not have monitoring capabilities.	Monitors charging activity; provides real-time data analysis on energy use and charging patterns.
Energy Management	Does not have energy management capabilities.	Smart chargers can communicate with the power grid and adjust charging rates based on energy availability and grid stability.
Cost	Has a lower upfront cost; less opportunity to take advantage of cost-saving data analytics.	Higher upfront cost; numerous opportunities for cost savings with data analytics and network connectivity.

[62] https://www.energy.gov/femp/managed-electric-vehicle-charging.

As the demand for energy increases with the rise in transportation electrification, innovative smart charging technologies are emerging to meet the challenges posed by the increasing demand. These intelligent solutions not only benefit end users by providing more efficient charging solutions but also contribute to grid stability and resiliency. The use of unidirectional controlled charging, vehicle-to-grid, and vehicle-to-home/building can provide a range of benefits.



Unidirectional Controlled Charging (V1G): V1G technology enables EVs or charging stations to dynamically adjust their charging rates based on various factors, such as grid conditions, electricity prices, and user preferences. This flexible approach helps alleviate the strain on the power grid during peak demand, reducing the need for additional infrastructure investments and promoting more efficient energy use.



Vehicle-to-Grid (V2G): V2G takes smart charging a step further by allowing EVs to not only consume electricity but to also return it to the grid when needed. This bidirectional energy flow is facilitated by advanced grid controls, transforming EVs into valuable energy storage resources. V2G technology has the potential to enhance grid stability, support the integration of renewable energy sources, and generate additional revenue for EV owners.

Vehicle-to-Home/Building (V2H/B): V2H/B technology enables EVs to supply electricity directly to homes or buildings, acting as a backup power source or helping offset peak energy demand. This integration can lead to significant cost savings for consumers, increased energy resilience, and a reduced reliance on traditional energy sources. By connecting EVs to the built environment, V2H/B technology unlocks new possibilities for efficient energy management and sustainable living.

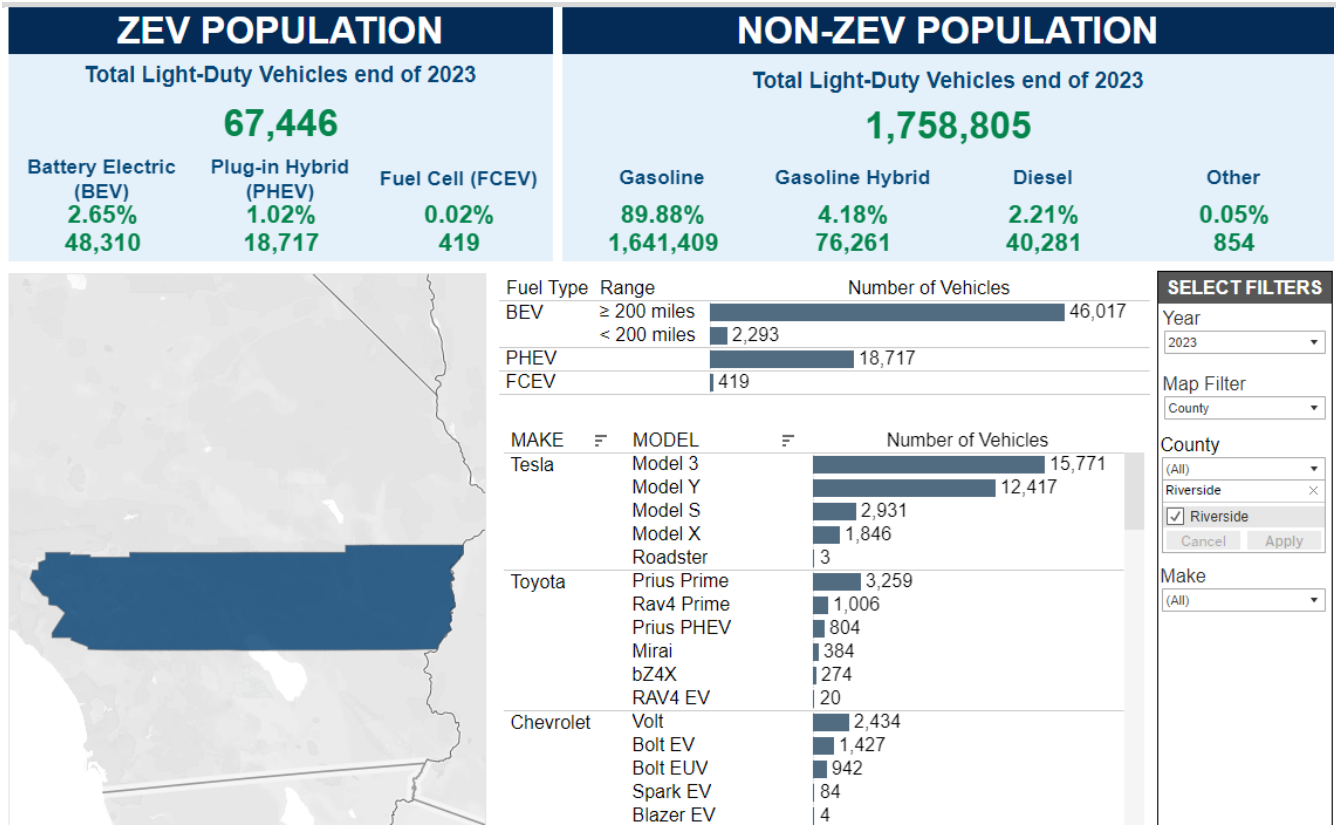
4. Regional Clean Technology Adoption Status and Challenges

The City of Moreno Valley is well positioned to leverage federal, state, and local policies and funding to achieve its transportation electrification goals. The following section examines ZEV adoption and current purchase rates within Riverside County and the city, EV charging infrastructure types and availability, land use and zoning considerations, and potential priority neighborhoods that would benefit the most from transportation emissions reduction efforts.

4.1. ZEV Adoption and Charging Infrastructure

CEC and the Department of Motor Vehicles publish statistics to reflect the number of on-road ZEVs in the state, including BEVs, PHEVs, and FCEVs.[63] The data are provided at the county and ZIP Code levels. Figure 8 shows the ZEV Dashboard results for Riverside County, which had a total of 67,446 light-duty ZEVs by the end of 2023. Approximately 72% of the reported ZEVs were BEVs (48,310), representing 2.65% of the total vehicle population. The top vehicle manufacturers represented include Tesla 32,968 vehicles), Toyota (5,363 vehicles), and Chevrolet (4,891 vehicles).

Figure 8. Light-Duty ZEV Population in Riverside County



[63] Zero-Emission Vehicle and Infrastructure Statistics.

To determine the share of on-road ZEVs in Moreno Valley, all seven of the city's ZIP Codes were input in the ZEV Dashboard (92551, 92552, 92553, 92554, 92555, 92556, and 92557). Of the 140,899 total vehicles in seven ZIP Codes in Moreno Valley, 3,373 (or 2.34%) are ZEVs (Figure 9). BEVs and PHEVs are similarly popular among ZEV consumers, with 2,240 and 1,105 vehicles counted, respectively. Table 8 shows the breakdown of ZEV counts across the individual city ZIP Codes. The higher ZEV counts correspond to ZIP Codes with higher percentages of the city's population clusters.

Figure 9. Light-Duty ZEV Population in Moreno Valley

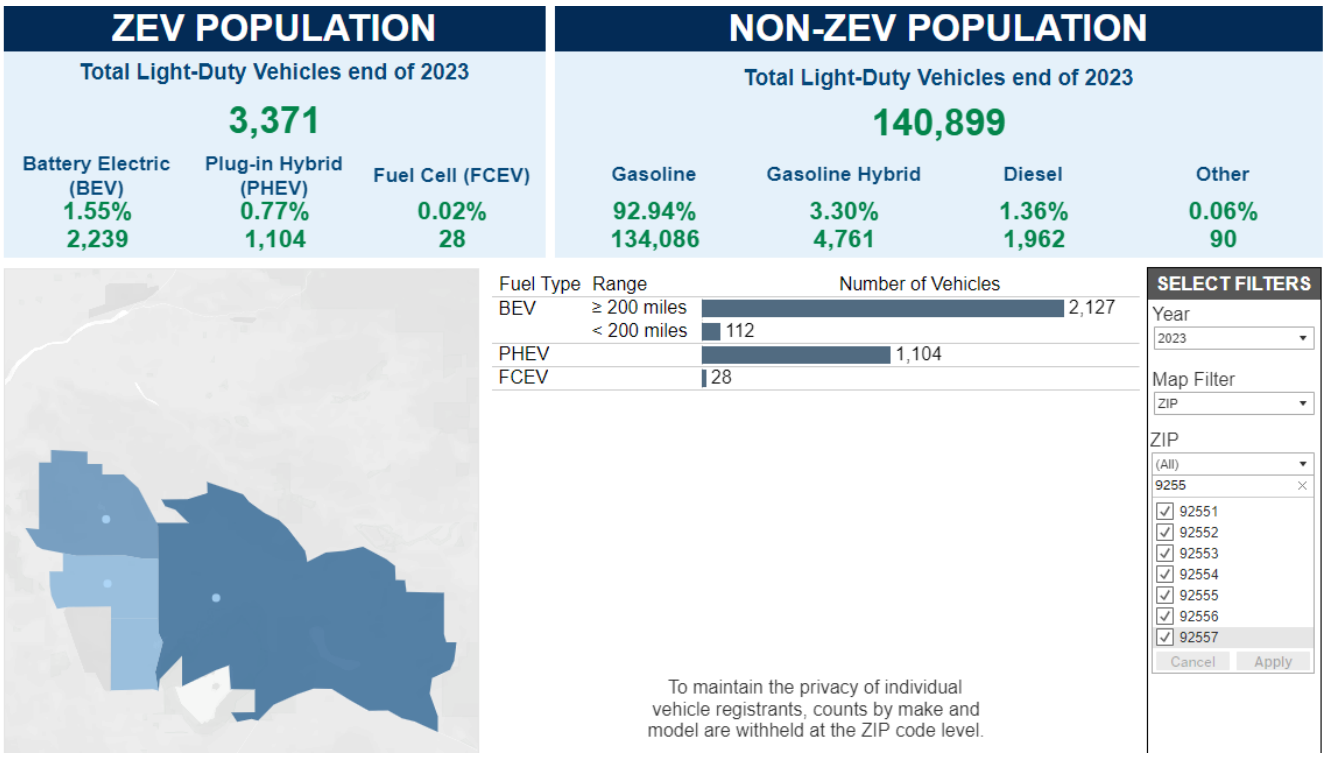
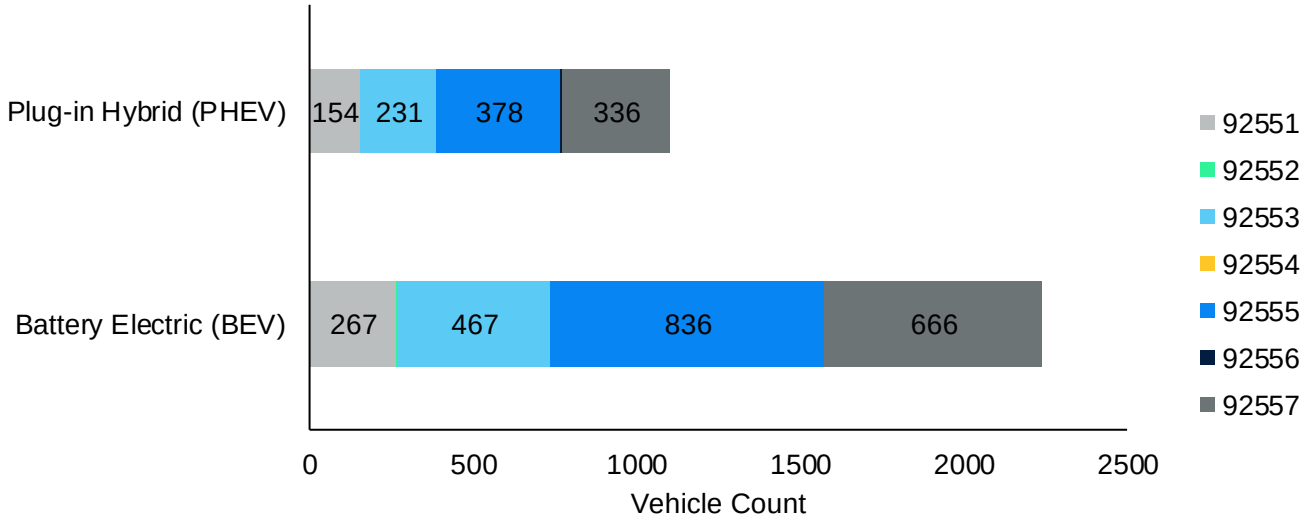


Table 8. ZEV Count by Moreno Valley Zip Code

ZEV Count	92551	92552	92553	92554	92555	92556	92557
Total: 3,373	431	6	701	1	1,221	3	1,010

To provide additional information about ZEVs registered in Moreno Valley, the CEC ZEV Dashboard provides vehicle fuel type counts by ZIP Code. The tallies represented here include BEV and PHEV light- and heavy-duty vehicles for a total of 3,345 PEVs. ZIP Code 92555 leads in both the BEV and PHEV categories, with 836 and 378 vehicles counted, respectively. Overall, BEV counts are higher than PHEVs in most of the ZIP Codes.

Figure 10. Vehicle Fuel Type Count by Moreno Valley ZIP Code As of 2023



The trends in these figures suggest continued growth in the demand for light-duty ZEVs in both Riverside County and Moreno Valley. To support the increasing population of ZEVs in the region, it is prudent to start planning for charging infrastructure deployment now. According to CEC ZEV Dashboard, as of March 2024, there are 1,834 total public and shared private EV chargers in Riverside County, with 88% or 1,608 of those being public chargers and 12% or 226 being shared private.[64] Of these, 1,255 are Level 2 EV chargers and 579 are DCFC stations.[65]

Looking more granularly at public charging station data as of May 2024, there are 32 unique addresses offering publicly available charging stations, with a total of 84 chargers within the City of Moreno Valley.[66] The infrastructure is provided by seven electric vehicle service providers (EVSPs) for the stations. The city has invested in a subset of these stations, which are located at Moreno Valley City Hall and the Walmart Supercenter, with equipment and networking provided by EVgo, ChargePoint, and Shell Recharge Solutions (formerly Greenlots).[67] Riverside County also has invested in 16 of the sites within Moreno Valley, located along Cactus Avenue. Table 9 summarizes the number of chargers by charging speed and EVSP network in the city.

[64] A shared private charging station has parking space(s) designated by a property owner or lessee to be available to and accessible by employees, tenants, visitors, and/or residents. Parking spaces are not dedicated to individual motorists or vehicles.
[65] Electric Vehicle Chargers in California.
[66] Alternative Fuels Data Center, Alternative Fueling Station Locator (energy.gov).
[67] MVU Charging Map (moval.gov).

Table 9. City of Moreno Valley Public EV Charger Count As of May 2024

EVSP	Level 2	DCFC	Total Number of Chargers
Blink Network	8		8
ChargePoint Network	39	3	42
eVgo Network		11	11
Shell Recharge	4	1	5
Tesla		12	12
Tesla Destination	4		4
Volta	2		2
Grand Total	**57**	**27**	**84**

4.2. EV and EVSE Challenges

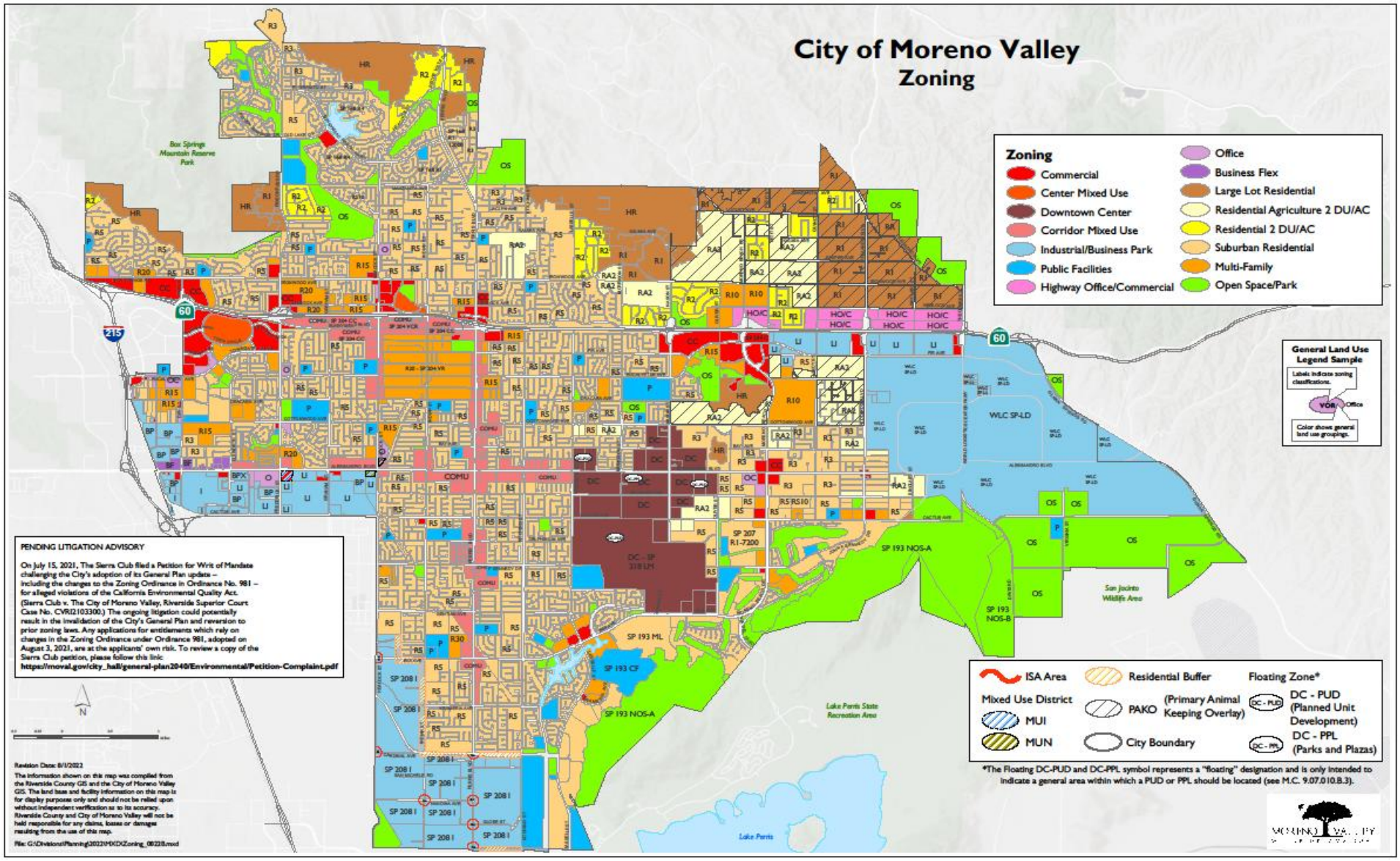
As the City of Moreno Valley plans the expansion of its public EV charger network, it is crucial to account for optimized EVSE siting procedures based on data such as transportation patterns and land use, which will indicate the most convenient and/or feasible areas in which to install new chargers. Additionally, data, such as those provided through CalEnviroScreen[68] on the low-income and disadvantaged communities in the region, provide valuable insight into the neighborhoods that stand to gain the most benefit from reduced emissions by promoting the use of ZEVs over fossil fuel-powered vehicles.

Land Use

The most current city zoning map is shown in Figure 11.[69] Moreno Valley is bordered by large open space and park lands (bright green shading) along the southeast boundary, with industrial/business park zones (light blue shading) along the eastern and southwest edges. The eastern part of the city is primarily commercial buildings, such as logistics hubs and warehouses for major corporations (e.g., Amazon, Sketchers, Karma Automotive). The residential zoning primarily consists of single-unit suburban homes (beige shading) spread throughout the city limits, with some multifamily zones (orange shading) across the central regions. Highway commercial and mixed-use corridor zones (e.g., large shopping centers featuring big box stores such as Walmart, Costco, and Target and popular restaurant chains) are found along State Route 60, which runs east to west through Moreno Valley and next to the intersection of I-215 to the west. The northern outskirts of the city, labeled as large lot residential zones (brown shading), are mostly populated with ranches. The downtown center (maroon shading) is located just southeast of the middle of the city, with smaller commercial zones (red shading) interspersed throughout the city. Moreno Valley Utility has conducted extensive reviews of the existing city-maintained parcels and notes that most of the zones outside of commercial areas are mostly undeveloped and do not currently have electrical infrastructure to support the addition of public EV charging.[70] It has therefore been recommended that properties in commercial zones be engaged to explore EV charging opportunities.

[68] https://oehha.ca.gov/calenviroscreen.
[69] NewZoning.pdf (moval.gov).
[70] Moreno Valley Utility Transportation Electrification Assessment and Roadmap, AESC, Inc. (aesc-inc.com).

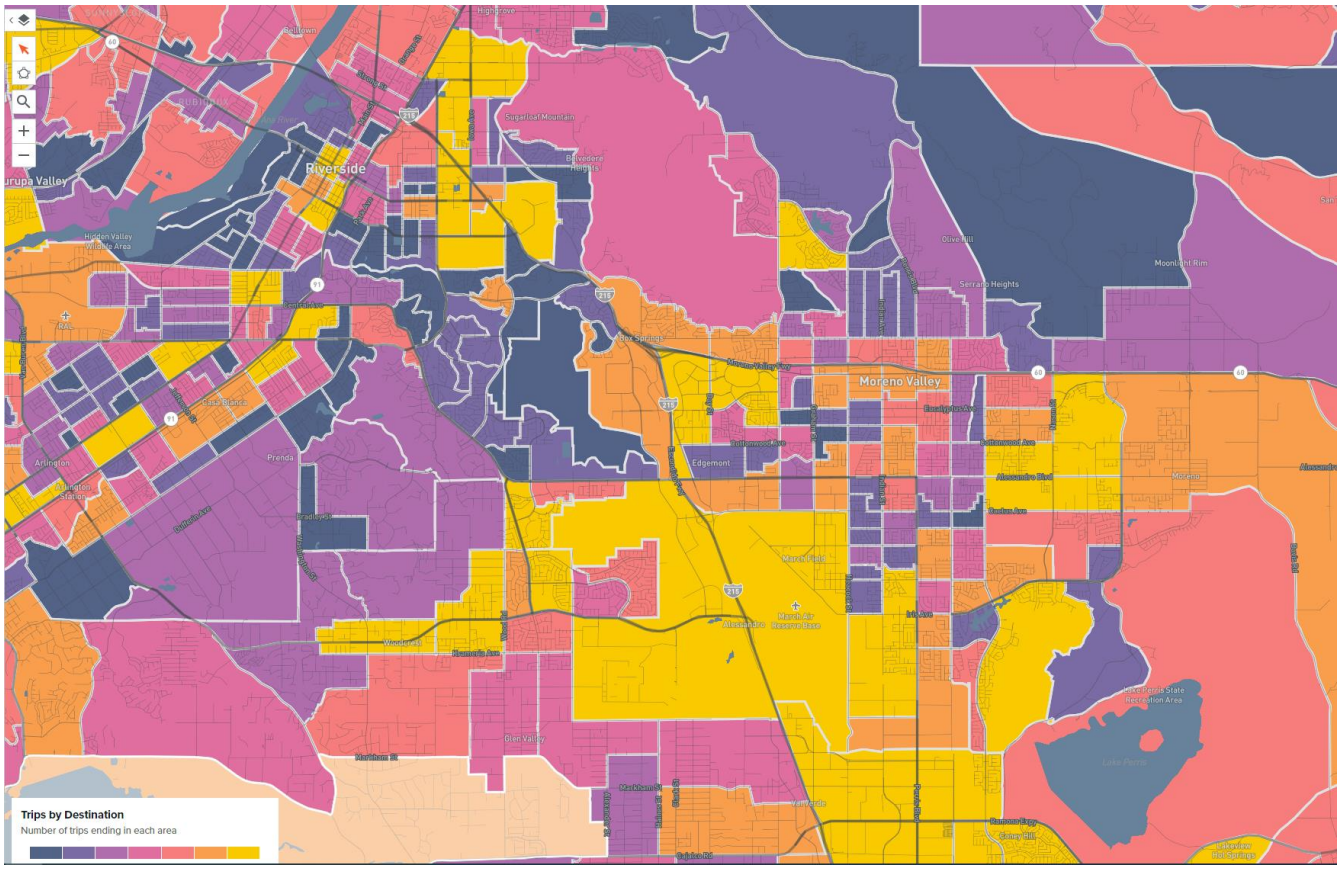
Figure 11. City of Moreno Valley Zoning Map



Transportation Patterns

In addition to the Moreno Valley zoning map, big data platforms, such as Replica, can help analyze regional transportation patterns. Figure 12 demonstrates an example of Replica's data fidelity, a color gradient map of the Moreno Valley area which displays the number of auto trips by destination during a typical weekday. The map uses dark blue shading to indicate the lowest number of trips relative to the region, whereas yellow shading represents the highest number of trips ending in the associated tract.[71] When compared with the zoning map, the highest volume of trip destinations are ones ending in the commercial/retail zones in the city.

Figure 12. Number of Vehicle Trips in Moreno Valley (Replica)



Transportation data platforms, such as Replica, also can provide insight regarding the purpose of trips, as shown in Figure 13. Incidentally, the number one trip purpose in Moreno Valley is traveling home (35.3% of recorded trips). The second is shopping (20.6%), followed by eating/restaurants (11.4%), work (11.4%), recreation (4.37%), and errands (3.57%). Furthermore, the average trip is 9.8 miles long and has a duration of 19.9 minutes from origin to destination. Figure 14 displays the distribution of auto trips by the total distance traveled from origin to destination (ending in Moreno Valley). The average vehicle-miles traveled (VMT) per capita in Moreno Valley is 23.5, just under the state average of 23.6 VMT per capita.

[71] Fall 2022 data and visuals from Replica. Methodology and definitions are available at Seasonal Mobility Model Methodology Summary (Places) (replicahq.com).

Figure 13. Percentage of Auto Trips in Moreno Valley by Purpose (Replica)

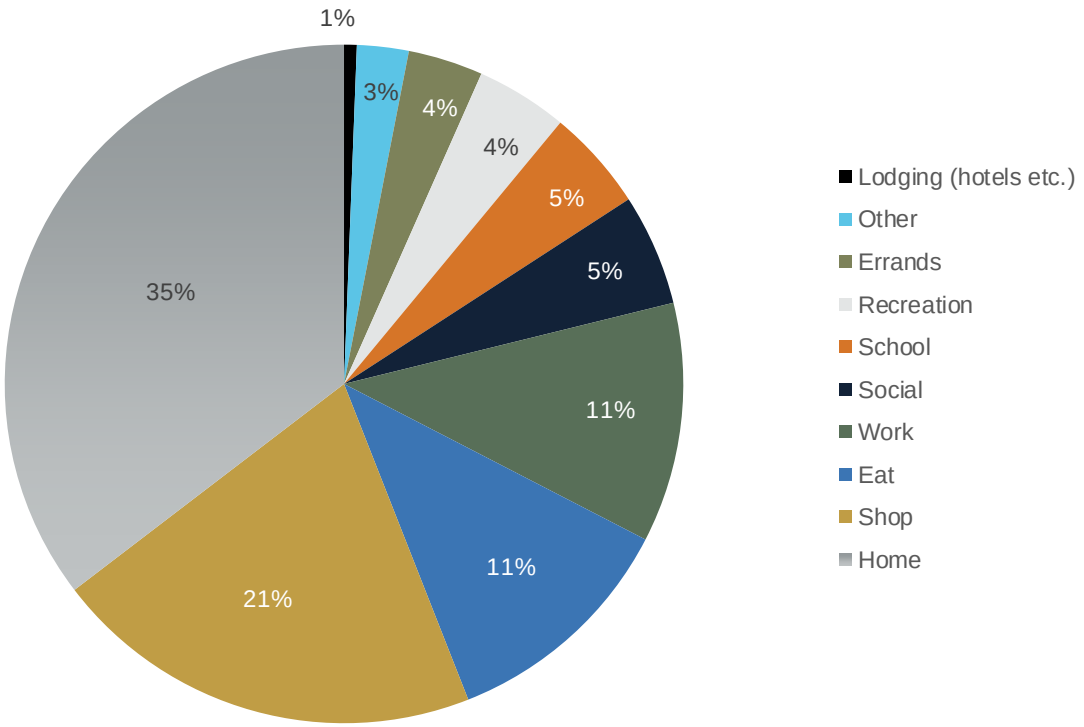
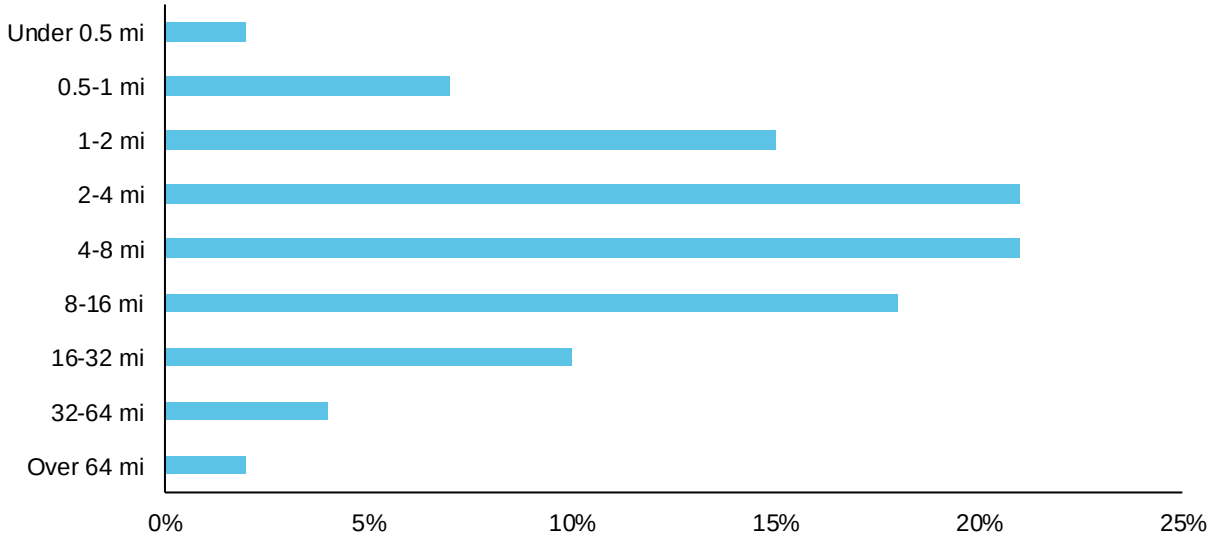


Figure 14. Percentage of Auto Trips in Moreno Valley by Distance Traveled (Replica)

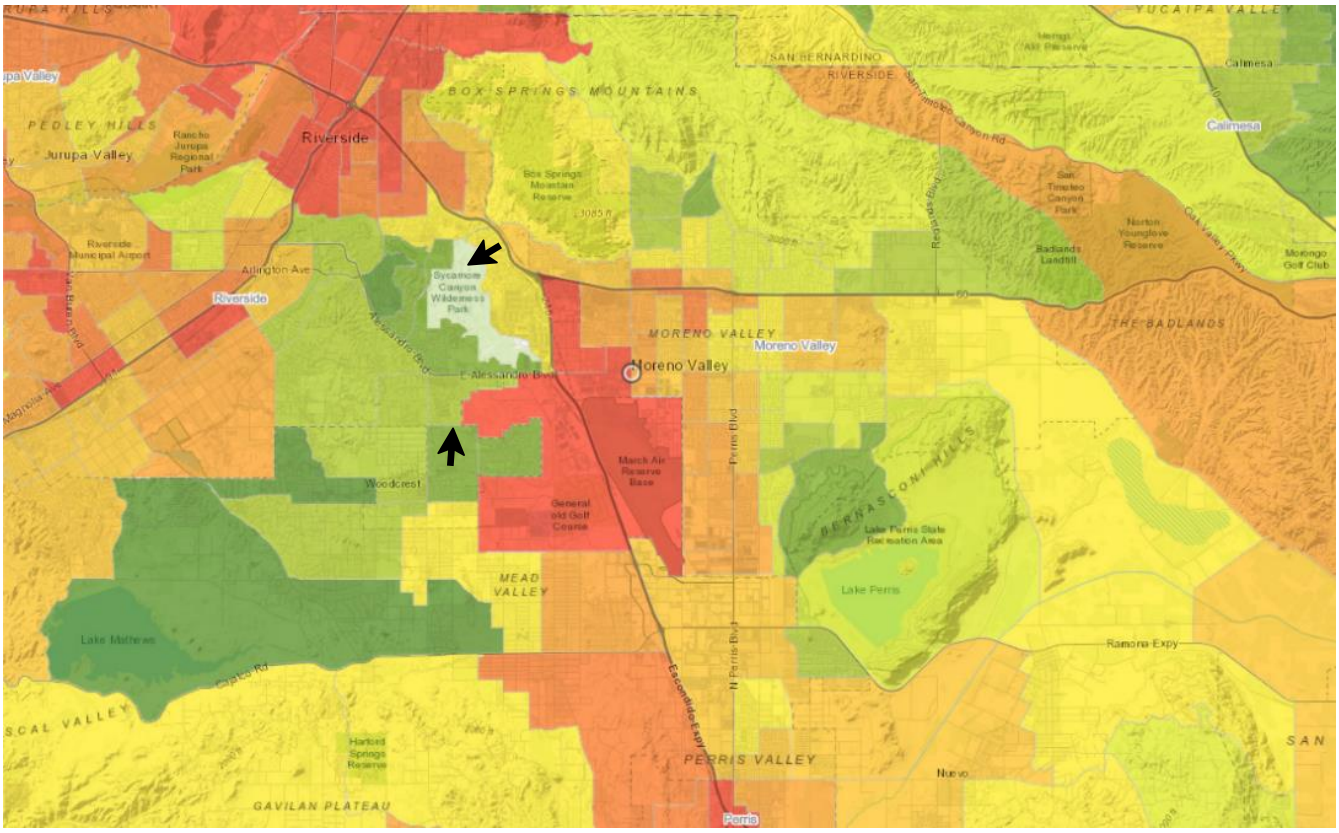


Disadvantaged Communities

Equity is a crucial factor to consider when determining the location of charging infrastructure for EVs. Expanding EV charging access to all demographic and socioeconomic groups, including low-income and disadvantaged communities, can help ensure that the benefits of this technology are distributed equitably. These benefits include not only the direct advantages of EV ownership, such as lower fuel and maintenance costs, but also the indirect benefits of reduced air pollution and improved public health, which

are especially significant in areas often disproportionately affected by environmental pollution. Thoughtfully planning the buildout of EV charging infrastructure in these communities also can spur local economic development by creating jobs in EV charging installation, maintenance, and related services. To identify these communities, the project team leveraged CalEnviroScreen 4.0 to display environmental and socioeconomic impacts on communities at the census tract level.[72] This tool factors in measures such as exposures (e.g., ozone, particulate matter 2.5 or $PM_{2.5}$, diesel particulate matter, toxic releases, traffic), environmental factors (e.g., cleanup sites, hazardous waste, solid waste), the presence of vulnerable communities (e.g., individuals with asthma, cardiovascular disease), and socioeconomic factors (e.g., education level, poverty, unemployment, housing burden) to create a score that is indicative of the cumulative burden. Figure 15 displays the results for Moreno Valley, with green representing a lower burden, yellow representing an intermediate burden, and orange or red representing the highest percentile burden. Areas of particular concern include census tract 6065046700, with a population of 4,721 people, and census tract 6065042505 (see arrows in Figure 15). Both of these blocks scored similarly high, within the 98th percentile, in pollution burden. They were both placed in the 70th or higher percentile for ozone, traffic, hazardous waste, sensitive populations, linguistic isolation, poverty, and unemployment.

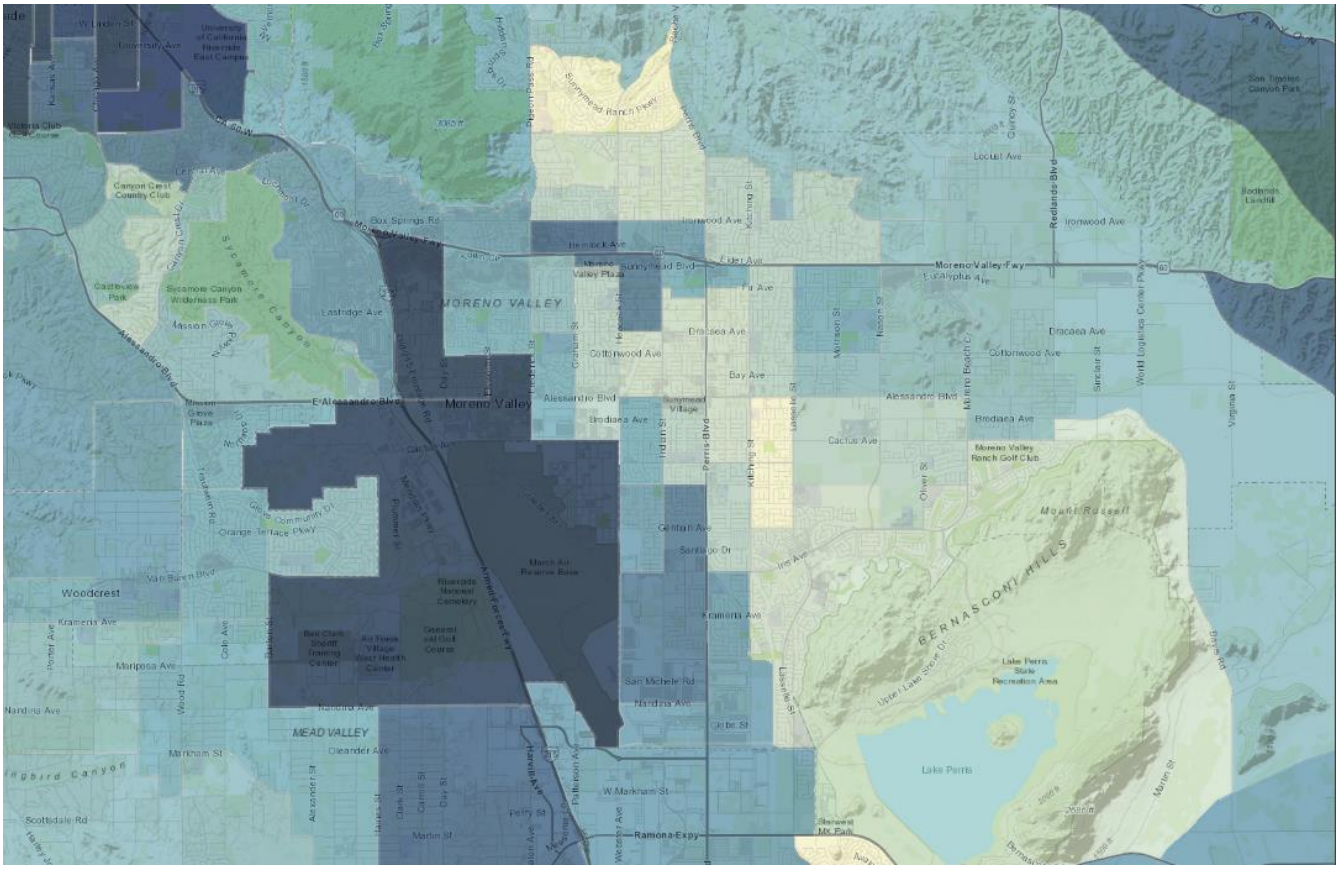
Figure 15. CalEnviroScreen 4.0 Results for Moreno Valley



[72] CalEnviroScreen 4.0, Office of Environmental Health Hazard Assessment.

To further illustrate the above results, CalEnviroScreen also provides indicator maps that focus on two categories of attributes: pollution burden and population characteristics.[73] In Figure 16, the darkest shaded areas represent the highest pollution burden scores. There is a visual correlation between poorer, more vulnerable communities and exposure to harmful environmental pollutants.

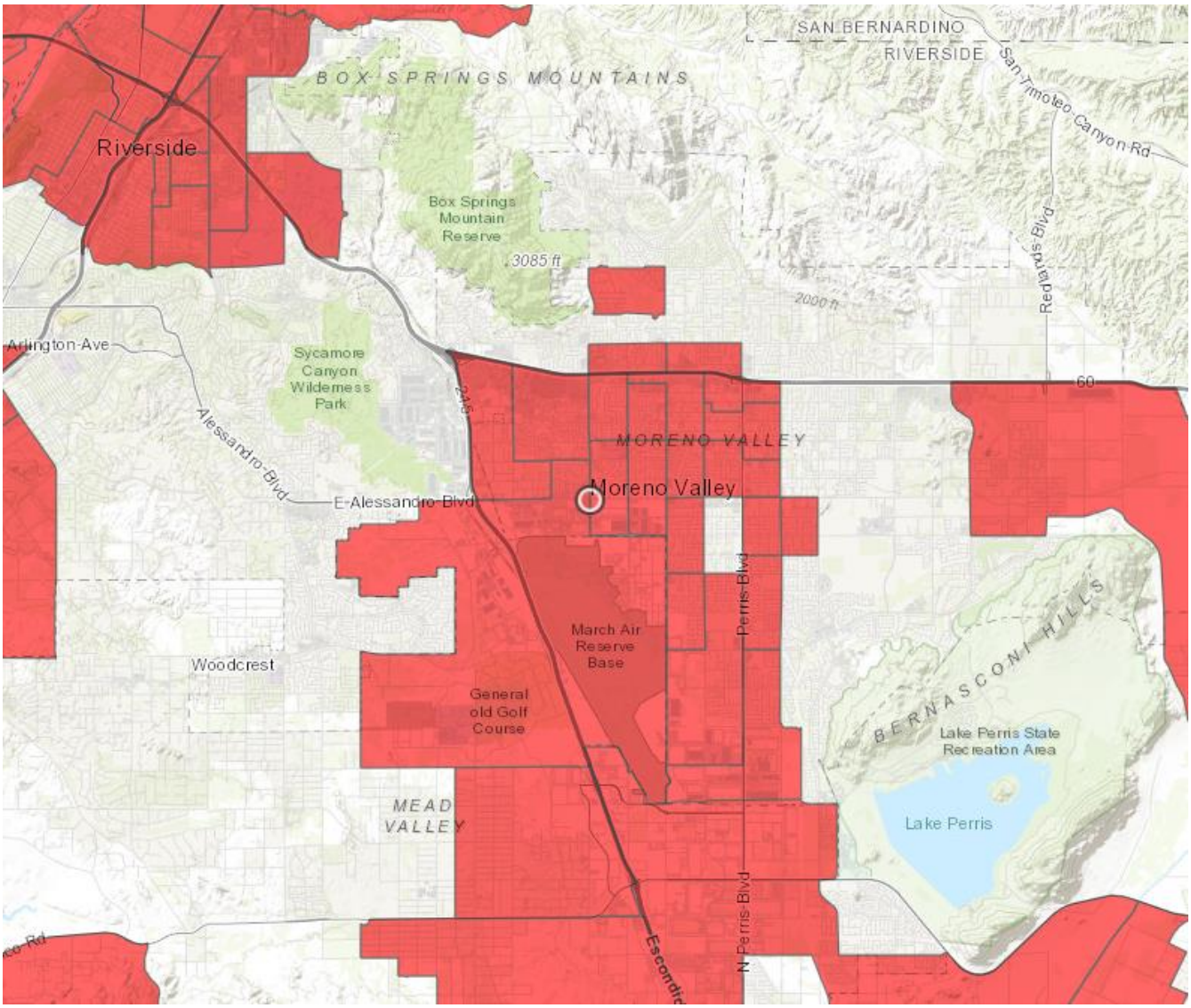
Figure 16. CalEnviroScreen 4.0 Pollution Burden Map for Moreno Valley



California Senate Bill (SB) 535 (signed in 2012) established guidelines directing 25% of funds from the Greenhouse Gas Reduction Fund created by AB 32 to go toward projects that benefit DACs. In response to this law, the California Environmental Protection Agency developed the CalEnviroScreen Disadvantaged Communities tool[74] to identify the communities most negatively affected by low income and pollution. These state-defined top 25% DACs are shaded in red and include census tracts and tribal areas (Figure 17). Similar to Figure 15 and Figure 16, the red shading in Figure 17 indicates the greatest burden and impacts on the same communities identified previously.

[73] CalEnviroScreen 4.0 Indicator Maps (arcgis.com).
[74] SB 535 Disadvantaged Communities, Office of Environmental Health Hazard Assessment.

Figure 17. CalEnviroScreen 4.0 Disadvantaged Communities



5. Current and Projected Light-Duty Vehicle Technology Mix

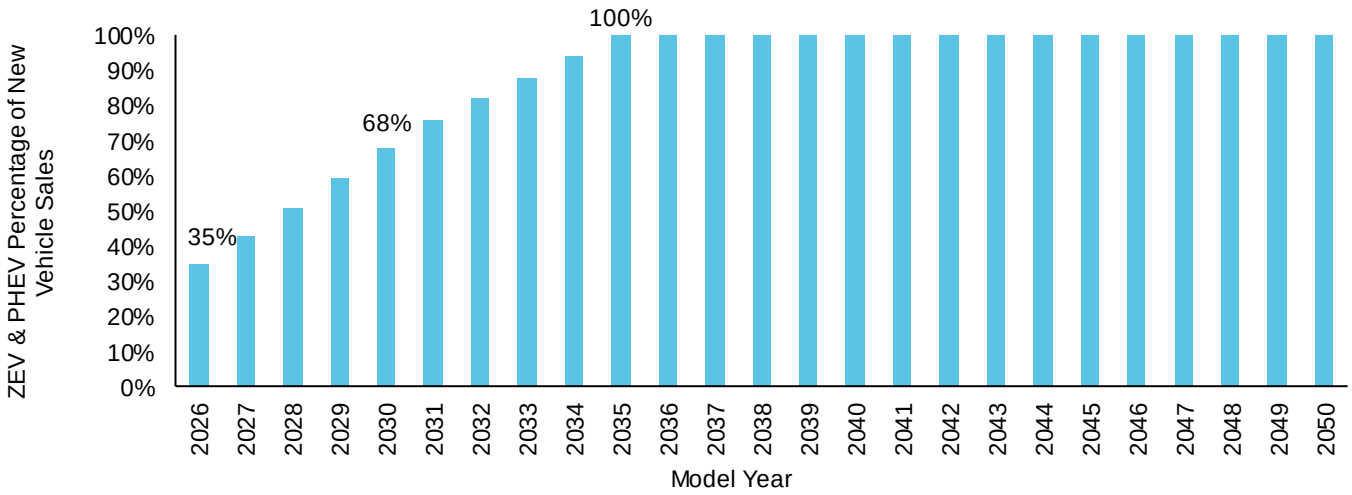
To better understand the city's ZEV technology portfolio and evaluate future ZEV adoption trends as informed by state regulations and regional electrification goals, the project team conducted vehicle inventory modeling using CARB's EMission FACtor 2021 (EMFAC2021), v1.0.2 model.[75] EMFAC2021 estimates the number of vehicles by fuel type that will be deployed within the Riverside (South Coast)[76] region according to Baseline conditions, including state policies adopted until 2021, such as the Advanced Clean Truck (ACT) and Innovative Clean Transit regulations.

By default, EMFAC2021 grouped all ZEVs (BEVs and FCEVs) into one Electricity fuel category, and the project team has further divided Electricity into BEVs and FCEVs by overlaying fuel technology assumptions from Advanced Clean Cars II and Advanced Clean Fleets rulemaking. Detailed population forecasts for ZEVs by weight class from 2023 through 2050 for the region were summarized. Although EMFAC2021 cannot provide finer spatial resolution at the city level, the overall trends in ZEV adoptions and vehicle populations in the city should be consistent with that of the sub-area of Riverside County.

5.1. Modeling the Impacts of Advanced Clean Cars II (ACCII) and Advanced Clean Fleets (ACF) Regulations

Alongside the Baseline scenario, a prospective scenario that considers the impact of ACCII and ACF regulations is modeled in this study. The ACCII regulation accelerates requirements that auto manufacturers deliver an increasing number of light-duty ZEVs each year, beginning in model year 2026. Sales requirements for new ZEVs and PHEVs will start with 35% in 2026, build to 68% in 2030, and reach 100% in 2035 and beyond (Figure 18).[77]

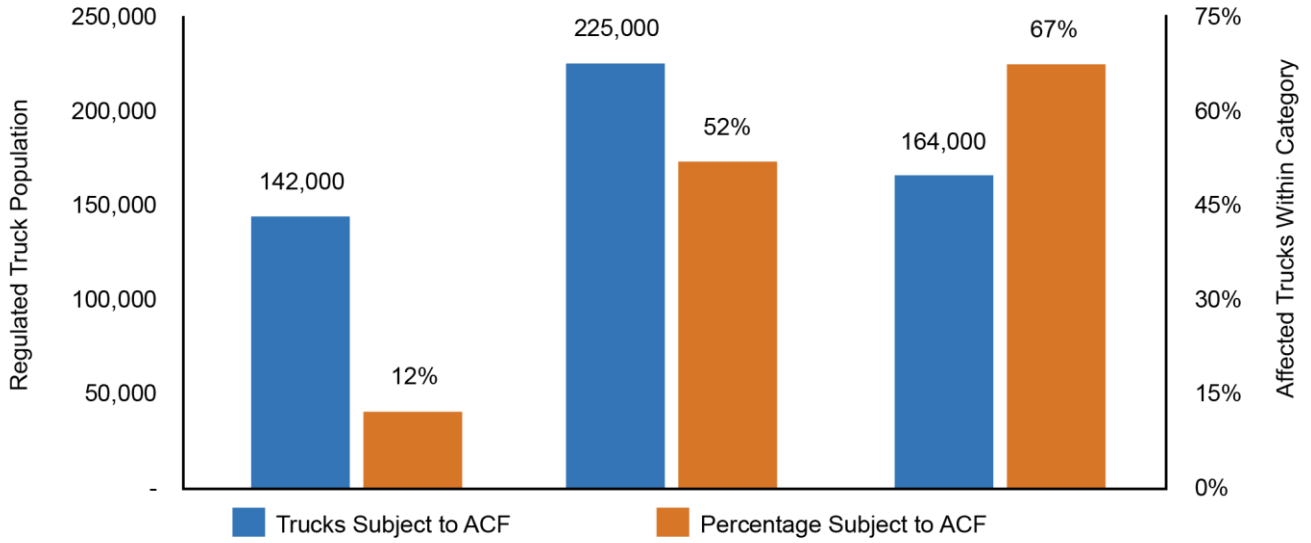
Figure 18. California ACCII Light-Duty ZEV and PHEV Manufacturer Sales Targets



[75] California Air Resources Board. Welcome to EMFAC. https://arb.ca.gov/emfac/.
[76] The sub-area of Riverside County that falls under the jurisdiction of the South Coast Air Basin and South Coast Air Quality Management District.
[77] California Air Resources Board. Advanced Clean Cars II Regulations. https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii.

The ACF regulation applies to fleets that are suitable for early electrification such as those that perform drayage operations; those owned by state, local, and federal government agencies; and high-priority fleets (Figure 19).[78]

Figure 19. California ACF Projected Percentage of Vehicles Subject to Regulation



The regulation affects on-road vehicles with a gross vehicle weight rating (GVWR) greater than 8,500 pounds, off-road yard tractors, and light-duty mail and package delivery vehicles. The ACF regulation will be phased in over the next two decades, allowing fleets time to replace their existing conventional internal combustion engine vehicles (ICEVs) with comparable ZEVs, with the detailed regulatory components as detailed below:

- **Manufacturer sales mandate:** Manufacturers in California may sell only zero-emission MHDVs starting in model year 2036.
- **State and local agencies:** State and local government fleets, including city, county, special district, and state agency fleets, are required to ensure that 50% of vehicle purchases are zero-emission beginning in 2024 and 100% of vehicle purchases are zero-emission by 2027. Alternately, state and local government fleet owners may elect to meet ZEV targets using the ZEV Milestones Option applicable to the high-priority fleets.
- **Drayage fleets:** Beginning in 2024, trucks must be registered in the CARB Online System to conduct drayage activities in California. Legacy internal combustion engine drayage trucks may register in the CARB Online System through December 31, 2023, and can continue to operate through their minimum useful life.[79] Beginning in 2024, only zero-emission drayage trucks may register in the CARB Online System. All drayage trucks entering seaports and intermodal railyards are required to be zero-emission by 2035.

[78] High-priority fleets are entities that own, operate, or direct at least one vehicle in California, and that have either $50 million or more in gross annual revenues, or that own, operate, or have common ownership or control of a total of 50 or more vehicles (excluding light-duty package delivery vehicles).
[79] The earlier of 18 years or 800,000 miles, or a minimum of 13 years if the truck has more than 800,000 miles. More information can be found in Senate Bill 1 (Beall, Statutes 2017, Chapter 5), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB1.

- **High-priority and federal fleets:** High-priority and federal fleets must comply with the Model Year Schedule or may elect to use the optional ZEV Milestones Option to phase in ZEVs into their fleets:
  - Model Year Schedule: Fleets must purchase only ZEVs beginning in 2024 and, starting January 1, 2025, must remove ICEVs at the end of their useful life as specified in the regulation.
  - ZEV Milestones Option (Optional): Instead of the Model Year Schedule, fleets may elect to meet ZEV targets as a percentage of the total fleet starting with vehicle types that are most suitable for electrification, following the schedule shown in Table 10.

Table 10. ACF ZEV Fleet Milestones by Milestone Group and Year

Percentage of Vehicles That Must Be Zero-Emission	10%	25%	50%	75%	100%
Milestone Group 1: Box trucks, vans, buses with two axles, yard tractors, light-duty package delivery vehicles	2025	2028	2031	2033	2035
Milestone Group 2: Work trucks, day cab tractors, buses with three axles	2027	2030	2033	2036	2039
Milestone Group 3: Sleeper cab tractors and specialty vehicles	2030	2033	2036	2039	2042

Both the ACCII and ACF regulations provide sales targets by calendar year that can be used as a stand-in for likely regional ZEV adoption. In this study, the project team converts fractions of otherwise newly purchased ICEVs, known from the Baseline scenario provided by EMFAC2021, to new ZEV on-road vehicles. This yields a projection of the likely regional fleet technology mix that will result in a significant number of on-road ZEVs by 2050.

5.2. Baseline Conditions

The EMFAC2021 model forecasts the on-road vehicle stock using the latest available information from the California Department of Motor Vehicles, combined with socioeconomic forecasts of the new vehicle sales and empirically based assumptions for the vehicle attrition rates based on California's historical vehicle stock data.[80] The projected growth in light-duty vehicles and MHDVs under Baseline conditions by fuel technology between 2023 through 2050 is shown in Figure 20 and Figure 21, respectively.

Four vehicle types (LDA, LDT1, LDT2, and MDV)[81] in EMFAC2021 are categorized as light-duty vehicles for this study, which includes all passenger cars and light-duty trucks with a GVWR less than 8,500 pounds. In 2023, the shares of the region's light-duty vehicle population by fuel type consists of 97% ICEVs (96% gasoline, 1% diesel), 2% electricity (including both BEV and FCEV), and 1.5% PHEV. In the absence of California's ACCII program, by 2050, the ZEV share of the light-duty vehicle population is projected to increase to 8.3% electricity and 3.3% PHEV.

MHDVs, on the other hand, include all Class 2b through Class 8 trucks and buses. The fuel technology mix for MHDVs in 2023 is 100% internal combustion engine, with 67% diesel, 31% gasoline, and 2% natural gas. Zero-emission MHDVs start phasing in around 2024 and will reach 41% by 2050 in the absence of the recently adopted ACF regulation.

[80] California Air Resources Board, EMFAC2021, Volume III: Technical Document. https://ww2.arb.ca.gov/sites/default/files/2021-03/emfac2021_volume_3_technical_document.pdf.
[81] LDA: Passenger cars. LDT1 & 2: Light-duty trucks with a GVWR < 6,000 pounds. MDV: Light-duty trucks with a GVWR < 8,500 pounds. https://ww2.arb.ca.gov/sites/default/files/2021-01/EMFAC202x_Users_Guide_01112021_final.pdf.

Figure 20. Baseline Light-Duty Vehicle Technology Mix Forecasted in Riverside County, excluding ACCII (EMFAC2021)

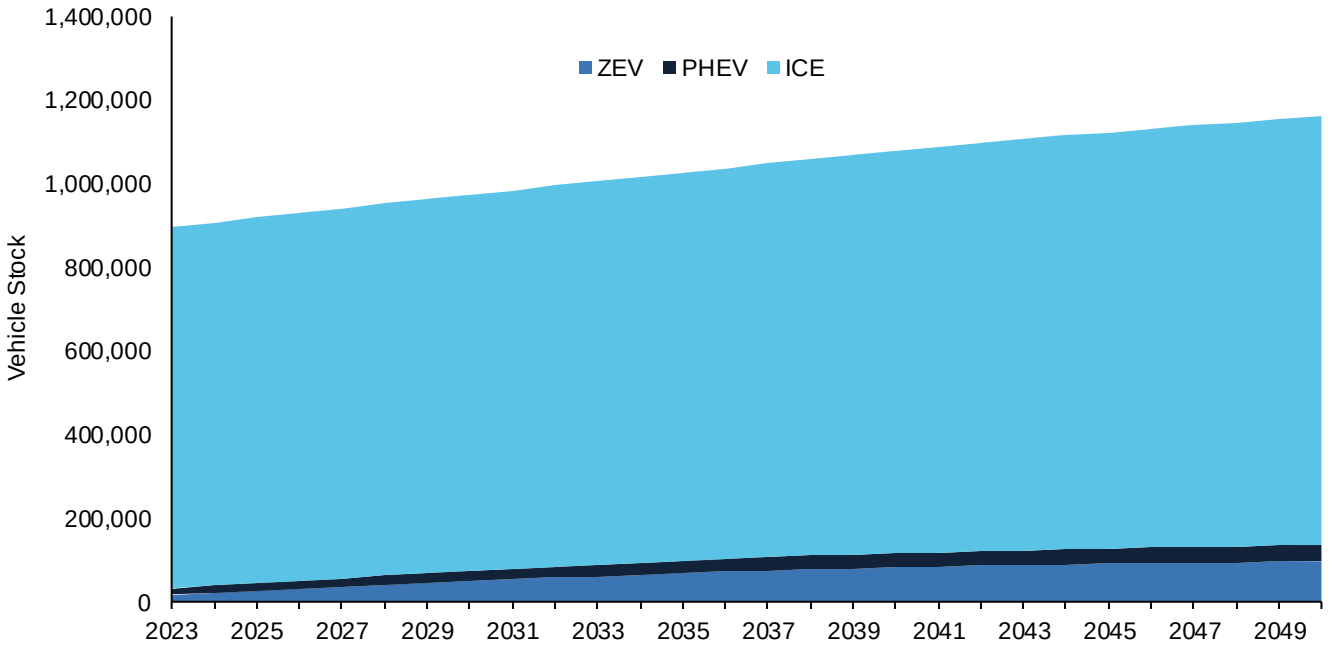
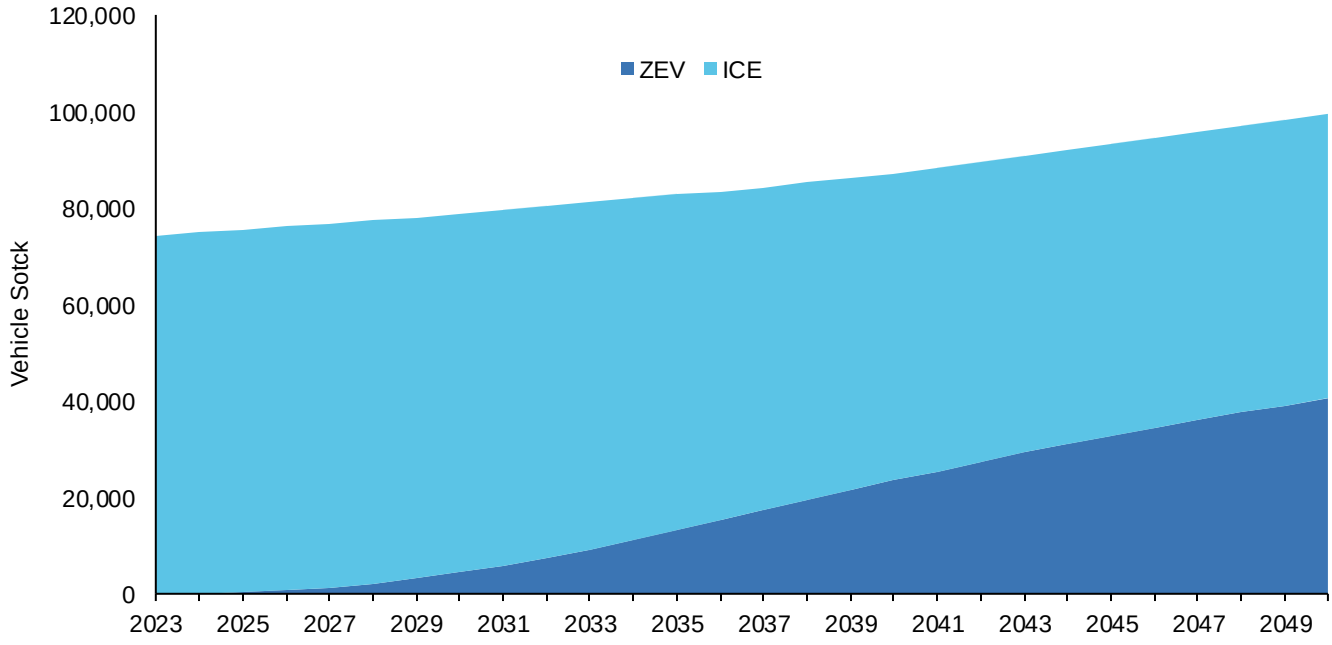


Figure 21. Baseline Medium and Heavy-Duty Vehicle Technology Mix Forecasted in Riverside County, excluding ACF (EMFAC2021)



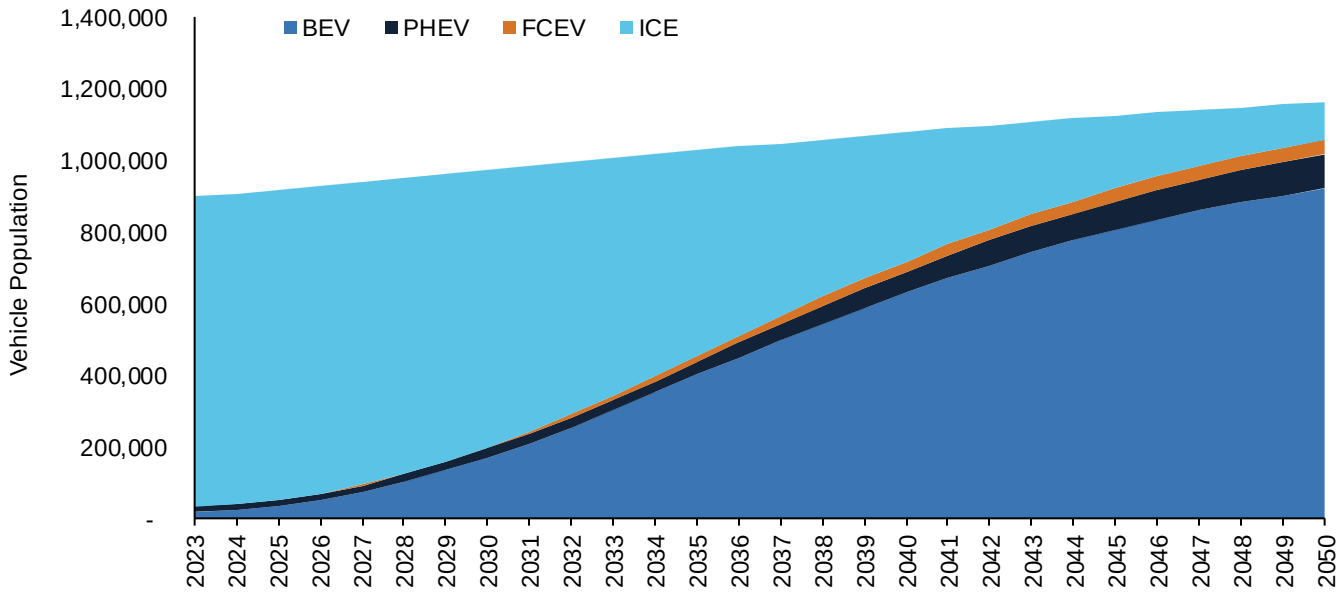
5.3. Projected EV Population

The ACCII regulation was officially approved by the California Office of Administrative Law and filed with the Secretary of State, effective November 30, 2022. With the official adoption of the regulation, the impact of ACCII will have to be quantified to evaluate full-scale ZEV deployment in the region. The modeling of ACCII relied mainly on CARB's rulemaking documents, which used EMFAC2021 as the basis to estimate new sales and the vehicle population. To evaluate the impacts of ACCII on EV new sales and EV population on-road, the project team has made the following assumptions:

- ZEV shares of new sales during and before 2019 are based on Department of Motor Vehicles' registration data, and sales in 2020 and 2021 are based on CARB's adjusted Baseline in the ACCII Initial Statement of Reasons, while the ZEV sales fractions from model year 2023 through 2025 are interpolated using CEC's report in 2022 and ACCII requirements in 2026.[82]
- The fuel technology distribution of BEVs, PHEVs, and FCEVs is consistent with CARB's modeling for the ACCII regulation. The detailed fuel technology fractions by vehicle categories were obtained via direct communication with CARB staff.

With ACCII considered, the vehicle technology share of ZEVs will significantly increase, with 17% BEVs, 3% PHEVs, and 80% ICEVs in 2030, and 79% BEVs, 8% PHEVs, 4% FCEVs, and 9% ICEVs by 2050 (Figure 22).

Figure 22. Projected Light-Duty Vehicle Technology Mix in Riverside County, ACCII Considered

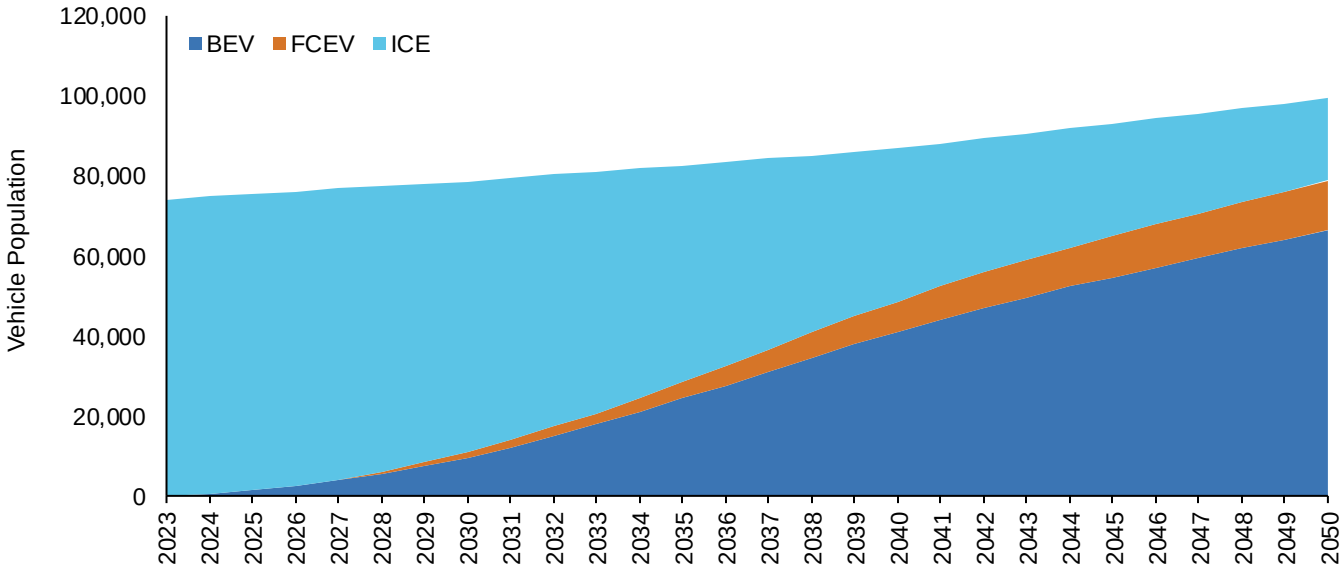


The ACF regulation was approved by CARB on April 28, 2023, subsequently approved by the California Office of Administrative Law, and was effective as of October 1, 2023. The modeling of the ACF regulation mainly followed the same assumptions as stated in CARB's rulemaking documents, including the total affected population, ZEV purchase and phase-in schedule, statutory useful life assumptions, and so

[82] California Air Resources Board (CARB). (2022). Public Hearing to Consider the Proposed Advanced Clean Cars II Regulations. Staff Report: Initial Statement of Reasons. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/isor.pdf.

forth.[83] The projections of technology mix also stayed consistent with CARB's assumptions that 10% of day cab tractors would be FCEV until 2027 and 25% afterwards, and an even 50:50 split between BEVs and FCEVs for sleeper cabs. For all other vehicles, all ZEVs would be battery electric until 2026, and purchases starting in 2027 onward would be 90% BEV and 10% FCEV.[84] For modeling purposes, all in-state tractors were assumed to be day cabs, while interstate and out-of-state Class 8 tractors were sleeper cabs.[85] The adoption of ACF raises ZEV shares of MDHV fleets significantly, with 12% BEVs, 2% FCEVs, and 86% ICEVs in 2030, and 67% BEVs, 12% FCEVs, and 21% ICEVs by 2050 (Figure 23).

Figure 23. Projected MHDV Technology Mix in Riverside County, ACF Considered



[83] California Air Resources Board. Advanced Clean Fleets Regulation, Appendix F: Emissions Inventory and Results. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appf.pdf.
[84] California Air Resources Board. Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf.
[85] T7 CAIRP, T7 NOOS, and T7 NNOOS categories under EMFAC2021.

6. Projected EVSE Needs Based on Light-Duty EV Growth

With the projected ZEV population, the project team also estimated the light-duty vehicle charging infrastructure needs for the City of Moreno Valley. The study assumes that the growth of Moreno Valley's light-duty vehicle population will follow the same trend as Riverside County. Utilizing the county-level technology-specific growth rates enabled the projection of Moreno Valley's light-duty EV population based on 2022 estimates from CEC. The forecasted number of light-duty EVs is subsequently used as an input to NREL's Electric Vehicle Infrastructure – Projection (EVI-Pro) model to assess the required number of charging ports, differentiated by type within the city.

6.1. Data Sources and Methodology

The City of Moreno Valley's on-road light-duty vehicle population is estimated using CEC's Light-Duty Vehicle Population statistics.[86] The total light-duty vehicle population in the City of Moreno Valley is estimated by filtering the data to the regional ZIP Code level (92551–92557), summarized in Table 11.

Table 11. City of Moreno Valley (ZIP Codes 92551–92557) Light-Duty Vehicle Population, End of 2022

Vehicle	Technology	Population	Total Population
PEV	BEV	1,311	2,252
	PHEV	941	
ICEV	Diesel	1,924	142,585
	Flex Fuel	5,946	
	Gasoline	130,594	
	Gasoline Hybrid	4,028	
	Natural Gas	93	

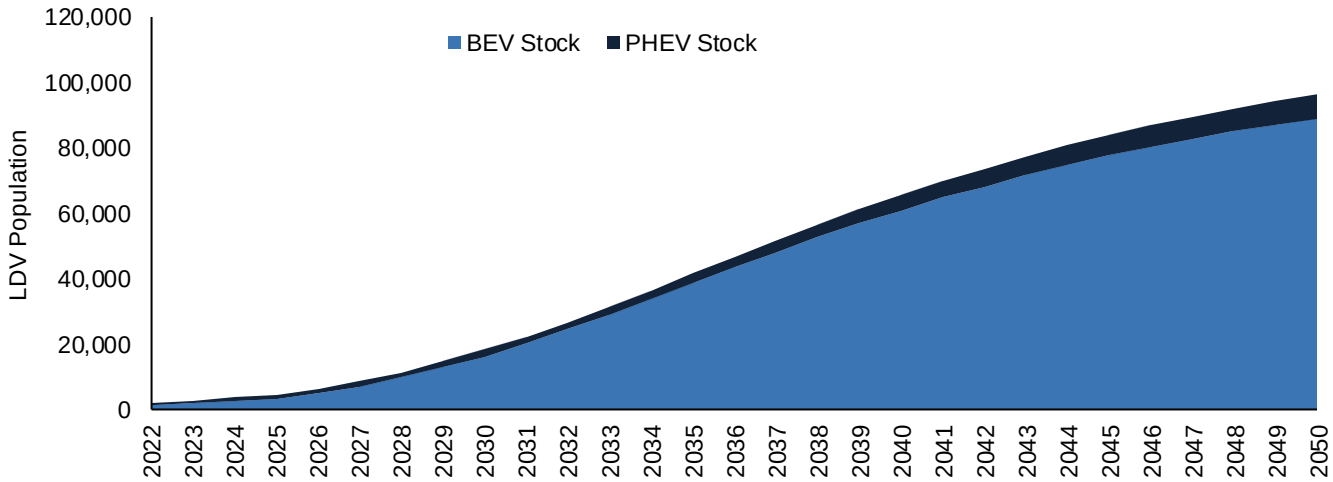
By 2022, the City of Moreno Valley's population of 144,837 light-duty vehicles consisted of 98% ICEVs (92% gasoline, 4% flex fuel, 3% gasoline hybrid, 1% diesel, < 1% natural gas) and 2% plug-in electric vehicles (PEVs) (58% BEVs, 42% PHEVs). Assuming CEC's light-duty vehicle population estimate as the Baseline population, the City of Moreno Valley's light-duty vehicle technology mix can be forecasted, as shown in Figure 24. By 2050, the City of Moreno Valley's light-duty PEV population is expected to increase to 96,359 (92% BEVs, 8% PHEVs), which is consistent with the growth expected in Riverside County.

This analysis follows the projection of the light-duty PEV population with estimates of the fleet's charging needs using the publicly available EVI-Pro tool.[87] EVI-Pro is a tool for projecting consumer demand of EV charging infrastructure, developed through a collaboration between NREL and CEC. The tool uses detailed data on personal vehicle travel patterns, EV attributes, and charging station characteristics in bottom-up simulations to estimate the quantity and type of charging infrastructure necessary to support regional adoption of EVs.

[86] California Energy Commission. (2023). Light-Duty Vehicle Population in California. Data last updated December 31, 2022. https://www.energy.ca.gov/zevstats.
[87] https://afdc.energy.gov/evi-pro-lite.

EVI-Pro estimates charging needs at two regional levels: states and metropolitan areas. In EVI-Pro, the City of Moreno Valley falls into the Riverside-San Bernardino-Ontario metropolitan area designation, a much broader region with an estimated light-duty vehicle population of 4,093,200 (98.4% ICEVs, 1.6% PEVs) at the end of 2021. Moreover, to estimate the number of charging ports by type, EVI-Pro requires that the number of PEVs be at least 1% of the total estimated vehicles in the region (40,900 PEVs) to successfully generate a projection. Because the City of Moreno Valley's PEV population is not expected to exceed 40,900 until 2035, the project team opted to forecast charging needs for calendar years 2035 through 2050, then used a backwards projection to estimate charging needs at PEV quantity resolutions lower than EVI-Pro is capable of.

Figure 24. City of Moreno Valley (ZIP Codes 92551–92557) Projected Light-Duty PEV Population



6.2. Projected Charging Needs Results

The results provided by EVI-Pro offer insights on the charging infrastructure that would be necessary to fulfill the needs of the regional projected light-duty PEV population. A summary of the total number of chargers by location and power level is available for reference in Table 12 and Table 13, respectively. Note that EVI-Pro considers two location classifications of private-access ports: residential and private locations. Residential chargers are private-access ports that would need to be installed at the residences of detached single-family homes; private chargers are shared private-access ports for residents of multi-unit dwellings (e.g., apartments, condos, duplexes, townhomes, mobile homes).

Table 12. Summary of the EVI-Pro Projection of Charging Port Needs by Access Type

Calendar Year	Private	Public	Residential	Total Ports
2025	8	16	1,866	1,890
2030	161	240	12,806	13,207
2035	322	471	40,237	41,030
2040	594	847	62,779	64,220
2045	761	1,088	80,515	82,364
2050	874	1,249	92,392	94,515

Table 13. Summary of the EVI-Pro Projection of Charging Port Needs by Power Level

Calendar Year	DCFC 150 kW	DCFC 250 kW	Level 1	Level 2	Total Ports
2025	2	0	1,361	527	1,890
2030	32	6	3,040	10,129	13,207
2035	58	13	10,494	30,465	41,030
2040	97	21	16,509	47,593	64,220
2045	128	28	21,173	61,035	82,364
2050	146	32	24,298	70,039	94,515

As indicated in Table 12 and Table 13, the majority of charging ports recommended to fulfill the needs of the projected light-duty PEV population—98%, on average, from calendar year 2025 through 2050—are residential Level 1 and Level 2 charging ports. The results presented in Table 12 also are consistent with planning studies conducted by CEC[88] and NREL,[89] which assume that as the number of PEVs increases, the percentage of PEV owners with home charging decreases. This inverse correlation illustrates that when the number of PEVs is minimal (e.g., among early adopters of PEVs), PEV owners are more likely to have access to home charging facilities. This is because these early adopters tend to have higher incomes, are more likely to own their homes, and typically have garages equipped with electrical outlets. In contrast, as the number of PEVs increases, more private shared-access and public ports are needed to serve the rest of the population who do not necessarily have access to residential ports. As detailed in the Existing Conditions Report, there are currently a total of 68 public charging ports in the City of Moreno Valley, comprising 57 Level 2 chargers and 11 DCFC chargers. Although this amount surpasses the quantity of chargers projected to be needed by 2025, it is significantly less than the number of chargers anticipated to be necessary for 2030 and the following years. The projected number of residential ports and public/private ports for the City of Moreno Valley are indicated in Figure 25 and Figure 26, respectively.

Significant Public Charging Infrastructure Development Is Needed

By 2030, the City of Moreno Valley will need a total of 401 public and private chargers to support more than 193,000 plug-in electric vehicles (BEVs and PHEVs) operating in the city. Currently, there are only 63 public charging ports in the City of Moreno Valley, comprising 51 Level 2 chargers and 12 DCFC chargers.

[88] Alexander, Matt, Noel Crisotomo, Wendell Krell, Jeffry Lu, and Raja Ramesh. July 2021. Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment: Analyzing Charging Needs to Support Zero-Emission Vehicles in 2030 – Commission Report. California Energy Commission. Publication No. CEC-600-2021-001-CMR. https://www.energy.ca.gov/data-reports/reports/electric-vehicle-charging-infrastructure-assessment-ab-2127

[89] Ge, Yanbo, Christina Simeone, Andrew Duvall, and Eric Wood. 2021. There's No Place Like Home: Residential Parking, Electrical Access, and Implications for the Future of Electric Vehicle Charging Infrastructure. Golden, CO: National Renewable Energy Laboratory. NREL/TP-5400-81065. https://www.nrel.gov/docs/fy22osti/81065.pdf.

Figure 25. EVI-Pro Projection of Residential Ports by Power Level

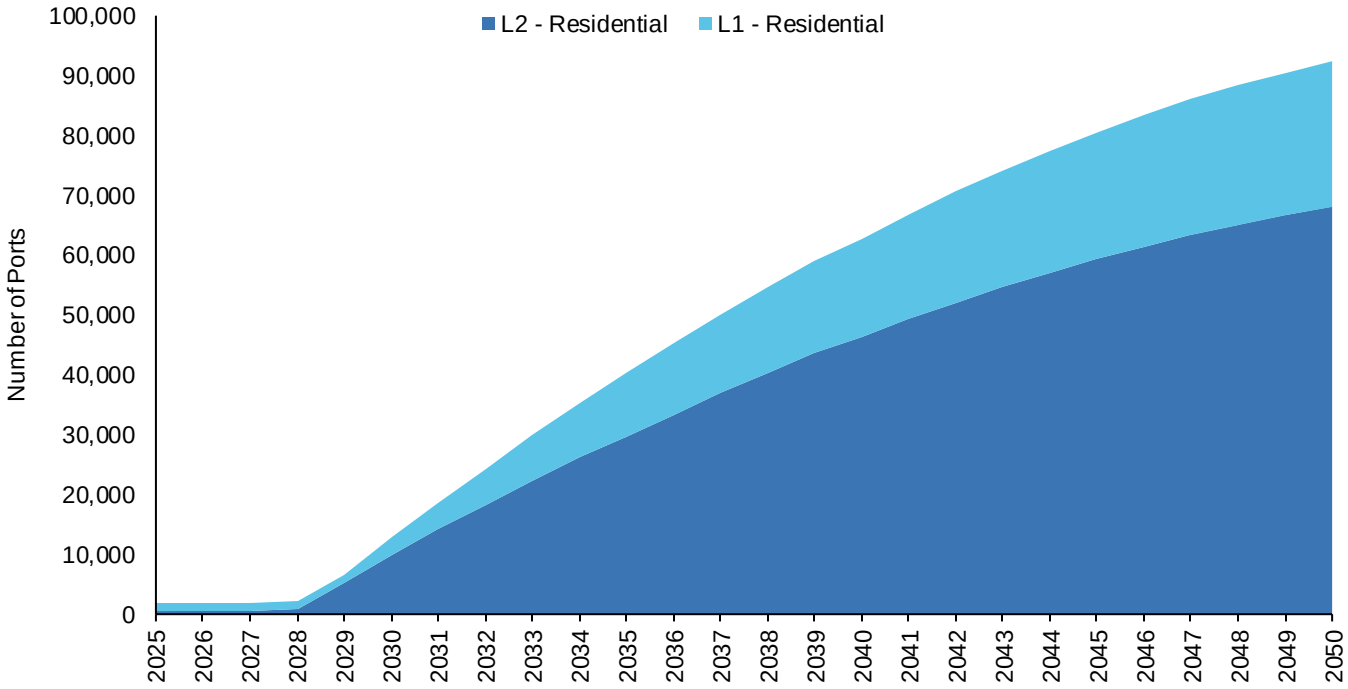
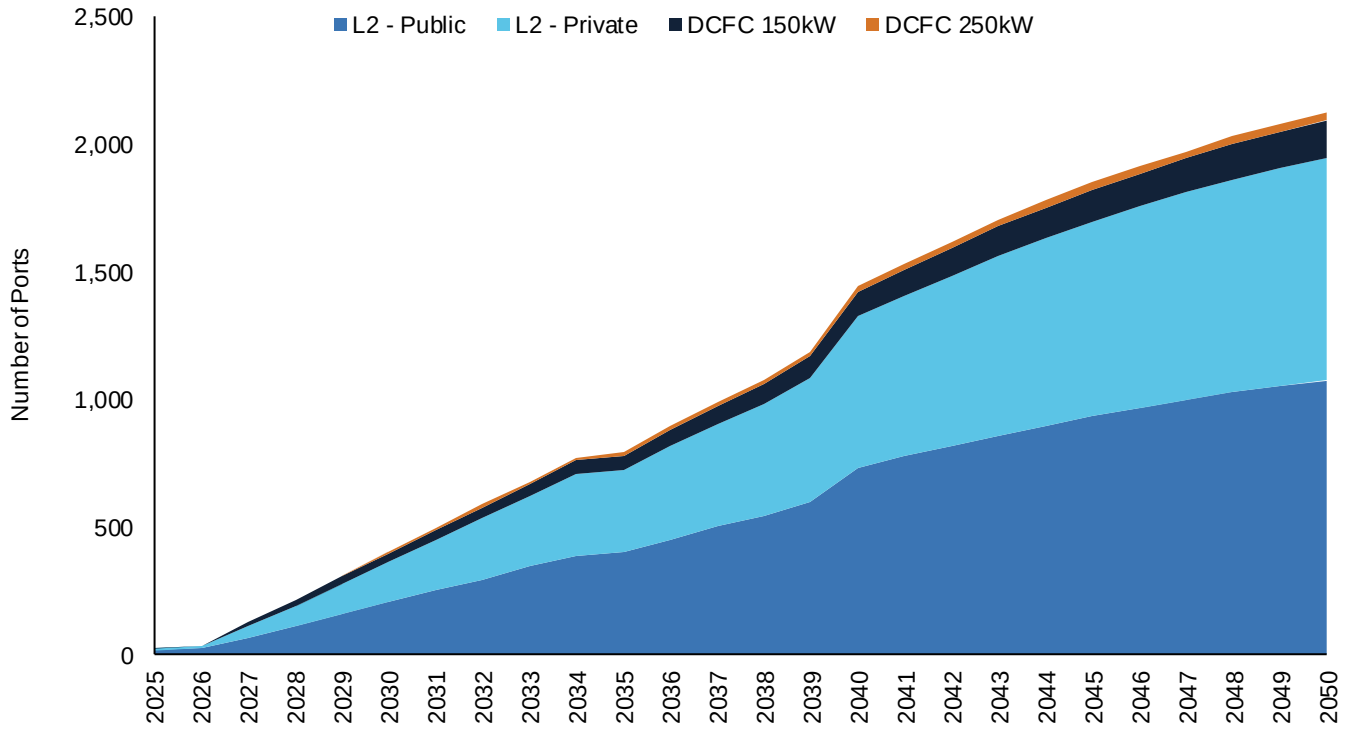


Figure 26. EVI-Pro Projection of Public and Private Ports by Power Level



7. Siting Public EV Charging Infrastructure

In order to determine the most appropriate locations for placing EV chargers in Moreno Valley, it is important to understand the travel behavior of motorists in the city so that chargers can be sited in order to meet those needs. The project team used Replica travel data for trips both into and out of the city (including trips within the city) to understand which areas see the most traffic and to learn more about the characteristics of those trips, such as distance, stopping or dwelling time, and motorist demographics. The data were leveraged to develop travel demand scores for three scenarios and to distinguish which type of chargers would be best suited for each site—Level 2 or DCFC. Subsequently, the scores were then used to create a list of ideal locations across the city for public charger deployment. The project team and city staff conducted physical site visits to gather information, take photographs, and assess the overall suitability of each location (the details of the site visit process, as well as the checklists used for each location, are included in the appendices). Using the information collected from each site, all sites were ranked, resulting in a list of top choices supplemented by numerous backup locations.

7.1. Siting Analysis Methodology

This study utilized geographic information system (GIS) analysis to evaluate the worthiness of each parcel in the City of Moreno Valley for EV charging. Scoring each parcel not only indicates which sites have the greatest projected need for charging but also helps combine other priorities, such as siting chargers within Moreno Valley Utility's boundary, providing charging access to DACs, and encouraging multimodal trips into one quantitative metric.

Goals

In the siting analysis, a numerical score was assigned to objectively compare the sites for hosting EV chargers. The score captures the demand for EV chargers so they are placed where they are needed most. It also seeks to deprioritize locations that already have access to chargers nearby. Altogether, the goals were as follows:

- Identify areas with large numbers of personal automotive trips.
- Consider the types of trips that are most conducive to public charging needs (long distance, not home based).
- Consider the length of time that vehicles are parked at each destination (under an hour is best suited for fast charging, more than 2 hours is more conducive to Level 2).
- Prioritize trips that originated within DACs.
- Prioritize areas where people could charge their EVs and ride transit, encouraging multimodal transportation.
- Ensure that chargers are located at destinations where motorists naturally go and would want to spend a significant amount of time.

Variables Considered

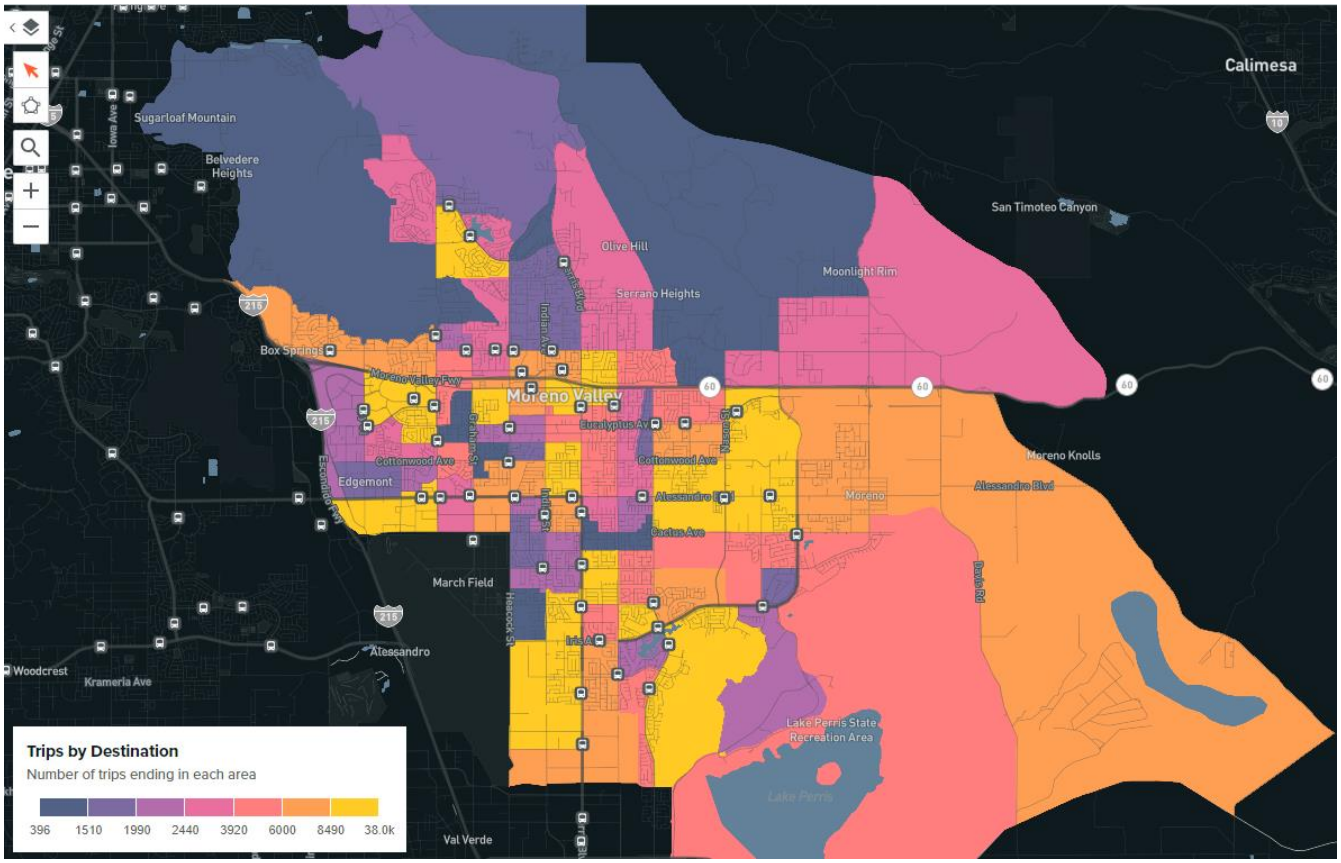
Table 14 outlines the key data sources used in developing the scores for the siting analysis. These data sources include big data platforms such as Replica, which simulate regional travel patterns based on anonymized cell phone data. Other public sources are included, such as CalEnviroScreen 4.0 and the Alternative Fueling Station Locator tool.

Table 14. Description of Inputs Used in the Siting Analysis

Information Type	Source	How It Is Used
Trip data	Replica	Generate travel demand scores.
Land use	City-provided parcel layer, zoning layer, and land use layer	Exclude sites solely used for housing.
Disadvantaged communities	CalEnviroScreen 4.0	Boost the scores of sites in DACs.
EV charger locations	Alternative Fuels Data Center database, planned sites provided by the city	Decrease the scores of sites < ¼ mile away from existing or planned chargers, both Level 2 and DCFC.
Riverside Transit Agency bus stops	Transitland GTFS feed	Boost the scores of sites near multiple (three or more) bus lines.
Moreno Valley Utility (MVU) boundary	City-provided layer	Boost the scores of sites within the MVU territory.

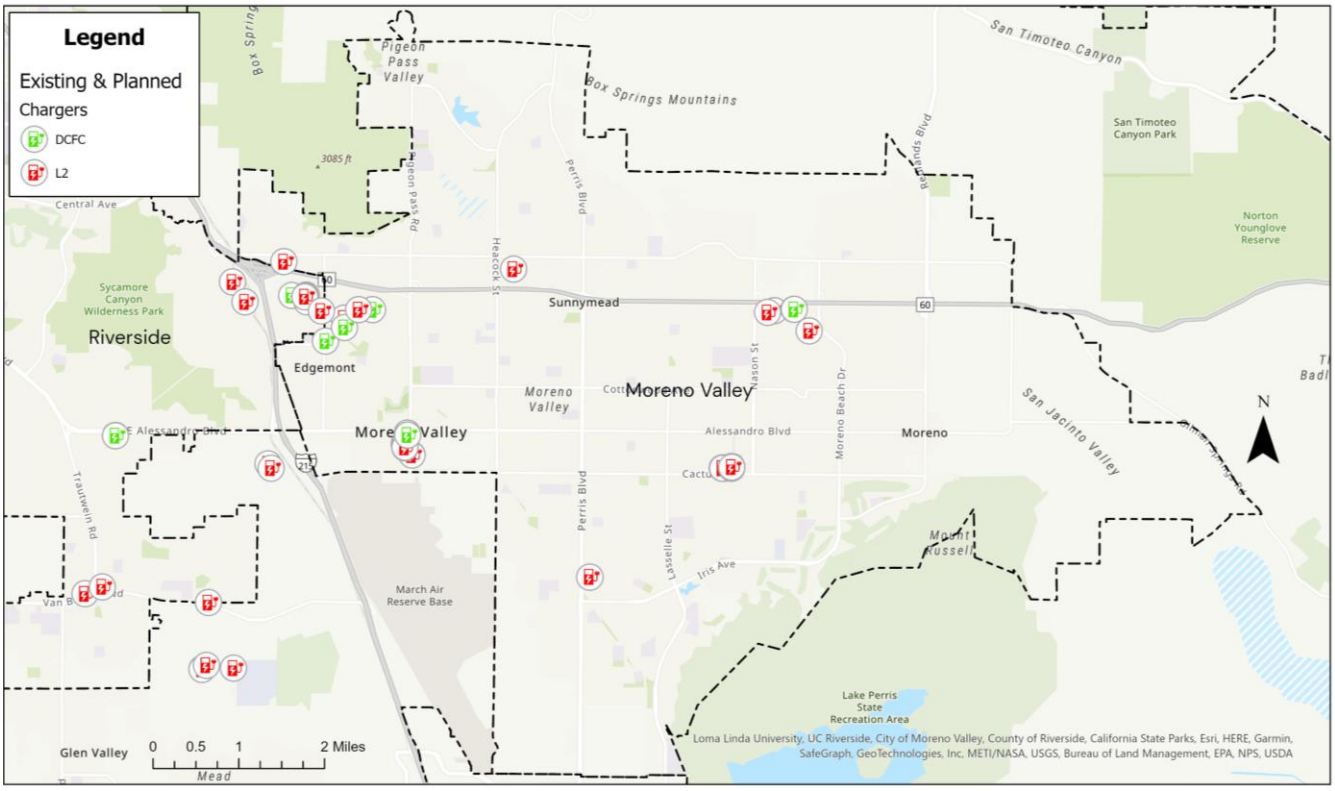
The main scenario scores (as outlined in Overview of Scoring Metrics) are calculated using the trip data from Replica, as shown in Figure 27. The data lists every trip taken by car that either started or ended in Moreno Valley in Fall 2022 on a Thursday. The trip data include the land use where each trip started and ended, trip purpose, trip length, and the trip start and end times. It also gives detailed information about the motorist, such as their home ZIP Code, estimated household income, estimated number of household vehicles, and their estimated employment status.

Figure 27. Moreno Valley Trip Demand by Destination (Replica)



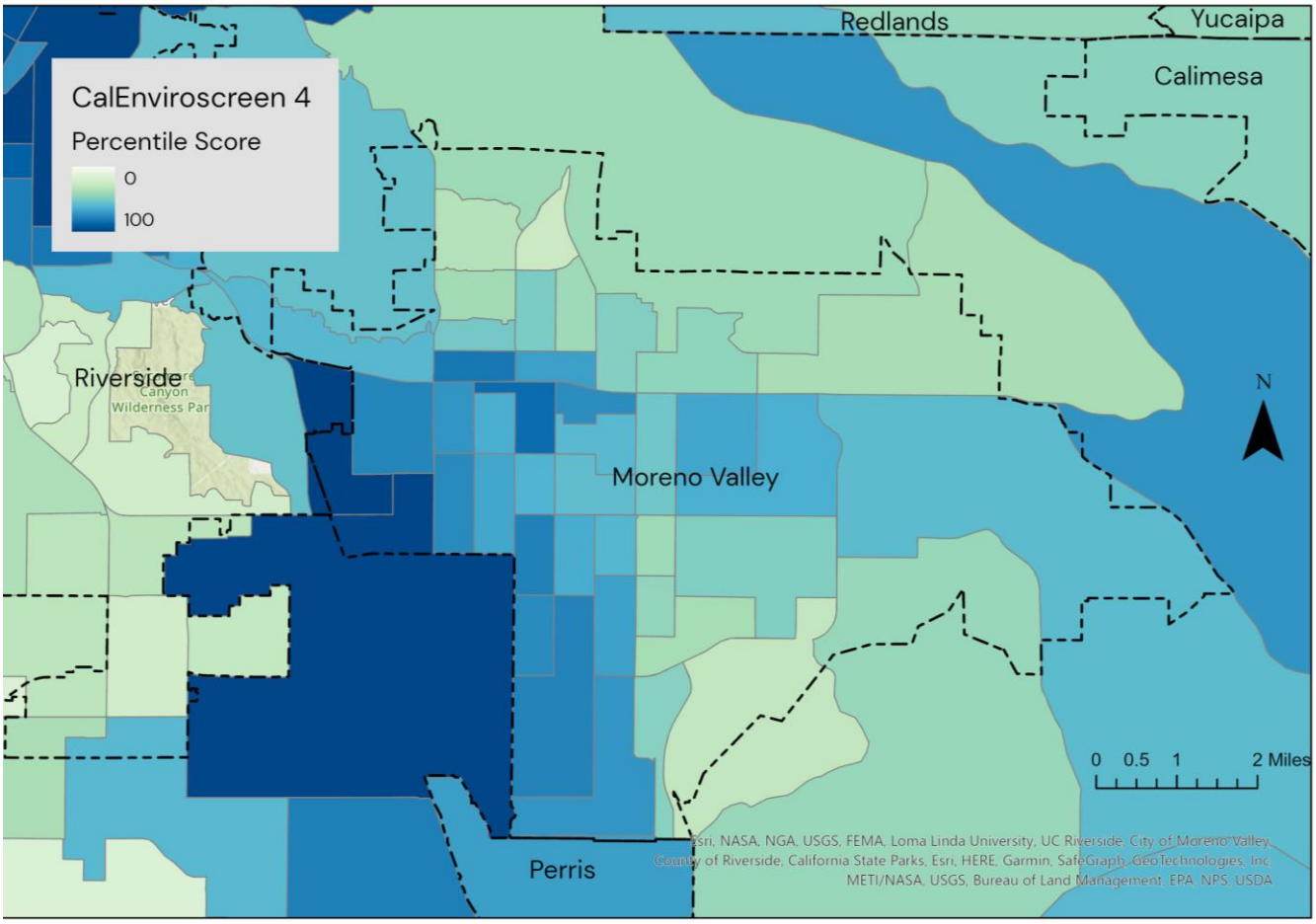
To prioritize siting chargers in areas where they are needed, our siting analysis includes an inventory of every existing and planned EV charger in Moreno Valley, as shown in Figure 28. This was obtained by querying the Alternative Fuels Data Center (AFDC) for every EV charger within the ZIP Codes that cover Moreno Valley. As such, the data also include some chargers outside the city boundary because some ZIP Codes cross the city limits. This dataset considers both Level 2 chargers and DCFC chargers. Data on the locations and counts of planned chargers were gathered through communication with the city and are not guaranteed to be complete. It also is possible that some planned EV charging installations may not yet be known to the project team or the city.

Figure 28. Locations of Existing and Planned EV Chargers in Moreno Valley from AFDC



The analysis uses the CalEnviroScreen 4.0 score as a measure of which areas are part of DACs as shown in Figure 29. Communities with a score above the 75th percentile were defined as DACs, which is consistent with the old methodology used by the State of California. The new methodology includes > 75th percentile areas, tracts within the top 5th percentile in pollution score, tribal areas, and all tracts which were above the 75th percentile in the 2017 scoring. It has been suggested that California may revert to using the more restrictive definition in the future, and ultimately those are the communities with the greatest burden, so that is the definition used for adjusting the site scores in our analysis.

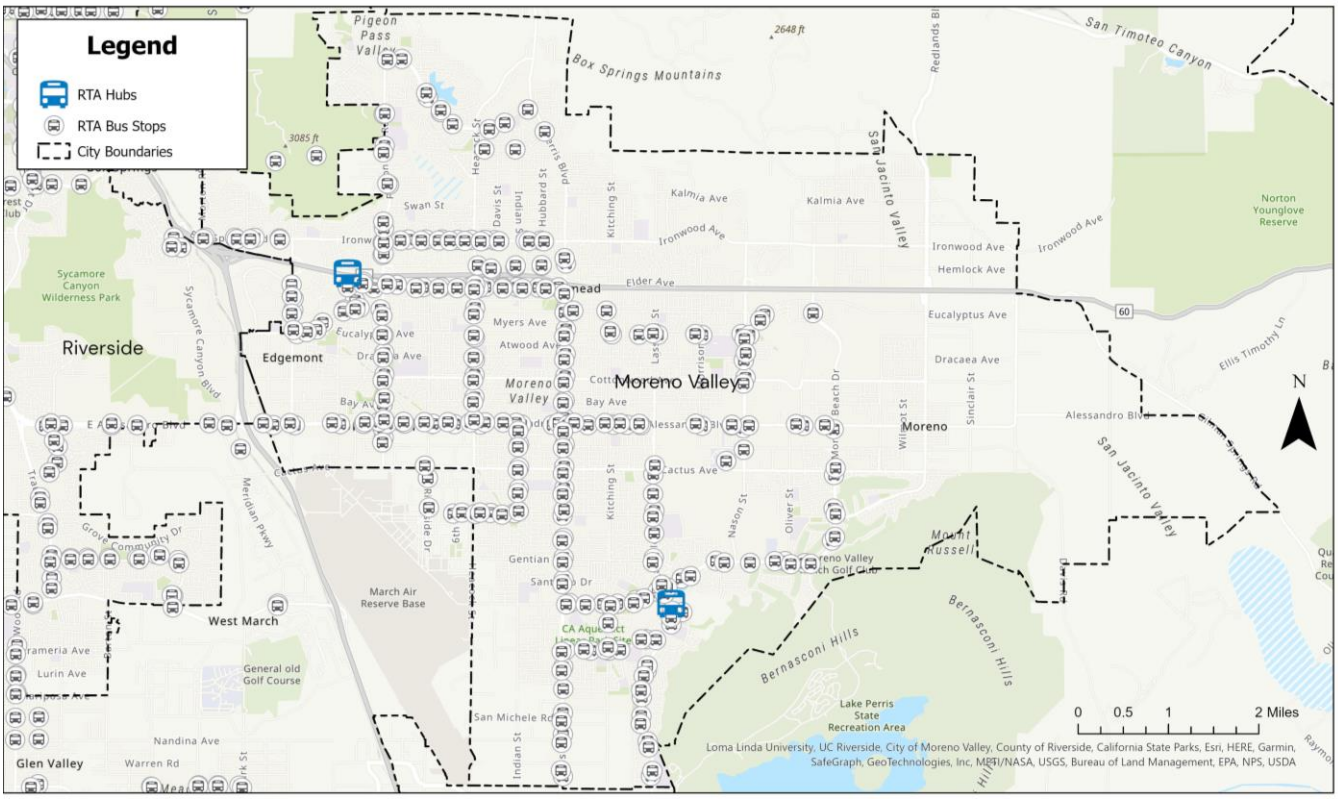
Figure 29. CalEnviroScreen 4.0 Score Used for DAC Determination



It should be noted that the California DAC designation differs significantly from the definition used by the Justice40 Initiative for identifying DACs for federal spending. The Justice40 definition is much broader and classifies the overwhelming majority of the neighborhoods in Moreno Valley as DACs. In practice, this means that most of the city qualifies for prioritized funding by the federal government.

To encourage siting chargers near high-quality transit, locations where three or more Riverside Transit Authority lines come together were identified as transit hubs and get an additional point in the site scoring as these locations have the potential to serve as park-and-ride facilities, as shown in Figure 30. These locations include the Moreno Valley Mall, Moreno Valley College, and the Riverside University Health System Medical Center. The Medical Center was later removed from our analysis because parking at the center is restricted to users of the Medical Center, such as patients, employees, and visitors, so it could not be selected as a location to park and ride. It also already has more than 30 charging ports for hospital visitors and employees, and thus need not be prioritized for additional installation.

Figure 30. Riverside Transit Agency Hubs (3+ lines coming together)



Although our analysis does not prioritize locations based on their zoning or land use, the significance of those variables is important for knowing which sites would be suitable for public charging. As such, considering that a significant fraction of the land area in Moreno Valley is zoned for residential use only, the project team excluded those parcels from the analysis (as described earlier, most of the vehicle trips ending in those sites are "home" trips, which are not suitable for use of public charging infrastructure). Thus, our site exclusion process takes information on zoning and land use, as shown in Figure 11, and uses that as criteria to remove sites from consideration. Any site that is zoned for residential or multifamily development only is excluded, leaving behind sites with uses such as commercial, retail, industrial, public facilities, parks, and even vacant lots. Although some of these sites may ultimately not be the best choices, they are kept on the map as possible options worth considering. The charging demands for residents in these excluded areas also will need to be met, especially for the large apartment buildings and condominium complexes across the city. Currently, several tax incentives and rebates exist to help facilitate charger installation in multifamily housing, such as the Southern California Edison Charge Ready Program, the Communities in Charge Program, or the Alternative Fuel Infrastructure Tax Credit. Nevertheless, it is in the city's best interests to support charger rollout at these complexes because, in most cases, residents have no access to at-home charging.

In anticipation of the study results, it should be noted that charging at single-family residences will be necessary for improving the adoption of EVs across the city. Currently, many EV purchases come with rebates of ~$1,000 for charger installation, which can sufficiently cover residential electrical access upgrades in most cases. Moreover, the city can help provide resources to dealers and buyers to ensure that these are fully taken advantage of. For example, the South Coast Air Quality Management District's Residential EV Charging Incentive Program provides up to $500 for Level 2 chargers for low-income residents. In addition, both Moreno Valley Utility and Southern California Edison have special rates for

homes with EVs to help further decrease the cost of ownership. Although these locations will not be considered for public charging, they shall remain a focus for the city moving forward.

Overview of Scoring Metrics

In conducting the siting analysis, each census block group (CBG) was scored based on the trip attributes that end within that CBG using an SQL script. For example, a CBG with higher numbers of trips not ending at home (whether single-residence or multifamily) receives a higher score because it is more likely that there will be a need for a public EV charging infrastructure within that CBG as opposed to another CBG where the majority of trips end at a home location. In another example, a CBG with a higher fraction of long-distance trips is more likely in need of charging stations. Following this analogy, each CBG is scored based on the following metrics:

1. **Trip Purpose – Number of trips where the destination is not home**

   From the Replica trip data, we count the number of trips ending at each CBG where the trip destination is not home. Then, we normalize the trips using the trip numbers from the CBGs with the maximum number of trips (e.g., if the maximum number of trips is 100, then divide the trip numbers for all CBGs by 100). This way, all CBGs will be scored between 0 and 1.

2. **Trip Length – Number of long-distance trips (≥ 20 miles)**

   From the Replica trip data, we count the number of trips ending at each CBG with a trip length greater than 20 miles. Then, we normalize the trips using the methodology described earlier.

3. **Dwelling time between 30 and 60 minutes (prioritizing DCFC)**

   First, we calculate the dwelling time for each trip. This is done by looking at consecutive trips from one person and calculating how much time elapses between the end of one trip and the start of the next. Then, we count the number of trips ending at each CBG with a dwelling time between 30 and 60 minutes. Finally, we normalize the trips using the methodology described earlier.

4. **Dwelling time greater than 120 minutes (prioritizing Level 2)**

   We count the number of trips ending at each CBG with a dwelling time greater than 120 minutes. Then, we normalize the trips using the methodology described earlier.

5. **Income of the trip taker (> median income)**

   From the Replica dataset, we count the number of trips ending at each CBG with a household income of the trip taker greater than the median household income in Moreno Valley ($70,385). We consider this higher income group because they currently own an overwhelming majority of EVs. As such, it is useful for predicting where the demand for charging is currently the highest. However, as EV adoption increases, we acknowledge that this effect will diminish, and that is why we have a scenario (Scenario 3) that specifically considers motorists living in DACs. We then normalize the trips using the methodology described earlier.

6. **Prioritizing trips to/from DACs and trips with an environmental justice focus**

   From the Replica demand data, we count the number of trips ending at each CBG with an origin CBG being within DACs.

Scenario Scoring

After determining the scores for all six metrics, we will compute a weighted average score considering the importance of each criterion under different scenarios. Our online siting map enables users to customize scoring based on their preferred criteria, allowing them to see the effect on location rankings. Scenario 1, shown in Table 15, considers locations with long dwelling times, long trips, non-home-based trips, and with higher income motorists well suited for Level 2 chargers. Scenario 2 identifies locations that are well suited for DCFC chargers by putting greater emphasis on longer trips, along with shorter dwelling times, where slower charging would not be convenient. Scenario 3 identifies good locations for DCFC chargers with a greater equity emphasis by more heavily weighting trips taken by motorists living in DACs. Ultimately, as our results show, all three of these scores have general agreement on the suitability for sites because these locations are popular for a wide variety of different lengths and types of trips. However, it is notable that warehouses and industrial areas in southern Moreno Valley score highly under Scenario 3.

Table 15. Criterion Values by Scenario

Metric	Weight		
	Scenario 1	Scenario 2	Scenario 3
Trip Purpose	30	10	0
Trip Length	20	50	40
Dwelling Time: 30–60 minutes	0	30	30
Dwelling Time: > 120 minutes	30	0	0
High Income	20	10	0
Environmental Justice	0	0	30
Total	100	100	100

Parcel-Level Factors

Additional factors are added onto the score to differentiate parcels within the same block group, including the following:

- +1 for within ½ mile of a transit hub (three or more bus lines coming together)
  - Riverside University Health System Medical Center (omitted)
  - Moreno Valley Mall
  - Moreno Valley College
- 0 to -2 for Level 2 charging within ¼ mile
- 0 to -4 for DCFC within ¼ mile
- +1 for a DAC within ¼ mile (CalEnviroScreen 4.0 score above the 75th percentile)
- +1 for within the Moreno Valley Utility boundary

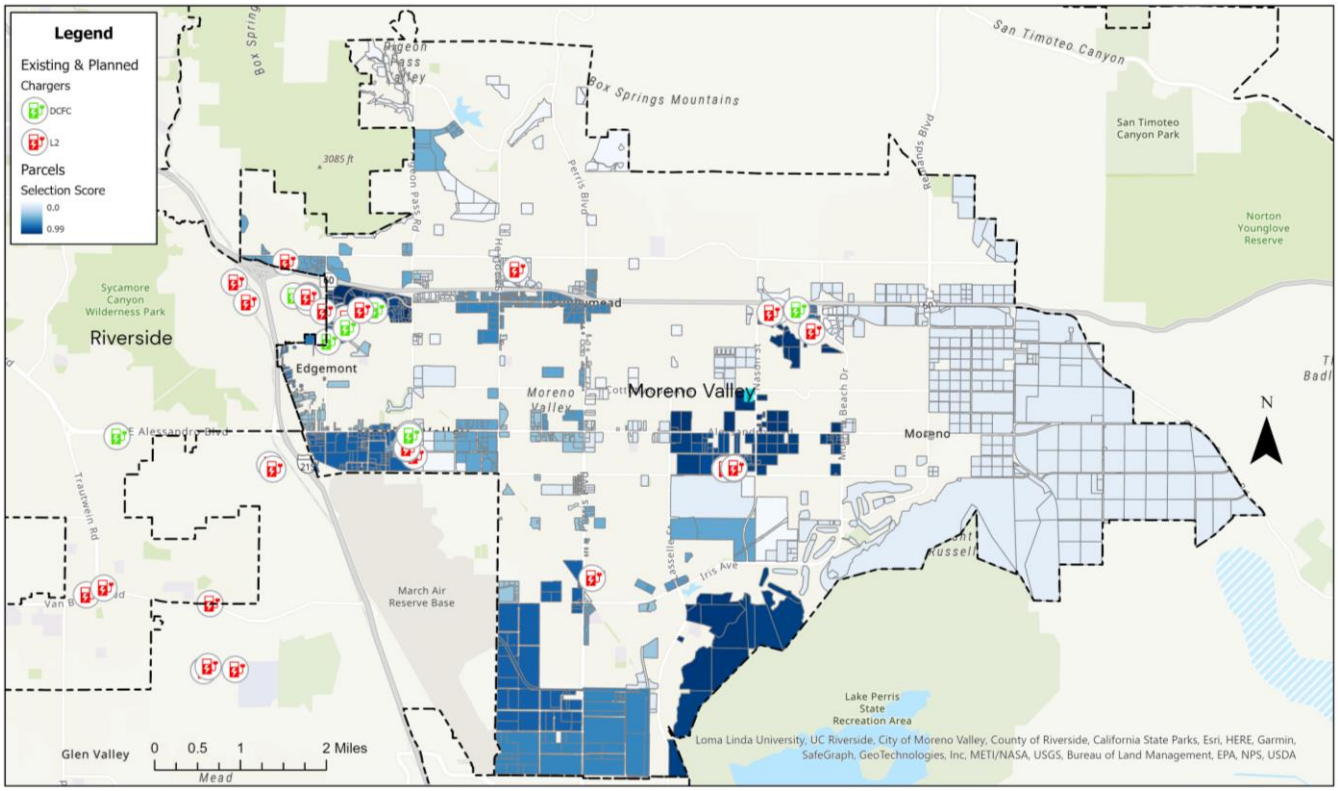
These factors serve an important purpose in reducing the scores of sites that already have access to nearby EV charging. They also give added weight to sites that meet basic transportation priorities such as increasing the likelihood of multimodal trips and the equitable distribution of chargers within DACs.

Site Analysis Results

The scenario scores for each of the parcels is compiled in the web map (link: https://moreno-valley-ev.azurewebsites.net/). Generally, sites with major attractions in the city score well, such as Moreno Valley

College, the warehouse district in South Moreno Valley, the shopping centers near Moreno Valley Mall, and the industrial areas near City Hall. Sites with numerous existing chargers score quite low due to the modifiers added to the selection, as can be seen in parcels such as Moreno Valley Mall or the University Medical Center. Figure 31 indicates the scores for each of the three scenarios added together. Visualized in this manner, it is evident that several regions with high charging demand do not currently have any chargers. Also, parts of the city north of State Route 60 have far fewer commercial or retail sites that are suitable for charging and thus there are far fewer sites to choose from. Nevertheless, these areas have significantly fewer non-home-based trips due to the dominance of single-family housing across this part of the city.

Figure 31. Results of Parcel Scoring – Scenarios 1–3 Combined



7.2. Site Selection Methodology

The site selection process takes the list of all parcels in the City of Moreno Valley and pares it down to a list of the best locations based on the site analysis score, the parcel's land use, and the distribution of sites across the city. This is done in three distinct steps: (1) **site exclusion** removes parcels that do not fit the desired characteristics, (2) **site selection** picks out the best sites that remain and recommends them to be considered for further examination, and (3) **each site is visited** to document the location and identify any non-physical factors that might be helpful in finalizing a short list of selected sites.

Site Evaluation Criteria

Site Exclusion

The site exclusion process aimed to remove all residential sites that should not be considered for locations of public chargers. This process was done in ArcGIS using overlays from the land use, zoning, and parcel layers. After significant exploration of the parcels and the zoning layers, the filter shown in Table 16 was used to exclude these residential sites. Although most of the parcel and zoning labels worked quite well to exclude

houses, one land use type was particularly challenging because it was zoned for multiple purposes, including single-family homes. The "Homesite" label was quite frequently assigned to vacant lots; however, it also was given to several houses, open spaces, and even some public properties. To streamline the process, homesites smaller than 5 acres were excluded, while those larger than 5 acres were retained. This is because larger sites are less likely to be typical home lots and given that we confirmed that they were not zoned as residential, they might be suitable for chargers, especially if they were parks or public lots. While most of these homesites were eventually not chosen during the site selection process due to insufficient parking, they were retained in the dataset for the sake of thoroughness.

Table 16. Formula for Excluding Sites Based on Residential Status

Variable Name	Source Layer	Excluded Tags
Proposed General Plan Land Use	Land Use	R1 Residential, R2 Residential, R3 Residential, R5 Residential, R10 Residential, R15 Residential, R20 Residential, R30 Residential, Floodplain, Hillside Residential, Rural Residential
Real Use	Parcel	Single-Family Dwelling (SFD), SFD with accessory units, Mobile Home (MH) on foundation, MH Lot (MH on ILT), MH Lot (MH on LPT), MH Land, Manufactured Home Park, Duplex, Triplex, Fourplex, CT- Apartment, Residential Use Zoned Commercial, Apartment (5–10 units), Apartment (11–20 units), Apartment (21–40 units), Apartment (41–60 units), Apartment (61–100 units), Apartment (100+ units), Homesite (< 1 acre), Homesite (1–4.9 acres)

Site Selection

Site selection was used to pare down the list of possible sites to a brief set of high-priority locations. This was conducted with the following objectives:

- Select sites with the highest scores.
- Consider sites in every neighborhood and every council district.
- Choose sites with existing parking.
- Sites should be available for charging at all times.
- Site should be based around an attractor such as retail, recreation, education, or a combination of multiple attractions.

The site selection process was conducted in two phases to build an appropriate short list of sites for the Master Plan. First, all sites were arranged based on their site analysis scores. Each of these sites was then examined using satellite imagery to discern its features, and subsequently, with Google Street View if it appeared promising. These high-scoring sites tend to be grouped together in small geographic areas, so only the best sites in these regions were selected.

In the second phase, the parcels are instead examined using the map to identify areas within the city that did not have any high-scoring sites. From this map, several sites were added in northern Moreno Valley, as well as several parks and sites with high scores that were owned by the city. Furthermore, some sites with existing charging were considered for whether their existing charging would meet future demands. Some sites, such as the Super Target in the Stoneridge Towne Center, were added to the list through this process because the existing charging within ¼ mile is slow, located in an inconvenient place, or likely insufficient. Altogether, this process resulted in a total of 32 candidate sites being considered for site visits.

Site Visits

To refine the final site selection further, the project team carried out a series of site visits to locations identified using our site selection methodology. The primary goal of these site visits was to detect physical or environmental conditions not immediately discernible from satellite imagery. Specific conditions, such as fencing around a lot's perimeter or obstructions to traffic, could restrict or impede public access at sites that might otherwise be eligible. To guide this exercise, the project team devised a site visit checklist (found in Appendix C) to numerically assess how many basic and special criteria each site met. This checklist is a straightforward Yes or No questionnaire that evaluated criteria such as site location, accessibility, scalability, community integration, and make-ready considerations. Some questions, especially those related to electrical upgrades or make-ready improvements, could not be addressed during the visits. Our plan is to collaborate with the City of Moreno Valley, Moreno Valley Utility, Southern California Edison, and site owners to gather this additional data once the 12 priority sites are finalized.

7.3. Site Selection Results and Discussion

Proposed Sites

The project team's siting analysis led to a total of 32 candidate sites:

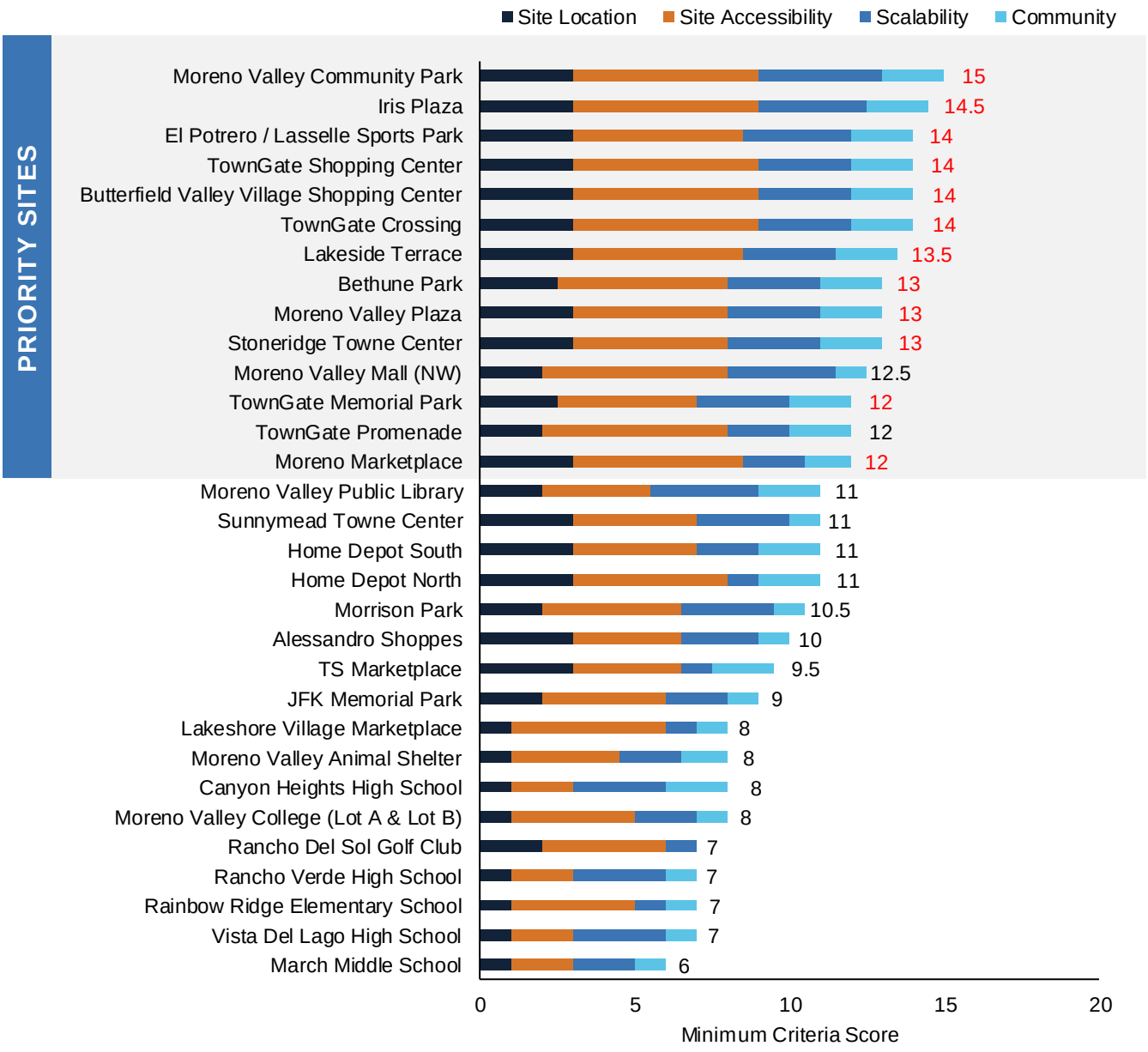
1. Rancho Verde High School
2. Moreno Valley College (Lot A)
3. Moreno Valley College (Lot B)
4. Moreno Marketplace
5. Moreno Valley Animal Shelter
6. TownGate Crossing
7. TownGate Shopping Center
8. TS Marketplace
9. Home Depot South
10. Alessandro Shoppes
11. JFK Memorial Park
12. TownGate Memorial Park
13. Rainbow Ridge Elementary School
14. March Middle School
15. Moreno Marketplace
16. Sunnymead Towne Center
17. El Potrero / Lasselle Sports Park
18. Home Depot North
19. Canyon Heights High School
20. Lakeshore Village Marketplace
21. Stoneridge Towne Center
22. Morrison Park
23. Vista Del Lago High School
24. Sundance Center
25. Butterfield Valley Village Shopping Center
26. Moreno Valley Mall (NW)
27. TownGate Promenade
28. Iris Plaza
29. Bethune Park
30. Moreno Valley Public Library
31. Moreno Valley Plaza
32. Lakeside Terrace

Of these sites, eight are on sites owned directly by the city, with an additional seven sites on land owned by other public entities, such as the school district. Additionally, 18 of the sites selected were major retail centers, with a significant set of attractors where residents might go anyways and be able to spend time charging while completing errands. Five of the sites selected were K–12 schools, which have a significant need for workplace charging for teachers and staff, and also serve as centers of community and recreation in their neighborhoods with fields and playgrounds used by youth and parents outside of school hours. Notably, the sites selected spanned all of the city council districts in Moreno Valley, with nine sites in District 1, four sites in District 2, seven sites in District 3, and 12 sites in District 4. The 32 candidate sites were determined based on a number of factors, such as scoring from the siting analysis, as well as potential public interest and accessibility. The site visit checklist provided additional information to the project team and direct input from stakeholders and city personnel that was used to move sites up or down the list of prioritizations for installing EV chargers.

Site Visit Results

Following the site visits, the project team compiled the site evaluations and categorized the results by site criteria. The results for the number of basic criteria, including site location, accessibility, scalability, and community accessibility, fulfilled by each site are indicated in Figure 32.

Figure 32. Site Visit Results Summary



All priority sites determined from this exercise are highlighted in red. The site visit results listed in Figure 32 rank locations from the highest to the lowest scores. These scores are derived by tallying the number of criteria that each site meets. Given that the site evaluation checklist employed during the physical site visits consists of 15 scoring criteria, a site's maximum achievable score is 15. For example, Moreno Valley Community Park attained the highest score of 15. The project team identified Moreno Valley Community Park as an exemplary site for EV chargers because of its city-owned status, its popularity within the community, its proximity to amenities and the freeway, and the ample space available for charging stations. In the rankings following Moreno Valley Community Park, sites with relatively high scores include

private shopping plazas and centers, as well as groupings of public parks adjacent to the Juan Bautista de Anza Trail, which intersects the City of Moreno Valley.

The site visit results listed Figure 32 also demonstrate some general trends observed by the project team during the physical site visits. In general, sites with a score lower than 12 tended to have qualities that lowered their site location and site accessibility scores. This trend is especially notable among the educational facilities that were evaluated because school districts restrict parking lot access to students or staff members and can physically close parking lot entrances at will.

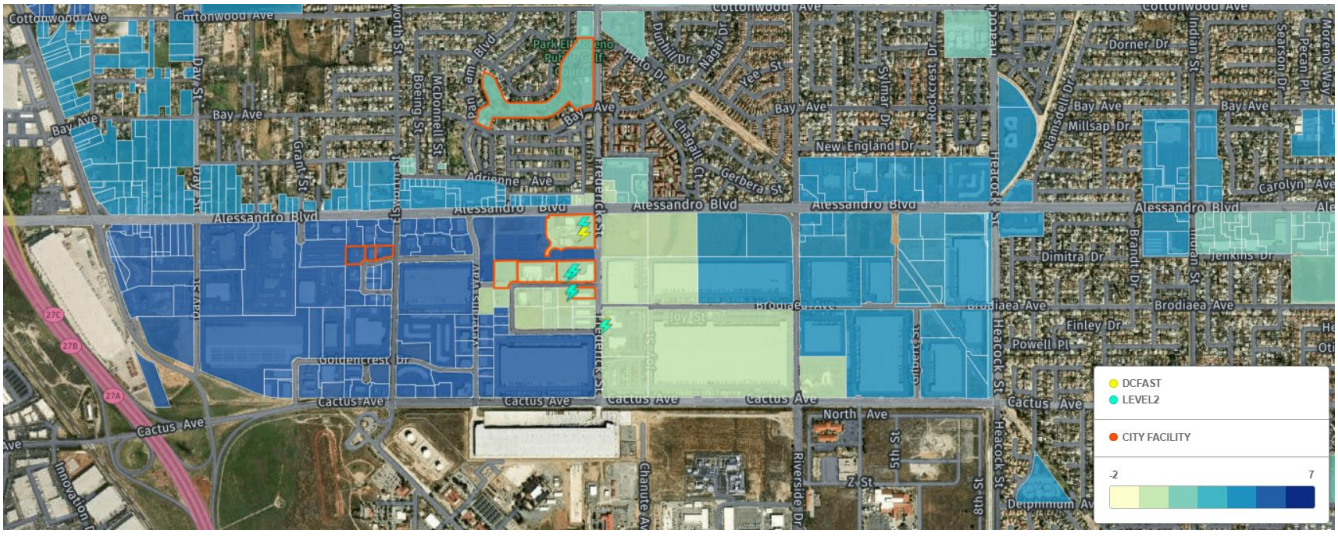
Otherwise, any sites with a score of 12 and above should be identified as priority sites and the rest as backup sites. Three sites—TownGate Memorial Park, TownGate Promenade, and Moreno Marketplace—are scored equally; however, TownGate Memorial Park was prioritized because it is owned by the city, as well as Moreno Marketplace, due to its lack of existing chargers in proximity. Additionally, the project team also was notified during the site visits that Moreno Valley Mall is under redevelopment and thus was removed from the priority site list. The project team recommends that the city work with the developer to consider incorporating charging needs in the Mall's revitalization plan. All priority sites determined from this exercise are highlighted in red as shown in Figure 32.

Additional Sites Considered

In evaluating sites across the city, two regions with high charging demand were identified that would not be suitable for public charging due to their lack of public access. These locations include the industrial areas near City Hall in the Edgemont neighborhood north of March Air Force Base and the warehouse district in southwest Moreno Valley. These locations have some of the highest demand scores from our siting analysis, as well as high numbers of trips from residents in DACs or those who live in multifamily housing.

As shown in Figure 33, the Edgemont industrial area is already quite well served by DCFC and Level 2 chargers available near City Hall and the police department. Nevertheless, trip demand in this area is very high and its location near the freeway draws many employees from other neighboring cities, as well as residents from more distant neighborhoods in Moreno Valley.

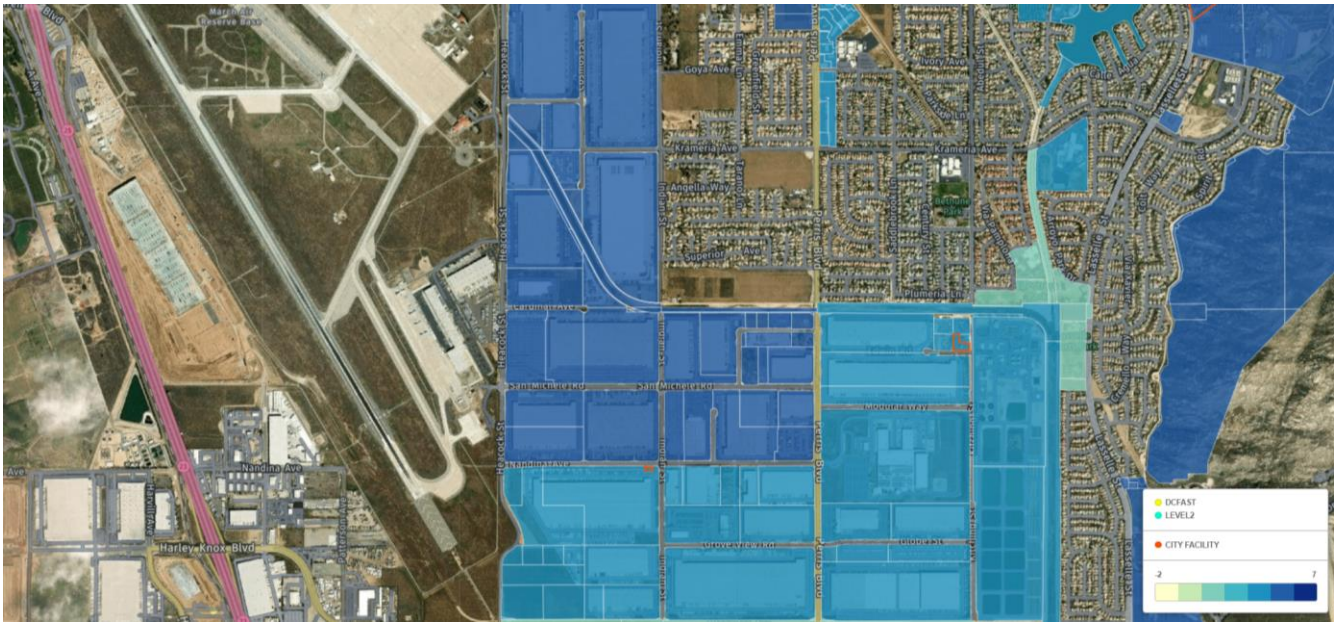
Figure 33. High Charging Demand at Industrial and Warehouse Sites Between Cactus and Alessandro



As shown in Figure 34, the warehouse district in southwest Moreno Valley does not have notable access to EV charging, with especially high demand from residents living in DACs. These warehouses are operated by very large corporations that more than likely can apply for incentive funding and install workplace charging on their own. Nevertheless, our analysis showed that many of the trips to these sites came from

neighborhoods without sufficient access to charging. Thus, the project team recommends that the city and Moreno Valley Utility pursue cooperation with these companies to facilitate the rollout of workplace charging at as many of these warehouses as possible. Additionally, most of these locations already have existing electrical capacity so installation would require less additional utility infrastructure. Finally, many of these warehouses operate at all hours of the day, making them an even greater bargain for improving accessibility by serving multiple shifts of motorists per day.

Figure 34. High Demand at Warehouse Sites in Southwest Moreno Valley That Deserve Attention from the City



All considered, these industrial sites could be good candidate sites for Level 2 workplace charging. Workplace charging is most effective at avoiding grid impacts or increasing emissions because a very high fraction of Moreno Valley's electricity comes from solar during the sunny daytime hours. It also presents affordable charging options for residents who cannot charge at home for a wide variety of reasons. For example, workers who park on the street at their homes or who live in apartments are forced to rely on public or workplace charging.

Sites on School Properties

In choosing sites for EV charging, the project team identified many locations on school properties as locations with high demand and as centers within a community as sites where charging is needed. During the site visits, it was found that most of these school sites are gated and do not allow access at all hours of the day. The exact timing and operation of these parking lots is not completely apparent; however, we believe that most of these sites would not be feasible locations for traditional public chargers due to the restrictions on access. With that being said, we still highly recommend that the city work with the two school districts and the community college in rolling out charging infrastructure. Many of the schools have solar covered parking, which makes them ideal locations for Level 2 charging, even if that charging is restricted access for employees or students. Additionally, more funding avenues are available for schools and public agencies, which makes it possible for these installations to have more restricted access. Nevertheless, if possible, we would recommend that all chargers installed using public funds be publicly accessible at all hours, and thus we are recommending additional sites at public parks nearby to many of these schools as backup options for these locations.

8. Public Outreach and Stakeholder Engagement

Developing a publicly accessible EV charging network is a strategic, long-term investment that necessitates careful planning and detailed input from a diverse range of stakeholders. To this end, the project developed a comprehensive plan for public outreach and engagement. This plan was enhanced by the formation of a Project Taskforce, which provided guidance on the project and its engagement strategies and included regular quarterly stakeholder meetings. To further facilitate engagement, a dedicated website and social media accounts were created, alongside a survey, an interactive public feedback map, and a targeted digital advertising campaign, all designed to heighten awareness and foster participation in the planning process.

In addition to engaging everyday residents and businesses within the community, the city prioritized outreach to and input from disadvantaged and underrepresented communities, where languages other than English are often spoken. These are communities that have traditionally borne a disproportionate share of air pollution from gas-powered vehicles and may benefit most from an expanded public EV charging network. ICF ensured that the website included a translation widget to support access to the information in multiple languages, and a digital advertising campaign with approximately 50% of its assets specifically targeted toward Spanish-speaking communities in Moreno Valley.

8.1. Overview of the Approach and Project Taskforce

Project Taskforce

Working closely with the city, ICF prepared a list of proposed Project Taskforce members and external stakeholders. The Project Taskforce played a critical role in the development of the EV charging infrastructure plan for the city. The main purpose of the taskforce was to provide guidance on EV charging needs and solutions, identify educational and incentive programs, develop a plan for community engagement and marketing strategy, and support the feasibility and siting analyses for future EV charging infrastructure. The taskforce also identified educational and incentive programs that will support the adoption of EV infrastructure and developed a plan for community engagement, as well as a marketing strategy. The Project Taskforce met approximately once a month between June 2023 and March 2024.

The Project Taskforce consisted of the following individuals:

- Guadalupe Cortes, Public Works, City of Moreno Valley (Cortes also was the city's project manager for this effort)
- Jeannette Olko / Jason Nicolli / Daniel Carlos, Moreno Valley Electric Utility
- Joseph Mattox, Maintenance and Operations Division, City of Moreno Valley
- Taylor York, Clean City Coalition, Western Riverside Council of Governments
- Wei Sun, Transportation Engineering Division, City of Moreno Valley

Project Stakeholders

Every 3 months (August 2023, November 2023, and February 2024), the 1-hour taskforce meeting was extended to 90 minutes to accommodate additional Moreno Valley stakeholders, who could more easily join quarterly rather than monthly. In July 2023, ICF prepared a list of external stakeholders who could provide additional insight to the EV charging needs across the Moreno Valley community. The stakeholder

invitation list included a diverse group of representatives from the public and private sectors, including community-based organizations (CBOs), local businesses, and government agencies.

The greater stakeholder invitation list included the following:

- Representatives from Public Agencies and Institutions
  - Guadalupe Cortes, Public Works, City of Moreno Valley
  - Kamran Aladross, Public Works, City of Moreno Valley
  - Joseph Mattox, Maintenance and Operations Division, City of Moreno Valley
  - Wei Sun, Transportation Engineering Division, City of Moreno Valley
  - Jason Niccoli, Moreno Valley Electric Utility, City of Moreno Valley
  - Daniel Carlos, Moreno Valley Electric Utility, City of Moreno Valley
  - Taylor York, Clean City Coalition, Western Riverside Council of Governments
  - Rich Miller, Transportation Department, County of Riverside
  - Kate Kigongo, Partnerships for Innovative Deployment, Southern California Association of Governments (SCAG)
  - Alison Linder, Clean Cities Coalition, SCAG
- Representatives from CBOs
  - Ivette Torres, The People's Collective for Environmental Justice
  - Stan King, Sierra Club, San Gorgonio Chapter, Moreno Valley Group
- Representatives from Local Businesses and Business Organizations
  - Karina Cocoletzi, Moreno Valley Hispanic Chamber of Commerce
  - Val Stewart, Moreno Valley Southern California Black Chamber of Commerce
  - Chip Ahlswede, Apartment Association of Orange County

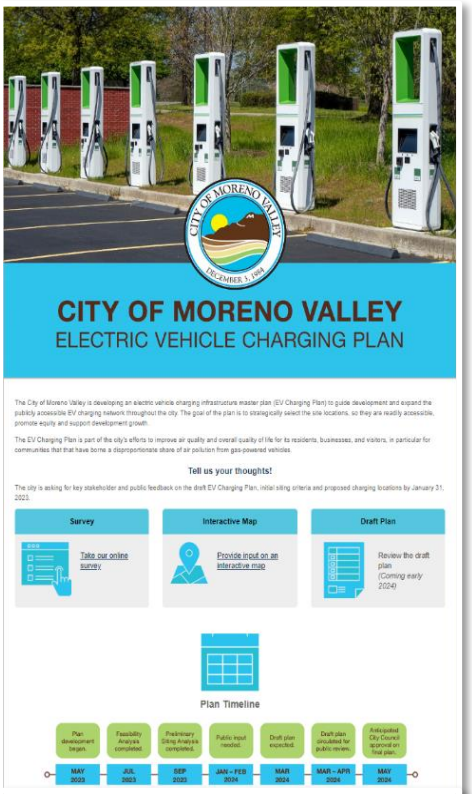
During these stakeholder meetings, the project team provided updates on the progress achieved, covering areas such as the analysis of EV infrastructure demand, siting analysis, and the outcomes from the public and stakeholder engagement efforts, including survey findings. These sessions were particularly focused on gathering feedback from stakeholders, using their insights to refine and improve the development of the plan. This interactive approach ensured that the project's direction was informed by a broad spectrum of perspectives, enhancing its relevance and effectiveness in meeting the community's needs and expectations for the EV charging network.

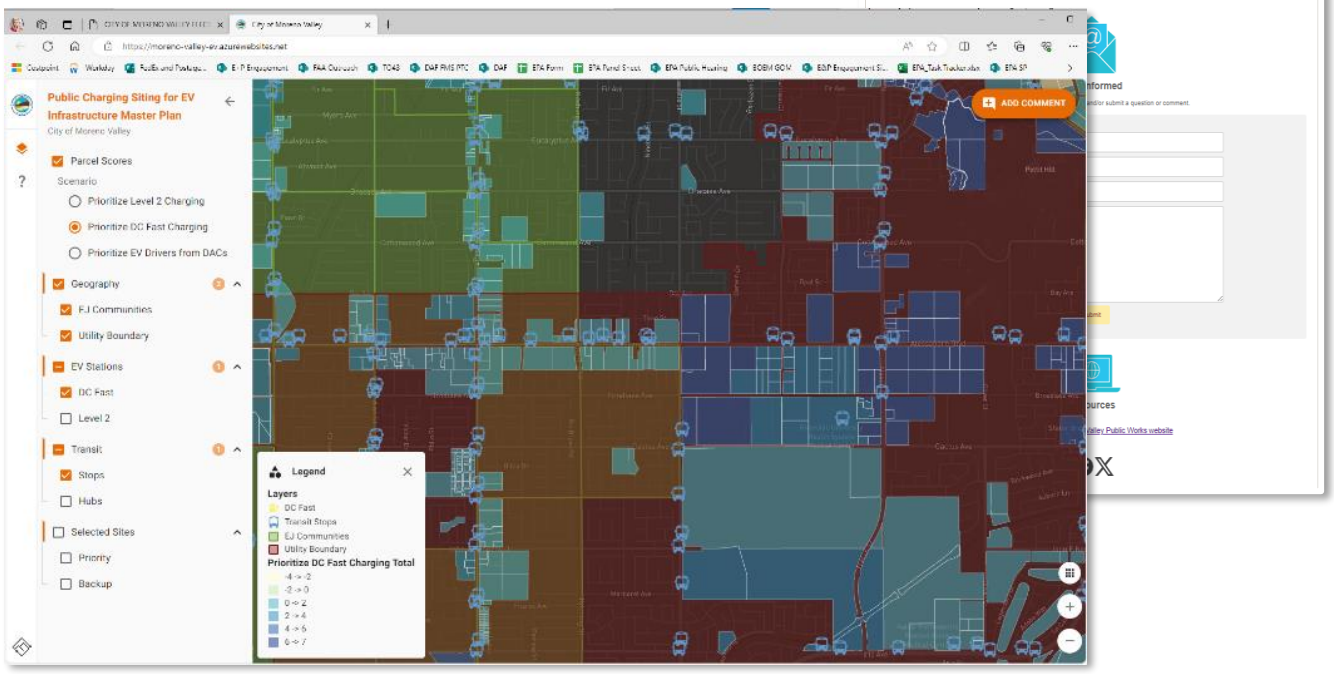
Public Outreach Approach

As siting criteria was established and EV charging site scenarios were developed through the Project Taskforce and stakeholder meetings, the city sought additional opportunities to increase awareness of the draft EV Charging Infrastructure Master Plan and solicit public feedback. The city was especially interested in hearing from underserved communities that would benefit most from a publicly accessible EV charging network. To support these objectives, ICF executed several public outreach tactics to build awareness and drive feedback on the plan, siting criteria, and proposed future EV charging sites.

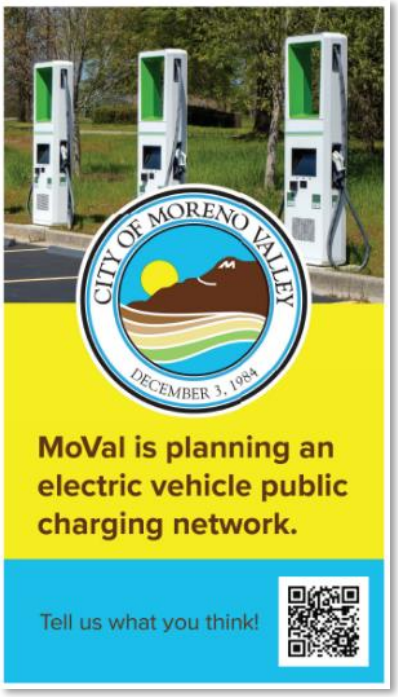
- **Website:** In late 2023, ICF and the city worked together to develop a stand-alone project website at www.MoValEVChargingPlans.com. This website houses basic project information, a link to a public survey, and a link to an interactive public input map on proposed EV sites. The website was purposefully designed to be clean, simple, and drive visitor action to take the survey and provide input on the interactive map. A translation widget was installed at the top of the page for visitors to enable translation into other languages (the most anticipated being Spanish). The website will remain active through the end of 2024. Visitors can review the draft and final EV report on the website as well.

- **EV Prioritization Survey:** In late 2023, ICF developed a 13-question survey geared toward the general public in order to understand their experiences with EVs, their challenges to owning/leasing EVs, their challenges with regard to charging, their awareness of existing charging facilities, and how they would prioritize future charging sites and types of chargers. The survey was launched in early January 2024 and remained open until the end of January. A link to the survey was embedded on the project website.
- **Interactive Public Input Map:** In late 2023, ICF and the city introduced an innovative public mapping tool designed to gather geotagged feedback on the 12 primary sites and 20 additional backup sites for prioritizing investment in public EV chargers. This digital tool was developed not only to share proposed locations with the public but also to invite input on the suitability of these sites and to verify that no potential sites had been overlooked. Through this initiative, the project aimed to ensure that the selection of sites for public chargers was both comprehensive and aligned with community needs and preferences, enhancing the effectiveness of the planned EV infrastructure expansion.

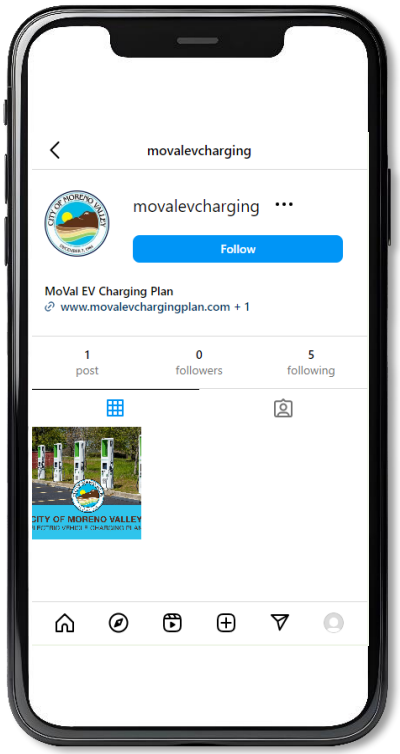




- **Paid Digital Media Campaign:** In order to drive relevant visitors to the new stand-alone website, ICF proposed and ultimately implemented a paid digital media advertising campaign that geotargeted all nine Moreno Valley ZIP Codes. Additionally, approximately 40% of the campaign also used Spanish language assets and targeted Spanish speakers. The digital channels that were chosen were designed to specifically connect with our target audiences (Moreno Valley ZIP Codes and English/Spanish) and avoid channels that require verification for advertising (the lengthy process to verify accounts would take too long for the purposes of plan development). The paid digital media campaign ran for 3 weeks, from January 8 through January 31, 2024. The types of ads used included the following:
  - **Digital Display:** These are ads that show up on various online ad networks visited regularly by our target audience.
  - **Digital Out-of-Home:** These are ads that show up on outdoor digital screens and they include a QR code.
- The paid digital media campaign provided the following:
  - 5.5 million impressions
  - 13,435 clicks to website (click-through rate = 0.28%)
  - English and Spanish ads (roughly 50/50)
  - Nearly 50 comments/requests to be added to a project list



- **Social Media:** The project team took a proactive approach in engaging with the community by setting up dedicated social media accounts on Facebook, Instagram, and X, aiming to communicate the project's findings and direct Moreno Valley residents to the project website. This approach disseminated information and facilitated an accessible channel for the public to stay informed about the progress, insights, and developments of the EV charging infrastructure project. Through these social media outlets, the team provided updates, shared important announcements, and created an interactive space for community feedback, ensuring that the project remained transparent and inclusive of public opinion.



8.2. Property Owner Outreach

To inform the property owners selected for this project about its objectives and assess their interest, the project team contacted those whose properties were privately owned and deemed suitable for charger installations. The objective of this targeted outreach was to confirm that no property owner was strongly against the idea of having publicly accessible EV chargers on their premises or opposed to future collaboration with the city. As part of this engagement, the project team emphasized that this outreach was only preliminary. Both ICF and the city were keen to identify property owners willing to partner with the city should funding become available for the design and/or installation of chargers. ICF made it clear to each property owner that, at the time of contact, no specific funding sources or timelines had been established for the project. The city provided the project team with a list of 18 privately owned properties with which to conduct outreach:

- Alessandro Shoppes (24990 Alessandro Blvd.)
- Butterfield Valley Village Shopping Center (25211 Sunnymead Blvd.)
- Home Depot North (12255 Pigeon Pass Rd.)
- Home Depot South (15975 Perris Blvd.)
- Iris Plaza (16090 Perris Blvd.)
- Lakeshore Village Marketplace (23575 Sunnymead Ranch Parkway)
- Lakeside Terrace (26150 Iris Ave.)
- Moreno Marketplace (14435 Moreno Beach Dr.)
- Moreno Valley Marketplace (southwest corner of Iris Ave. and Perris Blvd.)
- Moreno Valley Mall (NW) (22500 Town Circle)
- Moreno Valley Plaza (23715 Sunnymead Blvd.)
- Stoneridge Towne Center (27110–27140 Eucalyptus Ave.)
- Sundance Plaza (southwest corner of Indian St. and Sunnymead Blvd.)
- Sunnymead Towne Center (24891 Alessandro Blvd.)
- TownGate Crossing (12450 Day St.)
- TownGate Promenade (12700 Day St.)
- TownGate Shopping Center (12625 Frederick St.)
- TS Marketplace (12190–12240 Perris Blvd.)

The city provided a property owner mailing list and provided (if it existed) a specific property owner name, phone, or email. Each property was contacted by letter and followed up via email and/or phone call if provided by the city or procured via internet research. Of the 18 properties, none expressed disinterest in the potential future coordination. Five properties expressed interest in coordinating with the city on publicly accessible EV chargers.

- Moreno Marketplace (14435 Moreno Beach Dr.)
- Moreno Valley Marketplace (southwest corner of Iris Ave. and Perris Blvd.)
- Sundance Plaza (southwest corner of Indian St. and Sunnymead Blvd.)
- TownGate Crossing (12450 Day St.)
- TownGate Promenade (12700 Day St.)

8.3. Survey Results

On January 11, 2024, the 13-question public survey was launched. As a result of the paid digital media campaign, the survey received 275 responses as of April 18, 2024. High-level takeaways from the survey results include the following:

Respondent Data:

- 77% of respondents live in the City of Moreno Valley, with 19% stating that they live and work in the City of Moreno Valley.
- Approximately one-third of respondents claimed to have no commute and/or they worked from home.
  - Another one-third had a commute of fewer than 20 miles.
  - Another one-third had a commute of 20+ miles (with 14% stating that they had a commute of 50+ miles).
- Approximately 64% of respondents do not own an EV.
- 82 individuals provided their email address, indicating their interest in learning more and staying up to date regarding progress toward building the EV Charging Infrastructure Master Plan.

Experience with EVs:

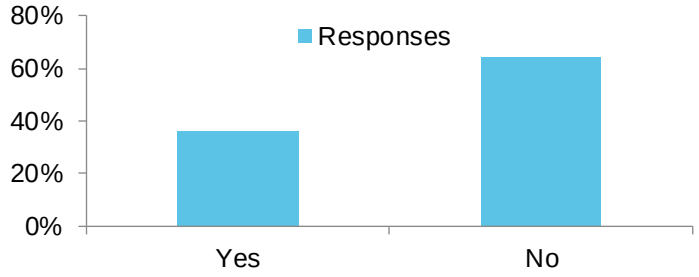
- 76% of those who own an EV say that their biggest charging challenge is that there are not enough publicly accessible charging sites and/or they are always full.
- The greatest obstacles keeping those who do not currently own an EV from buying one included:
  - Vehicle cost (62%)
  - Concerns about vehicle range (61%)
  - Charging costs (28%)
- Awareness of existing public charging sites is similar to ownership disparity, as 53% of respondents say that they do not know where existing charging sites are located.
- Of the approximately 47% of respondents who are aware of public charging sites, they claim that the majority of charging sites are more than a mile away, with 28% stating that they are more than 3 miles away.
- Within several of the "other" open response options, several people expressed additional concerns about EVs and EV charging sites that were not options in the preset responses:
  - For example, respondents mentioned that they have concerns about the reliability of the existing electrical grid, accessibility to charging sites (i.e., disabled spaces with chargers), and concerns about the environmental impact of producing and disposing of batteries.

EV Charger Site Prioritization:

- When asked what the city should consider as part of future EV charging locations, 59% wanted the city to prioritize real-time information regarding charging availability.
  - 36% stated that the city should consider traffic impacts, evolving technology, and incentive programs for private installation of EV chargers.
- 39% of respondents stated that the city should consider a mix of both Level 2 and DCFC, while 39% did not know what type of chargers they would need.
- When asked where the city should prioritize future charging sites, 63% of respondents said that charging sites should be located near shopping, and 52% selected commercial businesses/workplaces as being top priorities.
  - When asked where EV sites should be prioritized, several respondents mentioned in the "other" option that EV stations should be located at gas stations.
- When asked to rank topics based on their level of importance for public EV sites, safety/security/lighting, charging availability, and charging speeds were consistently ranked as most important, with guidelines for use/time limits and the use of renewable energy sources consistently ranked as least important.

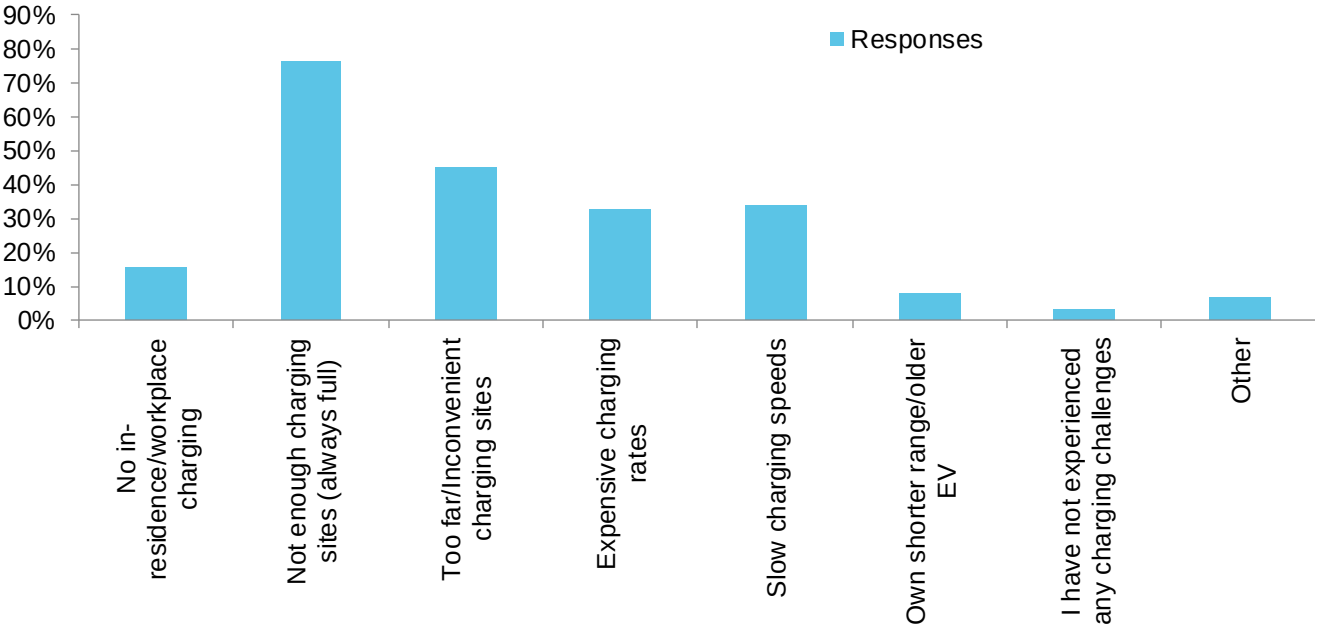
Responses to Individual Survey Questions

Q1. Do you own an electric vehicle (EV)?



Answer Choices	Responses	
Yes	36.00%	99
No	64.00%	176
	Answered	**275**
	Skipped	**0**

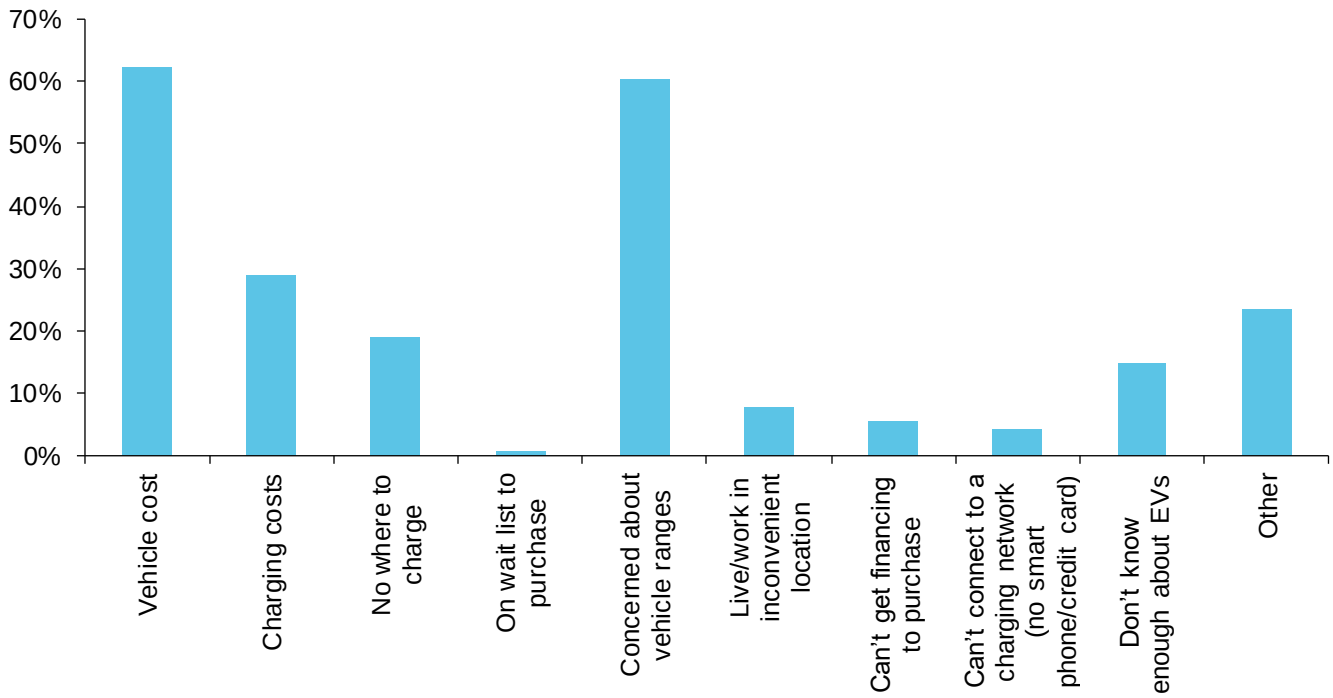
Q2. If yes, what are the biggest charging challenges you have? Please select three.



*Only respondents who answered “Yes” in Q1 were asked this question.

Answer Choices	Responses	
No in-residence/workplace charging	15.73%	14
Not enough charging sites (always full)	76.40%	68
Too far/Inconvenient charging sites	44.94%	40
Expensive charging rates	32.58%	29
Slow charging speeds	33.71%	30
Own shorter range/older EV	7.87%	7
I have not experienced any charging challenges	3.37%	3
Other	6.74%	6
Other (please specify)		10
	Answered	**89**
	Skipped	**186**

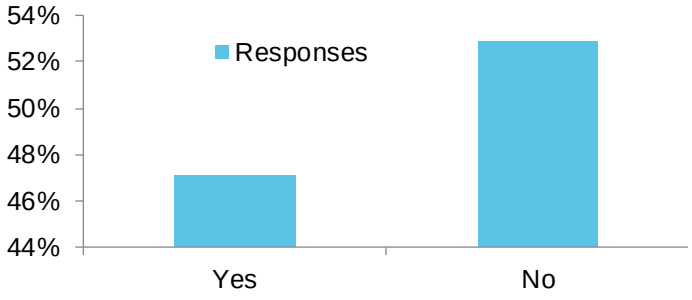
Q3. If no, what are the biggest barriers keeping you from purchasing one? Please select three.



*Only respondents who answered "No" in Q1 were asked this question.

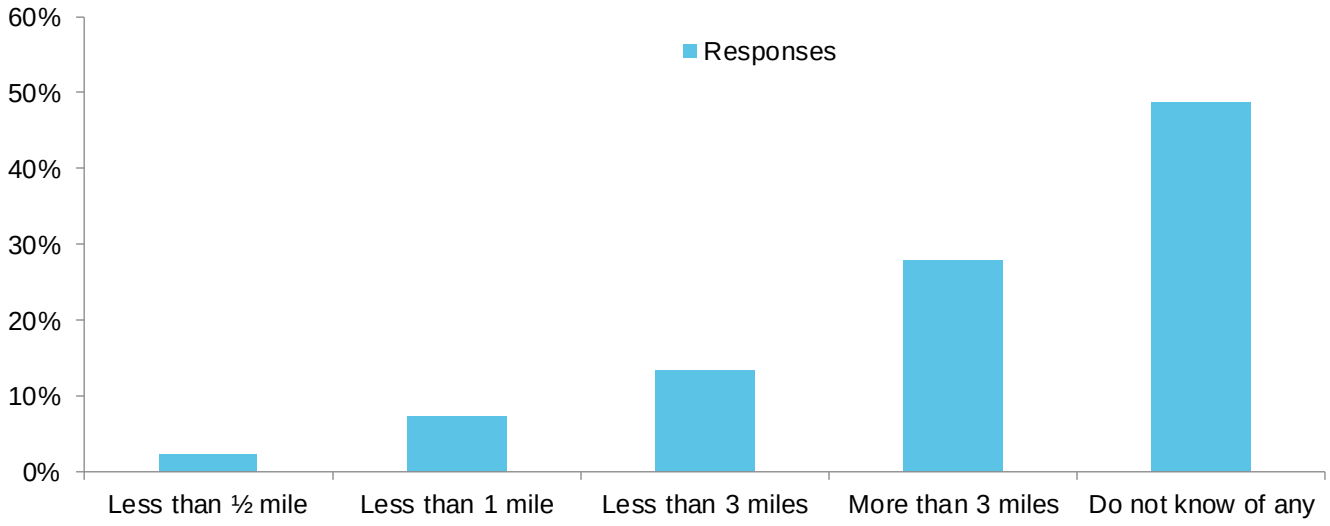
Answer Choices	Responses	
Vehicle cost	62.16%	92
Charging costs	27.70%	41
No where to charge	18.24%	27
On wait list to purchase	0.68%	1
Concerned about vehicle ranges	60.81%	90
Live/work in inconvenient location	8.11%	12
Can't get financing to purchase	5.41%	8
Can't connect to a charging network (no smart phone/credit card)	4.05%	6
Don't know enough about EVs	14.19%	21
Other	25.68%	38
Other (please specify)		59
	Answered	**148**
	Skipped	**127**

Q4. Are you aware of any publicly accessible EV chargers within the City of Moreno Valley near your residence or workplace? *Please note, these are NOT chargers installed in personal homes or private residential complexes.*



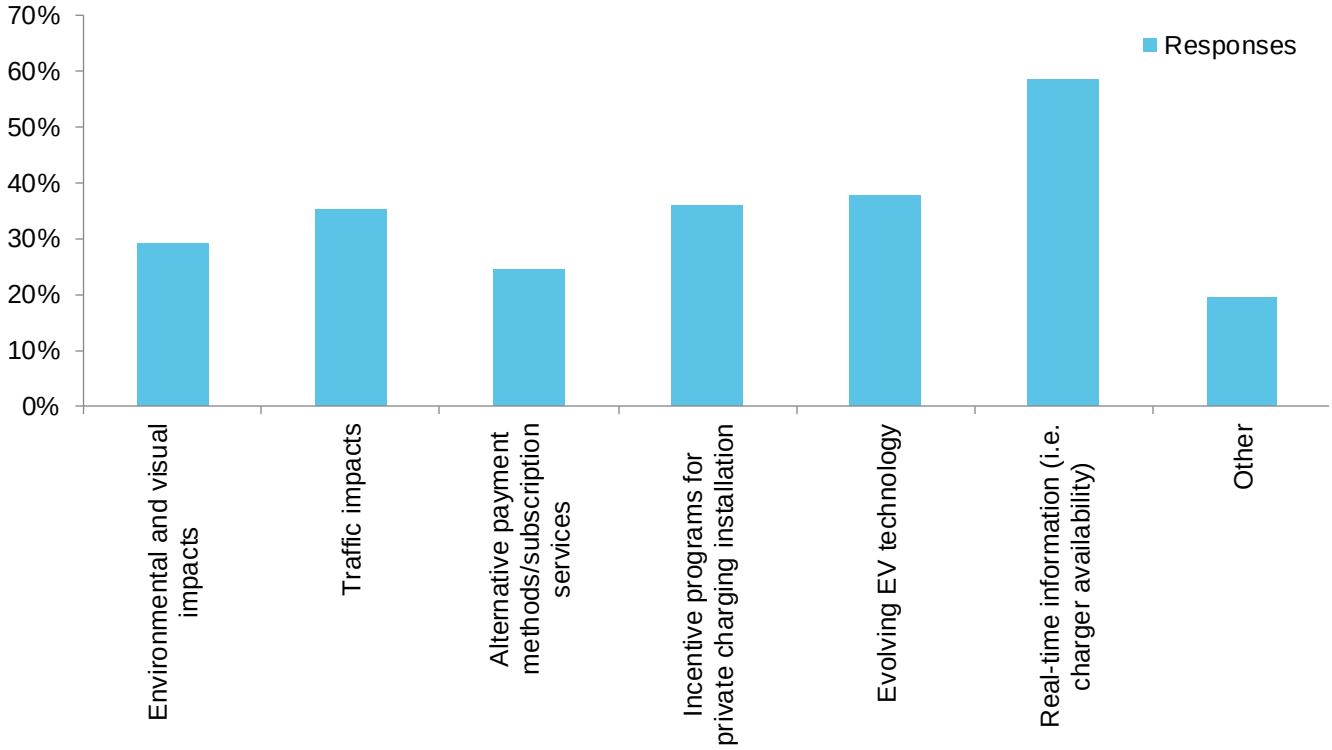
Answer Choices	Responses	
Yes	47.13%	115
No	52.87%	129
	Answered	**244**
	Skipped	**31**

Q5. If yes, how far are these public EV chargers from your residence or workplace?



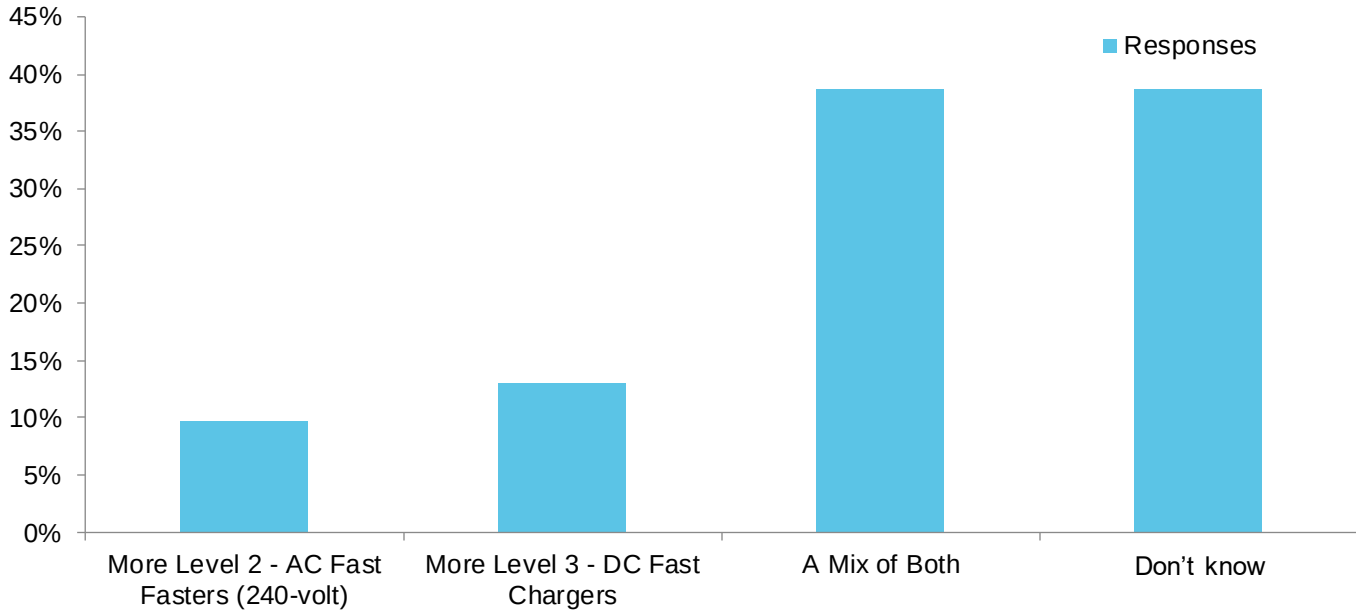
Answer Choices	Responses	
Less than ½ mile	2.46%	6
Less than 1 mile	7.38%	18
Less than 3 miles	13.52%	33
More than 3 miles	27.87%	68
Do not know of any	48.77%	119
	Answered	**244**
	Skipped	**31**

Q6. What should the City of Moreno Valley consider when planning for an expanded, publicly accessible EV charging network? Please select three.



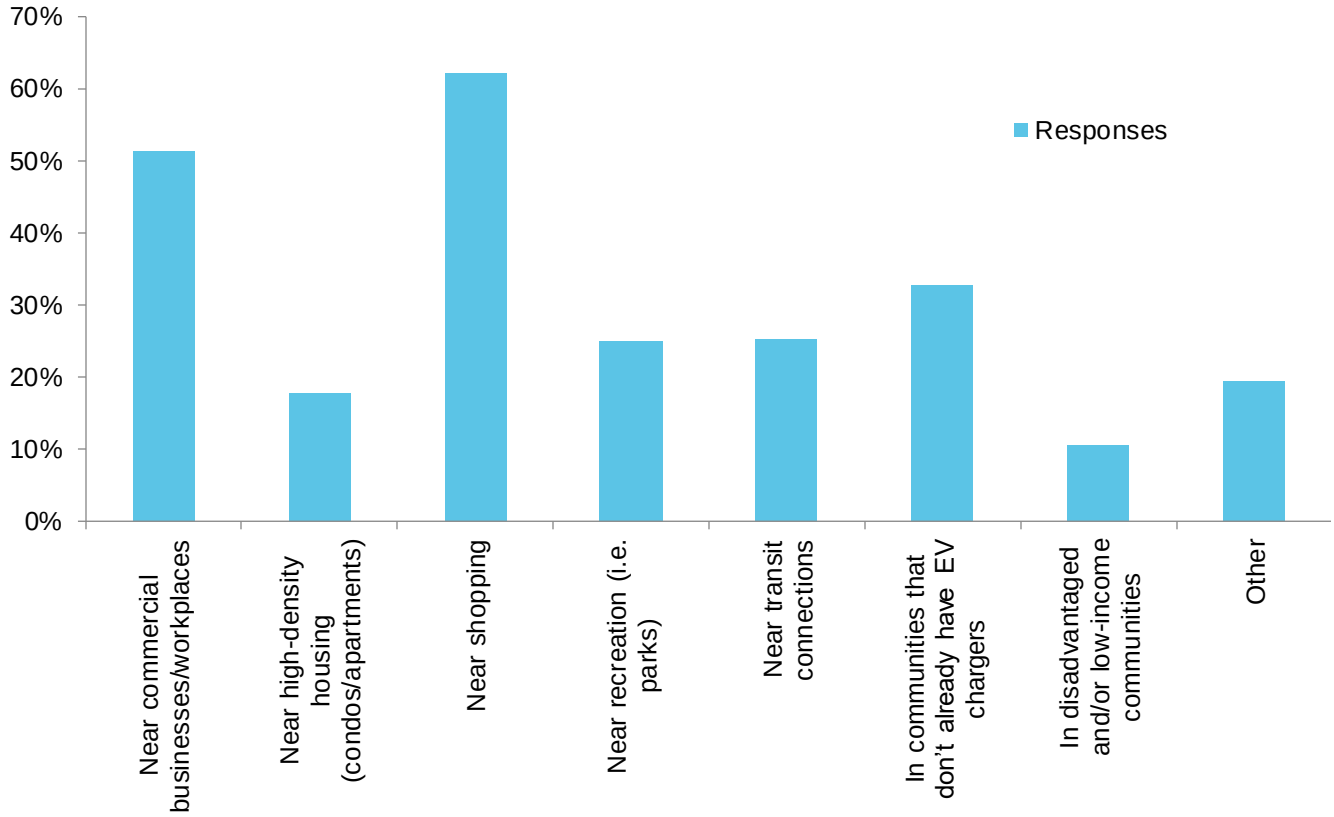
Answer Choices	Responses	
Environmental and visual impacts	29.06%	59
Traffic impacts	35.47%	72
Alternative payment methods/subscription services	24.63%	50
Incentive programs for private charging installation	35.96%	73
Evolving EV technology	37.93%	77
Real-time information (i.e. charger availability)	58.62%	119
Other	19.70%	40
Other (please specify)		53
	Answered	**203**
	Skipped	**72**

Q7. What type of EV chargers would you like to see the City of Moreno Valley install?



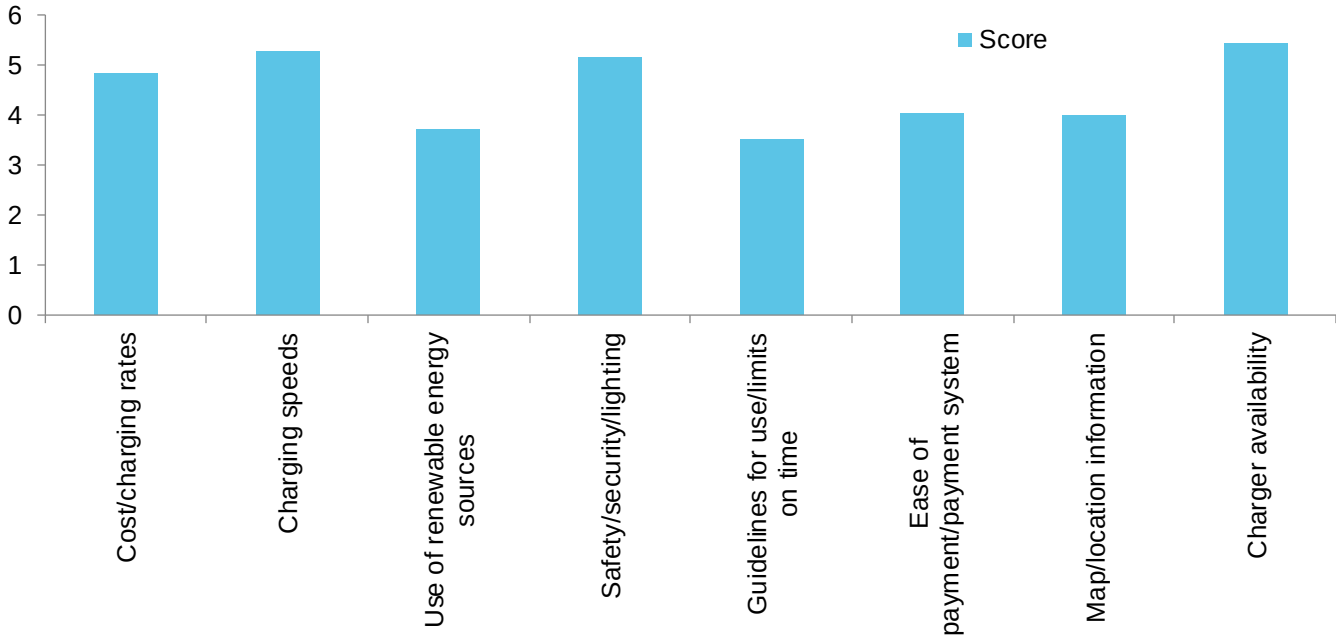
Answer Choices	Responses	
More Level 2 - AC Fast Fasters (240-volt)	9.66%	20
More Level 3 - DC Fast Chargers	13.04%	27
A Mix of Both	38.65%	80
Don't know	38.65%	80
	Answered	**207**
	Skipped	**68**

Q8. Where would you prioritize for future, publicly accessible EV charging sites? Please select three.



Answer Choices	Responses	
Near commercial businesses/workplaces	51.24%	103
Near high-density housing (condos/apartments)	17.91%	36
Near shopping	62.19%	125
Near recreation (i.e. parks)	24.88%	50
Near transit connections	25.37%	51
In communities that don't already have EV chargers	32.84%	66
In disadvantaged and/or low-income communities	10.45%	21
Other	19.40%	39
Other (please specify)		49
	Answered	**201**
	Skipped	**74**

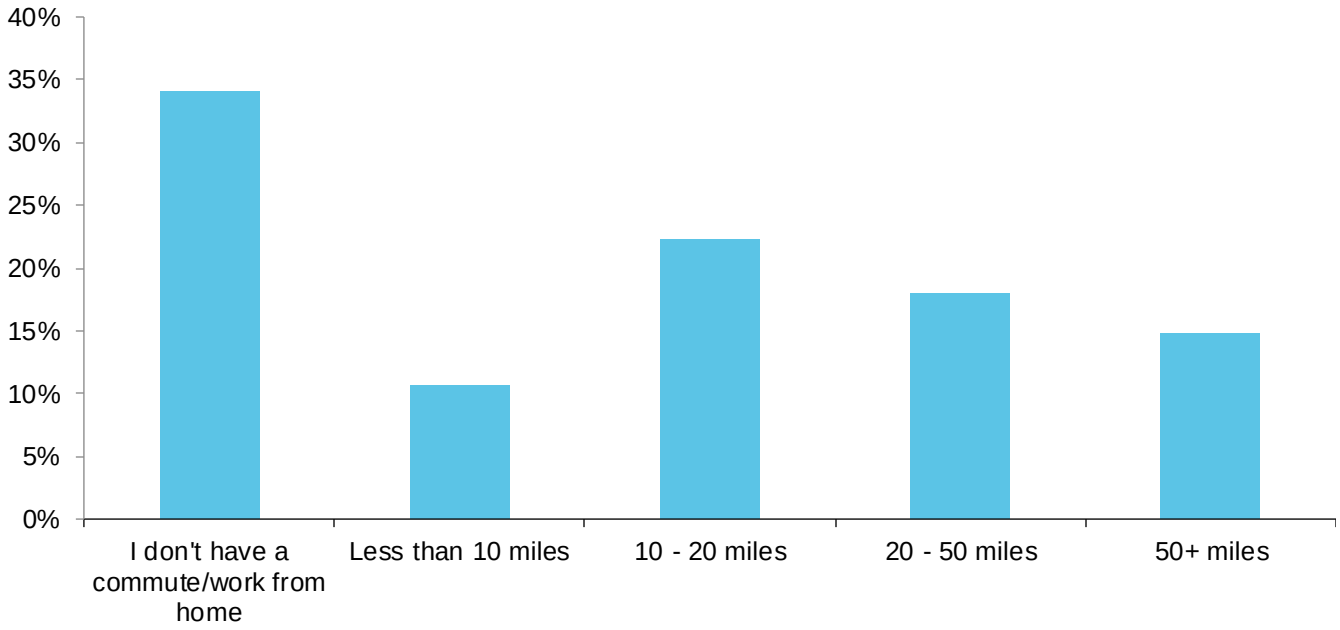
Q9. Please rank how important these topics are to you with regard to public EV charging sites?



	1		2		3		4	
Cost/charging rates	13.04%	27	11.59%	24	18.84%	39	14.98%	31
Charging speeds	16.91%	35	17.39%	36	16.91%	35	14.01%	29
Use of renewable energy sources	10.14%	21	9.18%	19	5.80%	12	8.21%	17
Safety/security/lighting	24.64%	51	12.56%	26	11.11%	23	14.98%	31
Guidelines for use/limits on time	3.86%	8	8.21%	17	8.70%	18	10.14%	21
Ease of payment/payment system	6.76%	14	7.25%	15	12.08%	25	15.94%	33
Map/location information	6.28%	13	10.63%	22	11.59%	24	11.11%	23
Charger availability	18.36%	38	23.19%	48	14.98%	31	10.63%	22

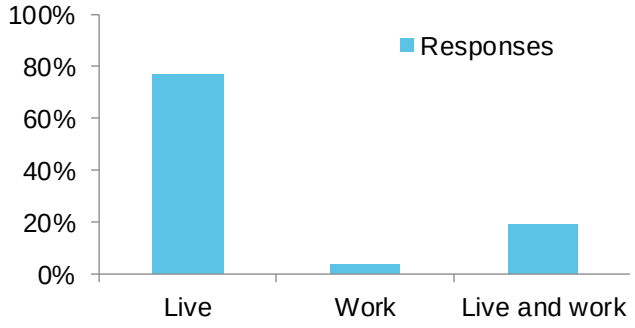
5		6		7		8		Total	Score
11.11%	23	11.11%	23	13.04%	27	6.28%	13	207	4.84
13.04%	27	6.76%	14	10.63%	22	4.35%	9	207	5.27
11.59%	24	15.46%	32	19.32%	40	20.29%	42	207	3.73w
8.21%	17	9.18%	19	9.66%	20	9.66%	20	207	5.16
14.98%	31	14.98%	31	16.91%	35	22.22%	46	207	3.52
14.49%	30	15.46%	32	14.49%	30	13.53%	28	207	4.04
14.49%	30	16.91%	35	12.56%	26	16.43%	34	207	4
12.08%	25	10.14%	21	3.38%	7	7.25%	15	207	5.45
								Answered	**207**
								Skipped	**68**

Q10. What is your average daily commute?



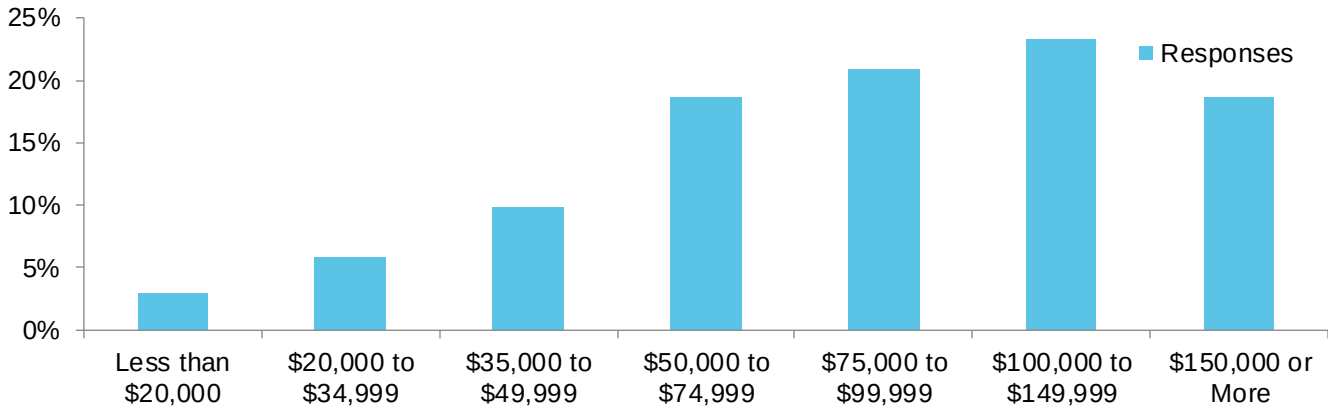
Answer Choices	Responses	
I don't have a commute/work from home	33.99%	69
Less than 10 miles	9.85%	20
10 - 20 miles	23.15%	47
20 - 50 miles	18.72%	38
50+ miles	14.29%	29
	Answered	**203**
	Skipped	**72**

Q11. Do you live or work in Moreno Valley?



Answer Choices	Responses	
Live	76.85%	156
Work	3.94%	8
Live and work	19.21%	39
	Answered	**203**
	Skipped	**72**

Q12. What is your total household income? (Optional)



Answer Choices	Responses	
Less than $20,000	2.91%	5
$20,000 to $34,999	5.81%	10
$35,000 to $49,999	9.88%	17
$50,000 to $74,999	18.60%	32
$75,000 to $99,999	20.93%	36
$100,000 to $149,999	23.26%	40
$150,000 or More	18.60%	32
	Answered	**172**
	Skipped	**103**

Q13. Please feel free to provide your email. By providing your email address, we can share future updates with you regarding the EV Charging Infrastructure Master Plan. However, this is entirely OPTIONAL, and your responses will be kept confidential.

Answer Choices	Responses	
Email Address	100.00%	82
	Answered	**82**
	Skipped	**193**

9. Costs and Barriers to the Adoption of Light-Duty EVs

Despite regional trends showing growth in ZEV adoption and a supportive ZEV policy landscape, several barriers hinder progress today. These include higher upfront purchase costs, insufficient charging infrastructure, concerns about EV range, and environmental issues related to the manufacturing process. Despite potential long-term savings through tax credits and lower fueling and maintenance costs, the upfront price of EVs remains significantly higher than their gasoline-powered counterparts. “Range anxiety,” which is the fear of the battery depleting before reaching the destination, continues to be a concern, especially for those without access to home charging. This issue is more prevalent among low-income households and residents of multi-unit dwellings. The concerns are further heightened by EVs’ reduced range in extreme weather conditions because the battery also powers the vehicle’s heating and cooling system. Moreover, DACs face additional barriers to EV adoption, including financial constraints, inconvenience due to location, lack of access to phones or credit cards, educational and language barriers, and difficulties in applying commuting subsidies to charging stations. However, research indicates that interest in EVs is high across all income groups and racial backgrounds, suggesting that, with appropriate strategies to address these barriers, equitable EV adoption is achievable.

9.1. EV Transition Costs

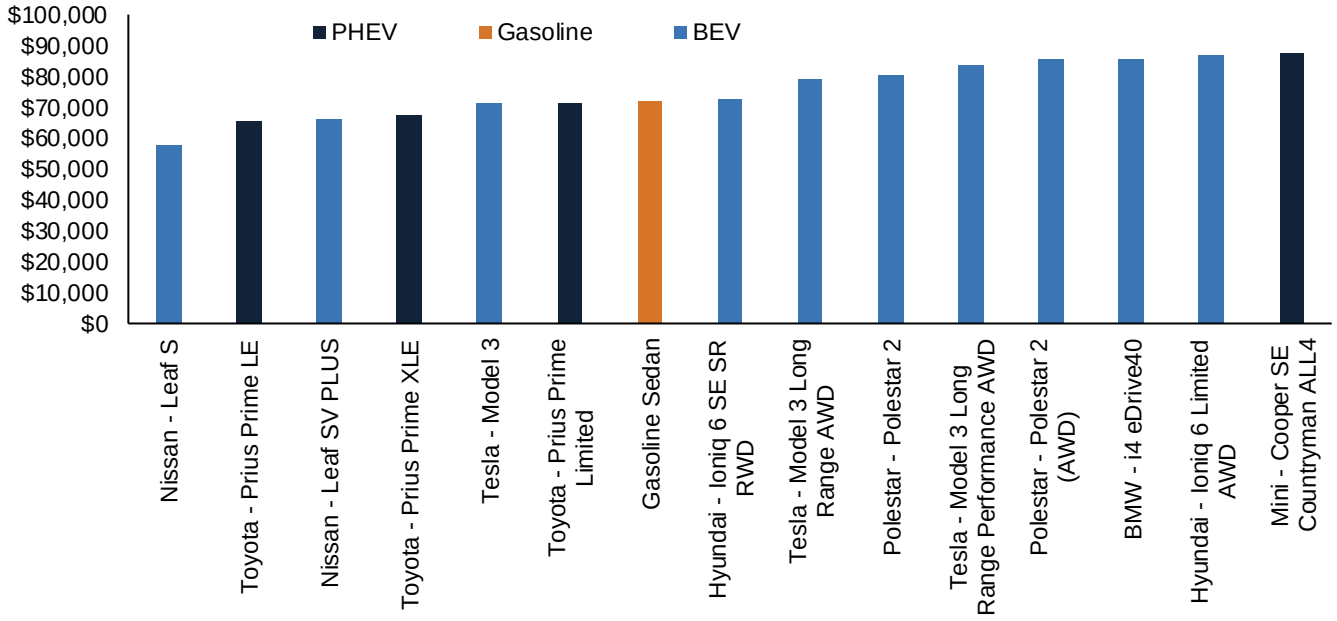
The Total Cost of Ownership (TCO) methodology is a useful financial analysis strategy to compare the total costs to own and operate EVs compared with ICEVs. TCO inputs include the following:

- Vehicle purchase price, including state sales tax and use tax, and federal excise tax, where applicable
- Fuel cost (i.e., gasoline, diesel, electricity, hydrogen)
- Maintenance cost
- Infrastructure cost

When comparing the TCO of light-duty or passenger EVs and conventional gasoline vehicles, the time horizon over which the financial analysis is conducted is over the course of the average vehicle life span, which for sedans is typically considered to be 15 years. Although it is possible to operate an internal combustion engine sedan for more than 15 years, ICEVs, in general, become less fuel efficient and more costly to maintain as the vehicle gets older. Moreover, the typical daily and annual mileage of electric versus conventional sedans can vary, depending on the region and occupational purpose of the vehicle, which directly affects the amount spent on liquid fuel or electricity. As an example, the project team compiled TCO estimates comparing a standard gasoline sedan to BEVs and PHEVs available on the market, as shown in Figure 35. The model comparison assumes an average vehicle life span of 15 years and an average annual mileage of 12,400 vehicle-miles traveled.

Although this simple comparison of a typical gasoline sedan to different PEV models does not include the cost of the charging infrastructure or the cost advantages of incentives, the results show that multiple BEV and PHEV options currently on the market have lower TCO compared with the typical gasoline sedan, estimated to be approximately $72,121 over the time horizon of the financial analysis. It should be noted that these vehicle options, such as the Nissan Leaf S, have lower range and power acceptance rate (i.e., fueling rate) than the typical gasoline sedan, as well as some other PEV offerings, which can pose issues for potential buyers who need to drive long distances without home charging capability. Most PEV offerings also have greater capital costs than ICEVs, as explored in the following section’s discussion of some of the major barriers to PEV adoption.

Figure 35. Sedan TCO Comparison by Fuel Type and Vehicle Make/Model



9.2. Major Barriers to EV Adoption

Even with momentum on the local, state, and federal levels, barriers to EV adoption remain, including higher upfront purchase prices, inadequate charging infrastructure, concerns about EV range, and environmental issues during the production process. There is currently a significant price gap between EVs and comparable gas vehicles. As of February 2023, the average cost of a new EV was $58,385, which is about $9,600 more than a conventional gas-fueled car.[90] In 2023, for example, consumers could purchase a gas-fueled Hyundai Kona starting at $22,140 and a Hyundai Kona Electric for $33,550 (an $11,410 difference).[91] Gas-fueled Ford F-150s go for $34,445, while the electric Ford F-15 Lightning sells for $49,995[92] (a $15,550 difference). It is worth noting, however, that EV tax credits, cheaper fueling costs, and lower maintenance costs can all reduce the price gap between EVs and gas-powered vehicles.

A lack of sufficient infrastructure remains a barrier to EV adoption. Many current and prospective owners have "range anxiety"—the concern that the battery will run out of power before reaching the destination. This concern is intensified for those who do not have access to a charger at home, which is more common for low-income households and those living in multi-unit dwellings. Coupled with concerns about inadequate charging infrastructure are concerns about the range of EVs in hot and cold weather. For gas vehicles, waste heat produced by the engine helps power the heating system. For EVs, the energy for heating comes entirely from the same battery that propels the vehicle, meaning that the range is reduced when the heating system is on. Additionally, EV battery thermal management systems use energy to keep the battery at an optimal temperature, so the battery uses extra energy on hot and cold days to regulate battery temperature.

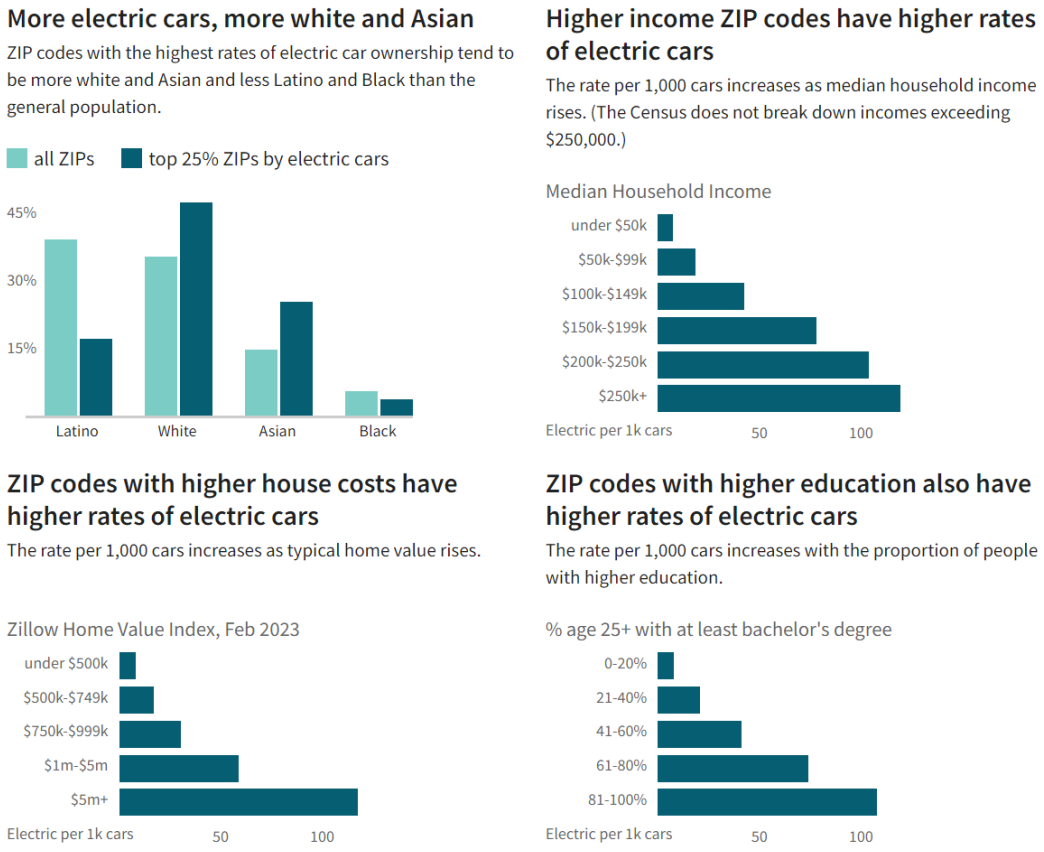
There also are sustainability concerns associated with EV manufacturing. EVs require approximately six times more minerals than gas-fueled cars. EV batteries require lithium, cobalt, and other rare earth minerals. The International Energy Agency predicts that the demand for minerals for EV and battery

[90] Who buys electric cars in California – and who doesn't? CalMatters.
[91] https://www.hyundaiusa.com/us/en/vehicles/kona-electric.
[92] https://www.ford.com/trucks/f150/f150-lightning/?gnav=header-trucks-vhp.

storage will grow more than 30 times between 2020 and 2050, and that this demand will surpass the expected supply from existing mining projects.[93] Mining processes are often energy intensive. However, research and development efforts are underway to reduce the environmental impacts of mining. The Snow Lake lithium mine in Canada, for example, is working toward a carbon-neutral process for mining lithium, including by using only 100% renewable energy.[94] Additionally, new processes are being developed to increase the efficiency of battery recycling and reuse. The United States Federal Consortium for Advanced Batteries[95] and several other new initiatives are committing to increasing domestic mineral production and recycling, relying less on minerals extracted from other countries.

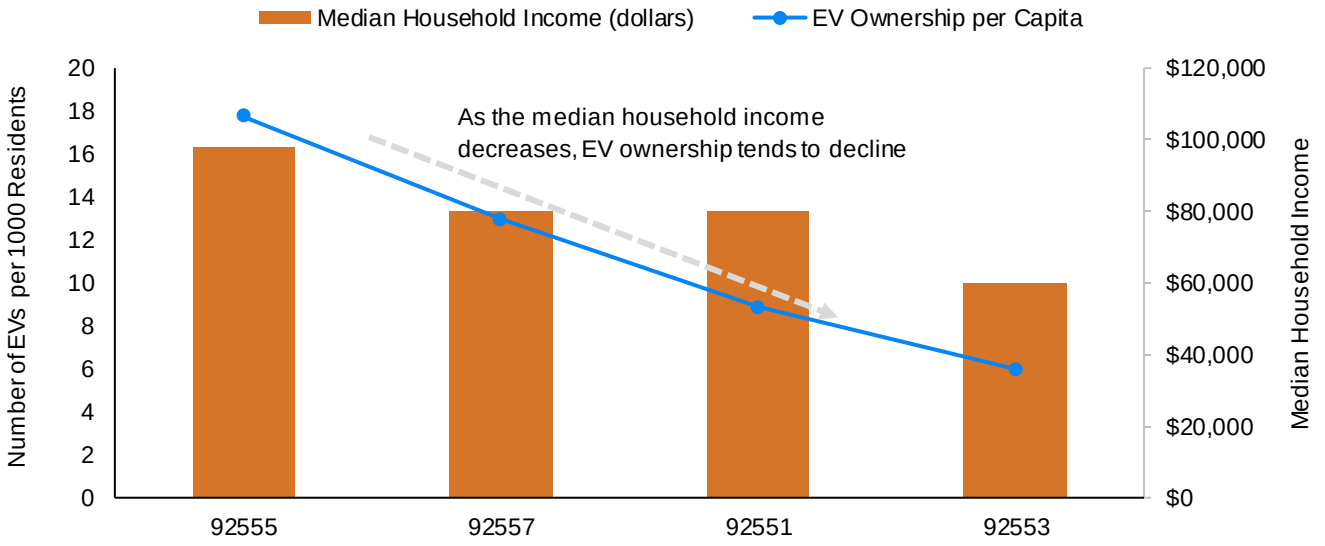
In addition to general barriers to EV adoption, DACs face further challenges that must be considered when developing equitable strategies for EV promotion. According to a CalMatters statewide study, the highest concentration of ZEVs are registered in ZIP Codes consisting of mostly white and Asian communities (75% or more).[96] These areas are generally located in Silicon Valley and the more affluent neighborhoods of Los Angeles and Orange counties. Conversely, the top 20 ZIP Codes where Latinos make up at least 95% of the population (including Kings, Tulare, Fresno, Riverside, and Imperial counties) have between 0% and 1% EV ownership. The largest driver of these disparities is income, especially due to the higher upfront cost of an EV, as noted earlier (Figure 36). Similar disparities also have been observed for EV ownership within the city (Figure 37).

Figure 36. EV Ownership Disparity Statistics



[93] van Halm, Isabeau. Mining Technology. Concerns for Mineral Supply Chain Amid Booming EV Sales. https://www.mining-technology.com/features/concerns-for-mineral-supply-chain-amid-booming-ev-sales/.
[94] About Snow Lake Lithium. https://snowlakelithium.com/.
[95] Federal Consortium for Advanced Batteries (FCAB), U.S. Department of Energy.
[96] Who buys electric cars in California – and who doesn't? CalMatters.

Figure 37. EV Ownership and Median Income by ZIP Code for the City of Moreno Valley[97]



In addition to income, other structural barriers prevent certain communities from making the switch to EVs. These may include the following:

- Greater financial need to purchase or lease any vehicle, including an EV or EVSE
- Extended waitlists or inadequate funding from incentive programs
- Live and/or work in inconvenient areas (e.g., further from transportation hubs or city centers, no private parking, rent their home, live in multifamily housing, no parking at their homes, grid constrained)
- Lack of a phone or sufficient data to connect with a charging network/payment system
- Lack of a credit card or access to accessible financing options
- Educational barriers to information, such as financial incentives, lifestyle changes, user instructions, etc.
- Language barriers with regard to charging station instructions
- Difficulties with applying commuting subsidies (e.g., gas card) to charging stations

Despite the socioeconomic disparities in EV ownership, research suggests that interest in EVs is high across all income types and racial backgrounds. A survey conducted by the Union of Concerned Scientists and Consumer Reports noted that one-third of survey respondents making less than $50,000 and between $50,000 and $99,999 in annual income expressed interest in making an EV their next purchase.[98] Additionally, 42% of people of color who participated in the survey indicated interest in purchasing an EV.

[97] Income and population data from the United States Census Bureau. https://data.census.gov/.
[98] New survey shows strong support for electric vehicles across economic spectrum (consumerreports.org).

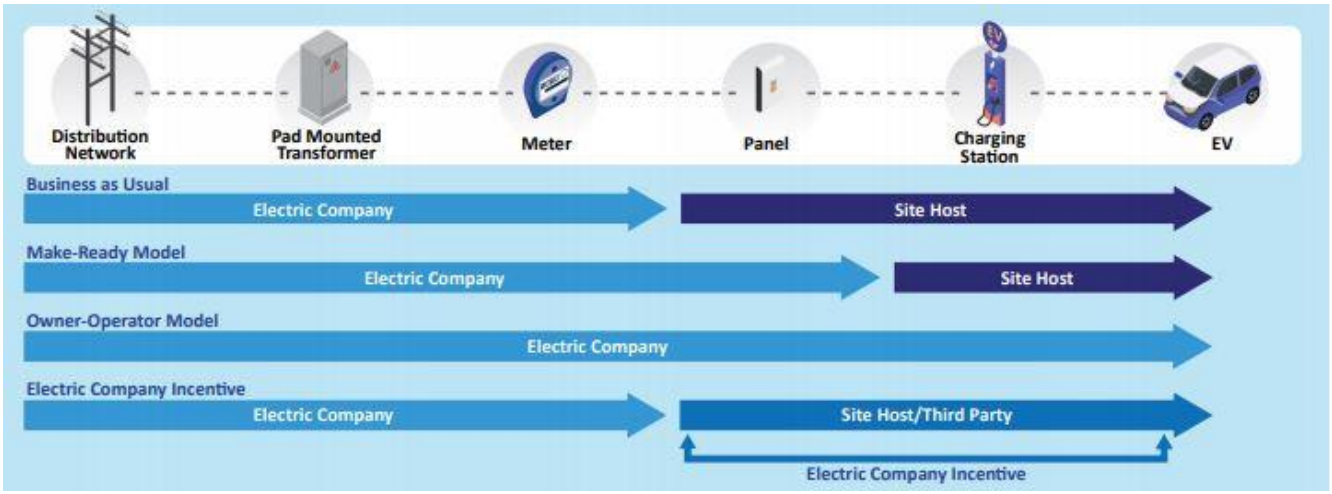
10. Charging Infrastructure Funding Sources and Ownership Models

The range of governmental incentives and funding programs can help offset the costs associated with deploying EV infrastructure. Reducing the financial burden on the municipality will encourage faster and more widespread deployment of EV infrastructure, which is a key factor in promoting EV adoption within the community. The following section explores the various EV infrastructure ownership models, providing a comprehensive overview of each type and their implications.

10.1. Infrastructure Ownership Models

Several charging station business and ownership models are available to entities interested in developing charging infrastructure. Understanding ownership models starts with understanding the various components that are part of the broader charging system. Figure 38, from the Electric Power Research Institute, shows four types of EV charging infrastructure ownership models from the perspective of an electric utility.

Figure 38. Electric Vehicle Charging Infrastructure Ownership Models[99]



The four types of infrastructure ownership models indicated in Figure 38 are the business-as-usual model, the make-ready model, the owner-operator model, and the electric company incentive model. The difference among ownership models is with regard to which party owns and operates site-level charger equipment, including the panel and the charging station itself. Naturally, utilities will own electric transmission and distribution infrastructure; however, virtually any entity can own and operate site-level EVSE.

- **Site Host Owner/Operator:** In this model, the entity hosting the charging stations also owns the charging stations. This model gives the site host complete control of the station and allows them to keep all revenues but also places the most risk on the host, including risks associated with maintenance, obsolescence, and low charger utilization.

[99] Electric Power Research Institute. (2019, August). Interoperability of Public Electric Vehicle Charging Infrastructure. https://www.publicpower.org/resource/interoperability-public-electric-vehicle-charging-infrastructure.

- **Utility Ownership:** In this model, the electric utility would own the charging stations. The utility may lease the chargers to the site host or develop its own sites and charging network. For non-utility entities that lease chargers, the risks associated with maintenance and charger redundancy are reduced; however, the risk of low charger utilization remains.
- **Third-Party Ownership:** In this model, a site host may partner with a third party to handle a portion or all of the ownership, operations, maintenance, and billing responsibilities for the charging stations. There is flexibility in this approach as the two parties may agree to the terms, roles, and responsibilities of their choosing. This approach includes partnerships with EV service providers, which is common.
- **Charging as a Service:** Charging as a Service is a business model in which a third party covers all capital expenses associated with charging infrastructure development, owns the equipment, and then effectively leases it to a site host under a service agreement, which also may include assistance with operations and maintenance. This approach can be beneficial for entities who seek to reduce or minimize the upfront capital costs of charging infrastructure development. The Charging-as-a-Service provider would effectively convert the capital cost of infrastructure development to an operating cost and pass those costs on to the site host via a monthly fee, with the addition of a service charge. This approach may be more costly for site hosts in the long run due to service fees but may still be attractive, depending on the value that the site hosts place on reduced upfront costs.

10.2. Funding and Financing Recommendations

Each of the EV charging infrastructure ownership models described previously, regardless of benefit or drawbacks, requires capital investment. This investment may be publicly or privately funded, depending on the model chosen. This is where governmental incentives and funding programs can provide financial relief and support to entities embarking on the deployment of EV charging infrastructure. Funding, in the form of grant and incentive programs, supports more streamlined EVSE deployment and bridges signif icant gaps in public health and transportation equity, which are especially prominent in low-income and disadvantaged communities. A variety of financing options also exist to support EVSE deployment, such as public-private partnerships and purchasing contracts to offer the most favorable vehicle and equipment procurement avenues. For details on eligibility and application processes, see Appendix A: Funding and Financing Programs.

Beyond higher upfront costs and the need for specialized resources for charging infrastructure deployment, there can be other unknowns in the assessment of regional charging needs. However, this Master Plan identifies funding and financing options that can help advance infrastructure deployment to meet the needs of the regional projected PEV population. Various funding and financing sources are available, including federal, state, local, and utility programs. The programs identified in this Master Plan were selected based on the City of Moreno Valley's likely eligibility to receive funds, according to each specific program's requirements. Most programs identified in this plan do not require matching funds and can offer tens of thousands to hundreds of thousands of dollars in community EV charging program funds. The recommendations here focus on charging infrastructure specifically; however, there also are programs to assist with PEV replacements. Additionally, total funding amounts can vary based on charger power levels or make-ready costs. As the City of Moreno Valley embarks on addressing its charging needs, the following recommendations should be considered:

- *Federal programs*, such as the following:
  - Inflation Reduction Act (IRA)
    - Alternative Fuel Infrastructure Tax Credit
  - Bipartisan Infrastrcture Law (BIL)
    - Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program)

- *State programs*, such as the following:
  - Energy Infrastructure Incentives for Zero-Emission (EnergIIZE)
  - California Electric Vehicle Infrastructure Project (CALeVIP)
  - Low Carbon Fuel Standard (LCFS)
- *Local programs*, such as the following:
  - South Coast AQMD Residential EV Charging Incentive Program
  - Southern California Edison Charge Ready Program
- *Financing strategies*, such as the following:
  - Charging Infrastructure as a Service (CIaaS)
  - Financing options through IBank, namely:
    - Infrastructure State Revolving Fund (ISRF)
    - Climate Tech Finance

Based on current program descriptions and requirements, the greatest potential for award funds stacking exists within the charging infrastructure landscape. In the case of funding for charging infrastructure, most state program incentives can be combined with other federal, state, or local agency incentives; applicants are ineligible to receive funds from CALeVIP if the applicant has already received funds from investor-owned utilities such as the Southern California Edison Charge Ready Program. Note that CALeVIP can provide up to $3,500 per charger, up to a limit of 20 chargers, and the Charge Ready Program can cover up to 75% of installation costs under the condition that Southern California Edison manages both the utility and customer sides of the meter.

In addition to EnergIIZE and CALeVIP, the city would be eligible to generate LCFS credits from electricity dispensed by charging infrastructure and sell the credits through a broker for additional funds. As with vehicle procurement, the IRA (through the Alternative Fuel Vehicle Refueling Property Credit) is another funding option available to reduce overall charging infrastructure project costs, provided that the site meets the outlined environmental justice requirements. Additionally, under BIL, the CFI Program offers $2.5 billion in competitive grant funding for the deployment of public EV charging and alternative fueling infrastructure in communities and along alternative fuel corridors. The CFI Program offers grants through two funding sources: the Community Program and the Corridor Program, which emphasize the placement of vehicles in highly trafficked downtown areas and along major highways. Eligible applicants include local governments, Native American tribes, and metropolitan planning organizations.

In addition to these funding programs, the city also has several financing options that it could explore; ISRF and CaaS are available for the acquisition or operations stages, respectively. The details of these programs are provided in Appendix A: Funding and Financing Programs.

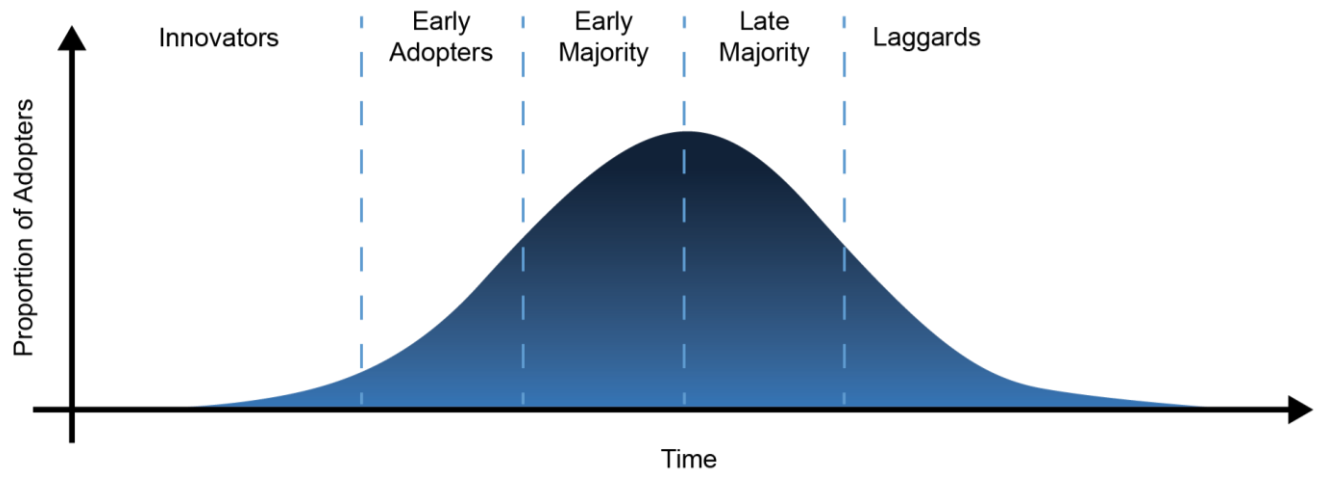
11. Education, Outreach, and Marketing

Education and outreach are critical components to the successful deployment and utilization of EVSE. Such efforts should be tailored to each situation; the messaging, communication channels, and other outreach strategies should be tailored to the audience and goals. This section provides general guidance on education and outreach strategies that can be used by local governments and other regional actors to educate and promote EV infrastructure deployment in Moreno Valley.

11.1. Understanding the Audience

The EV market has rapidly evolved over the course of the past few years, with a quickly growing range of new makes and models, better vehicle range and performance, more accessible pricing, and more charging options for prospective buyers. According to the Diffusion of Innovations theory, EV adoption can be broken down into five phases: Innovators, Early Adopters, Early Majority, Late Majority, and the Laggards (Figure 39).[100]

Figure 39. Illustrative Electric Vehicle Adoption Curve



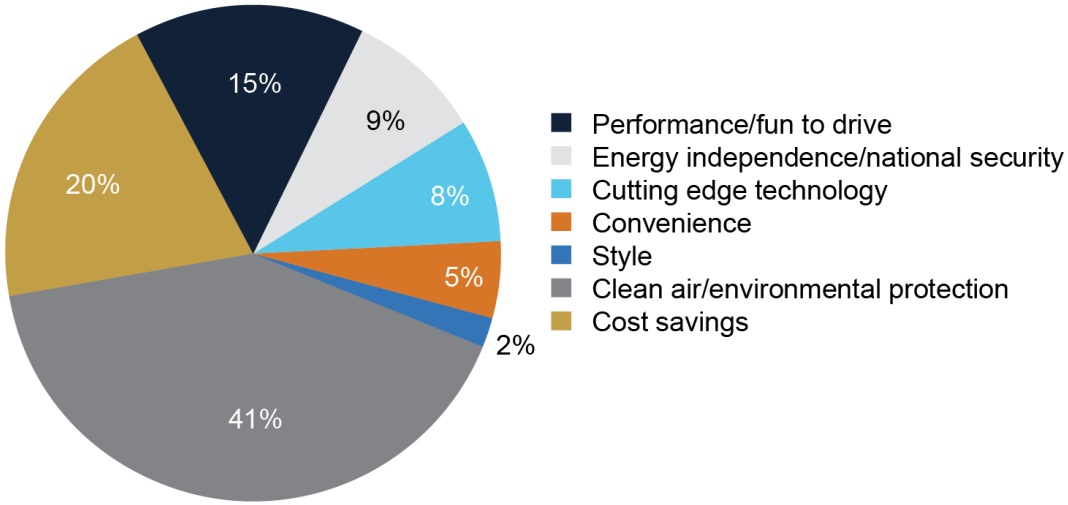
These five categories are defined as follows:

1. **Innovators:** These are the first individuals to adopt EVs. They tend to be risk-takers and are open to new ideas and technologies.
2. **Early Adopters:** They are typically opinion leaders who are influential in their social circles. They act as ambassadors for making EVs more prevalent in their communities.
3. **Early Majority:** This group tends to be more practical and deliberate in decision making and waits until others have "tested the waters."
4. **Late Majority:** They are more cautious and will adopt EVs more slowly, when they are more popular and easily accessible.
5. **Laggards:** This group is resistant to change and may be ideologically opposed to EVs over conventional gas-fueled cars. They may require significant incentive levers to be persuaded to adopt an EV.

[100] Early Adopters of Electric Vehicles: The EV Adoption Curve (exro.com).

Many EV market analysts agree that the U.S. market is reaching a critical tipping point between the Early Adopters and the Early Majority, with a growing need to address barriers to bridge the gap between the two. The progression through the EV adoption curve relies on several factors, which, if properly understood, can be leveraged to accelerate the transition to EVs. First, the role of the Early Adopters cannot be overstated: They bring increased visibility to EVs, their benefits, and experiences, and can provide valuable feedback or word-of-mouth education to their peers. Early Adopter confidence in the technology serves as an indicator to the Early Majority that EVs can be trusted and are viable replacements for conventional vehicle technology. Other factors include the relative advantages of EVs over gas-fueled cars, compatibility with motorists' values (e.g., sustainability and environmental values), the complexity inherent in understanding how EVs work, trialability (the ability to test drive an EV risk-free), and the general visibility of EVs and associated charging infrastructure to prospective buyers.[101] Plug In America surveyed EV motorists and prospective EV consumers across the United States, with most respondents residing in California. The 2023 EV Driver Survey[102] found that EV owners, who currently fall into the Early Adopter category, noted several motivating factors for their EV purchase (Figure 40).

Figure 40. Most Important Motivating Factor for EV Owners

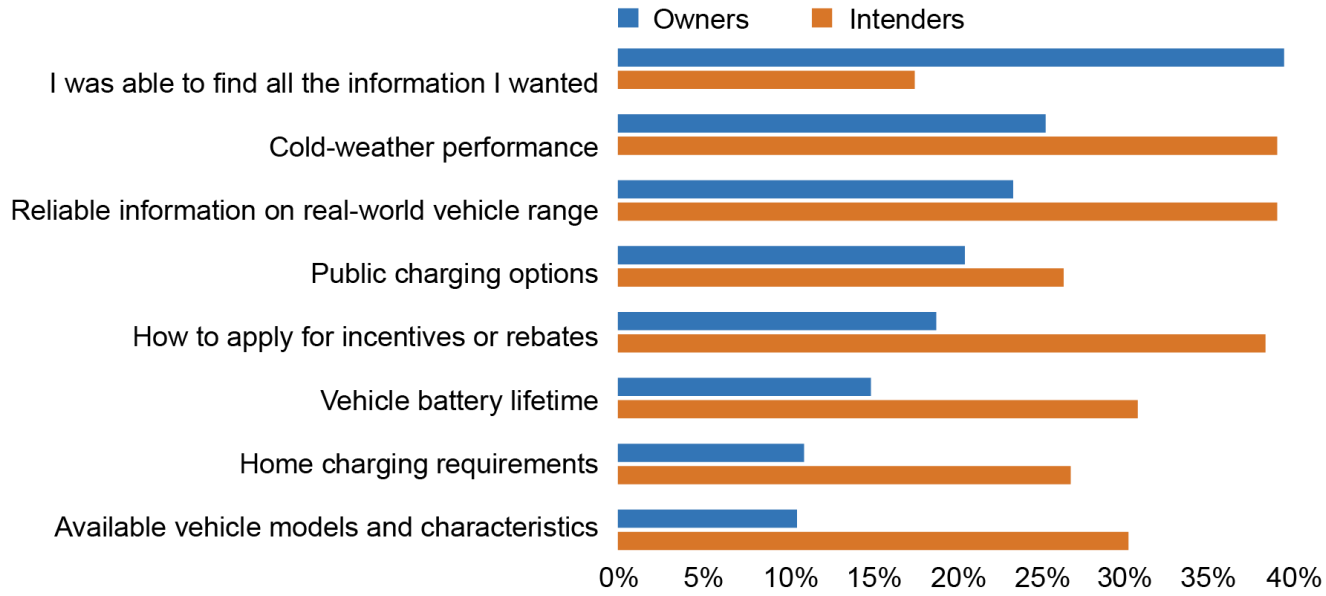


These findings provide insight into the top values and characteristics that push EV adoption forward. When formulating education and outreach campaigns, It is vital to keep these key messages at the forefront. While it is important to focus on the benefits and drivers, it is equally crucial to identify the gaps or opportunities for improvement in information sharing, based on real-world feedback. Figure 41 compares the percentage proportion of EV owners to "Intenders" (e.g., prospective EV motorists) facing challenges in finding the information they need to understand or complete a potential EV purchase. The research shows that EV Intenders face significantly more barriers to accessing the information they need, whereas EV owners have built up an incumbent level of understanding of the resources available at their disposal. Some of these information gaps include the following:

- Reliable information on real-world vehicle range
- Public charging options
- How to apply for incentives or rebates
- Available vehicle models and characteristics

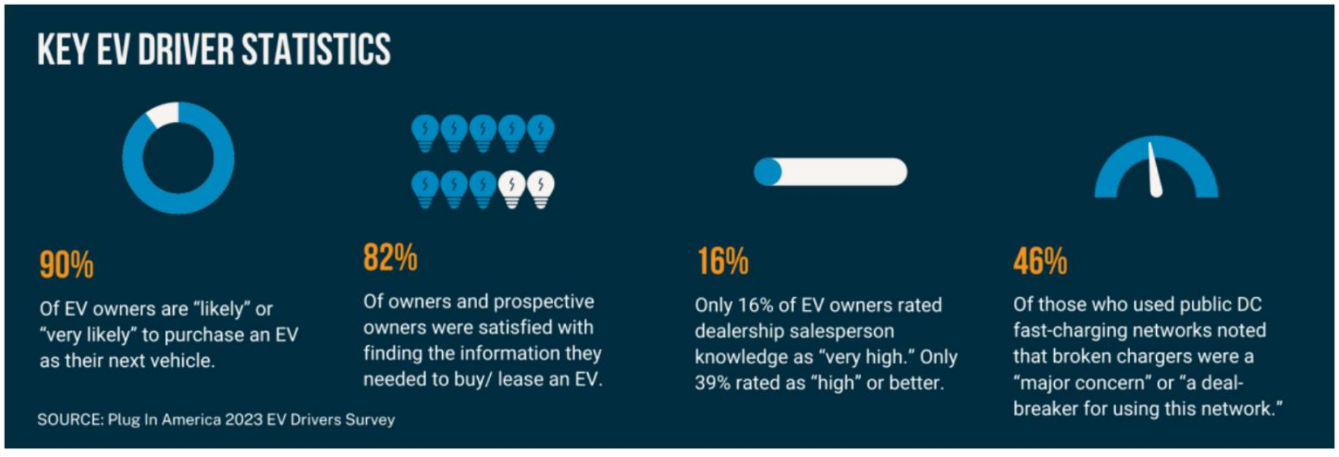
[101] 2023-EV-Survey-Final.pdf (pluginamerica.org).
[102] 2023-EV-Survey-Final.pdf (pluginamerica.org).

Figure 41. Information Gaps Faced by EV Owners and Prospective EV Buyers[103]



Understanding both the major reasons that consumers have already chosen to transition to EVs and the information gaps that remain to be filled in order to bring prospective buyers into the fold provides a solid foundation for key messaging points. Overall, already converted EV motorists are more likely to purchase or lease an EV as their next vehicle because they have firsthand experience with the benefits of EV ownership. Despite this, just 82% of survey respondents felt that they could find sufficient information in order to buy or lease an EV. Furthermore, only 16% of EV owners reported their local dealership salespeople as being very knowledgeable about EVs. Finally, 46% of EV motorists who have used public DCFC networks reported significant concerns about broken chargers (Figure 42).

Figure 42. Plug In America 2023 EV Driver Survey Feedback[104]



[103] 2023-EV-Survey-Final.pdf (pluginamerica.org).
[104] 2023-EV-Survey-Final.pdf (pluginamerica.org).

Overall, consumers are receptive to making an EV their next vehicle purchase but are still building confidence in the level of education or awareness of the technology and their ability to find the information that they need. Many individuals value environmentalism and sustainability when selecting their vehicle of choice but need to be aware of the available incentive programs, how to apply, and where they can charge up safely and reliably. It should be noted that certain groups face additional hurdles when considering an EV as their next vehicle. These may come in the form of language barriers, low income and/or credit, lack of local charging options, low access to smartphones and/or digital information, and fewer EV-centric programs available in their neighborhood. These factors can create additional layers that outreach teams should consider when creating a custom approach for each audience.

11.2. EV and EVSE Resources

Prospective EV buyers need extra support when it comes to understanding market availability and the options that will meet their needs. Various incentive programs and EV buyer resources are available at the federal, state, and local levels to help make EVs a more economical and attractive option. Different agencies and advocacy groups continue to compile resources to disseminate information across wider audiences, such as USDOE's Alternative Fuels Data Center (AFDC),[105] with the following resources:

- Overview of EV technology[106]
- Vehicle Cost Calculator[107]
- Federal laws and incentives for EVs[108]
- California laws and incentives specific to Riverside County[109]
- Alternative Fueling Station Locator[110]

Additionally, Consumer Reports (CR) offers ratings on various hybrid and EV models and may help EV buyers learn more about available EVs that fit their driving patterns.[111] CR also offers an Electric Vehicle Savings Finder to explore local and federal incentives and tax rebates by ZIP Code and model.[112] Technology-agnostic EV advocacy groups, such as GoElectricDrive[113] and Plug In America,[114] also offer education, advocacy, and research to help guide consumers on their journey to electrification. To foster a deeper understanding among city residents about the future prospects of public EV infrastructure, it is essential that the city communicates its initiatives aimed at constructing an extensive EV charging network. This communication process not only involves sharing information about prospective charger locations but also encourages diverse involvement and solicits feedback. The Public Outreach and Engagement Plan that the city has developed as part of this project provides a roadmap for how the city can keep its residents informed and engaged in these initiatives. Examples of EVSE messaging are shown in Table 17.

[105] Alternative Fuels Data Center.
[106] Alternative Fuels Data Center: Electric Vehicles (energy.gov).
[107] Alternative Fuels Data Center: Vehicle Cost Calculator (energy.gov).
[108] Alternative Fuels Data Center: Federal Laws and Incentives (energy.gov).
[109] Alternative Fuels Data Center: California Laws and Incentives (energy.gov).
[110] Alternative Fuels Data Center: Alternative Fueling Station Locator (energy.gov).
[111] https://www.consumerreports.org/cars/hybrids-evs/.
[112] EV Tax Credits, Rebates, & Savings, Consumer Reports.
[113] The GoElectricDrive Foundation, Electric Drive Transportation Association.
[114] Learn, Plug In America.

Table 17. Key Messages on the Benefits of EVSE Deployment

Message	Resource
EV infrastructure is an amenity that can help spur economic growth. EVSE can help owners of **multi-unit dwellings attract new residents** and can help restaurants, retail shops, and other businesses attract new customers.	Estimating the Economic Impact of Electric Vehicle Charging Stations, Argonne National Laboratory (2022) Electric Vehicle Charging for Multifamily Housing, AFDC (2022)
Widespread EVSE deployment will help make EV ownership more **accessible to low-income residents and those living in multi-unit dwellings**. These residents may not be able to charge at home or in their buildings because of a lack of EVSE in their parking garage or the use of off-street parking.	Equity Considerations in Planning, USDOT (2022)
Widespread deployment of EVSE helps make charging stations more ubiquitous, **reducing range anxiety** and encouraging and enabling the adoption and use of EVs.	Implementation Challenges and Evolving Solutions for Rural Communities, USDOT (2022)
With zero tailpipe emissions**, EVs have positive impacts on air quality** and thus yield health benefits. EV adoption can help reduce the levels of nitrogen oxides, volatile organic compounds, fine particle pollution, and sulfur dioxide, which are pollutants that can have harmful effects on lung and heart health.	Zeroing in on Healthy Air, American Lung Association (2022)
EVs help reduce GHG emissions with lower carbon dioxide emissions compared with other vehicles. As the grid gets cleaner through higher adoption of renewable electricity, the carbon footprint of EVs also declines.	Emissions from Electric Vehicles, AFDC (2022)

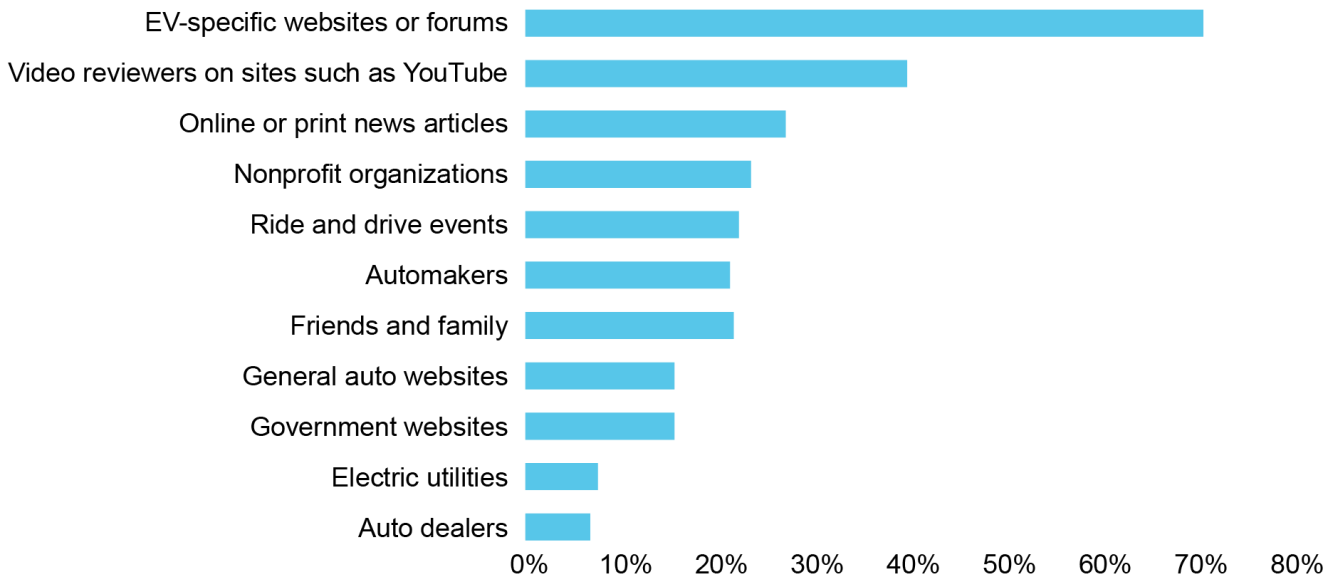
11.3. Channels and Tactics for EVSE Education and Outreach

Education and outreach should be conducted for all relevant and necessary audiences. Importantly, key objectives, messages, and tactics will vary as the audiences change. The following is a list of audiences to consider when pursuing education and outreach related to EVSE deployment:

- Residents, distinguishing between Renters and Homeowners
- Multifamily Housing Stakeholders
- Homeowners' Associations
- Building Owners/Managers
- Building Developers
- Business Owners
- Car Dealerships
- Sports and Entertainment Venue Owners
- Public and Private Vehicle Fleet Owners or Operators
- Community-Based Organizations representing low-income residents, seniors, DACs, rural communities, and other underserved groups
- Tourist Destinations
- Schools
- Utilities
- Environmental and Sustainability Groups
- Local and Regional Government Agencies and Offices

Depending on the audience type and demographics, they may have a preference for how they access and consume their news and information. This may include a combination of approaches to create ample touchpoints for a particular audience. Figure 43 displays the top information sources for EV owners, based on usefulness and trustworthiness.

Figure 43. Most Useful and Trustworthy Information Sources, by Percentage of EV Owners



While this information source mix is generally applicable to EV owners, it may not be the case for prospective EV motorists, especially those in DACs. In these cases, it may be necessary to implement a variety of approaches to determine the most effective communication channel(s). A variety of channels and tactics exist to conduct education and outreach efforts, including the following:

- Websites, including those belonging to both government agencies and utilities
- Social media
- Direct training and technical assistance
- Webinars and workshops
- Education and outreach materials, such as fact sheets, case studies, checklists, and frequently asked questions
- Direct engagement at existing meetings (e.g., community meetings, board meetings)
- The use of influencers or trusted community advocates to educate and share resources
- Physical showcases
- Recognition programs
- EV “ride-and-drive” events and EVSE demonstrations

A comprehensive and thoughtful outreach campaign will incorporate many of the elements outlined in this section. Employing creative strategies and data to tailor messaging and communication channels to specific audiences will be key to creating a positive impact on EV adoption and sentiment.

12. Outlook and Next Steps

The City of Moreno Valley's EV Charging Infrastructure Master Plan stands as a comprehensive strategy, setting the stage for the city to effectively leverage federal, state, and regional funding programs aimed at expanding the public EV charging network. This Master Plan presents a detailed blueprint for the development of EV infrastructure within the next 5 to 10 years, offering guidance on strategic investments and the placement of infrastructure to support the expected rise in EV adoption. By adhering to the insights and recommendations outlined in the Master Plan, Moreno Valley is positioning itself to create a sustainable, efficient, and accessible charging network. This network will not only support the city's environmental objectives but also cater to the evolving transportation needs of its residents. The Master Plan's thorough siting analysis, coupled with extensive public outreach and stakeholder engagement, ensures that Moreno Valley is well prepared for the deployment of EV charging infrastructure, aligning with the city's goals of capturing and utilizing available funding for public EV infrastructure development.

Moreover, Moreno Valley Utility can leverage this Master Plan to anticipate and prepare for the imminent influx of EVs in the city, ensuring that the electrical grid distribution system can accommodate the increased load demands. The Master Plan's EV projection and infrastructure demand analysis serve as invaluable resources for Moreno Valley Utility to forecast the necessary electrical capacity. Additionally, the siting analysis aids in identifying where, within the city, distribution system upgrades are imperative. In doing so, Moreno Valley Utility can not only ensure the grid's capability to support the growing number of EVs but also explore opportunities to enhance grid resilience through strategic EV integration. Beyond Moreno Valley Utility, the Master Plan holds the potential to catalyze partnerships with regional utility companies, aiming for wider grid optimization and the seamless integration of renewable energy sources. Such collaborations could pave the way for groundbreaking initiatives, including the utilization of EV batteries as a resource for grid storage and participation in demand response programs.

Furthermore, this Master Plan offers Moreno Valley's residents and businesses a clear vision of the city's commitment to the deployment of EV charging infrastructure. It provides a blueprint that outlines how the city is preparing for a future with widespread EV adoption. This foresight allows businesses and individuals to make informed decisions regarding EV investments, knowing that the necessary charging infrastructure will be developed in alignment with the Master Plan. Consequently, the Master Plan not only facilitates the city's transition toward sustainable transportation options but also empowers its community by ensuring readiness for the adoption of EVs, thereby contributing to Moreno Valley's overall environmental and transportation goals. Also, by demonstrating a strong commitment to sustainable infrastructure, the City of Moreno Valley's EV Charging Infrastructure Master Plan positions the city as an appealing destination for environmentally responsible businesses. Companies seeking to minimize their carbon footprint will find Moreno Valley to be an attractive option, assured by the knowledge that the city not only supports the adoption of EVs but also plans to deploy the necessary infrastructure to accommodate this shift. This forward-thinking approach signals to potential businesses that Moreno Valley is aligned with green initiatives, making it a favorable environment for organizations that value sustainability and environmental stewardship.

The Master Plan also presents a unique opportunity to be woven into broader smart city strategies, connecting advanced technology to enhance urban infrastructure comprehensively. It encompasses the utilization of data analytics to refine the siting of charging stations, ensuring that they meet the actual demand and accessibility requirements of the city's residents and visitors. Furthermore, the integration of EV charging infrastructure with other smart city innovations, such as intelligent transportation systems and the

incorporation of renewable energy sources, exemplifies a holistic approach to urban development. This synergy between EV infrastructure and smart city technologies not only optimizes the efficiency and sustainability of the urban environment but also sets a benchmark for future-focused urban planning, showcasing Moreno Valley's commitment to creating a connected, resilient, and sustainable city.

Appendix A: Funding and Financing Programs

Funding Programs

Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program)

The CFI Program was created by the Bipartisan Infrastructure Law to support the deployment of public EV charging and create more equitable access to refueling stations. The CFI Program offers two funding categories: Community Charging and Fueling Grants and the Alternative Fuel Corridor Grants. While the Community Charging and Fueling Grants category focuses on expanding EV charging in local neighborhoods, the Alternative Fuel Corridor Grants fund stations along major national highways. Community awards range from $500,000 to $15 million and Corridor awards start at $1 million. Grant recipients must provide at least 20% of the total project cost as a matching share. Eligible infrastructure for the CFI Program includes EV charging, hydrogen, natural gas, and propane fueling stations. Funds may be used for the acquisition and installation of infrastructure, as well as educational and community engagement activities to promote ZEVs in the region. Units of local governments, such as the City of Moreno Valley, are among the list of eligible applicants. The funding for each category is released in phases through Notice of Funding Opportunity (NOFO) postings on the Federal Highway Administration (FHWA) website. The application, to be submitted to Grants.gov, must include (1) the completed standard forms listed in the NOFO, and (2) a narrative document that addresses the following elements: project narrative, budget information, project merit criteria, project readiness, and environmental risk. Additional details and frequently asked questions regarding the contents of the application can be found on the CFI Program webpage.

Inflation Reduction Act (IRA)

The IRA contains several provisions aimed at increasing the number of clean fuels and vehicles. The IRA offers refundable income tax credits for qualifying EVs and extends tax credits for alternative fuel refueling property through 2032. The most notable is the Alternative Fuel Vehicle Refueling Property Credit, which is a federal income tax credit for businesses and individuals to install alternative fueling infrastructure. As of January 1, 2023, fueling equipment for natural gas, propane, hydrogen, electricity, E85, or diesel fuel blends containing a minimum of 20% biodiesel is eligible for a tax credit of 30% of the cost or 6% in the case of property subject to depreciation, not to exceed $100,000. Note that permitting and inspection fees are not included as part of the covered expenses.

Eligible fueling equipment must be installed in locations that meet one of the following census tract requirements:

- The census tract is not an urban area,
- The poverty rate in a population census tract is at least 20%, or
- The median family income in a metropolitan and non-metropolitan area census tract is less than 80% of the state median family income level.

Eligible projects also must meet workforce requirements, such as apprenticeships and prevailing wages. To apply for the credit, the Internal Revenue Service requires that Form 8911 be completed and filed with a federal income tax return.

Energy Infrastructure Incentives for Zero-Emission (EnergIIZE) Commerical Vehicles

The CEC Clean Transportation Program provides funding to support the development and deployment of clean transportation technologies in California, including EVs and EV charging infrastructure. The program offers funding for a wide range of clean transportation projects, including the following:

- Development and deployment of EVs and charging infrastructure
- Fleet electrification and charging infrastructure for medium- and heavy-duty vehicles
- Workplace and public charging infrastructure
- Development of hydrogen fueling infrastructure

The CEC Clean Transportation Program also includes several rebate and incentive programs to support the purchase of EVs, such as the Electric Vehicle Charging Equipment Rebate Program, which provides rebates for the purchase and installation of EV charging equipment. To apply for funding through the CEC Clean Transportation Program, eligible entities must submit a proposal through a competitive solicitation process that occurs periodically, and follow the guidelines and requirements outlined in the solicitation. CEC evaluates proposals based on specific criteria and selects the most promising projects for funding.

California Electric Vehicle Infrastructure Project (CALeVIP)

CALeVIP was introduced by CEC in December 2017 to provide incentives for EV charging infrastructure. The project simplifies the funding process and accelerates charger deployment, with each project targeting specific regions throughout the state that have low rates of infrastructure installation. Through 2022, CEC allocated $200 million for charger rebates through CALeVIP, and 13 regional incentive projects covering 36 counties have been launched. Funding amounts also are available for DACs and multifamily complexes, and CEC staff works with local governments to leverage other funding opportunities to increase the number of chargers in focused locations. To apply for CALeVIP, the applicant needs to follow these steps:

1. **Determine eligibility:** CALeVIP provides incentives for the installation of EV chargers in California. Eligible applicants include public agencies, nonprofit organizations, businesses, and individuals who own or lease property in California where EV chargers will be installed.
2. **Choose the project type:** CALeVIP offers two types of projects: regional incentive projects and equity incentive projects. Regional incentive projects provide incentives for EV chargers in specific regions throughout California, while equity incentive projects provide higher incentives for EV chargers installed in DACs and at multi-unit dwellings.
3. **Choose the charger type:** CALeVIP provides incentives for Level 2 and DCFC chargers.
4. **Apply for incentives:** Once the applicant has determined their eligibility and chosen their project and charger type, they can apply for incentives through the CALeVIP website (link: https://calevip.org/). The application process involves submitting an online application, providing project details and specifications, and signing a rebate agreement.

Eligibility requirements for CALeVIP vary, depending on the type of project and the applicant. However, generally, to be eligible for incentives, applicants must meet the following requirements:

- **Applicant Requirement:** To be eligible for any CALeVIP rebate, the applicant must be a site owner or authorized agent, a business, a nonprofit organization, a California Native American tribe, or public/government entity based in California or operating as a California-based affiliate. Some projects require a valid California business license, except for public agencies or joint powers authority agencies.
- **Site Requirements:** To qualify for rebates for EVCS in California, the properties must be located in the state and comply with federal, state, and municipal laws. DCFC sites must be publicly available 24/7 and located in specific areas, such as airports, gas stations, and hospitals. Level 2 charging sites must

be located at eligible commercial sites, workplaces, multi-unit dwellings, public facilities, or curbside charging sites. Some eligibility criteria only apply to certain rebate programs, and more information can be found on individual project pages.

- **Disadvantaged Community (DAC) and Low-Income Community (LIC) Requirements:** Some CALeVIP rebates are only available for EV charger installation sites located in disadvantaged or low-income communities that are identified by the CalEnviroScreen tool, and census tracts that are at or below 80% of the statewide median income. These sites may qualify for higher rebate amounts from some projects. For CALeVIP 2.0, a DAC is defined as an area that falls into one of the three categories mentioned, while an LIC is defined as census tracts that are below 80% of the statewide median income or at or below the threshold designated as low income by the Department of Housing and Community Development's (HCD) Revised 2021 State Income Limits. For CALeVIP 1.0, a DAC is defined as any census tract that scores in the top 50% of CalEnviroScreen 3.0, and an LIC is defined as census tracts that are either below 80% of the statewide median income or at or below the threshold designated as low income by HCD's 2016 State Income Limits.
- **Installation Requirements:** According to California Public Utilities Code 740.20, EV chargers must be installed by Electric Vehicle Infrastructure Training Program (EVITP) certified electricians for all CALeVIP projects except for Central Coast, Northern California, San Joaquin Valley, and Sonoma Coast projects. If the charging installation supports a port supplying 25 kW or more, at least 25% of the electricians working on the crew must be EVITP certified. One crew member may be both the contractor and the EVITP-certified electrician. To find an EVITP-certified electrician or other EV charging provider, visit CALeVIP Connects.
- **Equipment Requirements:** To be eligible for a CALeVIP rebate, DCFC equipment must be new, have at least an SAE CCS connector, be networked, capable of 50 kW or greater, use an open standard protocol, be approved by a Nationally Recognized Testing Laboratory Program, and accept some form of credit card and multiple forms of payment if payment is required. For Level 2 charging equipment, it must be new, ENERGY STAR® certified, networked, capable of 6.2 kW or greater per connector, use an open standard protocol, have a minimum 2-year networking agreement, and accept some form of credit card and multiple forms of payment if payment is required.

Eligible costs for CALeVIP projects include solar EV charging systems, demand management equipment, installation costs, network agreements, and other related expenses. The costs, such as the permits required by authorities having jurisdiction, are not eligible for reimbursement, and certain projects may not cover upgrades of existing ADA noncompliance.

Specific to Southern California, the Southern California Level 2 Incentive Project aims to reduce air pollution and GHG emissions in the Los Angeles, Orange, Riverside, and San Bernardino counties of California. The program offers funding and incentives to encourage the deployment of clean transportation technologies, especially charging infrastructure. The incentives can be combined with other federal, state, or local agency incentives; however, applicants are ineligible if they have already received incentives funded by investor-owned utilities such as the Charge Ready Program (Southern California Edison), EV Charge (Pacific Gas & Electric Company), or Power Your Drive (San Diego Gas & Electric). Non-residential properties, such as commercial, workplace, or light-duty fleet sites, can apply for Level 2 charger projects that are private access. The incentive for Level 2 chargers is up to $3,500 per connector, or 75% of project costs, whichever is less. Additionally, entities with sites located in DACs are eligible for an additional $500 per connector, for a total of $4,000 per connector. In Riverside County, entities can apply for up to 20 Level 2 charger incentives, provided that funding is available. The program also provides rebates for other equipment, including transformers, electric panels, demand management equipment, select distributed energy resources, and installation costs (labor and materials). Note that the Southern

California Level 2 Incentive Project stopped accepting new applications on July 31, 2023 but anticipates that more rebates will be available through CALeVIP.

Low Carbon Fuel Standard (LCFS)

The LCFS is a regulatory program that incentivizes fuel carbon intensity reduction and non-residential ZEV infrastructure. In particular, fleets that own Level 2 and DCFC chargers are eligible to apply for the generation of LCFS credits because electricity is a low-carbon transportation fuel. The number of credits that a fleet generates depends on the amount and carbon intensity of the electricity dispensed to vehicles. By using renewable electricity for charging or purchasing Renewable Energy Certificates, fleets can increase their LCFS revenue streams, potentially by up to 20%.

Participants in the LCFS program can manage fuel and credit transactions through the LCFS Reporting Tool and Credit Bank & Transfer System (LRT-CBTS), which is part of CARB's database management system for all LCFS processes. Credits earned through the LCFS program may be sold by a registered broker, and the value of the credits are generally required to be reinvested in EV infrastructure or services. This could include services such as EV purchases and maintenance, charging infrastructure purchases and maintenance, electricity costs, and administrative fees. The value of the LCFS credits for any one EV charging site is influenced by many factors, including, but not limited to, the number of EV chargers in operation, the type of EV chargers installed, the amount of fuel dispensed, and the value of the credit when sold. One limitation of LCFS credits is the fluctuation in their credit price, which can lower EV and EV charging infrastructure deployment potential. For example, while in 2020 the LCFS credits were traded at $200 per credit, the credit prices have dropped to ~$80 per credit in the first quarter of 2023.

South Coast Air Quality Management District (AQMD) Residential EV Charging Incentive Program

The South Coast AQMD and the Mobile Source Air Pollution Reduction Review Committee have established a residential EV charging incentive program to offset Level 2 charger hardware costs. This program is available to residents within the South Coast AQMD's four-county jurisdiction, including Riverside County. The program will provide an incentive to buy down the cost of residential chargers, which typically range from $400 to $800. The program is administered on a first-come, first-served basis and provides up to a $250 rebate or the cost paid for the charger, whichever is lower. Low-income residents can qualify for a total rebate of $500 or the cost paid for the charger, whichever is lower.

Program Requirements

- Charger would need to be in place for a minimum of 3 years and would be considered a permanent, not temporary, installation.
- Only hard-wired installations (no 240V outlets) will qualify for a rebate; the applicant would need to obtain any required city or county electrical permits for installation.
- The charger will need to be a new residential Level 2 (240V) charger that is UL listed or certified by an equivalent nationally recognized laboratory.

Southern California Edison (SCE) Charge Ready Program

The SCE Charge Ready Program offers cost-effective electrical upgrades for businesses and public sector stakeholders interested in installing charging equipment. Eligible installation sites include commercial, multifamily, and public sector properties. The Charge Ready Program features four program options: turnkey installation, charging infrastructure and rebate, new construction rebate, and small site rebate. These programs offer different levels of authority over the meter and EV charging infrastructure to fit the needs of property developers and owners. SCE can design, construct, and install the necessary

infrastructure on both the utility and customer sides of the meter, including electrical design; construction work; and new or upgraded transformers, electrical panels, conduit, and trenching. Alternatively, the rebates can be offered to offset customer-side meter distribution infrastructure upgrades and purchase/installation of qualified equipment. The Charge Ready Program application process can be initiated on SCE's Charge Ready Program page.

Public-Private Partnerships (PPPs)

PPPs can be used to build charging infrastructure by involving a private partner who finances initial capital costs with private debt and equity in exchange for returns on investment over time. This involves a partnership between a government entity and a private sector company, where the latter takes the lead in designing, financing, constructing, and operating the charging infrastructure. The government entity provides funding, land, and other resources, while the private partner is responsible for financing and operating the charging infrastructure. This model allows for the sharing of risks and benefits and can lead to the faster deployment of charging infrastructure, as well as increased innovation.

There are several PPP models that are available for charging infrastructure deployment. Some of the common PPP models include the following:

- **Build-Operate-Transfer (BOT) Model:** Under this model, a private partner is responsible for the design, construction, and operations of charging infrastructure, and transfers ownership to the government or public entity after a specified period of time.
- **Design-Build-Finance-Operate-Maintain (DBFOM) Model:** Similar to the BOT model, a private partner takes responsibility for the design, construction, financing, operations, and maintenance of charging infrastructure; however, the private partner operates it for a specified period of time before transferring ownership back to the government or public entity.
- **Concession Model:** This model involves the government granting a private partner the right to build and operate charging infrastructure within a specified area for a specified period of time in exchange for payment or a share of the revenue.
- **Joint Venture Model:** This model involves the formation of a joint venture between the public and private sectors, where both partners collaborate to develop and operate charging infrastructure.

The choice of PPP model depends on the specific goals and needs of the government or public entity and the private partner. The model selected should allow for efficient and effective deployment of charging infrastructure while ensuring that the public interest is protected.

Financing Options Through the California Infrastructure and Economic Development Bank (IBank)

IBank is a state agency that has broad authority to issue tax-exempt and taxable revenue bonds, provide financing to public agencies, provide credit enhancements, acquire or lease facilities, and leverage state and federal funds. IBank's current programs include the Infrastructure State Revolving Fund (ISRF) Program and partnership with Climate Tech Finance. The ISRF Program offers low-cost financing to state and local government entities and nonprofit organizations sponsored by a government entity for a wide variety of infrastructure and economic development projects. In partnership with Climate Tech Finance, this program provides loan guarantees to de-risk the lending process for banks and open new sources of working capital for climate tech entrepreneurs. These financing options provide small- and mid-sized governments and businesses with low-cost and direct financing for EVs and charging infrastructure through different loan and repayment structures. Generally speaking, IBank interest rates are set based on a combination of an interest rate benchmark and interest rate adjustments, which are dependent upon the repayment source. The interest rate benchmark will be based on Thompson's Municipal Market Data (MMD) Index and use published letter category ratings for the pledged revenue stream to determine the

base (market price) spread from the MMD AAA GO Scale applicable to the borrower. Interest rate adjustments will cause the interest rate on financing to generally be below the interest rate benchmark. The specifics of these programs are discussed below.

Infrastructure State Revolving Fund (ISRF) Program

The ISRF Program most notably finances economic development and public infrastructure projects; however, private developments, such as ZEV fleets and charging stations, qualify as well. ISRF financing is available in amounts ranging from $1 million to $65 million, with loan terms for the useful life of the project—up to a maximum of 30 years. The origination fee for processing an ISRF loan is the greater of $10,000 or 1% of the original loan amount. Applications for ISRF are continuously accepted and can be filled out in detail after initial consultation with IBank to determine whether the project meets creditworthiness and underwriting criteria. Applications approved by the IBank board can have funds issued within 45 to 90 days, and different financing repayment solutions, such as revenue-producing enterprise systems or property/sales/special taxes, can be used to repay ISRF financing.

Climate Tech Finance

The Climate Tech Finance partnership is meant to accelerate the development and adoption of technologies that reduce GHG emissions across California. The program is administered by the Bay Area Air Quality Management District (BAAQMD) in partnership with IBank but is accessible to entities statewide. BAAQMD recommends contacting their office via email (email: ctf@baaqmd.gov) for proposed projects. Through the IBank and Climate Tech Finance partnership, applications for loans and loan guarantees are available for projects focusing on emission-reducing technologies. Climate Tech Finance offers loan guarantees of up to $5 million on loans of up to $20 million, with up to a 7-year term (the loan term can be longer). For the loan guarantee, 80% of the loan amount is backed by a leveraged trust fund held by the State of California. A single loan guarantee is then issued by the State of California to cover the requisite amount. IBank provides loans for public entities ranging from $500,000 to $30 million, with up to 30-year terms.

Charging as a Service (ClaaS)

Charging-as-a-service (CaaS) is a business model for EV charging infrastructure where a third party provider installs, operates, and maintains charging stations on behalf of a host location, such as a shopping mall, hotel, or workplace. The host location provides the physical space and the electricity supply, while the CaaS provider takes care of the equipment, software, and connectivity required for charging EVs.

CaaS for EV chargers offers a range of charging solutions and services that can be tailored to the needs of businesses, municipalities, and property managers. This type of service allows them to provide charging infrastructure to their customers without having to invest in the equipment themselves, and also allows them to manage the installation, maintenance, and billing of the service, which can make the adoption of EVs more accessible and convenient for the end users. Some established companies that provide CaaS for EV chargers include the following:

1. ChargePoint offers a variety of EV charging solutions, including CaaS for businesses, municipalities, and property managers. ChargePoint provides the charging stations and manages the installation, maintenance, and billing for the service.
2. EVgo is another provider of CaaS for EV chargers. The company offers a network of fast-charging stations for EV motorists and provides CaaS to businesses, municipalities, and property managers. EVgo also offers a mobile app for customers to locate and pay for charging services.

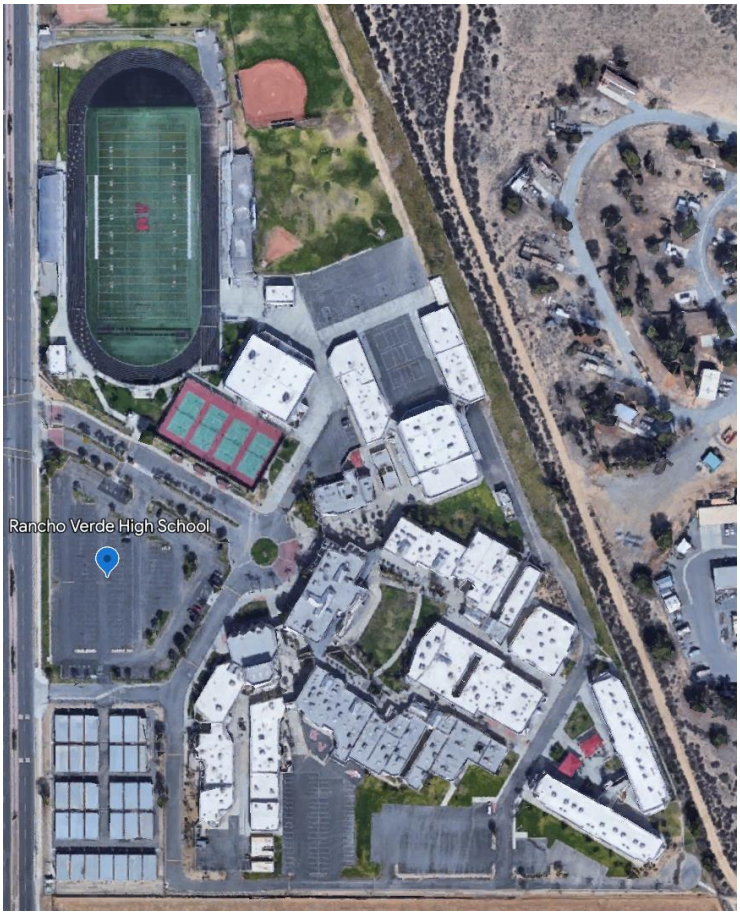
3. Blink Charging is a provider of EV charging equipment and services, including CaaS for businesses, municipalities, and property managers. The company provides the charging equipment and manages the installation, maintenance, and billing for the service.
4. Greenlots (now Shell Recharge Solutions) is an open-source network provider of EV charging infrastructure and services. They offer a variety of charging solutions, including CaaS for businesses, municipalities, and property managers. The company provides charging stations, manages the installation, maintenance, and billing, and also offers a mobile app for customers to locate and pay for charging services.
5. SemaConnect is another provider of EV charging infrastructure and services. The company offers a range of charging stations and manages the installation, maintenance, and billing for the service. They also provide a web-based network management system that allows property managers and fleet operators to manage and monitor EV charging on their premises.

Appendix B: Site Visit Information

1. Rancho Verde High School
    a. Site Score (with modifiers)
        i. Scenario 1 – 5
        ii. Scenario 2 – 5
        iii. Scenario 3 – 5
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	No
Hours of Possible Use	During school hours
City Land	No
Public Entity	Yes
City Council District	4

    c. Satellite Imagery



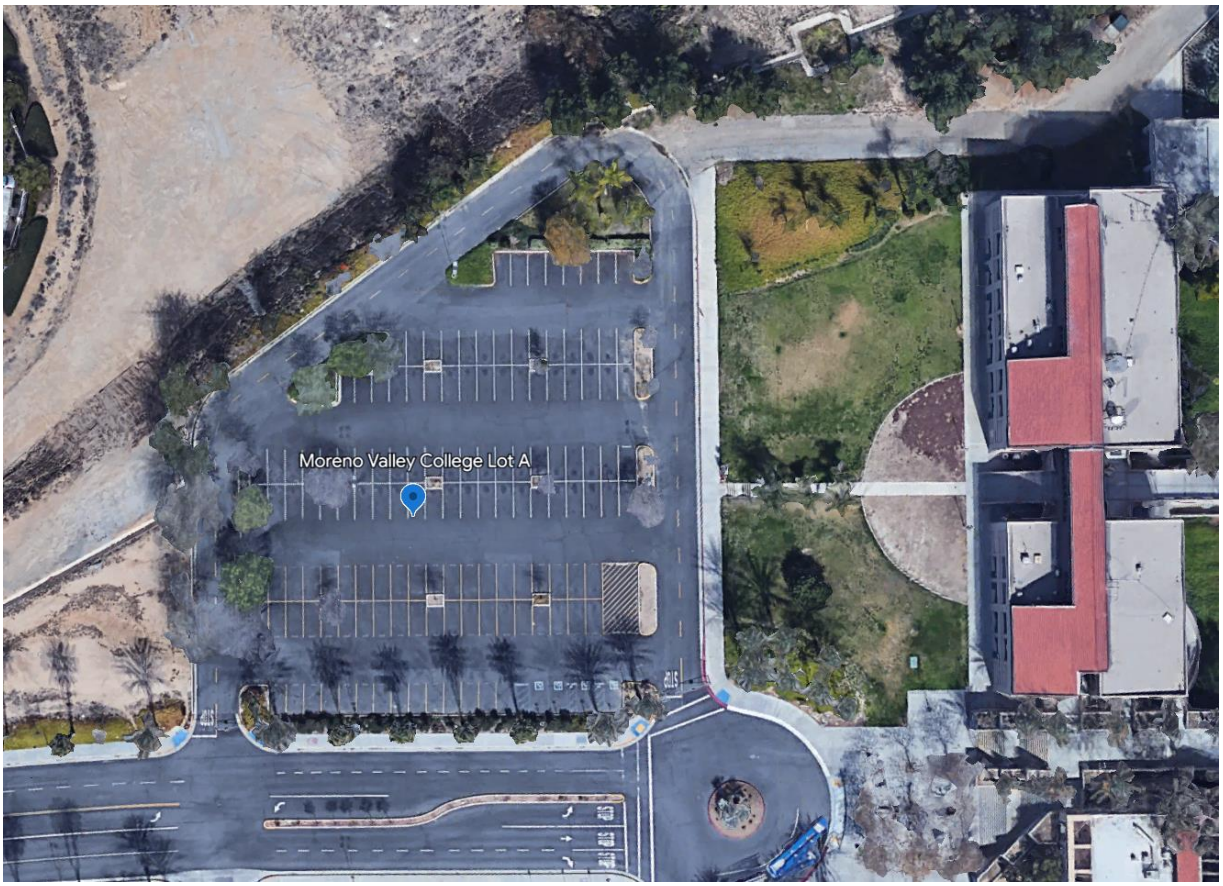
    d. Street Imagery

e. Street Address: 17750 Lasselle St., Moreno Valley, CA 92551

2. Moreno Valley College Lot A
    a. Site Score (with modifiers)
        i. Scenario 1 – 6
        ii. Scenario 2 – 6
        iii. Scenario 3 – 6
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes, but requires permit
Hours of Possible Use	24/7
City Land	No
Public Entity	Yes
City Council District	4

    c. Satellite Imagery



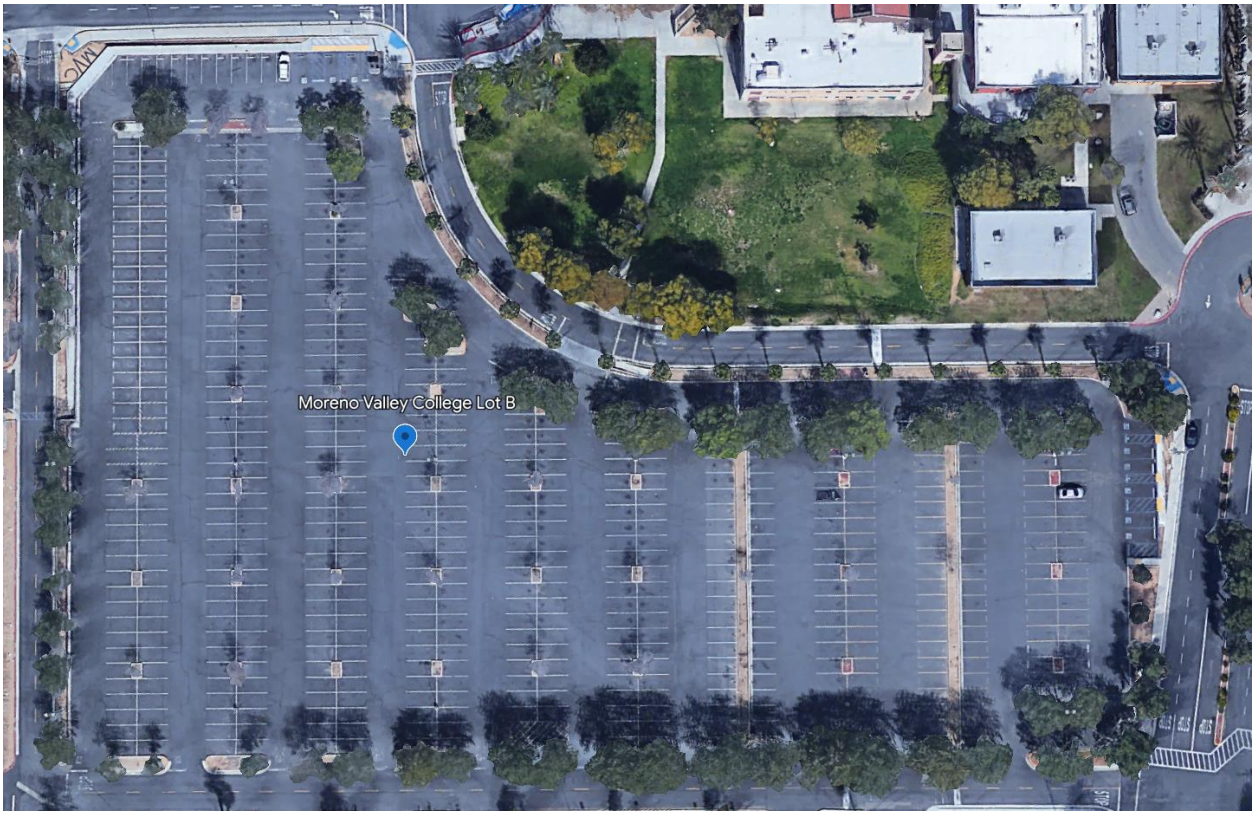
d. Street Imagery

e. Street Address: 16130 Lasselle St., Moreno Valley, CA 92551

3. Moreno Valley College Lot B
    a. Site Score (with modifiers)
        i. Scenario 1 – 6
        ii. Scenario 2 – 6
        iii. Scenario 3 – 6
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes, but requires permit
Hours of Possible Use	24/7
City Land	No
Public Entity	Yes
City Council District	4

    c. Satellite Imagery



d. Street Imagery

e. Street Address: 16130 Lasselle St., Moreno Valley, CA 92551

4. March Middle School
    a. Site Score (with modifiers)
        i. Scenario 1 – 5
        ii. Scenario 2 – 5
        iii. Scenario 3 – 5
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	No
Hours of Possible Use	During school hours, possibly on weekends
City Land	No
Public Entity	Yes
City Council District	4

    c. Satellite Imagery

d. Street Imagery

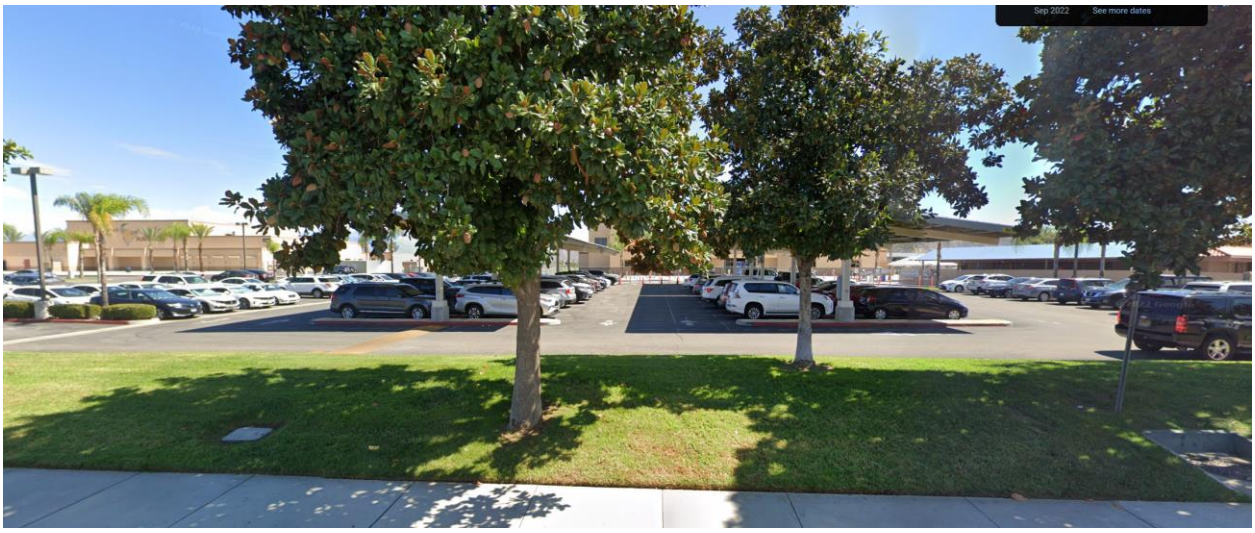
e. Street Address: 15800 Indian St., Moreno Valley, CA 92551

5. Rainbow Ridge Elementary School
    a. Site Score (with modifiers)
        i. Scenario 1 – 5
        ii. Scenario 2 – 5
        iii. Scenario 3 – 5
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	No
Hours of Possible Use	During school hours, possibly on weekends
City Land	No
Public Entity	Yes
City Council District	4

    c. Satellite Imagery

d. Street Imagery

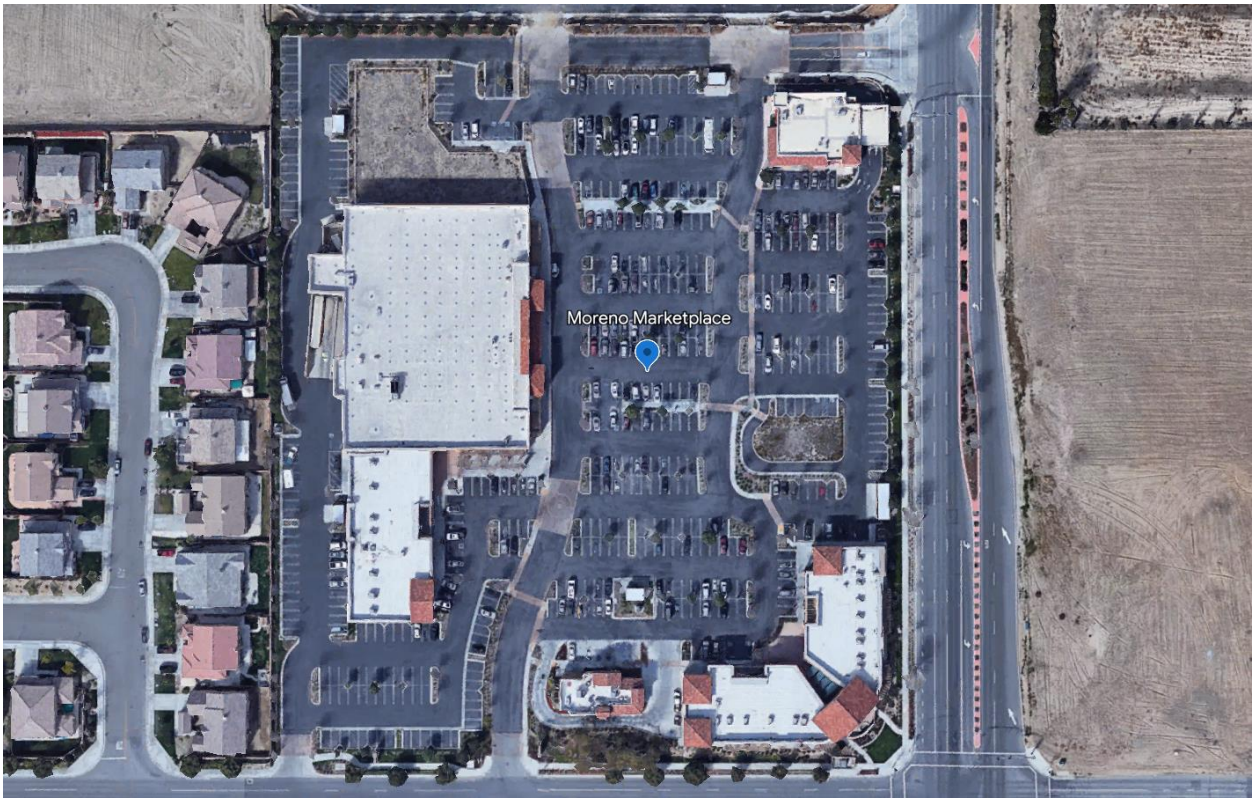


e. Street Address: 15950 Indian St., Moreno Valley, CA 92551

6. Moreno Marketplace
    a. Site Score (with modifiers)
        i. Scenario 1 – 5
        ii. Scenario 2 – 5
        iii. Scenario 3 – 5
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	3

    c. Satellite Imagery



d. Street Imagery

e. Street Address: 14435 Moreno Beach Dr., Moreno Valley, CA 92555

7. Sunnymead Towne Center
    a. Site Score (with modifiers)
        i. Scenario 1 – 2
        ii. Scenario 2 – 2
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	3

    c. Satellite Imagery

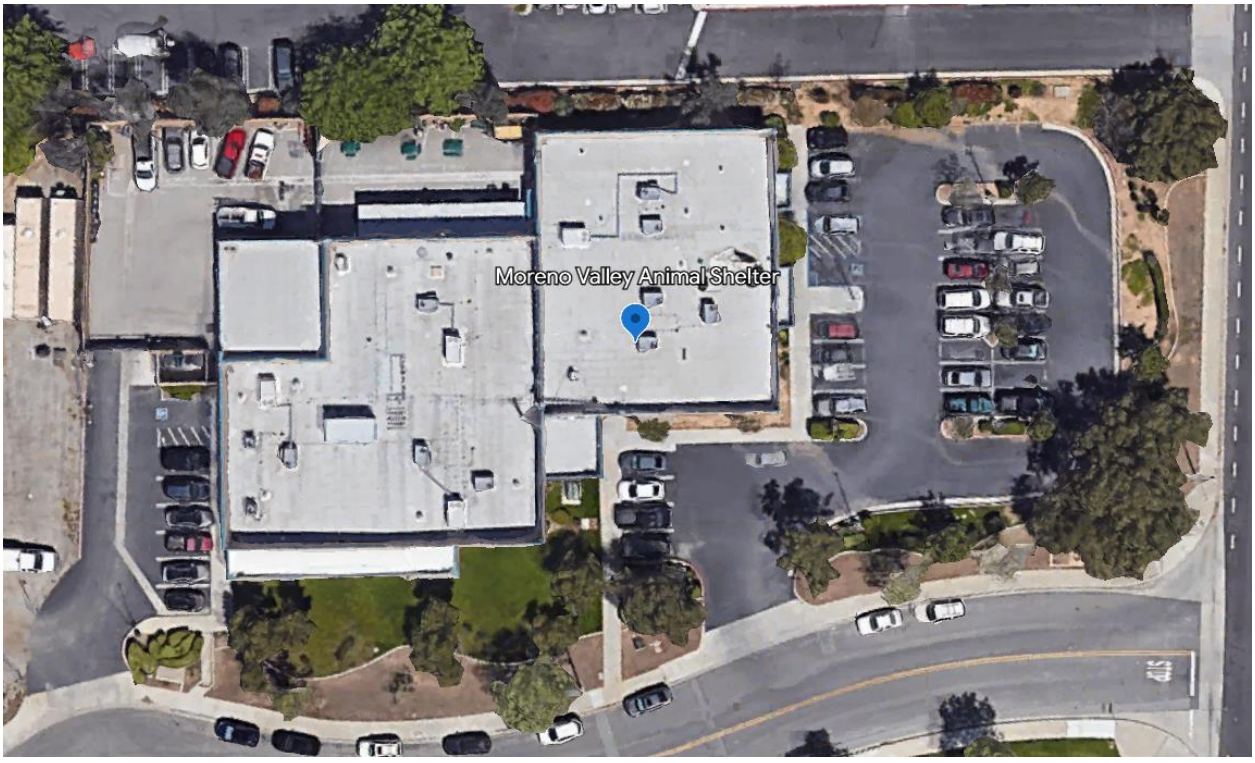
d. Street Imagery

e. Street Address: 24899 Alessandro Blvd., Moreno Valley, CA 92553

8. Moreno Valley Animal Shelter
    a. Site Score (with modifiers)
        i. Scenario 1 – 5
        ii. Scenario 2 – 5
        iii. Scenario 3 – 5
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	Yes
Public Entity	Yes
City Council District	1

    c. Satellite Imagery



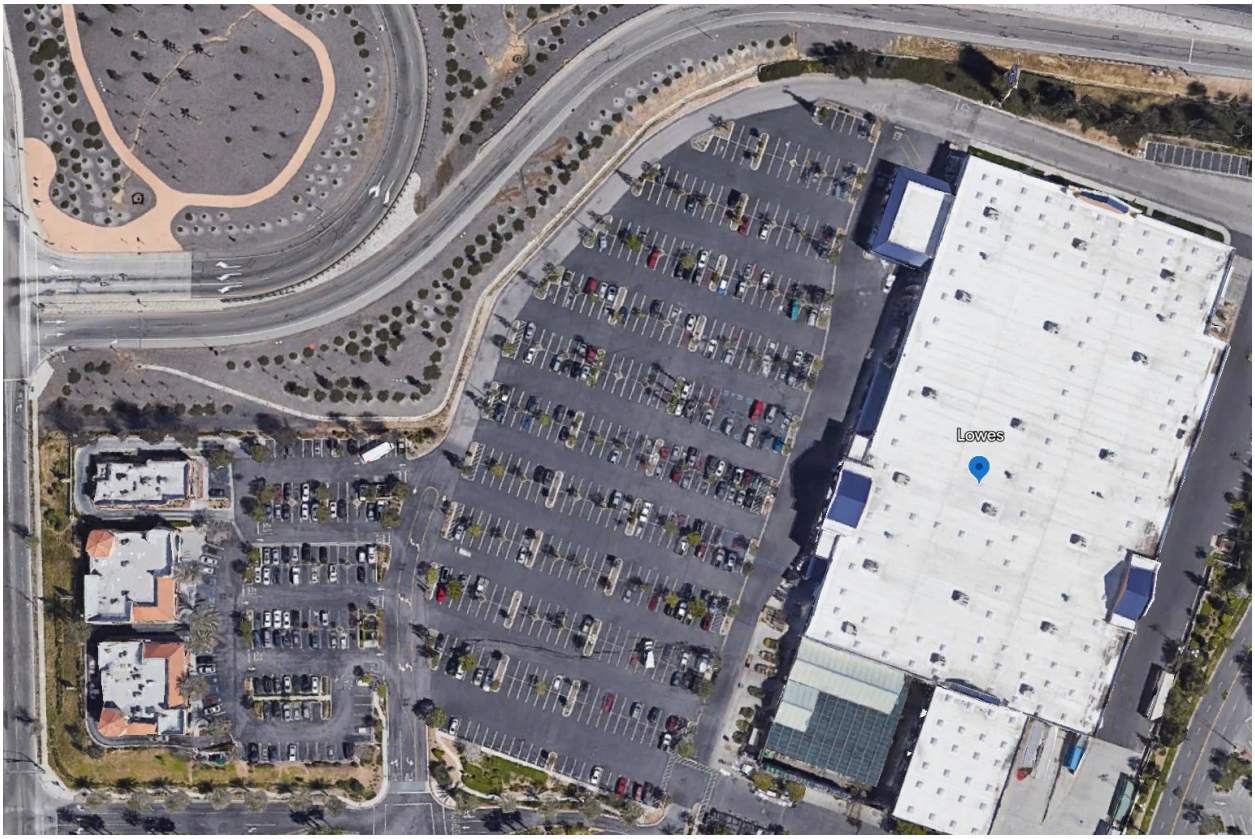
d. Street Imagery

e. Street Address: 14041 Elsworth St., Moreno Valley, CA 92553

9. TownGate Crossing
    a. Site Score (with modifiers)
        i. Scenario 1 – 7
        ii. Scenario 2 – 7
        iii. Scenario 3 – 7
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	1

    c. Satellite Imagery



d. Street Imagery

e. Street Address: 12400 Day St., Moreno Valley, CA 92553

10. TownGate Shopping Center
    a. Site Score (with modifiers)
        i. Scenario 1 – 7
        ii. Scenario 2 – 7
        iii. Scenario 3 – 7
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	1

    c. Satellite Imagery

    d. Street Imagery

e. Street Address: 12625 Frederick St., Moreno Valley, CA 92553

11. Home Depot (North Moreno Valley)
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	2

    c. Satellite Imagery

    d. Street Imagery

e. Street Address: 12255 Pigeon Pass Rd., Moreno Valley, CA 92557

12. Canyon Heights High School
    a. Site Score (with modifiers)
        i. Scenario 1 – 2
        ii. Scenario 2 – 2
        iii. Scenario 3 – 2
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	Yes
City Council District	2

    c. Satellite Imagery

    d. Street Imagery

e. Street Address: 23100 Cougar Canyon Rd., Moreno Valley, CA 92557

13. Morrison Park
    a. Site Score (with modifiers)
        i. Scenario 1 – 2
        ii. Scenario 2 – 2
        iii. Scenario 3 – 2
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	Yes
Public Entity	Yes
City Council District	1

    c. Satellite Imagery

d. Street Imagery

e. Street Address: 26667 Dracaea Ave., Moreno Valley, CA 92555

14. Lakeshore Village Marketplace
    a. Site Score (with modifiers)
        i. Scenario 1 – 2
        ii. Scenario 2 – 2
        iii. Scenario 3 – 2
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	Yes
Public Entity	Yes
City Council District	2

    c. Satellite Imagery

    d. Street Imagery

e. Street Address: 23575 Sunnymead Ranch Parkway, Moreno Valley, CA 92557

15. TS Marketplace
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario 3 – 2
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	2

    c. Satellite Imagery

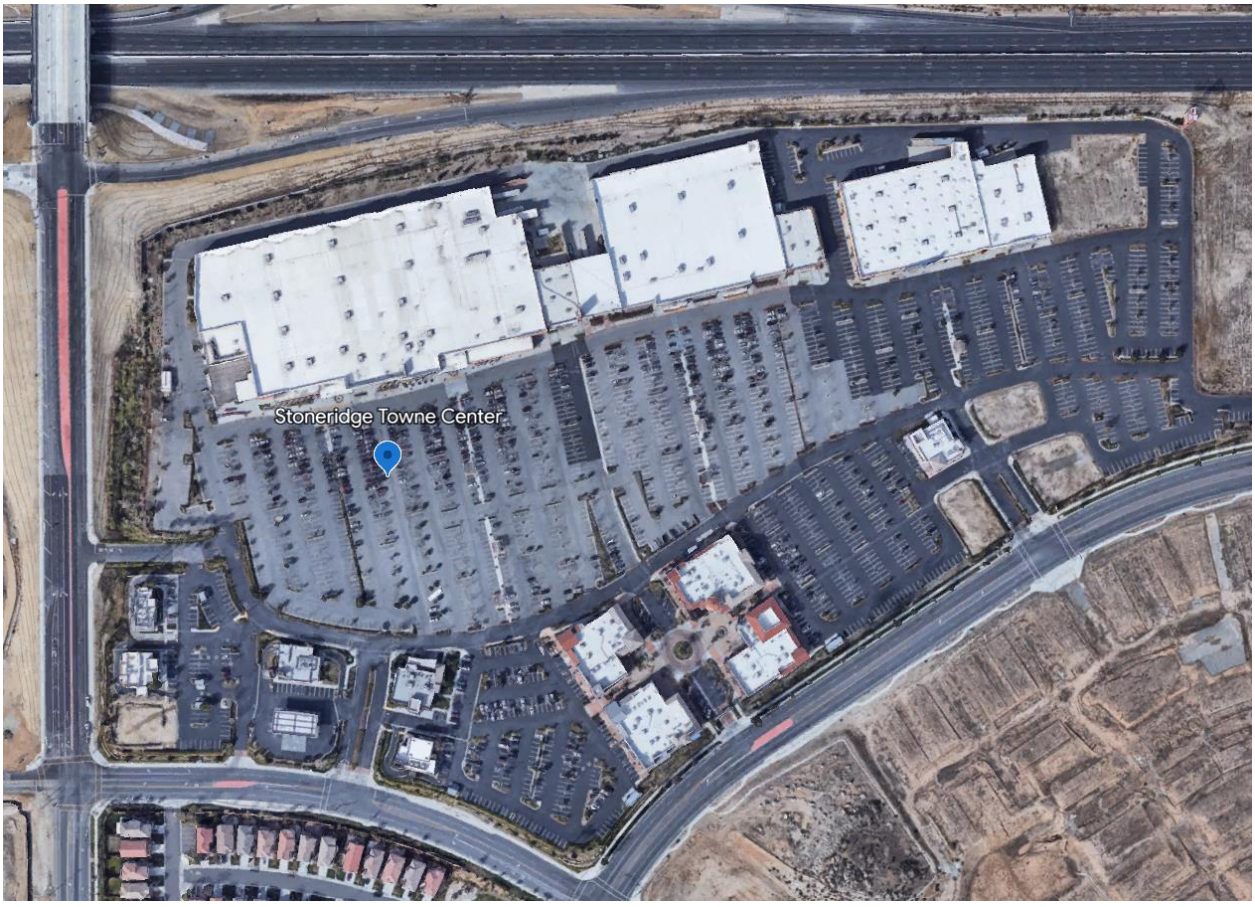
    d. Street Imagery

e. Street Address: 12190 Perris Blvd., Moreno Valley, CA 92557

16. Stoneridge Towne Center
    a. Site Score (with modifiers)
        i. Scenario 1 – 7
        ii. Scenario 2 – 7
        iii. Scenario 3 – 7
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	3

    c. Satellite Imagery



d. Street Imagery

e. Street Address: 27100 Eucalyptus Ave., Moreno Valley, CA 92555

17. Moreno Valley Community Park
    a. Site Score (with modifiers)
        i. Scenario 1 – 2
        ii. Scenario 2 – 2
        iii. Scenario 3 – 2
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	Yes
Public Entity	Yes
City Council District	1

    c. Satellite Imagery

    d. Street Imagery

e. Street Address: 13380 Frederick St., Moreno Valley, CA 92553

18. Home Depot (South Moreno Valley)
    a. Site Score (with modifiers)
        i. Scenario 1 – 5
        ii. Scenario 2 – 5
        iii. Scenario 3 – 5
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	4

    c. Satellite Imagery

    d. Street Imagery

e. Street Address: 15975 Perris Blvd., Moreno Valley, CA 92551

19. Vista Del Lago High School
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	Yes
City Council District	1

    c. Satellite Imagery

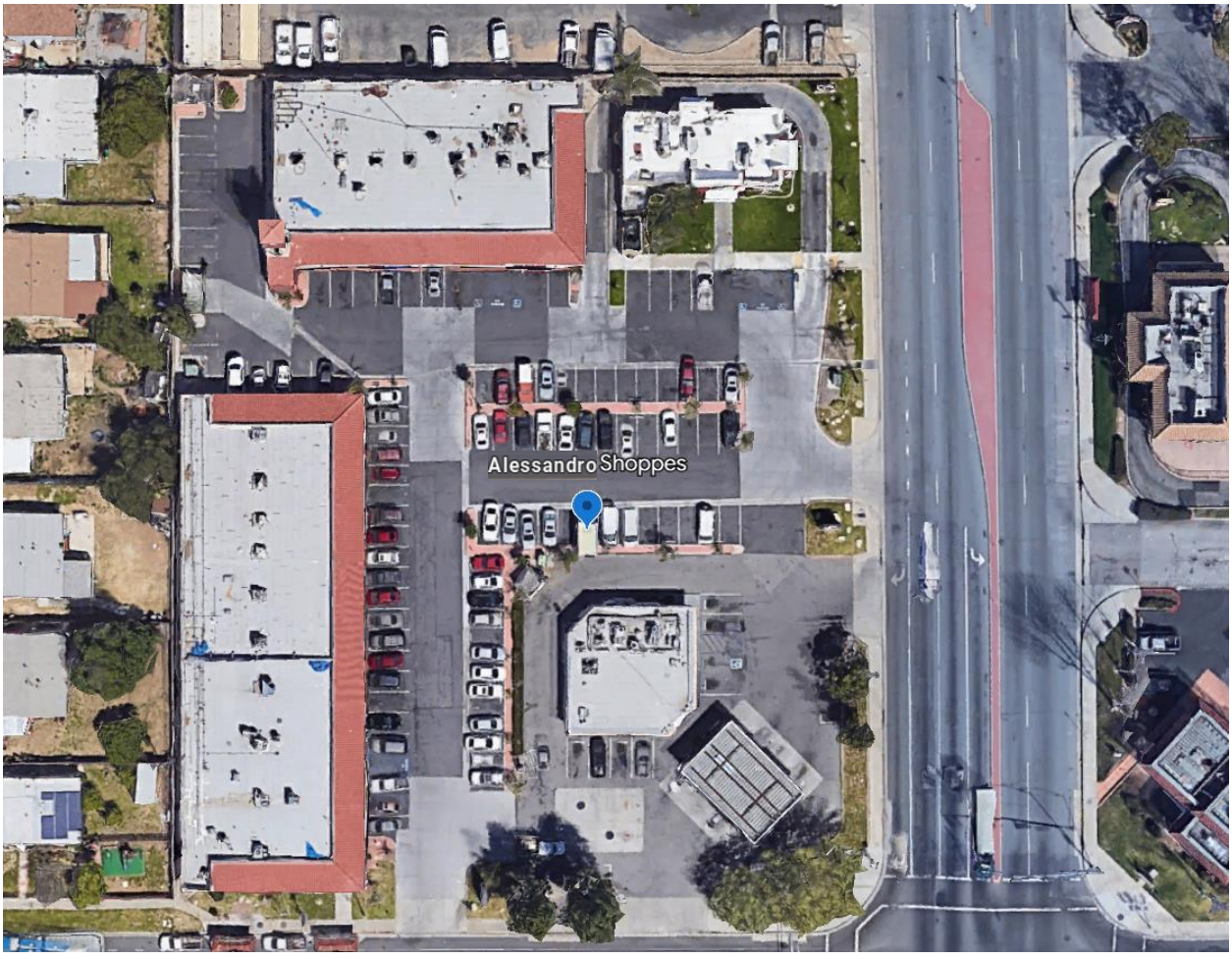
    d. Street Imagery

e. Street Address: 15150 Lasselle St., Moreno Valley, CA 92551

20. Alessandro Shoppes
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario – 4
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	3

    c. Satellite Imagery



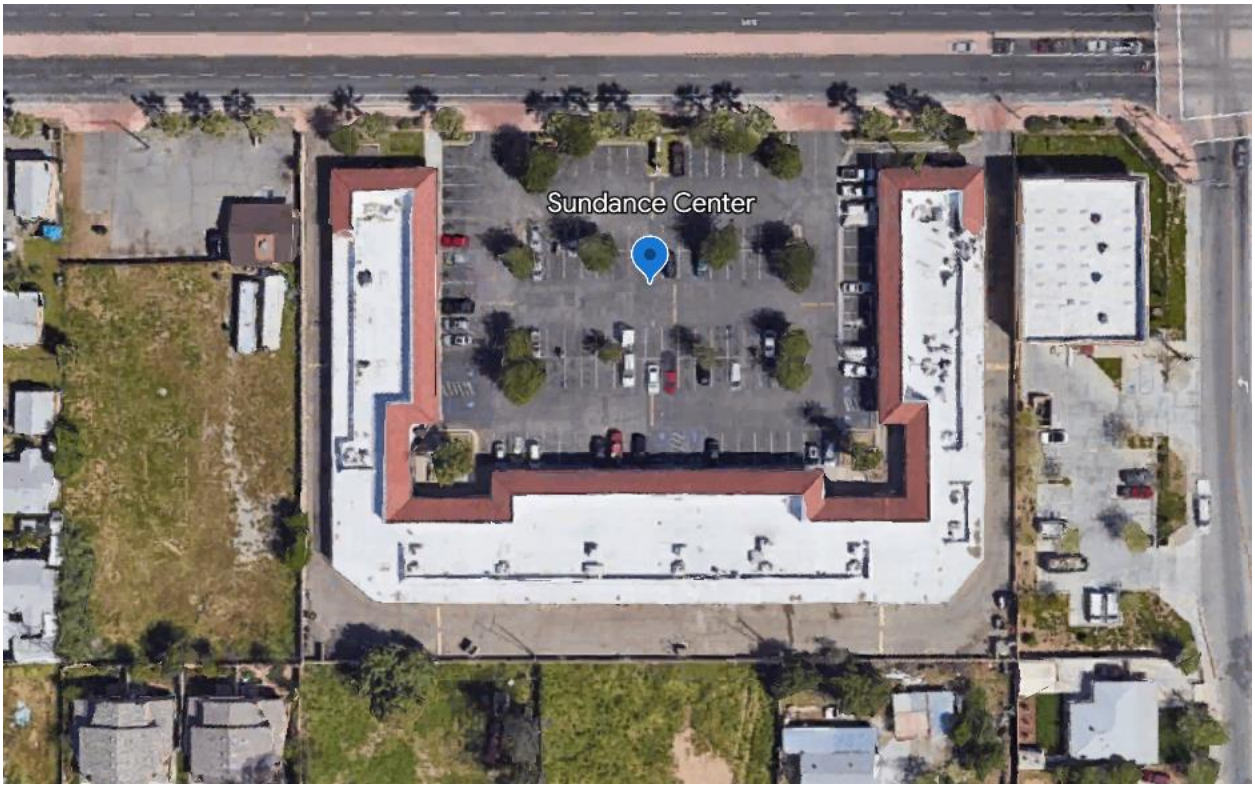
    d. Street Imagery

e. Street Address: 13945 Perris Blvd., Moreno Valley, CA 92553

21. Sundance Center
    a. Site Score (with modifiers)
        i. Scenario 1 – 4
        ii. Scenario 2 – 3
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	1

    c. Satellite Imagery



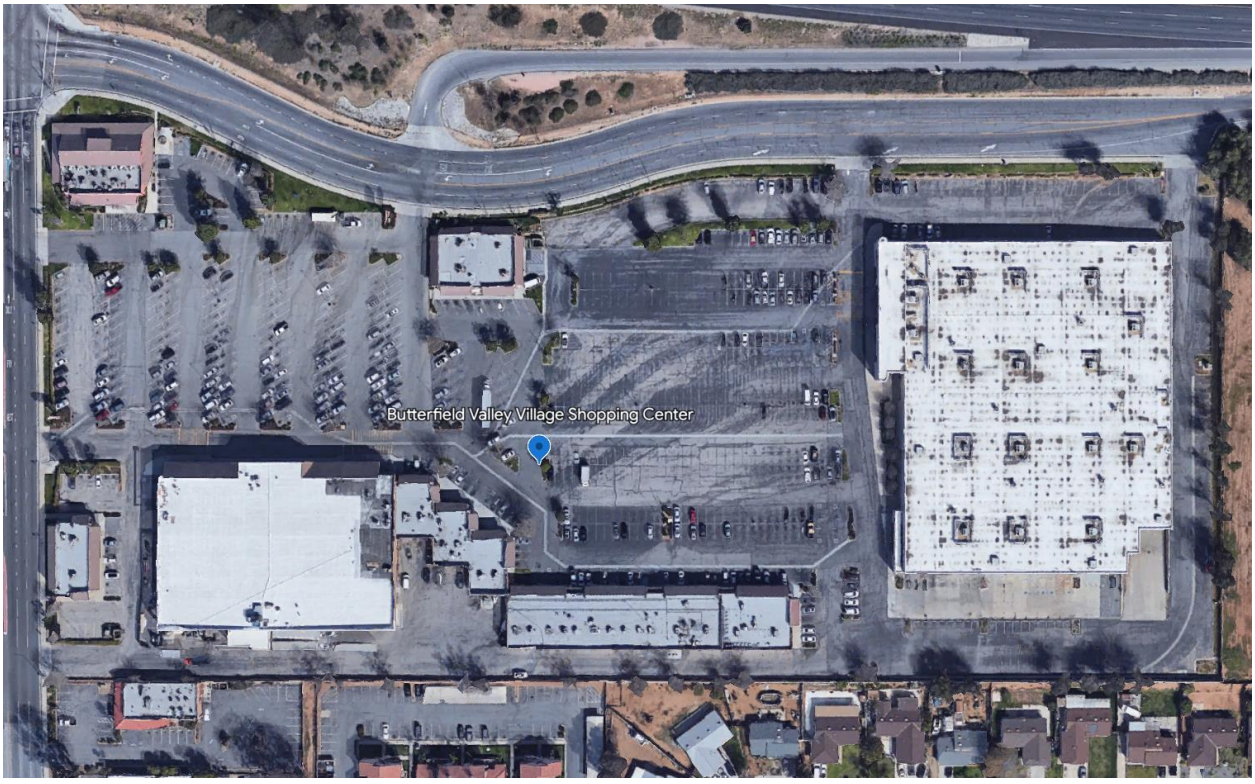
d. Street Imagery

e. Street Address: 24467 Sunnymead Blvd., Moreno Valley, CA 92553

22. Butterfield Valley Village Shopping Center
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	3

    c. Satellite Imagery



d. Street Imagery

e. Street Address: 25211 Sunnymead Blvd., Moreno Valley, CA 92553

23. Moreno Valley Mall
    a. Site Score (with modifiers)
        i. Scenario 1 – 7
        ii. Scenario 2 – 7
        iii. Scenario 3 – 7
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	1

    c. Satellite Imagery

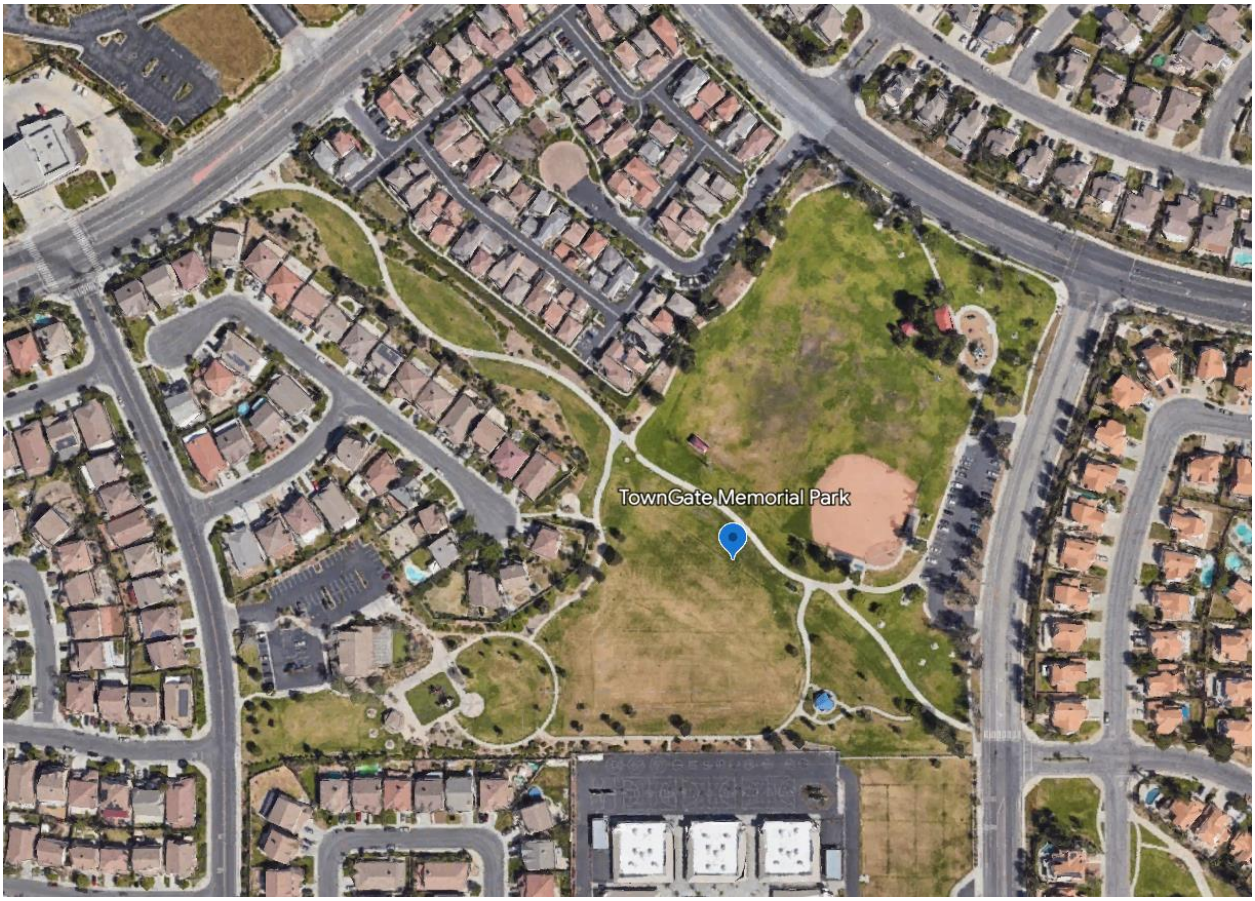
d. Street Imagery

e. Street Address: 22500 Town Circle, Moreno Valley, CA 92553

24. TownGate Memorial Park
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	Yes
Public Entity	Yes
City Council District	1

    c. Satellite Imagery



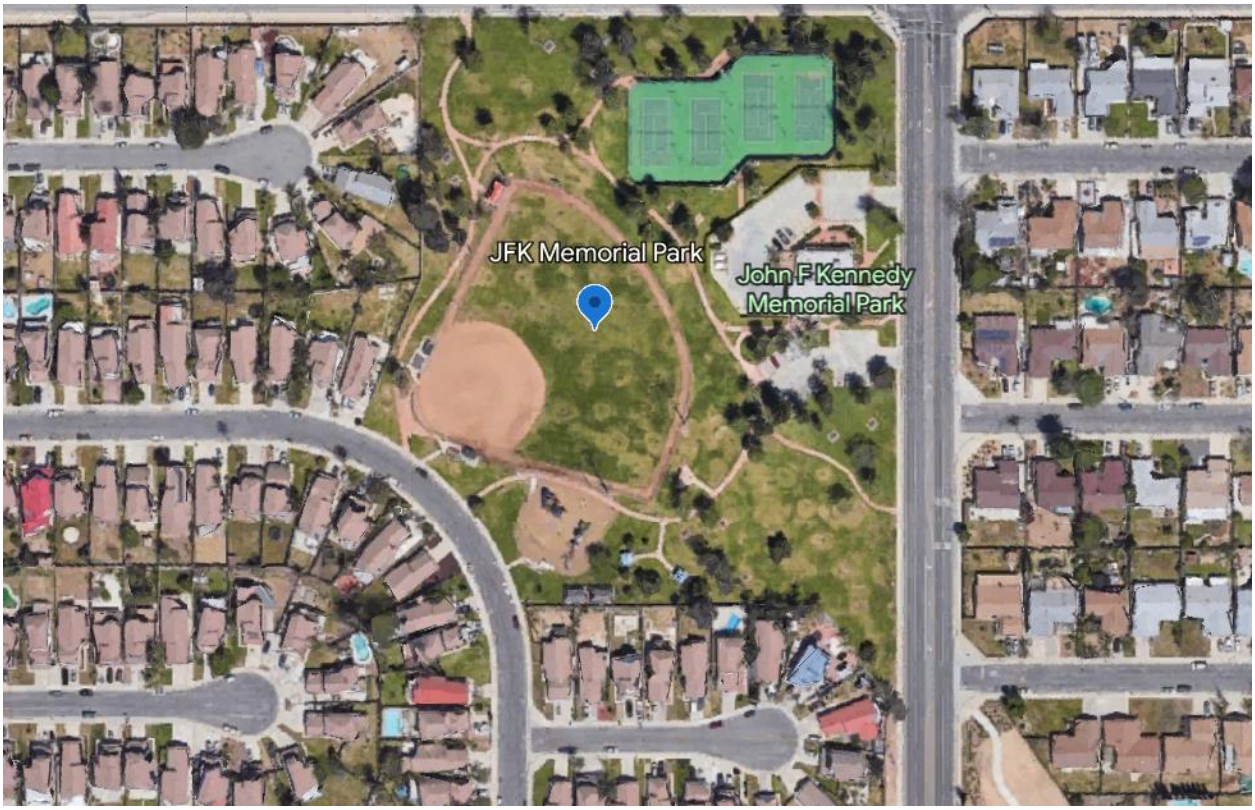
d. Street Imagery

e. Street Address: 22500 Town Circle, Moreno Valley, CA 92553

25. JFK Memorial Park
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	Yes
Public Entity	Yes
City Council District	4

    c. Satellite Imagery



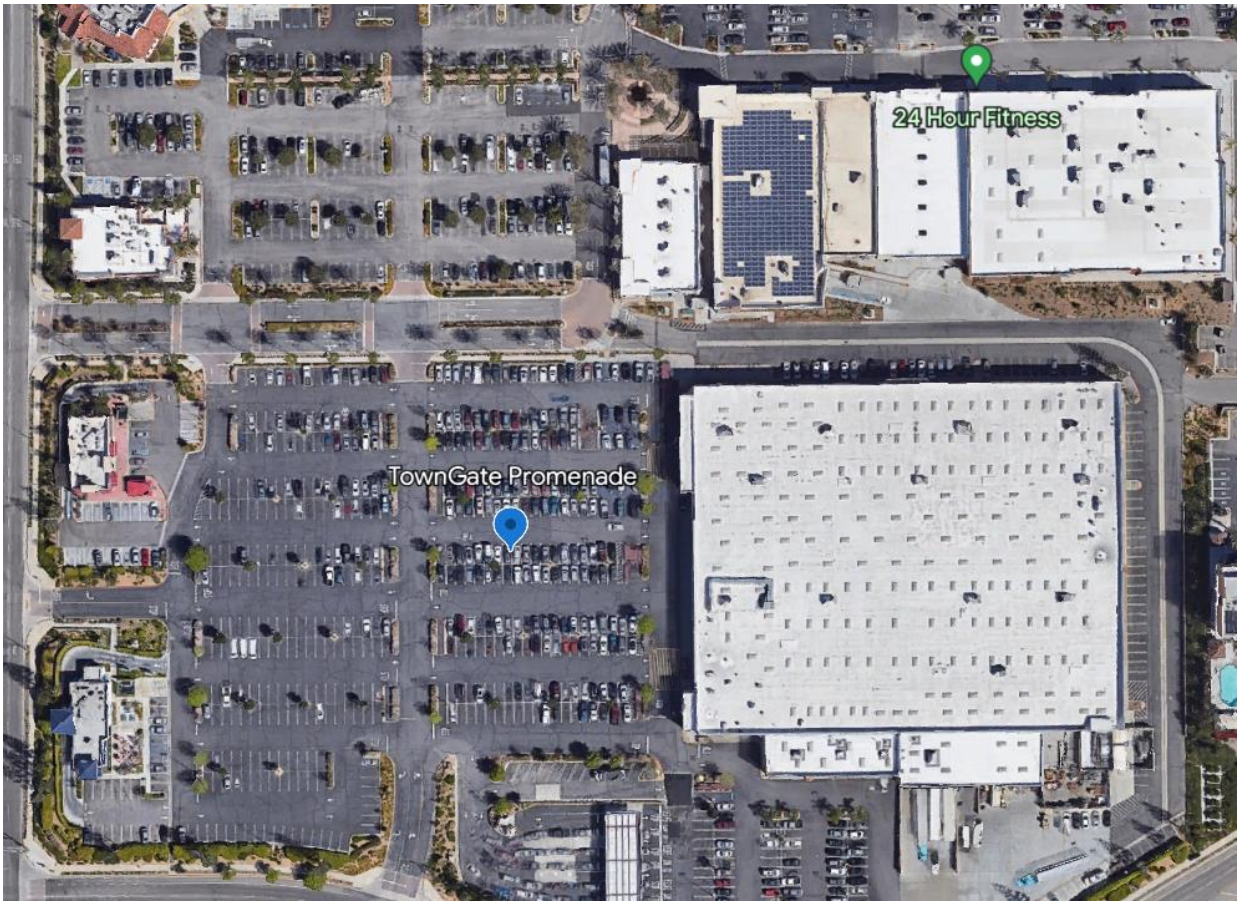
d. Street Imagery

e. Street Address: 15111 Indian St., Moreno Valley, CA 92551

26. TownGate Promenade
    a. Site Score (with modifiers)
        i. Scenario 1 – 1
        ii. Scenario 2 – 1
        iii. Scenario 3 – 1
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	1

    c. Satellite Imagery



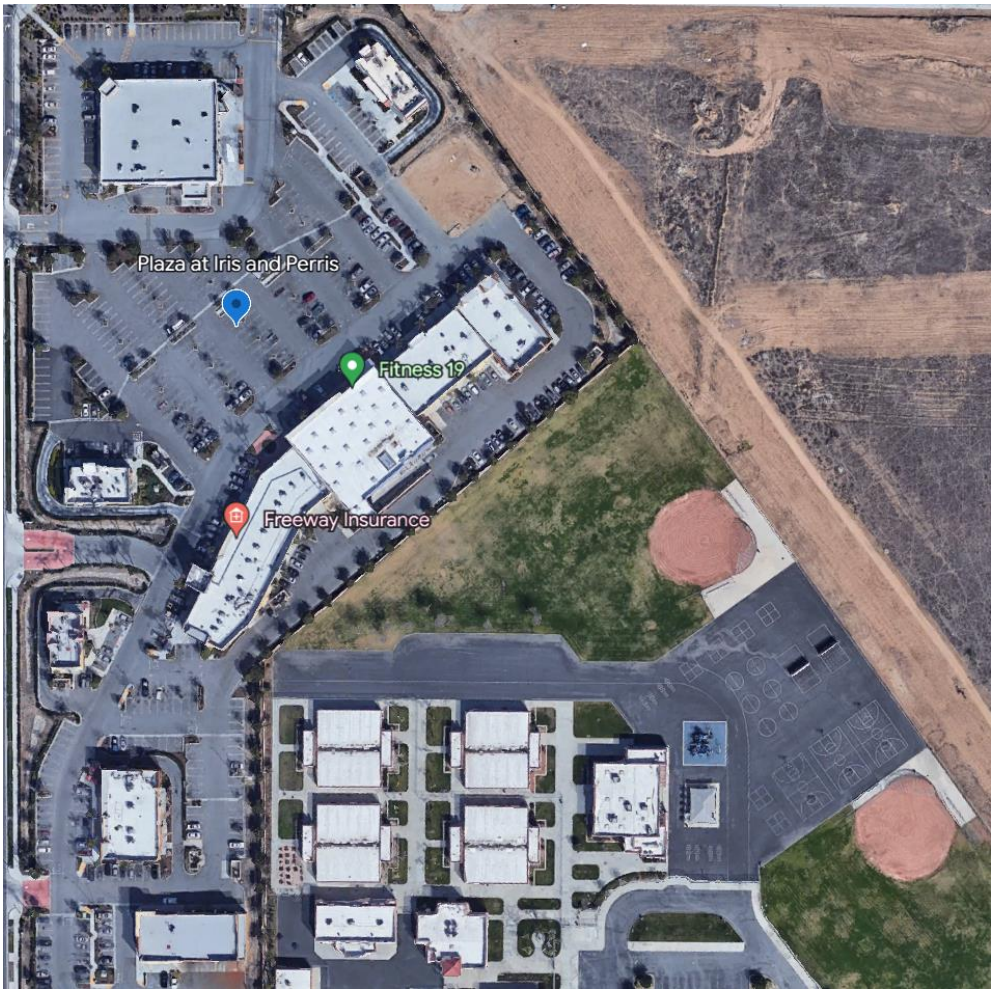
d. Street Imagery

e. Street Address: 12700 Day St., Moreno Valley, CA 92553

27. Iris Plaza
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	Partial yes (Plaza includes the library branch)
City Council District	4

    c. Satellite Imagery



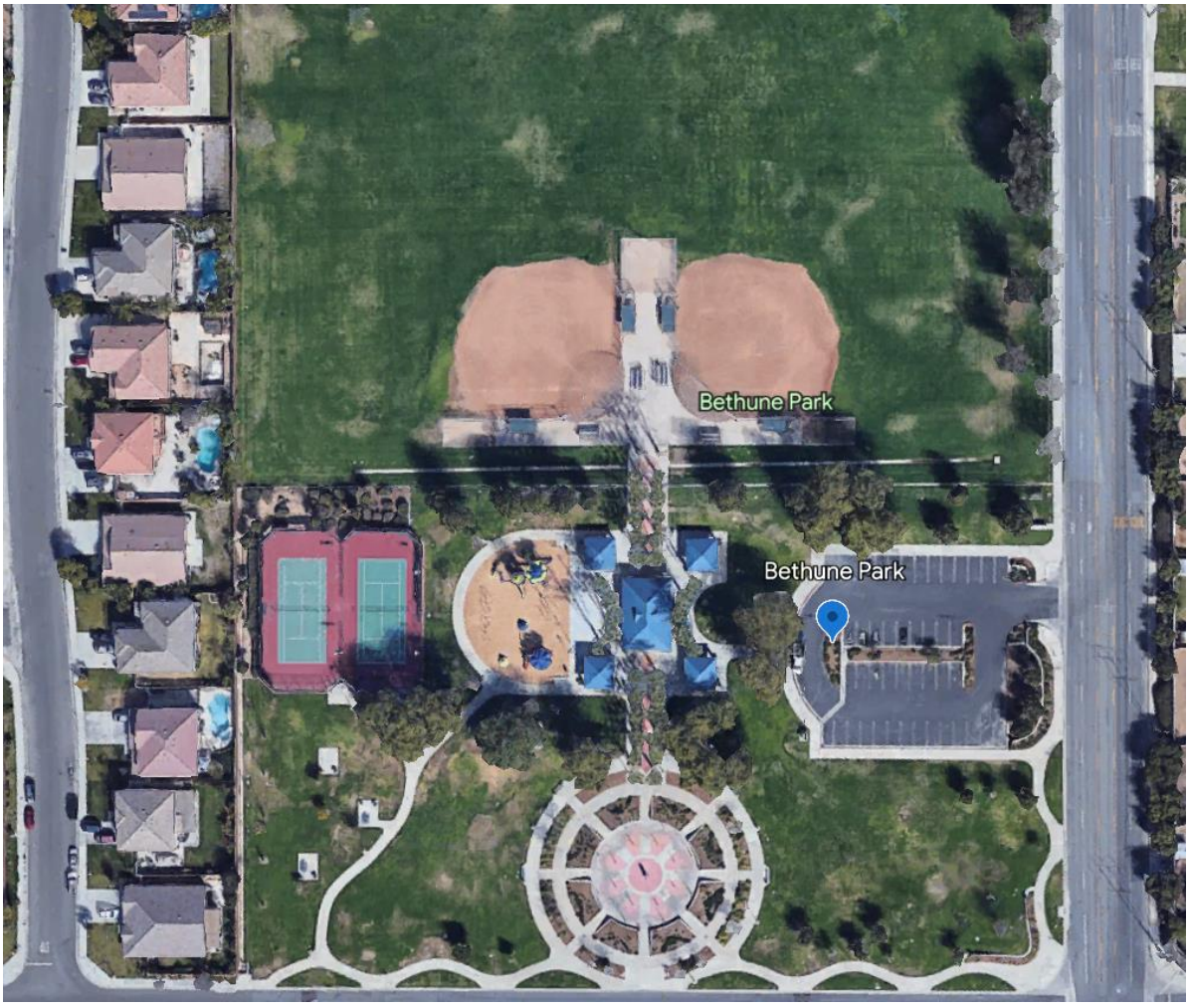
    d. Street Imagery

e. Street Address: 16170 Perris Blvd., Suite C3, Moreno Valley, CA 92551

28. Bethune Park (connected to El Potrero / Lasselle Sports Park)
    a. Site Score (with modifiers)
        i. Scenario 1 – 3
        ii. Scenario 2 – 3
        iii. Scenario 3 – 3
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	Yes
Public Entity	Yes
City Council District	4

    c. Satellite Imagery



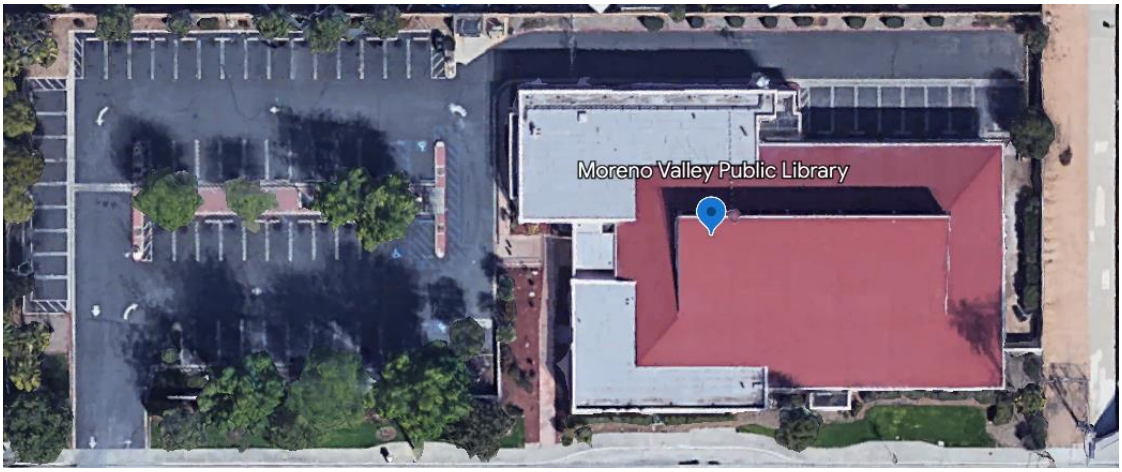
    d. Street Imagery

e. Street Address: 25510 Lurin Ave., Moreno Valley, CA 92551

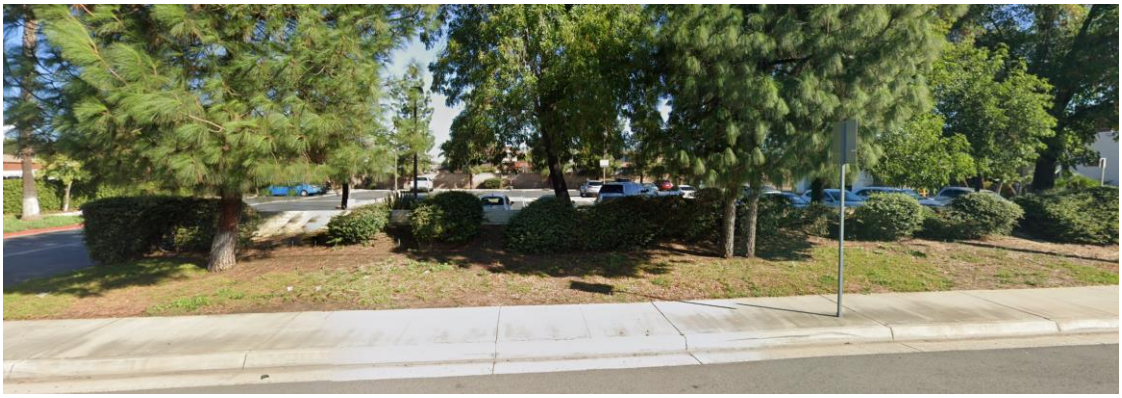
29. Moreno Valley Public Library
    a. Site Score (with modifiers)
        i. Scenario 1 – 2
        ii. Scenario 2 – 2
        iii. Scenario 3 – 2
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	Yes
Public Entity	Yes
City Council District	3

    c. Satellite Imagery



    d. Street Imagery



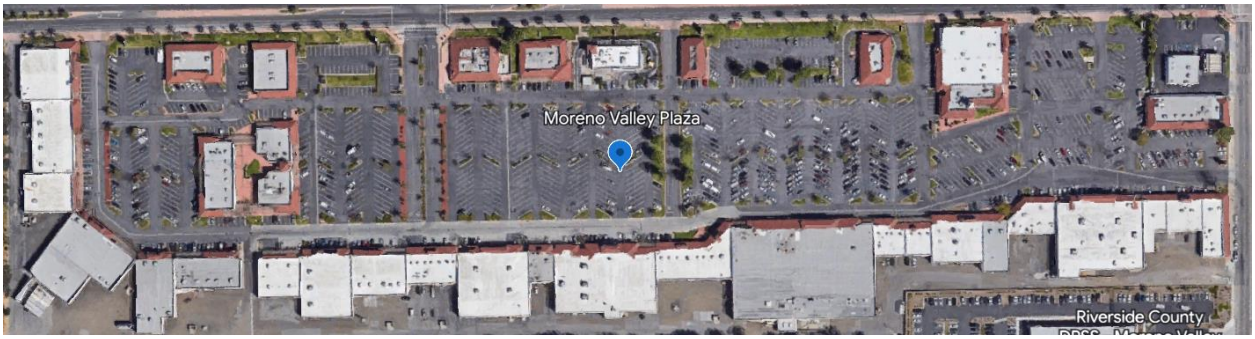
    e. Street Address: 25480 Alessandro Blvd., Moreno Valley, CA 92553
30. Moreno Valley Plaza
    a. Site Score (with modifiers)

i. Scenario 1 – 3
ii. Scenario 2 – 3
iii. Scenario 3 – 3

b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	1

c. Satellite Imagery



d. Street Imagery

e. Street Address: 23715 Sunnymead Blvd., Moreno Valley, CA 92553

31. Lakeside Terrace
    a. Site Score (with modifiers)
        i. Scenario 1 – 4
        ii. Scenario 2 – 4
        iii. Scenario 3 – 4
    b. Site Factors

Factor	Assessment
Existing Parking	Present
Accessible to Public	Yes
Hours of Possible Use	24/7
City Land	No
Public Entity	No
City Council District	4

    c. Satellite Imagery

d. Street Imagery

e. Street Address: 26041 Iris Ave., Moreno Valley, CA 92555

Appendix C: Site Visit Evaluation

Site Name & Address	TownGate Crossing 12400 Day St., Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	Huge plaza with all kinds of shops, fast food, restaurants, coffee shops.
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	Gets full based on the time of day – especially the west side (99 Cents and Lowe's have ample parking spaces and a walkway to other sides of the plaza).
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	Possibly, close to Lowe's (visible electrical box and new light poles).
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	

Community		
Does the site currently experience high traffic or pedestrian flow?	✓	Approx. 40–80 vehicles/hour.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Gets busy during weekdays around lunch time; the Starbucks/eatery side lot fills up quickly during the day. The north side of the lot in front of Lowe's may have tent sales events/holiday events but the other sides should be fine.	
MDV	□			
HDV	□			

The side with ample space and close to the electrical box in the Lowe's lot.

The eatery side gets filled up quickly.

Site Name & Address	TownGate Promenade 12700 Day St., Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	□	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	Greater throughput midday.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	
Special Criteria		
Available electric service		Perceived Level of Make-Ready Effort Required

120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Costco owns most of the lot; two rows of parking spots in the northern part of the lot seem suitable for the installation of chargers. Traffic lining up close to the gas station; however, the other side close to the entrance should be fine.	
MDV	□			
HDV	□			

Lot is already 70% full on weekday mornings.

Site Name & Address	Moreno Valley Mall 22500 Town Circle, Moreno Valley, CA 92553	Date:	Tue/Wed Sep 26/27, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	The NW side of the mall is quite empty during the day.
Is this site monitored by any security cameras or personnel?	□	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers <u>not</u> cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	Definitely not during weekdays.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	✓		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	✓		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	✓		High – Grid upgrade, trenching, permitting issues, etc.	✓
Intended Vehicles			Additional Comments	
LDV	✓		The city has approved a developer to demolish and redevelop the eastern side of the Moreno Valley Mall. Currently, there are eight DCFC ports serviced by EVgo (well utilized during the day). The city anticipates that the revitalization project will mirror Victoria Garden. There is an emergency generator on site. The Caltrans park-and-ride facility is also in the mall area – but not a lot of cars are parked during the day.	
MDV	□			
HDV	□			

EVgo fast chargers are being used during the day – this side of the mall is under redevelopment. It is unknown whether these chargers will be kept.

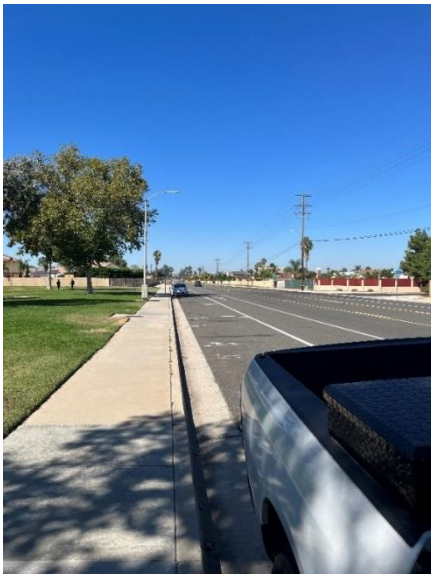
Lot is quite empty during the day.

Site Name & Address	JFK Memorial Park 15111 Indian St., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public ✓	Private □

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	The area is mostly residential – park is the only attraction.
Is this site monitored by any security cameras or personnel?	□	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	Small lot, mostly on-street parking.
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers <u>not</u> cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	Not during daytime.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	□		Some parking is available next to the nearby fire station; otherwise, there is just street parking. Converting street parking to EV charging spots would require significant work in order to maintain ADA compliance.	
MDV	□			
HDV	□			

Limited parking spaces.



Site Name & Address	March Middle School 15800 Indian St., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	Staff only restriction.
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	□	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	✓	School blocks with cones.
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Multiple signs posted that restrict parking for staff only; unlikely that the school district will allow mixed staff-public parking.	
MDV	□			
HDV	□			

Site Name & Address	Rainbow Ridge Elementary School 15950 Indian St., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	□	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	✓	Swing-gates at entrance.
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	□	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	✓		Low – The site doesn't need much conduit, no trenching, etc.	✓
240 VAC	✓		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓			
MDV	□			
HDV	□			

Site Name & Address	Home Depot (South Moreno Valley) 15975 Perris Blvd., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	Power box blocked by truck parking.
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	WI-FI garden.
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	The parking lot is full this Tuesday morning.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	✓
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	□		While at this site, the project team noted that the plaza across the street (i.e., Iris Plaza) has many more amenities and a retail anchor. The project team opted to evaluate Iris Plaza as an alternative to Home Depot. There is another new development (coffee shop and grocery) across the street as well.	
MDV	□			
HDV	□			

Parking lot gets filled up during the day.

Electrical box on the corner – next to truck lane.

Site Name & Address	Bethune Park 25510 Lurin Ave., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public ✓	Private □

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	In between other park and Home Depot.
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers <u>not</u> cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	Known as a popular community site.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	✓		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	✓		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Frequently visited community park (one of two with water features) along the Juan Bautista de Anza Trail. Side parking lots will likely see an increase in vehicle throughput as the trail gains public recognition. Additional parking is available next to the school.	
MDV	□			
HDV	□			

Additional parking available for elementary school and park events.

Site Name & Address	Moreno Valley College (Lot A & Lot B) 16130 Lasselle St., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	□	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	✓	Multiple swing-gates in sections.
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	□	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The law enforcement officer informed the project team that this is the only college in the district without charging stations, as well as low EV utilization. Both lots require student parking permits – the public will need to pay for access (also limited during certain hours). No attraction around the area other than the school (except some people may come to use the library).	
MDV	□			
HDV	□			

Signs show limited parking access.

Site Name & Address	El Potrero / Lasselle Sports Park 17155 Lasselle St., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public ✓	Private □

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	□	Known to overflow with vehicles.
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		This park is connected to Bethune Park and El Potrero Park. The proximity to Juan Bautista de Anza Trail and public parking lots makes these networked parks a good candidate area for chargers.	
MDV	□			
HDV	□			

Ample parking spaces (connected to Bethune park – park is not open 24/7 but parking might be accessible).

Site Name & Address	Rancho Verde High School 17750 Lasselle St., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	□	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	✓	Multiple swing-gates in sections.
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The schools in the district seem to provide solar panel-shaded parking lots for student and staff use only. The entrance, while open during the day, is gated and there is no guaranteed 24/7 access.	
MDV	□			
HDV	□			

Parking lot has gate restricting access.

Site Name & Address	Lakeside Terrace 26041 Iris Ave., Moreno Valley, CA 92555	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	In front of the bank – not on the CVS side.
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers <u>not</u> cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	✓		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	✓		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Storefront parking is limited due to fire lane striping; however, a corral of 4–6 parking spots is available near the on-site Chase Bank. Chase Bank parking can also get busy and is close to McDonald's.	
MDV	□			
HDV	□			

Cars lining up for McDonald's drive-through.

Definitely a lot of traffic.

Site Name & Address	Vista Del Lago High School 15150 Lasselle St., Moreno Valley, CA 92551	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	□	Closed to the public.
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	✓	Swing-gate at entrance.
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		School district is unlikely to change stance on parking lot access.	
MDV	□			
HDV	□			

Site Name & Address	Rancho Del Sol Golf Club 28095 John F. Kennedy Dr., Moreno Valley, CA 92555	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	□	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	□	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	□	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The parking lot is small and has an awkward roundabout that makes maneuverability difficult; unclear how well utilized chargers would be at this site. Leveled lot – ADA concerns.	
MDV	□			
HDV	□			

Leveled lot that gets filled up easily.

Site Name & Address	Moreno Marketplace 14435 Moreno Beach Dr., Moreno Valley, CA	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	The plaza may get busy during holiday seasons.
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	□	Depends on which side of the lot.
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	Lower activity than other plazas.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Good number of amenities and serves as an intermediate destination to Lake Perris, a recreational anchor for the city. Multifamily homes in the neighborhood – and next to a senior living facility.	
MDV	□			
HDV	□			

Parking is 50% full in front of busy stores.

Site Name & Address	Stoneridge Towne Center 27100 Eucalyptus Ave., Moreno Valley, CA 92555	Date:	Tue/Wed Sep 26/27, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	Super Target and eatery/restaurant.
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers <u>not</u> cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	□	
Does the site have enough visibility?	□	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	□	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	Especially the restaurant side.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	✓		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	✓		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	✓		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The site has two ~50-kW Volta DCFC chargers, one is an ADA-compliant EV parking spot. Super Target is a major attractor for the site. Super Walmart is across the street and has a few Shell slow chargers but not in good use.	
MDV	□			
HDV	□			

A Volta charger in use in front of Target.

Parking spaces filled up, especially around lunch time.

Site Name & Address	Morrison Park 26667 Dracaea Ave., Moreno Valley, CA 92555	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public ✓	Private □

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	It might get congested during school pickup/drop-off.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Better parking layout than most other parks (slanted parking spots) but does not seem well frequented by the surrounding community.	
MDV	□			
HDV	□			

Parking lot during the day.

Site Name & Address	Alesandro Shoppes 13945 Perris Blvd., Moreno Valley, CA 92553	Date:	Tue/Wed Sep 26/27, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	□	Already hard to find parking.
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	□	Plaza blocked by gas station.
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	Cars lining up in front of Starbucks.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	✓
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Chargers at this site would be considerate of environmental justice; however, the project team observed that considerable work would be required to prepare the site and is concerned that utilization would be low.	
MDV	□			
HDV	□			

Traffic is lining up to get in and out.

Cars lining up in front of Starbucks.

Site Name & Address	Moreno Valley Public Library 25480 Alessandro Blvd., Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public ✓	Private □

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	□	No security observed.
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	□	Known to overflow.
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	✓		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Project team interviewed library's director, noting that while the library does accommodate a steady stream of visitors, they currently experience parking shortages during events.	
MDV	□			
HDV	□			

A relatively small lot.

Site Name & Address	Butterfield Valley Village Shopping Center 25211 Sunnymead Blvd., Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	Amenities and services to do for 2+ hours.
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers <u>not</u> cause conflict for vehicle maneuverability?	✓	Slanted parking spots, increased space.
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Right next to Hwy 60 entrance.	
MDV	✓			
HDV	□			

Plaza next to Hwy 60 entrance.

Site Name & Address	TS Marketplace 12190 Perris Blvd., Moreno Valley, CA 92557	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	Limited space – traffic lining up to get in and out.
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	✓
Intended Vehicles			Additional Comments	
LDV	✓			
MDV	□			
HDV	□			

The lot gets quite busy during the day and parking spaces are limited.

Site Name & Address	Moreno Valley Plaza 23715 Sunnymead Blvd., Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Project team recommends this site as a substitute for the Sundance Center; the Sundance Center is known locally to struggle with safety issues and illegal activities. Ample space in front of storefronts.	
MDV	✓			
HDV	□			

There is moderate traffic during the day and ample parking spaces.

Site Name & Address	Home Depot (North Moreno Valley) 12255 Pigeon Pass Rd., Moreno Valley, CA 92557	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	Felt a bit cramped already.
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	□	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		It's a relatively small plaza (although right next to a Caltrans park-and-ride facility, which the city has no jurisdiction over). Traffic is already busy because of drive-throughs on the same block.	
MDV	✓			
HDV	□			

The park-and-ride facility is not very full.

The Home Depot lot is full.

Site Name & Address	Canyon Heights High School 23100 Cougar Canyon Rd., Moreno Valley, CA 92557	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	□	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	✓	Multiple swing-gates at entrance.
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Virtually closed to the public; posted signs clearly indicate student and staff only parking.	
MDV	□			
HDV	□			

Permit-only parking.

Site Name & Address	Lakeshore Village Marketplace 23575 Sunnymead Ranch Parkway, Moreno Valley, CA 92557	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	□	
Is this site monitored by any security cameras or personnel?	□	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	□	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	✓
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The project team feels that this site would need some work done to improve the parking layout and address potential wildlife concerns. Besides, the main grocery store recently closed down.	
MDV	□			
HDV	□			

The only side of the plaza that has some level of traffic.

Site Name & Address	Moreno Valley Community Park 13380 Frederick St., Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public ✓	Private □

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	WIFI garden.
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	✓		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	✓		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The project team observed a few EVs arriving at the park this Tuesday afternoon. Skate park/soccer field. Next to a busy arterial that leads straight to freeway – also close to apartment buildings.	
MDV	□			
HDV	□			

Properly sized lot with decent traffic.

Site Name & Address	Moreno Valley Animal Shelter 14041 Elsworth St., Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public ✓	Private □

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	□	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	□	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	□	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The project team felt that this is an odd place to choose to park and charge an EV, especially since the parking lot is small. An adjacent shopping center seems to offer more space and amenities that would not impose on the more veterinarian-oriented parking lot.	
MDV	□			
HDV	□			

Site Name & Address	TownGate Memorial Park 22500 Town Circle, Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public ✓	Private □

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	Relatively close to the mall area.
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	Smaller lot than other parks; however, additional space is available on the other side of the park.
Will this site's potential chargers <u>not</u> cause conflict for vehicle maneuverability?	□	Still could be challenging during events.
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	□	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		Fairly busy on Tuesday afternoon. Limited curbside parking near power box, could potentially be easier to connect chargers here.	
MDV	□			
HDV	□			

Parking lot is getting full on Tuesday evening.

Additional parking is available behind the park.

Still quite busy on Wednesday morning.

Site Name & Address	TownGate Shopping Center 12625 Frederick St., Moreno Valley, CA 92553	Date:	Wed Sep 27, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	T.J. Maxx, HomeGoods, Ulta, gym.
Is this site monitored by any security cameras or personnel?	✓	Couple of cameras at select stores.
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	Large parking lot.
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	Box is far from the main lot.
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	The lot is 60%–70% full on weekdays.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	✓
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The East side is busier; the West lot by the Burlington is almost empty. Didn't see any electrical box close to parking. Limited space in front of the store. Close to mall, depends on mall redevelopment.	
MDV	□			
HDV	□			

East side is busier than the west side.

Site Name & Address	Sunnymead Town Center 24899 Alessandro Blvd., Moreno Valley, CA 92553	Date:	Tue Sep 26, 2023	
		Overall *"Feel"*:	Good! □	Not very good… ✓
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	□	Alessandro already congested.
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	□	Gas station blocks view to parking.
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	□	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	□	Moderate.
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	✓	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	✓
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	✓		The Starbucks drive-through seems to be the largest attractor. Environmental justice/DAC affirmative; however, the site doesn't seem to attract EV owners. There are issues with loitering at this site.	
MDV	□			
HDV	□			

Site Name & Address	Iris Plaza 16170 Perris Blvd., Suite C3, Moreno Valley, CA 92551	Date:	Tue/Wed Sep 26/27, 2023	
		Overall *"Feel"*:	Good! ✓	Not very good… □
		Ownership:	Public □	Private ✓

Minimum Criteria	Criteria Met?	Comment
Site Location		
Is this site somewhere that people would be reasonably nearby for, like restaurants, shops, rest stop?	✓	
Is this site monitored by any security cameras or personnel?	✓	
Are there any amenities on site (e.g., restrooms, convenience store, car services)?	✓	
Site Accessibility		
Would this site allow public charging?	✓	
Is this site's entrance blocked by anything (e.g., gate, traffic control spikes)?	□	
Is this site adequately sized for its current parking requirements?	✓	
Will this site's potential chargers not cause conflict for vehicle maneuverability?	✓	
Does the site have adequate lighting?	✓	
Does the site have enough visibility?	✓	
Scalability		
Is this site's electrical panel reasonably close to where chargers might go?	✓	
Is there room for expansion in the future if demand for charging increases?	✓	
Are there existing utility connections (e.g., electricity, water) nearby?	✓	
Is there any broadband connection (e.g., Public WIFI or Internet access)?	✓	
Community		
Does the site currently experience high traffic or pedestrian flow?	✓	
Will it be possible for the community to provide input about the impact of chargers at this site (e.g., public forum, town hall meeting, CBO engagement)?	□	
Is the site accessible to individuals with disabilities?	✓	

Special Criteria				
Available electric service			Perceived Level of Make-Ready Effort Required	
120 VAC	□		Low – The site doesn't need much conduit, no trenching, etc.	□
240 VAC	□		Mid – The site would need CBs on the panel, resurfacing of lot, etc.	□
480 VAC	□		High – Grid upgrade, trenching, permitting issues, etc.	□
Intended Vehicles			Additional Comments	
LDV	□		Public Library branch sits in the plaza – but the city doesn't own the land. Decent traffic throughout the day, especially during lunch time.	
MDV	□			
HDV	□			

Busy lot during the day – the Public Library side gets less traffic (except morning/evening).