

Bay Area and Monterey Bay Area

PLUG-IN ELECTRIC VEHICLE READINESS PLAN

Summary 2012

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Prepared for



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

In Partnership with

 Association of
Bay Area Governments



METROPOLITAN
TRANSPORTATION
COMMISSION

Prepared by



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BAY AREA AND MONTEREY BAY AREA PLUG-IN ELECTRIC VEHICLE READINESS PLAN

The Bay Area and Monterey Bay Area Plug-in Electric Vehicle Readiness Plan is comprised of two parts: the Summary and the Background and Analysis. The Summary is a high level review of the Plan, while the complementary Background and Analysis contains more detailed information about key planning elements covered in the Summary. The numbered sections in the Summary correspond to the numbered sections in the Background and Analysis. Additionally, the Background and Analysis includes a glossary, a complete list of references, and appendices containing additional information that was used to develop the Plan. The following is an overview of the contents of the Plan:

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• Summary

- ▶ Overview
- ▶ Needs Analysis (Sections 1-4)
- ▶ Recommendations for Local and Regional Governments (Sections 5-10)
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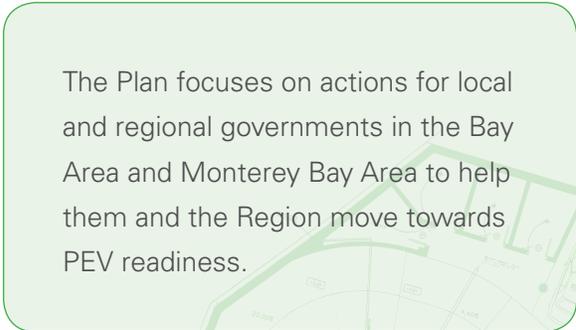
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OVERVIEW

The deployment of plug-in electric vehicles (PEVs) has the potential to reduce petroleum consumption and greenhouse gas (GHG) emissions dramatically, and increase energy independence through the utilization of locally produced energy. However, the success of long-term transportation electrification will depend in part on the near-term deployment of charging infrastructure. The transition towards higher rates of PEV adoption and the corresponding Electric Vehicle Supply Equipment (EVSE) infrastructure requires a broad range of stakeholders to prepare and plan for deployment. As a result of this need, the Bay Area Air Quality Management District (BAAQMD) in partnership with the Metropolitan Transportation Commission (MTC), the Association of Bay Area Governments (ABAG), and other stakeholders has developed this Plug-in Electric Vehicle (PEV) Readiness Plan (the Plan) as part of a grant awarded by the United States Department of Energy (DOE) under a solicitation released in 2011 (DE-FOA-0000451).

The Plan highlights results from research, analysis, and planning conducted to help the Bay Area and Monterey Bay Area (the Region) achieve the goal of being “PEV Ready;” in other words, being well positioned to handle large-scale adoption of PEVs over the next several years. The work builds on previous phases of the Region’s readiness planning effort, represented in a “Planning Concepts Document” and a “Best Practices Document” provided to local governments in mid-2012. The Plan also identifies the key planning elements that require further research, analysis, and planning to help the Region improve its PEV readiness.



The Plan focuses on actions for local and regional governments in the Bay Area and Monterey Bay Area to help them and the Region move towards PEV readiness.

The Plan focuses on actions for local and regional governments to help them and the Region move towards PEV readiness. The Plan is comprised of this Summary document and accompanying Background and Analysis sections, which contain a review of each of the elements that were required as part of the DOE grant. Each of the Background and Analysis sections contain an in-depth review of existing or potential gaps and deficiencies in the Region with respect to key issues, and the recommendations to close the gaps and correct those deficiencies. Further-

more, best practices and mechanisms to share lessons learned between local governments are also identified. The key elements of the Plan can be characterized as follows:

- **Needs Analysis (Sections 1-4).** An outline of key stakeholders and the partnerships that have developed via the readiness planning process and other initiatives in the Region; a review of why a plan is needed and how it fits within existing initiatives; a review of PEV and EVSE deployment in the Region to date; and a regional siting analysis for residential and publicly available EVSE.
- **Recommendations for Local and Regional Governments (Sections 5-10).** Analysis and recommendations related to each aspect of the PEV readiness planning process including: building codes; construction permitting and inspection processes; zoning, parking, and local ordinances; stakeholder training and education; consumer education and outreach; and minimization of utility grid impacts.
- **Actions for Further Regional Readiness.** A review of specific actions for regional governments to implement readiness efforts and an assessment of the potential costs and sources of funding for local jurisdiction readiness planning.

Moving forward, BAAQMD will collaborate with other regional agencies and stakeholders to assess and facilitate the Region’s progress toward PEV readiness. This will involve tracking the deployment of PEVs and EVSE; monitoring local government implementation of policies to support PEV and EVSE deployment; and providing regional support to local efforts through policy and planning guidance, coordination, and funding and incentives.

BAAQMD and its regional partners will collect and analyze data to determine whether the number of vehicles and infrastructure in the Region is consistent with the assumptions and targets in the Plan. Table 1 shows the metrics and targets that regional agencies will use to assess vehicle and infrastructure deployment. Current deployment and future targets are discussed in depth in Section 3 and Section 4.

Table 1. Metrics and Targets for Vehicle and Infrastructure Deployment

Metric	Target
Purchase of new PEVs	Meet or exceed assumptions about PEV ownership in MTC/ABAG Sustainable Communities Strategy (San Francisco Bay Area only).
Number and type of EVSE deployed	Meet or exceed mid-range scenario for EVSE deployment in Section 4 contingent upon vehicle deployment status.

BAAQMD and its regional partners will also monitor local progress toward implementing the recommendations contained in Sections 5 through 7 of the Plan. Table 2 summarizes these recommendations and shows the metrics that will be used to assess readiness and the targets against which regional agencies will measure progress. Local governments’ progress towards PEV readiness will be tracked through periodic surveys.

Table 2. Prioritized Recommendations, Metrics, and Regional Targets for PEV Readiness at the Local Level

Recommendation	Metric	Regional Target
<i>Local government actions—tracked through surveys of local government agencies</i>		
Adopt California Building Code standards for EVSE into local building codes	Percentage of agencies with standards for EVSE in building codes	100% of local governments by 2014
Adopt requirements for pre-wiring EVSE into the building code and/or minimum requirements for PEV parking spaces	Percentage of agencies that have adopted requirements for pre-wiring EVSE into the building code and/or minimum requirements for PEV parking spaces	100% of local governments by 2021
Create a permitting checklist for residents and contractors	Percentage of agencies that have created a permitting checklist for EVSE	100% of local governments by 2014
Train permitting and inspection officials in EVSE installation	Percentage of agencies that have trained permitting and inspection officials in EVSE installation	100% of local governments by 2014
Work with local utilities to create a notification protocol for new EVSE through the permitting process	Percentage of agencies working with local utilities to create a notification protocol for new EVSE through the permitting process	100% of local governments in areas where MOUs provide electricity by 2021
Staff the permitting counter with electrical permitting experts	Percentage of agencies staffing the permitting counter with electrical permitting experts	100% of local governments by 2021
Specify design guidelines for PEV parking spaces	Percentage of agencies that have adopted design guidelines for PEV parking	100% of local governments by 2014
Allow PEV parking spaces to count toward minimum parking requirements	Percentage of agencies that allow PEV parking spaces to count toward minimum parking requirements	100% of local governments by 2021
Adopt regulations and enforcement policies for PEV parking spaces	Percentage of agencies with regulations and enforcement policies for PEV parking spaces	100% of local governments by 2021
Adopt a climate action plan, general plan element, or stand-alone plan that encourages deployment of PEVs and EVSE	Percentage of agencies that have adopted a climate action plan, general plan element, or stand-alone plan that encourages deployment of PEVs and EVSE	100% of local governments by 2021

Finally, BAAQMD will collaborate with other regional agencies to issue policy and planning guidance to address key issues in local PEV readiness, raise support among elected officials, coordinate opportunities for local governments to share best practices, and develop funding opportunities and incentive programs that support accelerated PEV readiness. Table 3 summarizes these actions, which are discussed in more depth in the Actions for Further Regional Readiness section at the end of this Summary.

Table 3. Actions and Recommendations for PEV Readiness at the Regional Level

Type of Actions	Recommendations
Policy and Planning	<ul style="list-style-type: none"> • Provide resources for local EVSE deployment planning such as installation checklists, PEV projections, and siting analysis. • Convene summit of local elected officials. • Use existing local government forums to share PEV information across government agencies. • Update design guidelines for EVSE in public locations, commercial properties, and MDUs based on a survey of existing PEV charging spaces. • Monitor the success of near-term and long-term actions and incentives to determine progress on PEV readiness.
Coordination	<ul style="list-style-type: none"> • Coordinate training of stakeholders and local government staff. • Implement Go EV campaign with MTC as the lead, support from BAAQMD and ABAG. • Create cross-jurisdictional opportunities for sharing lessons learned.
Funding and Incentives	<ul style="list-style-type: none"> • BAAQMD to continue to provide incentives for EVSE and PEV deployment. • MTC and ABAG to provide regional transportation and funding incentives e.g., through the Sustainable Community Strategy. • Funding agencies to consider linking and prioritizing funding to PEV readiness. • Consider additional incentives for EVSE deployment in impacted/ environmental justice communities if necessary.

1 STAKEHOLDERS AND PARTNERSHIPS

The development of the Plan is the result of collaboration among regional agencies, state and federal funding agencies, members of the California Plug-in Electric Vehicle Collaborative, and other stakeholder groups. The Plan is part of a broader effort currently taking place to identify and prioritize the steps that our Region must take to become PEV ready. Stakeholders in this effort include the many local government agencies in the 12 counties covered by the Plan: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma, Monterey, San Benito, and Santa Cruz. Local government agencies are joined by a broad and diverse group of Bay Area and Monterey Bay Area stakeholders that are pursuing numerous avenues to support deployment, including:

- PEV Advocacy
- Electrification of Public and Private Fleets
- EVSE Infrastructure Vendors and Providers
- Funding Agencies
- Grid Solutions and Utility Service Providers
- Policies, Codes, and Guidelines Development
- Public Charging Opportunity Providers
- Regional PEV Readiness Planning
- Technical Innovation and Research
- Training and Outreach
- Vehicle Manufacturers and Retailers

Substantial coordination between PEV stakeholders throughout the Region is anticipated to continue throughout the implementation of the Plan (through 2014) due to a number of factors as follows: commitments to the California Energy Commission to do further work on PEV readiness in the Region, participation in the California Plug-In Electric Vehicle Collaborative, integration of PEV readiness into the Sustainable Communities Strategy, continued partnership with DOE Clean Cities Coalitions for stakeholder engagement in the Region, consumer PEV marketing and education, and incentives to reduce GHG and air pollution.

For a complete list of stakeholders, their respective roles, partnerships, please see Background and Analysis, Section 1.

2 NEED FOR A PLAN

The Region is currently one of the leading markets for PEVs in the country. The most recent estimates from the Clean Vehicle Rebate Project (CVRP) indicate that more than 5,100 PEVs are on the road in the Region today, with more than 700 publicly available EVSE in the ground, and at least another 1,500 charging spots planned over the next 2 years. In order to support projected rates of PEV adoption for the next 10 years, local governments and affected stakeholders will need to take action to be ready to meet the increased and unique demands posed by PEVs and supporting charging infrastructure.

As part of the PEV readiness planning process, a variety of surveys were conducted of (1) local government agencies, (2) private and public fleets and employers, (3) BEV drivers, and (4) City CarShare users to learn about the existing and potential barriers to PEV adoption and opportunities to improve the Region's readiness.

Local Government Survey

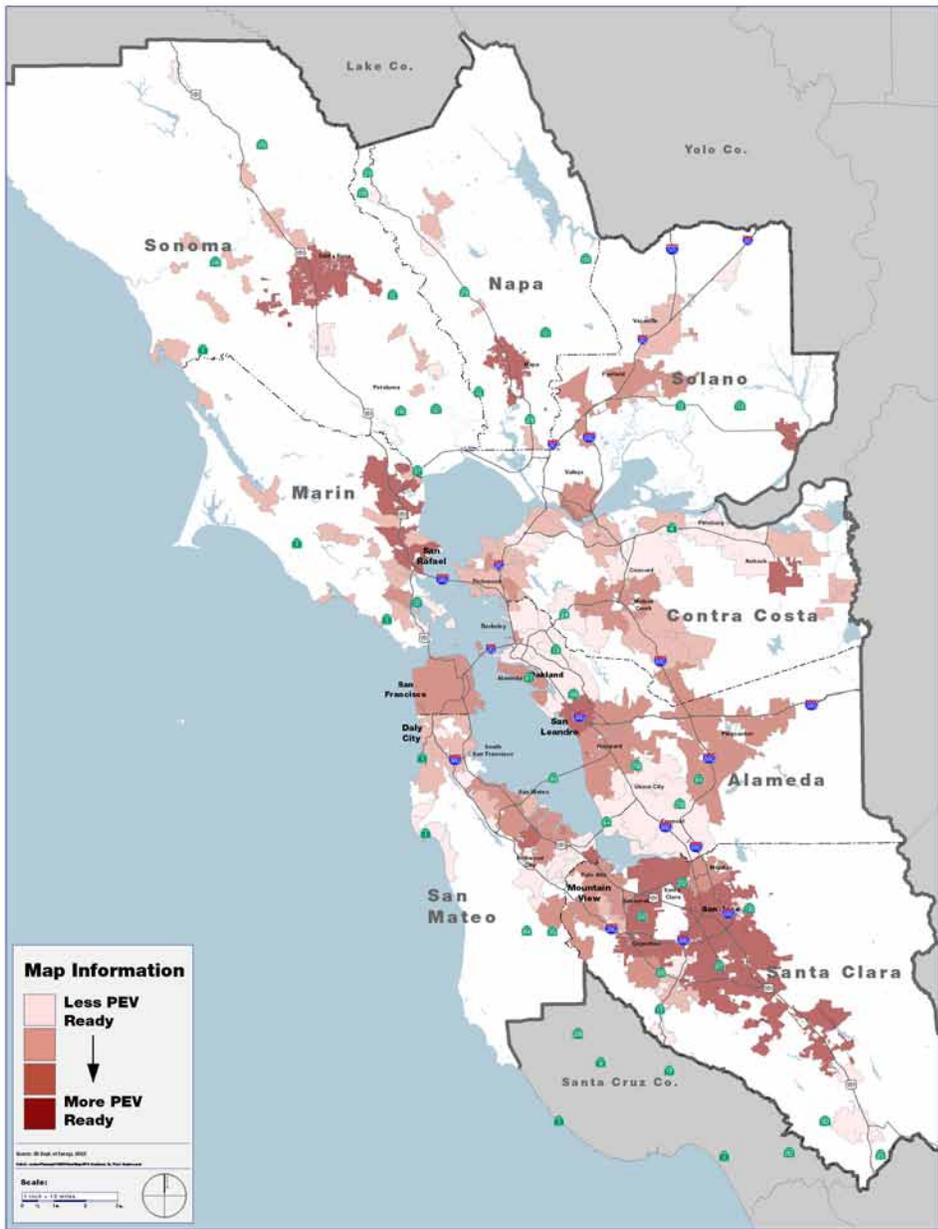
The results from a survey, conducted from March to August 2012, of more than 100 local government agencies reveal that the Region is in vastly different states of readiness in terms of their attention to developing PEV specific building codes, permitting and inspection practices, and zoning and parking ordinances. Some of the key results that highlight the need for a regional plan and barriers to PEV adoption include the following:

- Only 1 in 6 local governments surveyed have adopted EVSE requirements for permitting; although about 1 in 3 respondents are in the process of or considering the adoption of EVSE-specific requirements for permitting.
- Most agencies are generally close to meeting the goal of 24-48 hour permitting at a cost of less than \$250; however, approximately 25% reported taking longer than 6 days to issue permits and approximately 20% reported charging more than \$250 across all installation types (e.g., residential and commercial).
- The level of readiness regarding zoning and parking ordinances is difficult to ascertain because more than half of the survey respondents are not actively involved in these issues, and in many cases two-thirds of the respondents left the question blank. Only 5% of the respondents have adopted zoning and parking ordinances related to EVSE.

- Only 1 in 10 local governments have pro-actively adopted building codes for EVSE. More detailed results of the survey are available in Appendix B.

The maps in Figure 1 and Figure 2 below show the assessment of readiness in the Bay Area and the Monterey Bay Area, respectively. Note that while the maximum PEV readiness score achievable is 100, the top tier of local governments in our Region scored between 48 and 63 on the readiness scale.¹ These scores are based solely on the survey responses, which are self-reported assessments of readiness.

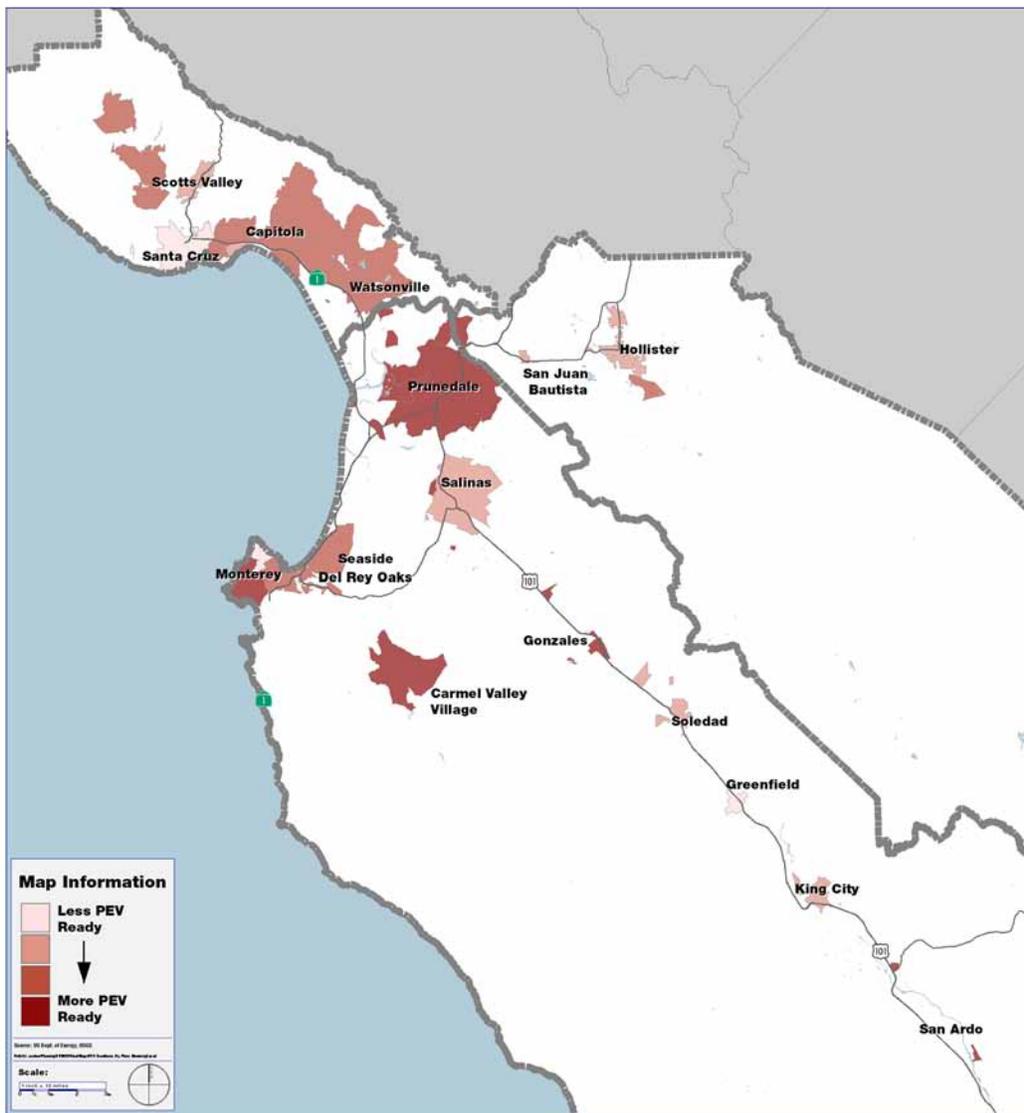
Figure 1. PEV Readiness in the Bay Area, August 2012



Source: ICF, MTC GIS Unit

¹ Note that in Figure 1 and Figure 2, unincorporated towns and communities were given a score based on the responses provided by the corresponding County government.

Figure 2. PEV Readiness in the Monterey Bay Area, August 2012



Source: ICF, MTC GIS Unit

Regional Fleet and Employer Survey

BAAQMD also issued a survey to Bay Area and Monterey Bay Area employers to assess PEV readiness and to identify tools and resources that would help employers to successfully provide PEV infrastructure for their employees and fleets. The survey was conducted from June to August 2012, and received over 500 responses. More detailed results of the survey are available in Appendix C. The key findings from the survey highlight some of the barriers faced by this segment of the PEV market:

- Almost half of the responses are from employers with more than 100 employees (45%); 97% of employers have either on-site parking, off-site parking, or both on-site and off-site parking; and 60% of employers own, rent, or a combination of own and rent vehicles.

- Half of employers reported having at least one vehicle that travels on average less than 60 miles each day.
- 21% of respondents indicated that they are considering PEVs for fleet replacement or expansion.
- One out of five employers (22%) have electric vehicle charging stations currently installed at the workplace.
- The top 3 challenges that employers have encountered during EVSE installation or operation are: cost of the installation (19%), cost of the equipment (15%), and no one uses this equipment (13%).

BEV Driver and City CarShare User Surveys

Two other surveys that were conducted for the Plan provide some insight into the readiness planning process, barriers to adoption, and highlight the need for a plan. BAAQMD and ECOtality conducted a survey of Bay Area participants in The EV Project; and MTC, City CarShare, and ICF conducted a survey of City CarShare members regarding their familiarity with and interest in PEVs. The full results from each study are available in Appendix D and Appendix E.

The results of the survey of Bay Area participants in The EV Project, conducted from September to October 2012 reflect a nascent market going through some growing pains:

- Although early adopters reported being relatively unconcerned about range anxiety, one of the clear and overwhelming responses was the need for more publicly-available EVSE or away-from-home charging, especially at employment centers, and access to fast chargers along highway corridors to facilitate intra- and inter-regional transportation.
- Keeping in mind that EV Project participants were generally not directly involved with the permitting process and that EVSE installation program eligibility was limited to drivers living in single family homes, the majority of respondents stated that they were satisfied with the permitting process; however, one quarter of respondents still rated their experience as neutral or expressed some level of dissatisfaction.
- 4 out of 5 respondents have opted into a time-of-use (TOU) rate with their utility.

The following results from the survey of City CarShare members, conducted in July 2012, help communicate the enthusiasm of the region's population for new technology, while also highlighting some common misconceptions about PEVs:

- Respondents had good awareness of PEVs and were not seriously concerned by the issues that might dissuade a consumer from purchasing a PEV (e.g., range anxiety, vehicle performance, and safety).

- Respondents were overwhelmingly eager to drive one of the PEVs in City CarShare’s fleet. When asked to indicate why they were interested in PEVs, the most popular responses (in order) included: environmental reasons, curiosity, affinity for new technology, and the potential cost savings.
- The responses also indicated some confusion about PEV technology: although a majority of respondents indicated they were familiar with electric vehicles, when asked to identify specific vehicle models, nearly 1 in 5 respondents identified a vehicle that was not a PEV, most notably hybrid electric vehicles (HEVs) such as the Toyota Prius or the Honda Insight. Furthermore, when asked to characterize the all-electric range of PHEVs and BEVs, survey respondents did not typically distinguish between the vehicle architectures properly.

Summary of Barriers to Adoption and Proposed Solutions

The results of the surveys and the extensive analysis and outreach conducted as part of the Plan has resulted in the identification of the barriers to PEV adoption identified in Table 4 below. The table provides a citation for a more extensive discussion in the Background and Analysis sections and a brief discussion in this Summary regarding each of the barriers listed. Each cited section provides a more in-depth analysis of the near and long-term solutions to these issues. A summary of solutions is also provided in Tables 1-3 of this document.

Table 4. Description of Gaps and Barriers

Target Audience	Description of Gaps and Barriers (Exiting, Future)	Corresponding Section
Consumers, Fleets	The price differential between a PEV and a conventional vehicle or even a HEV remains high.	Section 2 and Appendices
Local Agency Building Codes	Only 19% of the Region’s local agencies report adopting building codes specific to EVSE installations. Less than half have begun to consider EVSE-related building code changes or are seeking more information and 35% indicated that they have not yet initiated any work in this area.	Section 5
MDU and Commercial Properties	Installing EVSE at MDUs and commercial properties is potentially more complicated due both to the greater complexity of electrical systems at these properties and questions about ownership and management of EVSE. At this time, little guidance exists for municipalities on how to complete permitting for these installations.	Section 6
Local Agency Permitting and Inspection	Most agencies are close to meeting the goal of 24-48 hour permitting at a cost of less than \$250; however, approximately 25% report more than 6 days to issue permits and approximately 20% reported charging more than \$250 across all installation types (e.g., residential, commercial).	Section 6

Target Audience	Description of Gaps and Barriers (Exiting, Future)	Corresponding Section
Local Agency Zoning and Parking Ordinances	<p>More than half of the Region’s local government agencies report that they are not actively involved in the process of adopting zoning and parking ordinances. Of the agencies that did respond, only 5% have adopted zoning and parking ordinances related to EVSE. The gap includes:</p> <p>Establishing minimum standards for parking requirements for opportunity and workplace Charging or for Multi-family Dwelling Units</p> <p>Enforcement of restrictions on non-PEVs using spaces designated for charging vehicles</p> <p>Official design standards for accessible PEV parking or charging stations and official guidance on signage for PEV parking spaces</p>	Section 7
Stakeholder Education and Training	<p>Some key stakeholders are largely unfamiliar with their role in the PEV landscape. A coordinated effort will be required to prioritize the most likely early- and mid-adopter regions so that jurisdictions of these regions can be educated using the training courses and resources available to them.</p>	Section 8
Consumer Education	<p>Common misconceptions about PEVs:</p> <p>20% of respondents of a survey conducted of City CarShare members could not properly identify a PEV (instead selected a hybrid electric vehicle (HEV) such as the Honda Insight).</p> <p>Also, many of these respondents could not distinguish between HEV, PHEV, and BEV designs properly.</p> <p>Education of automobile dealers to ensure accurate information is provided to potential consumers about vehicle range and EVSE installation requirements.</p>	Section 9 and Appendices
Potential Impacts on the Grid	<p>Load impacts; Transformer impacts; Clustering of PEV adopters; Time of Use tariff structures; and Utility notification</p>	Section 10

For a complete discussion of the need for a plan, please see Background and Analysis, Section 2.

3 CURRENT DEPLOYMENT

Vehicle Deployment

The Region leads in consumer demand for PEVs and has the highest rate of LEAF adoption in the country and in the State on a per household basis. The Bay Area has the most number of vehicles deployed of any of the 22 areas participating in The EV Project, according to a nationwide study of PEV drivers and EVSE deployment. Furthermore, according to the California Center for Sustainable Energy, the administrator of the California Air Resources Board's (CARB's) Clean Vehicle Rebate Project (CVRP), more than 5,100 rebates have been issued in the Region for PHEVs and BEVs as of November 2012. Drivers in the Region have received 30% of the PHEV rebates and 42% of the BEV rebates issued statewide, even though the Region only accounts for approximately 17% of the State's population.

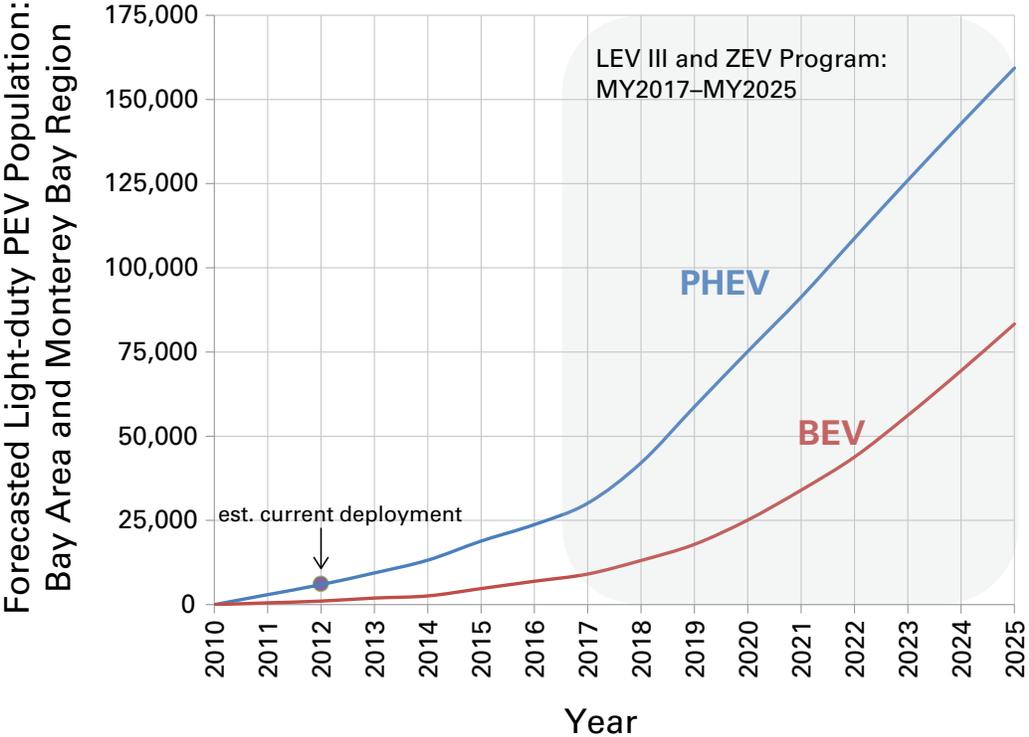


Bay Area PEV Drivers celebrate National Plug In Day at Crissy Field, part of the Golden Gate Recreational Area in San Francisco on September 23, 2012. Photo credit: Brian Kimball, Kimball Stock Photography

Moving forward, strong continued growth in the Region's PEV market is projected over the next 10-15 years, with moderate growth of PEV sales over the next several years as shown in Figure 3. Furthermore, as regulatory drivers such as the Zero Emission Vehicle (ZEV) Program and the Low Emission Vehicle (LEV) III Program—both part of California's Advanced Clean Cars Program—

become more important during the release of model year (MY) 2017 vehicles, it is projected that there will be a significant increase in PHEV deployment in the Region. Furthermore, battery costs—the most significant driver for PEV costs—are projected to decrease by about 30% by 2020, making PEVs more affordable and accessible to a larger demographic of car buyers.

Figure 3. Forecasted Baseline PHEV and BEV Populations (in the light-duty sector) for the Region



EVSE Deployment

As a result of consumer interest, regional agencies and electric vehicle service providers (EVSPs) have responded to the need for public charging infrastructure with a variety of deployment projects, as highlighted in Table 5 below. The current map of EVSE deployment in the Region is also shown in Figure 4 and Figure 5 below.

For a complete discussion of current deployment efforts and PEV forecasts for personal light-duty vehicles and fleets (i.e., government and commercial fleets), please see Background and Analysis, Section 3.

Table 5. Overview of EVSE Deployment Projects in the Region

Project Title	Lead & Support Agencies	Incentive Funding		Match Funding	Charging Stations		DC Fast
		Source	Amount (Millions)		Residential Level 2	Nonresidential Level 2	
EVSE Home Charger Rebate Program	ECOtality, Coulomb, AeroVironment	BAAQMD	\$2.50	N/A	3,000	–	–
		DOE	\$5.00				
DC Fast Charger Program	AeroVironment, TBD	BAAQMD	\$0.45	\$1.20 ^a	–	–	50
ChargePoint America	Coulomb Technologies	DOE	\$1.17 ^a	\$1.71 ^a	–	330	–
Bay Area and Monterey Bay EV Corridor Project	EV Communities Alliance. ABAG, Local Cities/Counties	CEC	\$1.49	\$2.60	–	186	18
		BAAQMD	\$0.40		–		
Reconnect CA	Clipper Creek	CEC	\$2.30	\$1.20	–	65	–
Local Government EV Projects	Multiple	BAAQMD	\$0.15	\$1.94	–	50	–
		MTC	\$2.80		–		
eFleet: Car Sharing Electrified	City CarShare SFCTA	MTC	\$1.70	\$0.74	–	24 ^b	–
		BAAQMD BACAF/RFG	\$0.53		–		
Bay Area Electric Vehicle Taxi Corridor Program	Better Place, SFMTA	MTC	\$7.00	\$8.00	6 battery switch stations		
		CEC via BAAQMD	\$3.00				
		BAAQMD	\$0.43				
Tribal Community Sustainable Transportation	Kashia Band of Pomo Indians	MTC	\$0.37	\$0.08	–	6	–
Businesses Deploying EV Infrastructure	Best Buy, McDonald's, Etc.	BAAQMD	\$0.34	\$0.75	–	178	–
Electric Vehicle Charging Station Project	NRG (settlement w/ CPUC)	N/A	–	\$25.00 ^c	1,650 ^c (minimum)		55
Total (maximum)					3,990	1,499	123

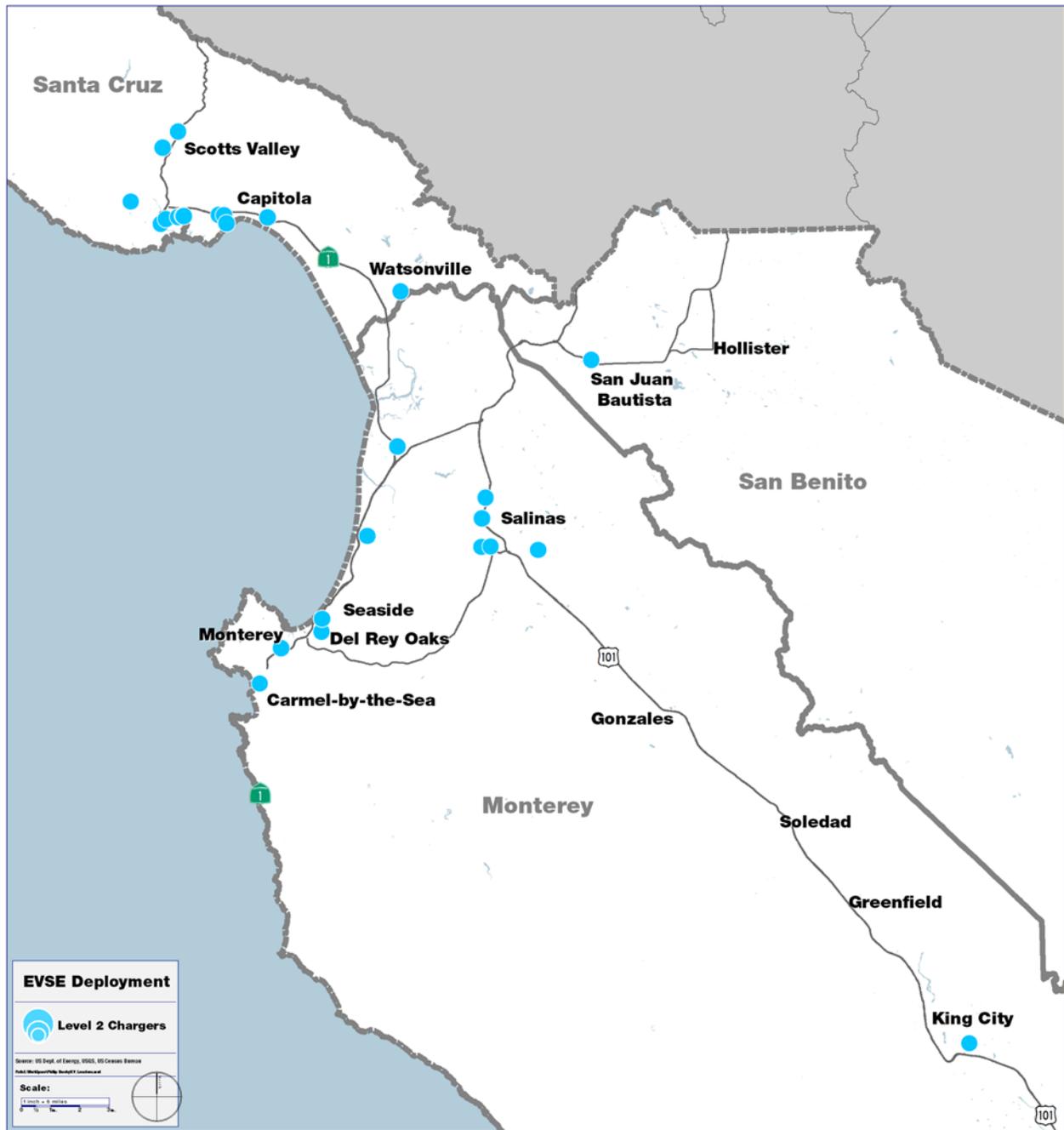
^a Values were estimated based on the total project funding, match funding, and grant funding. ^b City CarShare has been installing EVSE through the ChargePoint America program. These charging stations are not included in the total because they are already accounted for in the ChargePoint America line item. ^c To estimate the match funding for the Region, we assumed about 25% of the settlement would be invested in the Bay Area and Monterey Bay Area. For the purposes of our EVSE estimates, we assume that 60% of the Make Readies (see below for more information) to be deployed by NRG will ultimately be residential Level 2 EVSE and the other 40% will be nonresidential Level 2 EVSE.

Figure 4. EVSE Deployment in the Bay Area as of December 2012



Source: Alternative Fueling Station Locator (accessed December 2012), MTC GIS Unit, ICF

Figure 5. EVSE Deployment in the Monterey Bay Area as of December 2012

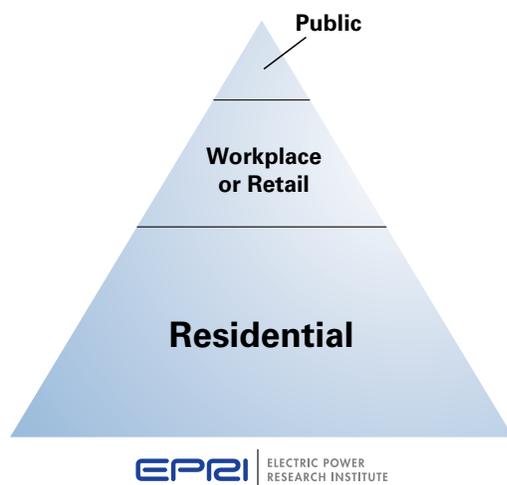


Source: Alternative Fueling Station Locator (accessed December 2012), MTC GIS Unit, ICF

4 REGIONAL SITING ANALYSIS

Readiness planning must also include strategies to ensure sufficient infrastructure is in place to meet the increasing demand for charging as greater numbers of PEVs are deployed over time. To date, the Region has properly focused on ensuring that early adopters have a positive experience for charging vehicles at home. EPRI has prepared a convenient graphic to illustrate the relative priorities for likely charging scenarios, as shown in the triangle in Figure 6.

Figure 6. The EPRI Charging Triangle



The siting of charging infrastructure is a key component of successful PEV deployment and requires consideration of the following factors: location, quantity, level of charging, investment, and payment.

The goal of a siting plan is to help guide and coordinate future PEV charging infrastructure-siting efforts based on anticipated or projected demand for EVSE. To that end, this siting analysis combines various parameters shown in Table 6, to identify the most likely areas to:

- Provide charging opportunities for PEV owners that lack access to home charging;
- Extend the range of PEVs for intra- and inter-regional travel along various corridors; and
- Maximize all-electric miles by providing ample opportunities for charging while minimizing the risk of stranded PEVs.

The siting analysis for suitable locations for EVSE was designed to identify optimal areas to deploy EVSE for the consideration of various stakeholders. The siting plan will have to be re-evaluated over time and adapted to take into account current and future demand versus availability of EVSE, and advances in PEV technology, such as increased battery efficiency and increased rate of charging via changes in PEV's on-board chargers to allow faster charging times.

As noted above, the siting plan focuses on (in order of priority): a) residential charging, b) workplace charging, and c) publicly accessible charging (also referred to as opportunity charging). This section concludes with estimates of the number of EVSE that should be deployed to support the forecasted PEVs in the Region. These estimates are dependent on parameters such as the price of charging; the number of EVSE needed to support PEV deployment will rise or fall based on these types of parameters. EVSPs are still developing their business models, and the price that consumers are willing to pay for vehicle charging is largely undetermined at this point.

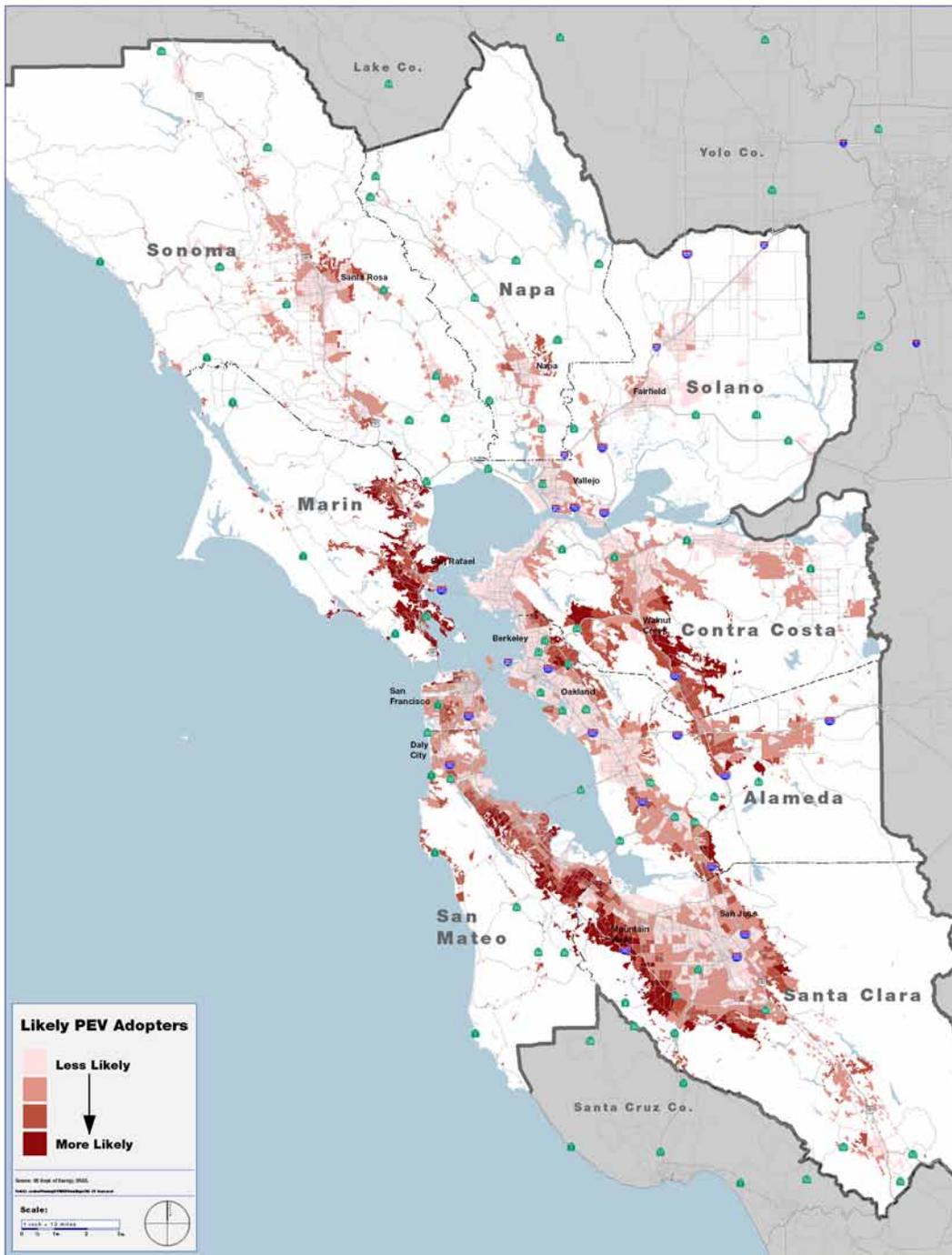
Table 6. Parameters Considered in the Identification of Suitable Locations for EVSE

Category	Parameter	Brief Explanation
Vehicle Characteristics	Vehicle range	Informs trip distance and vehicle type; as well as level of charging that is appropriate.
	Charging time	Together with trip characteristics, helps characterize potential for opportunity charging; and provide estimate of level of charging needed (e.g., long charging times are not practical in some cases; fast charging is impractical in others).
PEV Demand	Vehicle type	PEV forecasts were differentiated by PHEVs and BEVs.
	Trip characteristics	Understanding purpose of trips (e.g., home to work) and distance traveled.
	Home charging capability	Accessibility to a garage will help indicate the likelihood of a driver charging at home, where the vehicle spends a considerable amount of time.
Parking Characteristics	Lot types	The type of lot availability will help us understand, at a first pass at least, the range of costs for deploying EVSE.
	Ownership status	Helps identify barriers associated with gaining access to some lots e.g., deploying EVSE at a lot that is owned and operated by separate entities is challenging.
	Accessibility for installation	Improves cost estimate of EVSE installation; proximity to appropriate wiring/circuitry is useful, otherwise installation can be expensive.

Residential Charging Projections

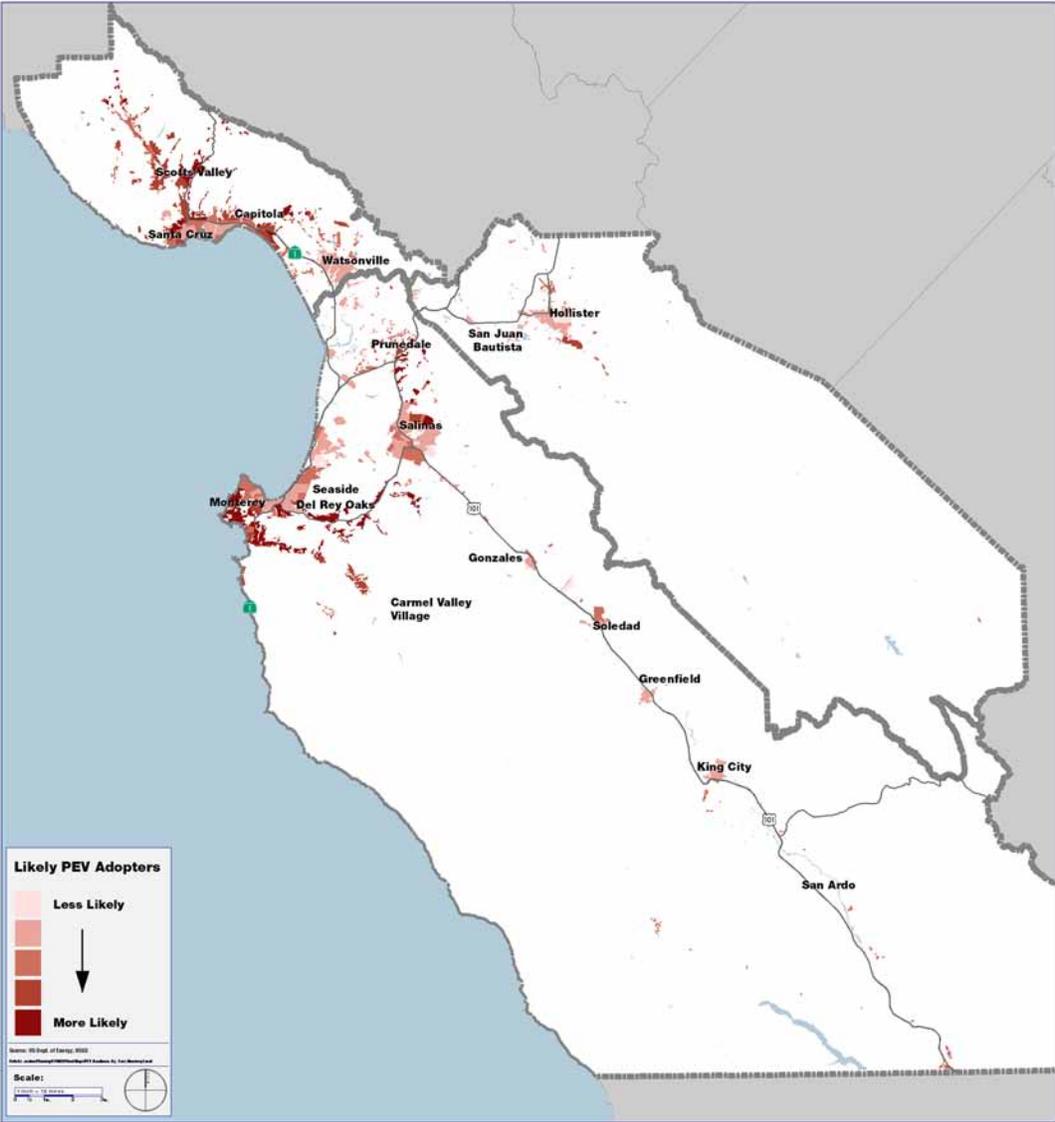
Based on the parameters identified above, the residential siting analysis yields the map in Figure 7 for the Bay Area and Figure 8 for the Monterey Bay Area below. The areas with the darkest shades of red are most likely to include a higher percentage of PEV adopters than regions with lighter shades of red.

Figure 7. Most Likely PEV Adopters in the Bay Area



Source: ICF, MTC GIS Unit

Figure 8. Most Likely PEV Adopters in the Monterey Bay Area

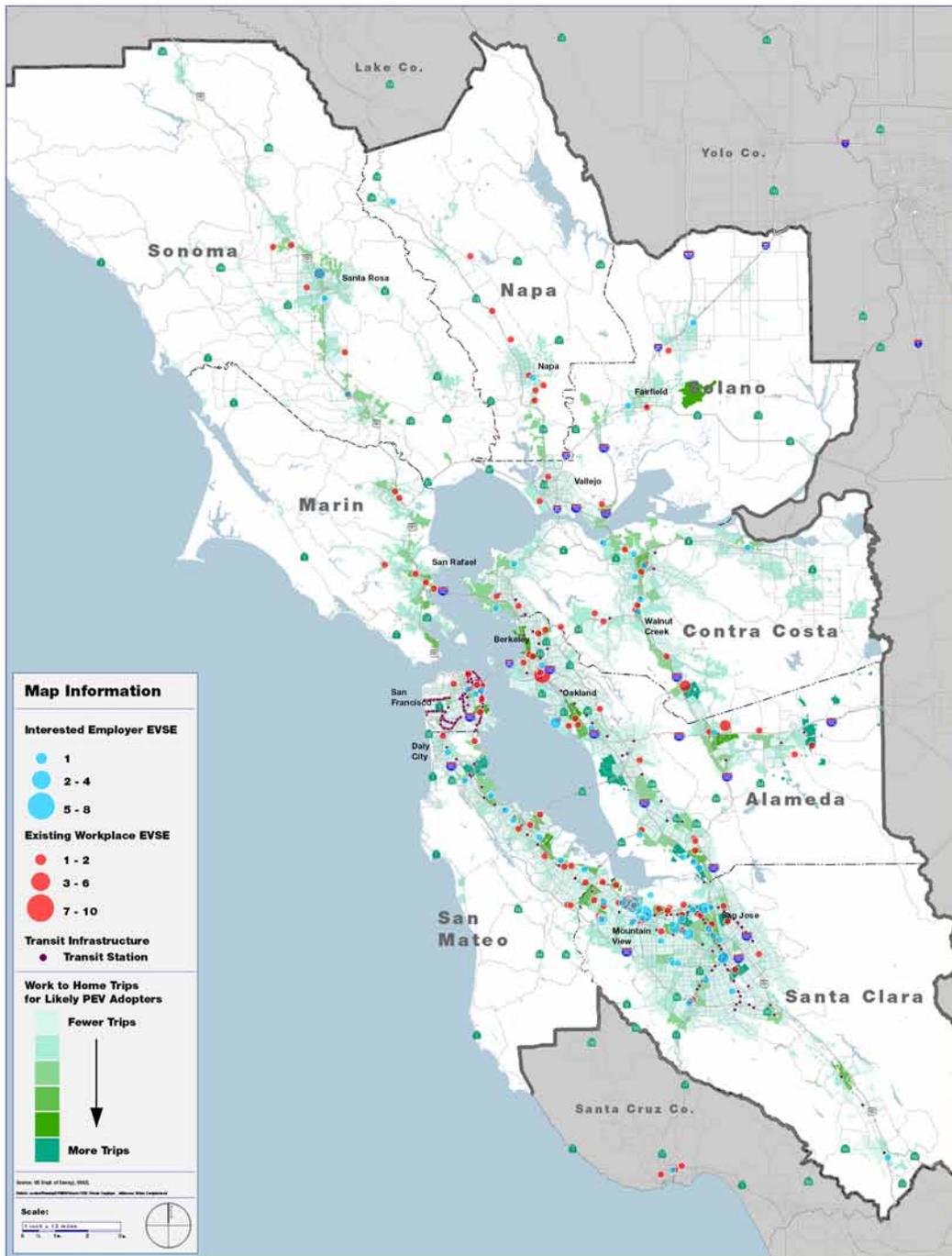


Source: ICF, MTC GIS Unit

Workplace Charging Siting Analysis

The map in Figure 9 below shows an overlay of the following data: the most likely destination zones for workplace trips (different shades of green), areas with existing workplace Level 2 EVSE (red dots), areas with employers interested in deploying workplace EVSE for employee charging (blue dots), and transit stations (purple dots).

Figure 9. Workplace Siting of EVSE for the Bay Area



Source: MTC, GIS Unit, Fehr&Peers, ICF, BAAQMD

Opportunity Charging

Level 1 and Level 2 EVSE

Opportunity charging is distinguished from residential and workplace charging and covers a wide range of situations where a PEV driver could potentially charge when away from home and/or work. Within this category, there are different sub-categories specific to the type of venue—such as retail parking lots, on-street parking, airport long- and short-term parking, cultural and/or recreational centers, etc. For the purpose of this Plan, the analysis does not differentiate between Level 1 and Level 2 EVSE at any given location, but rather provides general guidance with respect to whether chargers should be Level 1, Level 2, or a mix of these—and if so, in what ratio—to anyone who is considering installing EVSE. Table 7 below shows that the preference for one type of charging over another will be determined in part by the duration of time that a PEV driver may be parked at that specific location.

Table 7. Example of Charging Type based on Purpose²

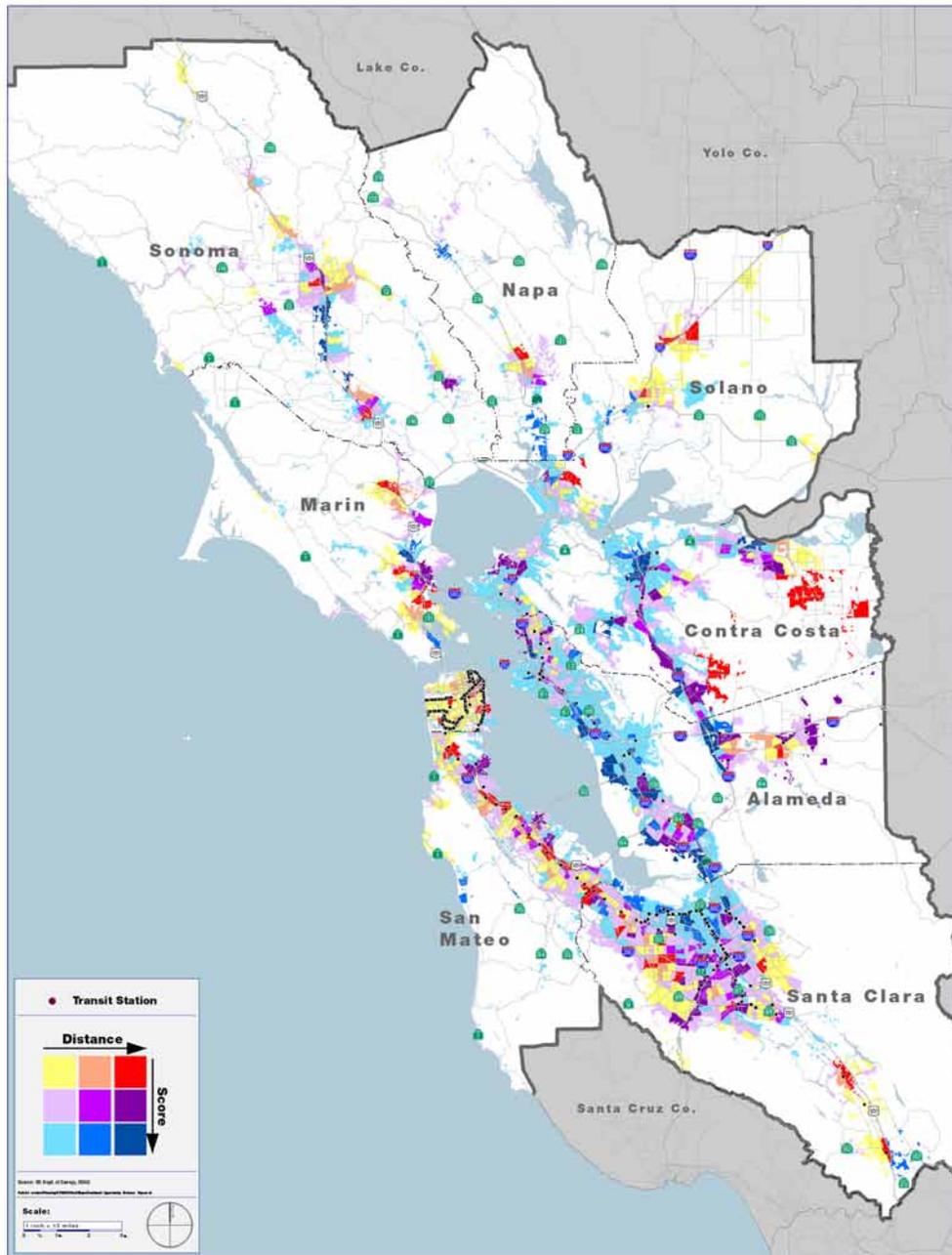
Category	Typical Venues	Available Charging Time	Charging Method (Primary/Secondary)
Opportunity and Destination	Shopping Centers	0.5–2 hours	Level 2/DC Fast
	Airport (short-term parking)	< 1 hour	Level 2/DC Fast
	Other	< 1 hour	Level 2/DC Fast
	Street/Meters	1–2 hours	Level 1/Level 2
	Parking Garages	2–10 hours	Level 2/Level 1
	Cultural and Sports Centers	2–5 hours	Level 2/Level 1
	Airports (long term parking)	8–72+ hours	Level 1/Level 2
	Hotels/Recreation Sites	8–72 hours	Level 2/Level 1
Corridor/Pathway	Interstate Highways	< 0.5 hours	DC Fast/Level 2
	Commuting/Recreation Roads	< 0.5 hours	DC Fast/Level 2
Emergency	Fixed	< 0.1 hours	DC Fast
	Mobile	< 1 hour	Level 2/DC Fast

For the purposes of this analysis, due to the variation in parked times, trips were considered based on purpose rather than parked times. Similar to previous maps shown, the legend in Figure 10 shows 9 colors representing a matrix of scoring across 3 groups of distances and 3 groups of PEV-weighted trips. Each block or color in the horizontal direction (left to right) represents the following trip distances: 0-5 miles, 6-10 miles, and 11+ miles. Unlike other maps shown, however, it is important to note that opportunity trips are generally in addition to other daily trips (e.g., home to work and work to home trips). As a result, even though these trips may be short, they do not reflect the driver’s tour (note: the sum of all individual trips equals a tour). Therefore, even though these distances are short, they most certainly

² Adjusted table that was provided by the SF BayLEAFs, October 24, 2012.

do not correlate with the state of charge of the battery. Each block or color in the vertical direction (top to bottom) represents the highest number of trips by likely PEV adopters to that zone. In other words, the blue shaded zones (light, medium, and dark blue) represent the most trips by likely PEV adopters to that particular region. Retail locations (e.g., shopping malls or dining establishments) in the zones with shades of blue (represented in the bottom of the 3x3 matrix in the legend) should be considered the highest priority areas for Level 2 EVSE deployment for opportunity charging.

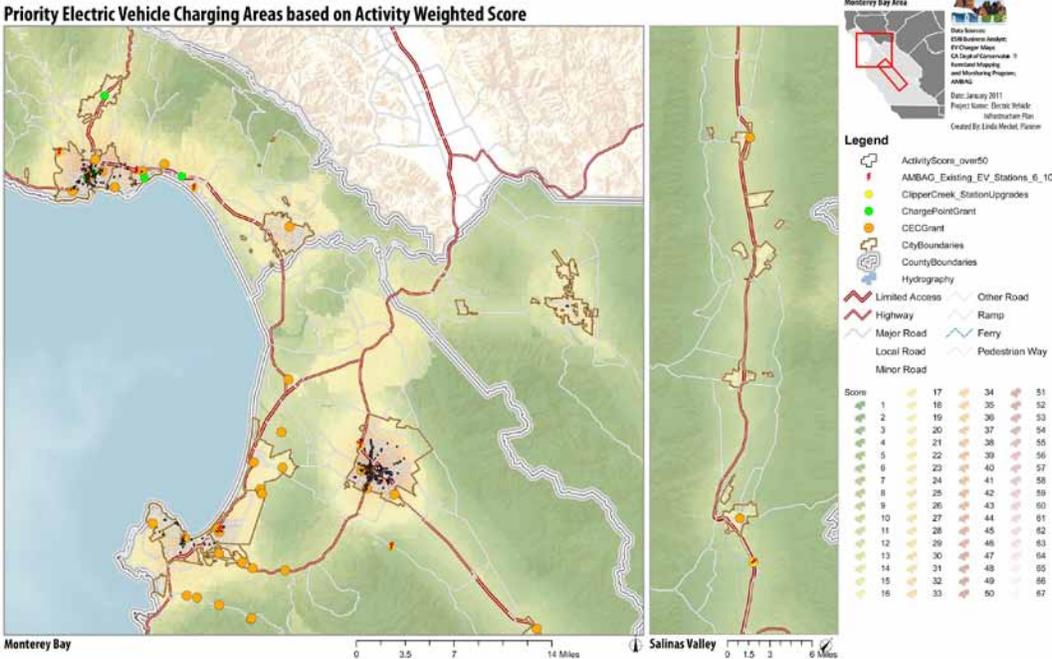
Figure 10. Opportunity Charging for Level 2 EVSE



Source: MTC GIS Unit, Fehr&Peers, ICF

For Level 2 EVSE siting in the Monterey Bay Area, the Association of Monterey Bay Area Governments (AMBAG) and the Monterey Bay Unified Air Pollution Control District (MBUAPCD) developed a suitability analysis,³ which includes both workplace charging and publicly accessible charging. AMBAG identified areas where a PEV driver would spend 1-3 hours as a reasonable amount of time to charge. Using a combination of data inputs, including the AMBAG Regional Travel Demand Model, AMBAG developed the suitability analysis from 45 different indicators. These indicators are largely the same as those employed in the siting analysis in the Bay Area, and include: existing parking locations, activity locations, high visibility locations, tourism attractors, distance from highway, route popularity, gas stations locations, and large employers. The results of the suitability analysis are shown in Figure 11 below. Note that the black dots in the map are actually the borders of areas that should be prioritized for Level 2 EVSE siting based on high activity weighted scores.

Figure 11. Prioritized Locations for Level 2 EVSE Deployment in the Monterey Bay Area



Source: AMBAG, MBUAPCD

DC fast charging

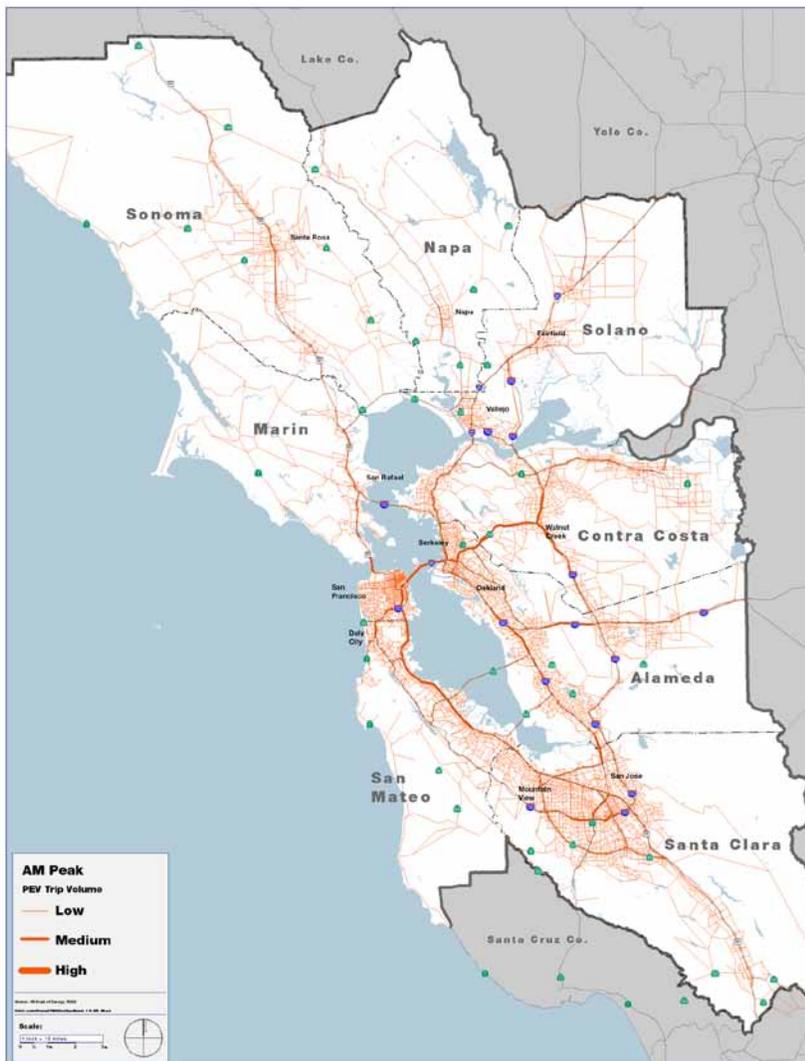
Fast charging is similar to opportunity charging in that it covers a range of situations where a PEV driver could potentially charge when away from home and/or work. However, fast charging is, at least in the short term, limited to only certain BEVs and will likely serve specific needs. These include as a method to extend range for inter- and intra-regional travel, as an alternative for PEV owners who do not have access to charging at home, as a backup for Level 2 charging until Level 2 EVSE are ubiquitous,

³ Draft Electric Vehicle Infrastructure for the Monterey Bay Area, AMBAG, January 2012.

and for emergency charging situations. Only DC fast charging is discussed in this section given that it is the most commercially readily available technology at this time. However, as new types of fast charging technologies emerge (e.g., AC fast charging, battery switch) the analysis and conclusions contained in this section will largely be applicable to those technologies as well. Finally, it is important to note that as fast charging is deployed in the Region, that there may be a reduced demand on the Level 1 and Level 2 opportunity charging network.

Based on the Bay Area regional transportation demand model, trips by likely PEV adopters during the morning and evening peak periods were derived. Figure 12 shows PEV traffic volumes during the morning peak period. The links shown with high traffic volume (the thickest lines on the map) indicate the links with top 10% of likely PEV traffic volume on the regional transportation network, which are optimal locations to site DC fast charging.

Figure 12. Heavy volume corridors during the AM peak period: siting for DC fast charging

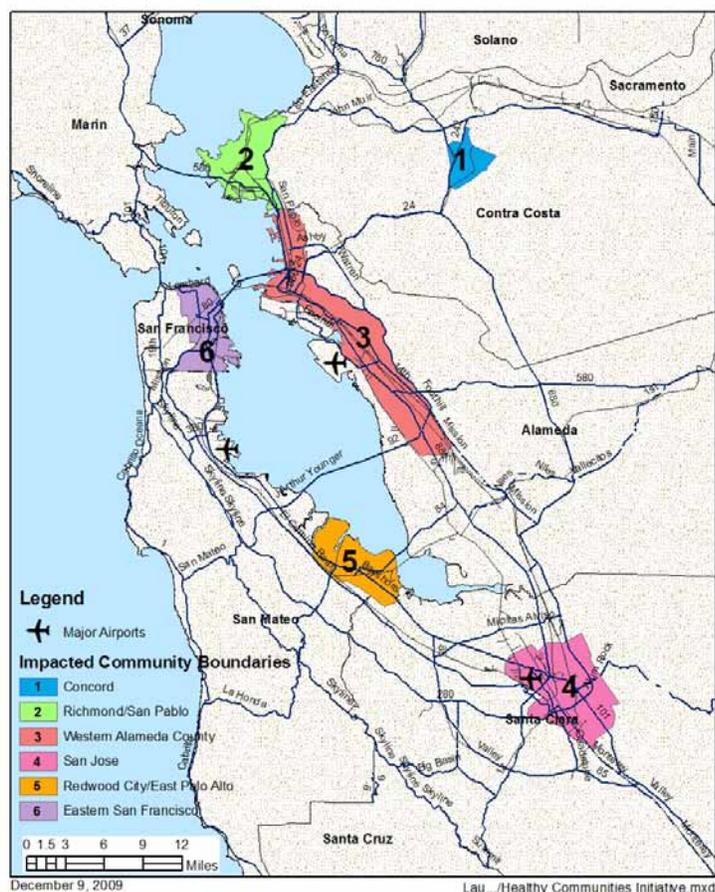


Source: MTC GIS Unit, Fehr&Peers, ICF

Impacted/Environmental Justice Communities

As part of the planned deployment of EVSE in the Region, it will be necessary for regional and other granting agencies to monitor the uptake of PEV in Impacted/Environmental Justice communities. While current research and analysis shows that uptake in these communities is likely to occur at a slower pace over the next several years, it is important that these areas be targeted for PEV adoption to assist in the reduction of harmful particulate emissions from both light- and heavy-duty vehicles. Currently, the BAAQMD prioritizes its grant funding towards projects in the 6 communities identified in Figure 13 below and this will likely assist in the deployment of additional EVSE in Impacted/Environmental Justice communities moving forward. Also, as part of the NRG settlement identified in Table 5, 20% of the DC fast charging EVSE to be installed as part of that project are required to occur in Impacted/Environmental Justice Communities. Based on the analysis performed in the Plan, it is anticipated that this deployment will provide sufficient EVSE for vehicles located in these communities through 2015. However, it is strongly suggested that the regional agencies monitor deployment under this program and coordinate siting with both NRG and the California Public Utilities Commission.

Figure 13. Impacted Community Boundaries in the Bay Area



Source: BAAQMD, Applied Method for Developing Polygon Boundaries for CARE Impacted Communities, December 2009

Estimating the Number of Charging Stations for the Region

The market is in the early stages of vehicle adoption and our understanding of driver behavior and optimal EVSE deployment is evolving. The analysis in this section draws to some extent from research conducted by EPRI and the University of California, Davis to estimate the number of EVSE that will need to be deployed in the Region to support the forecasted PEVs. Only non-residential charging was considered for the estimates discussed below.

Level 1 and Level 2 EVSE

For the purpose of this Plan, an EVSE deployment model was developed that decreases the demand for chargers over time to account for potential market saturation and the benefits of increased station utilization. Table 8 below compares estimates for Level 1 and 2 EVSE required to support the forecasted number of vehicles in the Region with estimates derived from a methodology developed by EPRI.

Table 8. Estimated Non-residential Level 1 and Level 2 EVSE to Support Forecasted PEV Population

Year	Vehicle Forecasts		L1 and L2 EVSE		EPRI Method (mid-level)
			Estimates		
	PHEV	BEV	Low	High	
2015	18,854	4,753	2,647	9,412	4,323
2020	75,161	25,111	8,808	27,069	17,389
2025	159,296	83,313	18,139	44,343	37,606

Based on the vehicle forecasts for the Region and considering the average of the low and high scenario estimates as well as EPRI’s methodology, it is estimated that by 2015 the Level 1 and Level 2 network of EVSE may need to be increased by 1,000–2,000 EVSE.

DC Fast Charging

Survey research conducted as part of the planning process indicates there is a significant need for increased fast charging in the Region. To determine the number of DC fast chargers that may be required to support the PEV forecasts for the Region, research conducted by the University of California, Davis was reviewed and considered. At a deployment of about 10,000



A row of Blink chargers (by ECOTality) at Facebook’s campus in Palo Alto, CA is a good example of workplace charging.

vehicles, the researchers report that about 225 stations are needed at 200 locations. As the number of vehicles increases, the number of stations will need to increase accordingly; however, it can be a non-linear increase as the number of charges per charging station are maximized per day. Based on the BEV forecasts for the Bay Area and Monterey Bay Area and findings from UC Davis, it is estimated that, depending on the utilization of fast charging stations, 75-170 DC fast charge stations at 35-50 locations will serve the needs of the Region out to 2020.

For a complete discussion of the regional siting analysis, please see Background and Analysis, Section 4.



A Ford Focus Electric charges at City Hall in Santa Rosa, CA.

5 BUILDING CODES

Building codes contain safety standards and specifications that guide new construction and renovations. There are two major opportunities to create building codes to support PEV deployment. The first is to specify standards for EVSE in the building code to ensure that any EVSE installations are safe and accessible. The second is to require pre-wiring for EVSE to lower the cost of future EVSE installations. “Pre-wiring” refers to the practice of providing sufficient basic infrastructure, such as conduits, junction boxes, outlets serving garages and parking spaces, adequate wall or lot space for future EVSE, and adequate electrical panel and circuitry capacity, to meet anticipated future demand for EVSE.

Issues, Gaps, and Deficiencies

Electricity use in commercial buildings and MDUs is much higher than in single-family residences, and the level of demand for EVSE is often difficult to estimate. As a result, a greater number of local governments have established requirements related to EVSE for single-family homes than have done so for commercial buildings and MDUs.

Review of PEV-Friendly Building Code Practices in the Region

According to a survey of local governments that was conducted in mid-2012 to assess PEV readiness, a minority (19%) of agencies have adopted building codes specific to EVSE installations. Of the remaining respondents, slightly less than half have begun to consider EVSE-related building code changes or are seeking more information. However, California’s Building Code and Electrical Code both contain specifications related to EVSE, and these codes apply in all cities and counties unless local governments have taken action to adopt their own codes. Thus, many local governments in California already have standards for EVSE in place.

Recommendations

Building codes are the appropriate place for local governments to specify the technical requirements for EVSE, as well as to require installation or pre-wiring for EVSE in new construction. This section contains two recommendations for the Region’s local government agencies to consider. The accompanying Background

and Analysis, Section 5 contains in-depth discussions of the issues and costs associated with each recommendation. Appendix B contains further analysis of the results from the survey of local governments regarding building codes.

Adopt standards for EVSE into the building code

Implementing this recommendation is relatively straightforward as the California Building Standards Code already contains standards for EVSE. Local governments that adopt the Building Standards Code therefore have standards for EVSE in place, while those that use their own building codes can simply adopt the relevant sections of the state code. If local governments wish to instead adapt or create their own building code standards for EVSE, they should be sure to address the issues of location of EVSE relative to vehicles and electrical panels, electrical and technical standards for EVSE, signage and marking, proper ventilation, and accessibility requirements.

Adopt requirements for pre-wiring EVSE into the building code

Adopting building code standards enables the installation of EVSE, but requiring pre-wiring removes a key barrier by dramatically lowering the costs of installing EVSE in the future. Pre-wiring requirements can be adopted either through the building code or through parking requirements in the zoning code, as discussed in Section 7. If local governments choose to amend both the building and zoning codes to create pre-wiring requirements for EVSE, the requirements in the two codes should be consistent with one another. Future updates to the California Building Code may include pre-wiring requirements. If this is the case, local governments that do not plan on adopting their own building codes may soon have requirements for EVSE in place without any additional effort.



6 PERMITTING AND INSPECTION

There is a tremendous opportunity to support successful large scale deployment of PEVs by ensuring that local governments are well prepared to handle potentially high volumes of permit requests for EVSE installations in an efficient and safe manner.

Issues, Gaps, and Deficiencies

The challenges associated with permitting and inspection of EVSE installations varies depending on the type of property at which the EVSE is located; whether it is at a single-family residence (SFR), at a MDU, or a commercial property.

PEV owners living in SFRs are typically both the property owners and the users of the EVSE, which streamlines decision-making about EVSE installations. Many SFR owners will likely seek certified contractors to install the EVSE, but some will seek to install the equipment themselves, creating potential safety risks if installations are conducted incorrectly. Also, there may be impacts to the electric grid if a significant number of homes in the same area install EVSE without notifying utilities.

Installing EVSE at MDUs and commercial properties is slightly more complicated due to homeowner associations (HOAs) or property managers that typically have ultimate say over EVSE installations. HOAs or property managers often have questions about the costs of installation, how to manage payment for use, and how to regulate use of EVSE and associated parking spots.

Review of PEV-Friendly Permitting and Inspection Practices in the Region

Based on the results of a survey of local governments that was conducted in mid-2012 to assess PEV readiness, more than half of local governments in the Region currently issue same-day permits for EVSE in SFRs, and 80% charge applicants under \$250 for these permits. The survey results also indicated that 22% of jurisdictions have either adopted or are in the process of adopting additional practices to support expedited and low-cost permits for installations at SFRs, MDUs and commercial properties. While many local jurisdictions have taken steps to remove barriers for permit applicants in SFRs, there are additional opportunities to streamline permitting for agencies that have not yet taken initial steps, as well as to expand expedited permitting to MDUs and commercial properties.

Recommendations

As local governments explore options for expediting and streamlining the permitting process, they will need to seek balance between convenience and quality control. EV charging stations, particularly Level 2 EVSE, may consume more electricity than other residential appliances—and in some cases as much as all other uses in the house combined—and require careful attention to safety and potential grid impacts, which can drive up the costs and time associated with permitting.

The five recommendations in this section summarized below are focused on helping local governments remove barriers to installing EVSE without sacrificing safety and quality control. The accompanying Background and Analysis, Section 6 contains in-depth discussions of the issues and costs associated with each recommendation. Appendix B contains further analysis of the results from the survey of local governments regarding permitting and inspection.

Expedite permitting for EVSE in single-family residences

In order to encourage EVSE installations, it is recommended that local governments consider expedite permitting for electric vehicles in SFRs by:

- Issuing permits in under 48 hours;
- Levying fees between \$100 and \$250;
- Making permits available online or over-the-counter; and
- Minimizing inspections and requirements for supporting materials such as site plans.

Create a permitting checklist for EVSE permit applicants, and post guidance online

Regardless of permitting requirements, it is a best practice to combine requirements and guidance into a single document that can guide PEV owners through the process. This document should be available online for easy access by applicants, such as property owners and contractors.

Require load calculations for Level 2 EVSE, and work with local utilities to create a notification protocol for new EVSE through the permitting process

In order to help utilities identify and address potential grid impacts due to new EVSE installations, it is a best practice for local governments to require that permit applications for Level 2 EVSE, as well as for DC fast chargers and other new fast charging technologies that become available, contain load calculations, and work to create a protocol for sharing this information with utilities.

Train permitting and inspection officials in EVSE installation

Local governments that anticipate a significant number of EVSE installations should consider having electrical inspection officials be certified in EV installation through the Electric Vehicle Infrastructure Training Program (EVITP) or a similar educational program that includes hands-on installation, instruction in relevant electric codes, and load calculation testing.

Staff the permitting counter with electrical permitting experts

In order for a local government to expedite permitting, the staff working the permit counter should be adequately familiar with the technical aspects of EVSE to evaluate applications with minimum delay before issuing permits.



PEV drivers charge up at ChargePoint stations during Game 2 of the World Series at AT&T Park, home of the 2012 World Champion San Francisco Giants.

7 ZONING, PARKING RULES, AND LOCAL ORDINANCES

Local governments in California have exclusive authority over all land use decisions within their jurisdictions. These decisions extend from general plans and other policies that guide the long-term growth of a community to zoning and parking ordinances that regulate the physical form of streets, buildings, and public spaces. At every step of the planning process, local governments have opportunities to prepare to accommodate greater numbers of PEVs. These include establishing a policy framework for PEV readiness as well as adopting standards, guidelines and requirements for PEV parking and charging stations.

Issues, Gaps, and Deficiencies

With respect to requirements and incentives for EVSE in commercial locations, workplaces, and MDUs, the key question is “how much is enough?” Requiring more pre-wired spaces or charging stations creates more opportunities for PEV charging, but setting requirements too high may drive up the cost of new development or lead to under-utilized EVSE. Though a growing number of resources are available for local governments to draw upon when setting requirements, PEV use is still in its infancy, and there is little data on how much demand there is for PEV charging.

Several overlapping issues affect the adoption of parking requirements. Local governments need to ensure that enforcement of policies limiting parking to charging PEVs is feasible and that enforcement officers are trained to distinguish between PEVs and conventional vehicles. Currently, no official design standards exist for accessible PEV parking or charging stations. Local governments can choose from several resources when creating accessibility standards, but when choosing between these resources they need to consider trade-offs between accessibility and costs. Agencies may also wish to address issues related to EVSE management, such as how to pass costs on to residents and users, particularly in MDUs, before creating parking requirements. Finally, conflicting guidance exists on signage for PEV parking spaces, and signage at actual parking spaces around the Region varies widely as a result.

Review of PEV-Friendly Zoning and Parking Practices in the Region

Based on the results of a survey of local governments that was conducted in mid-2012 to assess their PEV readiness, only 14% of local governments in the Region reported that they have adopted or are in the process of adopting zoning and parking requirements related to EVSE. The requirements that have been or are in the process of adoption vary widely according to the needs, context, and opportunities to revise plans in each jurisdiction.

Recommendations

This section contains five recommendations for local government agencies to consider in order to ensure that adequate charging opportunities are available for PEVs and that these charging spaces are designed to accommodate PEVs as efficiently as possible. This Summary briefly discusses each of these recommendations below. The accompanying Background and Analysis, Section 7 contains in-depth discussions of the issues and costs associated with each recommendation. Appendix B contains further analysis of the results from the survey of local governments regarding zoning and parking regulations.

Adopt a Climate Action plan, General Plan update, or stand-alone plan that encourages deployment of PEVs and EVSE

Local governments have found that including policies and strategies in comprehensive plans is a critical first step in building consensus among policymakers and the public in support of more specific implementation measures. This also makes it easier to allocate different funding streams toward PEV plans and projects.

Create minimum requirements for PEV parking

Over the long term, the most effective way to ensure that there is adequate PEV charging infrastructure to support increased adoption of PEVs is for local governments to consider adopting minimum requirements for the number of PEV parking spaces at different land uses.

Allow PEV parking spaces to count toward minimum parking requirements

Many jurisdictions have minimum parking requirements specifying the number of spaces that developers must provide for new construction in different land uses. Amending the zoning or parking code to allow PEV parking to count toward these requirements allows developers to provide PEV parking without increasing the total number of parking spaces required.

Adopt regulations and enforcement policies for PEV parking spaces

Regulations and enforcement policies can ensure that PEVs have unobstructed access to PEV charging, create incentives for drivers to purchase PEVs, and help local governments recoup the costs of publicly-available charging.

Specify design guidelines for PEV parking spaces

Local governments should also adopt design guidelines that address the many unique considerations associated with PEV parking spaces in order to guide property owners through the process of creating these spaces. Among other factors, these guidelines should address dimensions, configuration, signage, and accessibility for PEV parking spaces.

For a complete discussion of zoning, parking, and local ordinances related to PEVs and EVSE deployment, please see Background and Analysis, Section 7.



ChargePoint charging stations in the City of Sonoma, with signage and an ADA accessible parking spot.

8 STAKEHOLDER TRAINING AND EDUCATION

Transitioning the Region’s fleet over to PEVs will require extensive marketing, outreach, training, and education relating to PEVs, charging services, and infrastructure. There are already a number of organizations and stakeholders that are leading efforts at the national, state, and regional level to develop curriculum and specialized training for electrical contractors and inspectors, workforce development training for PEV fleet technicians, public charging station owners and operators, fleet managers, dealers, automotive repair shop owners, first responders, and other safety officials. Table 9 below highlights the organizations that are working to provide training opportunities in the Region.

Table 9. Organizations engaged in stakeholder training and education in the Region

Organization	Brief Description
The Electric Vehicle Infrastructure Training Program (EVITP)	The EVITP is a 24-hour course set up to train and certify electricians throughout California to install residential and commercial scale EVSE.
Clean Cities	At the national level, Clean Cities has developed a 30-minute online presentation for electrical contractors and inspectors regarding EVSE residential charging installation.
Green Transportation Workforce Development (GTWD)	GTWD teaches a series of green transportation technical classes in collaboration with The Green Team. The target audience for the workforce development training is fleet technicians, automotive shop employees, returning veterans, and hobbyists.
California Plug-in Electric Vehicle Collaborative	The PEV Collaborative is working to launch a PEV Resource Center that will provide answers to key issues.
Advanced Transportation Technology & Energy (ATTE) Initiative	The ATTE Initiative helps maintain California’s competitiveness as a national leader in advanced transportation and energy technologies through the development and continuous improvement of technical education at community colleges throughout the state.

Issues, Gaps, and Deficiencies

In many cases, dealers are delivering sound and robust advice to potential PEV consumers, particularly with regard to PEV vehicle specifications and residential EVSE deployment. However, anecdotal evidence suggests that some initial PEV dealerships were not prepared to either sell the vehicles effectively or provide good advice with regard to EVSE installations, with some being performed without the assistance of an electrician and without the required permit. When this happens,

a bad precedent is created that may lead dealers to continue to communicate potentially inaccurate information to consumers, thereby perpetuating risk and misinformation regarding the deployment of EVSE. At this early stage, the degree to which this issue may impact (or has impacted) PEV deployment is not well understood. As such, further research is required, particularly performing at least initial outreach to dealers through educational initiatives.

There are many efforts that have been initiated at the state and regional level to educate stakeholders. As more local and regional agencies seek to educate themselves about the PEV ecosystem, a more coordinated effort will be required by prioritizing the most likely early- and mid-adopter regions. Jurisdictions of these regions should be educated on the training courses and resources available to them from local community colleges, the DOE Clean Cities, and other jurisdictions. Furthermore, anecdotal evidence from the Region indicates that there are some key stakeholders who are largely unfamiliar with their role in the PEV landscape. As a result, this uncertainty may cause additional challenges to PEV and EVSE deployment.

Recommendations

Develop Schedule for Stakeholder Training and Education

Based on the review of gaps and deficiencies identified via stakeholder interviews and survey responses, it is clear that coordination of efforts and additional stakeholder training and outreach is necessary. The accompanying Background and Analysis, Section 8 contains in-depth discussion of the issues and costs associated with the recommended training and outreach.

BAAQMD anticipates that there will be significant stakeholder engagement required to develop a coordinated training schedule. Recommended stakeholders and their corresponding roles are highlighted in Table 10 below.

Table 10. Recommended Roles and Responsibilities of Stakeholders Engaged in Stakeholder Training and Outreach

Stakeholder / Agency	Role / Responsibility
East Bay, San Francisco and Silicon Valley Clean Cities Coalitions	<ul style="list-style-type: none"> • Hosts: organize venues, coordinate outreach, and advertising • Coordinate day-of logistics
MTC, BAAQMD*, and ABAG DOE / CEC Utilities	<ul style="list-style-type: none"> • Co-funding and logistical support • Advertising and outreach to promote events • Utilities could conceivably use revenue from Low Carbon Fuel Standard credits to help co-fund training
EVITP	<ul style="list-style-type: none"> • Training instructor

*BAAQMD has recently applied to DOE for funding for training for first responders and local officials via the Clean Cities Funding Opportunity “Implementation Initiatives to Advance Alternative Fuel Markets”.

For municipal planning and permitting staff, a 6 to 8 hour training session is recommended, focusing on codes, safety, standards, site assessments, electric load calculations, permitting processes, and utility notification. Based on the survey of local governments, it is estimated that 250-370 local government staff will require some training. These staff should be trained by the end of 2014, which would require about 8-15 training sessions depending on the number of participants per session.



A row of Blink chargers (by ECOTality) at IKEA in Emeryville, CA.

9 CONSUMER EDUCATION AND OUTREACH

The introduction of new technologies like PEVs requires careful coordination and outreach to consumers. The familiar aspects of car ownership—such as vehicle pricing, fuel pricing, vehicle range, availability of refueling infrastructure—changes with PEV ownership. With support at the federal and state level through incentives for vehicles (e.g., tax credits and rebates) and for infrastructure (e.g., through The EV Project or the Home Charger Rebate Program), it is incumbent upon local and regional agencies to provide key, high-level messages that highlight PEV availability and benefits, including total cost of ownership, environmental, health, and community benefits.

Federal, State and Local Incentives

While the Region's early adopters have shown a strong commitment to PEV technology, the current and future success of PEV deployment is believed to be significantly tied to the availability of financial and nonmonetary incentives. Some of the key incentives that are available to consumers and commercial fleets today include:

- **Federal Tax Credit up to \$7,500 for PEVs.** The value of the tax credit is tied to the capacity of the battery in the PEV. The minimum value is \$2,500.
- **California State Rebate up to \$2,500 is available through CARB's CVRP.** The minimum value of the rebate is \$1,500 for light-duty vehicles.
- **California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)** includes incentives for medium- and heavy-duty electric vehicles, with vouchers ranging in value from \$30,000-\$50,000.
- **Access to HOV lanes:** California law allows single occupants in qualifying clean alternative fuel vehicles access to High Occupancy Vehicle (HOVs) lanes. The State issues an unlimited number of White stickers for BEVs and other qualifying zero emission and CNG vehicles, and Green stickers to the first 40,000 applicants that purchase or lease cars meeting California's enhanced advanced technology partial zero emission vehicle (AT PZEV) requirements. White and Green stickers are valid through January 1, 2015.
- **Local Incentive Funds:** Regional agencies also provide incentive funding for vehicle and infrastructure deployment. Agencies, including the BAAQMD, MTC and MBUAPCD are working to provide additional funding to meet the Region's

needs to ensure that adequate charging infrastructure is available. For instance, in partnership with ECOtality through the EV Project, BAAQMD is helping to defray the costs of residential EVSE installation at homes for early adopters.

To fully implement the recommendations contained within the Plan, additional incentives may be necessary to ensure continued adoption of PEV technology. For example, the federal government previously provided a federal tax credit to help reduce the cost of installation of EVSE at homes and workplaces. It is hoped that this type of incentive will be renewed in future funding cycles. BAAQMD and MTC will also monitor the need for incentives that complement available opportunities for funding to meet future deployment capacity needs.

Go EV Campaign for the Bay Area

There are many stakeholders in the Region engaged in the deployment of PEVs and EVSE, including public and private actors that have contributed to making the Region a market leader in PEV and EVSE deployment. With a market that includes more than 5 million registered light-duty vehicles and more than 250,000 new light-duty vehicles sold annually, a local, well-coordinated PEV educational campaign that specifically targets consumers is needed in order to successfully capture the attention and acceptance of the broader general public. The key regional stakeholders—led by MTC in collaboration with ABAG and BAAQMD—have responded to that need and are developing a Go EV Campaign that will target potential consumers in the Region.

Review of Campaign Objectives

The effort will be a promotional campaign aimed at building awareness and demand for PEVs (including both BEVs and PHEVs) in the Bay Area along with helping to stimulate additional supportive actions including for infrastructure development. One of the primary objectives of the Campaign is to communicate the potential of PEVs to displace gasoline and save consumers money, stimulate the local economy, create jobs, reduce GHG emissions, and improve public health. The specific goals of the Campaign include:

- Behavior change of Bay Area drivers to purchase PEVs or otherwise use PEVs;
- Develop core messages that create awareness to communicate PEV benefits;
- Continue to promote the Bay Area identity as a center for high tech, green culture, and the EV capitol of the US;
- Educate Bay Area residents about PEVs;
- Demonstrate PEVs for potential consumers through targeted outreach;
- Identify prominent individuals/organizations to deliver campaign messages; and
- Motivate individuals to reduce their contribution to Bay Area GHG emissions.

The accompanying Background and Analysis, Section 9 contains an in-depth discussion of incentives and consumer education.

10 MINIMIZING GRID UTILITY IMPACTS

One of the primary concerns associated with PEV deployment for electric utilities in the Region is the potential negative impact from increased load on the local grid. The degree of the impact depends on parameters such as PEV penetration rates, the current condition of local distribution infrastructure, and strategies used by the electric utility to manage additional load. Through the use of tariff structures and incentives, utilities are actively seeking solutions that maximize PEV charging during periods of lower electrical demand, such as off-peak hours, helping to mitigate grid impacts.

The utilities in the Region include:

- Alameda Municipal Power
- City of Healdsburg Electric
- City of Hercules
- City of Palo Alto Utilities
- Marin Clean Energy
- Pacific Gas & Electric Company
- San Francisco Public Utilities Commission
- Silicon Valley Power

These utilities are at various stages of developing programs for PEV deployment in their service territories, including special rate programs, supporting efforts for charging infrastructure development, and public education programs. For more information, please see Background and Analysis, Section 10.

Issues, Gaps, and Deficiencies

Clustering

Though the generation and transmission capacity may be sufficient to serve a statewide PEV adoption rate of a certain percentage, in local areas where city or neighborhood adoption rates are much higher, the local distribution grid may not be sufficient resulting in the overloading of the local distribution grid and causing premature degradation of infrastructure such as pole-top transformers and decreased reliability. The clustering of PEV loads may be one of most immediate threats to utilities in the Region, and accordingly each utility should examine the structure and condition of the local distribution grid as it relates to the potential for local PEV clusters.

Congestion and Capacity Expansion

Even if utilities in the Region are able to overcome the barrier of local clusters, long-term challenges will be created by high levels of PEV adoption. If PEV loads were to push peak demand higher, there will be additional costs to ensure that sufficient generation capacity is available to meet consumer demand. Shifting PEV loads to off-peak hours through pricing will mitigate the increases in peak demand, but some needs for additional capacity can be expected as the market grows.

Potential Gaps at Municipal Utilities

With assistance from PG&E's leadership in developing programs for PEVs, other utilities serving communities in the Region will also need support from local communities regarding issues such as notification protocols and understanding potential demand for PEVs in order to assess the potential impact on local distribution infrastructure. If not already done, these utilities should consider adopting TOU rates to encourage off-peak charging, comparable to those outlined from PG&E in the Background and Analysis, Section 10.

Recommendations

Evaluating Rate Structures and Impact on PEVs

Utilities in the Region should evaluate their rate structures in the context of the potential impact on PEV consumers, including alternatives to tiered rate structures, time of use rates, and secondary meters as discussed below.

Assess alternatives for tiered rate structures

California has used a tiered rate structure to incentivize energy conservation. Unfortunately, the tiered rate structure does not take into account the environmental benefits of PEVs and in many cases could move a consumer into to a more expensive tiered rate. Utilities should consider amending existing tiered rate structures to include PEV-friendly programs, such as:

- Develop a PEV rate structure comparable to a medical baseline program, which bumps up the baseline level for qualified residential customer requiring the use of at-home medical equipment. A similar program could be made available to qualifying PEV owners.
- Offer a PEV discount rate based on gross vehicle weight or battery size with certain requirements, such as charging during off-peak hours, justified by the grid capacity utilization benefits that can be provided.
- Offer alternatives to tiered rate structures for PEV drivers.

Evaluate Time of Use Rates

Time of use (TOU) rates can be an effective tool to mitigate grid impacts by encouraging consumers to charge during certain periods. Utilities should consider TOU rate options that preserve fairness to other ratepayers, allow for secondary metering at low cost to the customer, and do not include demand charges for commercial customers.

Review options for secondary meter

A secondary meter, or in some cases a sub-meter, would provide a number of added benefits to both the consumer and the utility. The consumers could save money on the potential cost of upgrading household circuits and maintain a lower electricity rate. The utility could analyze the merits of load management and demand response programs, obtain data for necessary local grid upgrades, and improve accounting for GHG emission reductions. Utilities may want to consider implementing a rebate program to supplement the consumer's cost of installing the secondary meter or pro-rate the cost of the secondary meter over a period of time.

Create Utility Notification Protocol

To minimize the potential grid impacts of EVSE, particularly among residential customers, utilities should be notified where vehicles are being deployed and how they are being charged (e.g., Level 1 vs. Level 2). Utility notification protocols could include standards for data collection, prerequisites for the timeliness of notification (e.g., prior to the installation of EVSE), granularity of the EVSE location (e.g., street address instead of zip code), standards for automated data collection protocols (e.g., online forms), and strategies to reduce overhead and program costs.

Upgrade Distribution Infrastructure and Evaluate Needs

When making upgrades or adding distribution infrastructure, utilities, regulators, and planners should include the potential for PEV charging impacts as part of the analysis and, where possible, make strategic and cost-effective investments. Despite low PEV adoption rates in some areas, utilities should begin to explore vulnerable infrastructure, particularly in areas more likely to experience PEV clustering and large public infrastructure projects.

Implement Consumer Outreach Programs

Utilities should take necessary steps to ensure consumers have accurate information regarding utility rates, utility incentives, and programs. A variety of tools should be provided, such as PEV rate calculators, to help customers select the best rate option for their lifestyle. Customers should know about the availability and benefits of PEV rates, vehicle fueling costs, charging, and the utility role in the installation process. Information should be presented through a wide variety of media, including bill inserts, brochures, public events and presentations, online material, videos, school curriculum, emails, and other media.

Evaluate Smart Grid Opportunities

As PEVs become more popular, networking EVSE and ensuring grid interoperability, particularly through smart grid technologies, will become a more predominant issue. In order to mitigate potential impacts of PEV deployment, utilities should investigate opportunities for smart grid technologies, particularly as a technique to monitor and control charge events. As part of this planning effort, methods for ensuring the charging infrastructure and vehicles are compatible with smart grid technologies should be explored.

Provide Renewable Energy Options for PEV Drivers

Some early PEV adopters identify environmental benefits as a key reason to switch from internal combustion engine (ICE) vehicles. By integrating renewable energy options into existing or future PEV rates, some utilities in the Region may see accelerated PEV adoption rates. One effective pathway to provide renewable energy is through Green Pricing Programs, which allow customers to voluntarily pay a premium for renewable energy. PEV rate programs should seamlessly integrate with renewable energy programs. Utilities may also explore options to market PEV incentives to existing renewable energy customers.



As part of the Reconnect California Program, funded by the California Energy Commission, Clipper Creek is upgrading publicly available Level 2 EVSE throughout the State. This Level 2 EVSE is at the commuter parking lot at the Larkspur Ferry Terminal, operated by Golden Gate Ferry.



ACTIONS FOR FURTHER REGIONAL READINESS

The following subsections include a discussion of actions for regional agencies that are further distinguished by: a) policy and planning actions, b) coordination actions, and c) funding and incentive actions.

Policy and Planning Actions

As part of the implementation of the Plan, it will be important to galvanize local and regional leadership to implement the recommendations presented as part of this document. This leadership needs to come in the form of policy actions and directives that attempt to standardize and unify, as much as possible, elements such as building codes, parking and zoning ordinances, and permitting and inspection across local jurisdictions.

Provide Resources to Local Governments for EVSE Deployment

Regional agencies in the Bay Area—BAAQMD, MTC, and ABAG—and in the Monterey Bay Area—AMBAG and MBUAPCD—should continue to make resources available to local governments that will support them in the deployment of EVSE. It is important to recognize that the marketplace and associated needs of PEVs and EVSE will likely change. Regional agencies can help local governments remain flexible and responsive to the changing needs of the market. The Plan represents the first step in the process towards helping the Region get PEV ready. Moving forward, the regional agencies in each area should continue to provide resources such as modified or updated installation checklists, updated PEV projections, and any updates to the siting analysis.

Summit of Local Elected Officials

As research for this document was completed, one of the underlying trends that emerged was the willingness of local jurisdictions to assume leadership in the area of PEV deployment. This is evidenced by the multitude of practices developed in the Region that have been identified via various guideline documents as best practices for the State and nation. However, as is equally evidenced by the surveys conducted as part of the Plan, not all the jurisdictions have moved forward with PEV readiness at the same rate. It is also clear that at least initially, not every local

jurisdiction will be impacted by the adoption of PEVs at the same rate, but as the number of PEVs in the Region increases, each jurisdiction will need to deal with all the elements outlined in this planning document.

As part of the development of the Plan, a considerable amount of outreach was conducted with local governments and stakeholders. One of the key messages from this outreach was that the growing strain on local finances will make it difficult for local jurisdictions to take on new work or to implement new policy directions without priority setting and impetus from local leadership. Therefore, in order to present the recommendations of the Plan and solicit the support of local elected leadership, a regional summit regarding PEV readiness is recommended. Such a summit could be hosted by regional agencies such as BAAQMD, MTC, ABAG, AMBAG and MBUAPCD and be supported by regional organizations such as the EV Strategic Council and Monterey Bay Electric Vehicle Alliance (MBEVA). The purpose of the summit would be to kick start the adoption and sharing of the recommendations included in the Plan and the associated “best practices” guidelines. Local jurisdictions already implementing these best practices would be invited to share their experiences with others in the hopes that coordination and cooperation would continue under the direction of elected officials. The goal of the summit would be to elicit commitments from each jurisdiction to adopt PEV readiness plans by the close of 2014, implementing the recommendations from this document and including additional municipality-specific information.

Alternative: Use existing local government forums to share PEV information across government agencies

As an alternative, the regional agencies should explore opportunities for using existing local government convening forums such as Mayors’ Conferences to solicit the policy direction required for the successful implementation of the recommendations in the Plan. The smaller meetings, while more labor-intensive, may ultimately be more effective at directly reaching more city and county leadership versus a one-day summit.

Create updated design guidelines for EVSE in public locations, commercial properties, and MDUs based on a survey of existing PEV charging spaces

Several of the resources referred to in the Plan include design guidelines for PEV charging spaces in locations other than single-family residences. However, these guidelines are generally based on input from local stakeholders, manufacturers, and installers, and focus primarily on new construction. They often reflect best-case scenarios in which property owners are able to balance the many design constraints placed on PEV charging spaces by the site layout, proximity to electrical infrastructure, accessibility requirements, installation costs, and, in the case of EVSE at existing construction, the current parking configuration. In reality, property owners often face trade-offs between these constraints, and many of the PEV

charging spaces in the Bay Area and Monterey Bay Area do not conform to design guidelines as a result. This hodgepodge of designs can make it confusing for PEV owners to locate charging, but it also provides the opportunity for planners to examine usage patterns at EVSE throughout the Region and identify best design practices, especially at existing developments and in locations where overlapping constraints force trade-offs between meeting the different constraints listed above.

Monitor the success of near-term and long-term actions and incentives to determine progress on PEV readiness

An additional key policy action that will be required from the regional agencies is the monitoring of progress towards PEV readiness under the Plan. This can be done by measuring the success of local governments in meeting the near- and long-term objectives identified in Table 2 utilizing the methodologies that were used in the development of the Plan (e.g., surveys, interviews, and site visits). Additionally, the regional agencies will as a requirement of their own planning efforts (the BAAQMD Clean Air Plan and the MTC/ABAG Sustainable Communities Strategy planning) need to monitor the uptake and deployment of PEVs in the Region to meet air quality and greenhouse gas targets. Based on the results of this monitoring, additional actions (e.g., incentives and legislation) may be required to ensure that the Region continues on its path to PEV readiness.

Coordination Actions

The rapidly changing landscape of technologies associated with PEVs and EVSE will make it necessary for the recommendations in the Plan to be flexible in certain areas (e.g., consumer education or grants). To help maintain flexibility moving forward, it is essential to continue the dialogue and coordination between the private and public sectors regarding elements that are within the scope of the Plan.

Coordinate Stakeholder Training and Education of Local Government Staff

As noted previously in Section 8, regional agencies can play an important role by coordinating the training and education of local government staff on issues related to PEVs and EVSE. The coordinated schedule will help chart a path for local governments to train staff by the end of 2014, while also providing consistent and reliable information to local governments.

Implement Go EV Campaign

As noted previously in Section 9, MTC has begun the implementation of the Go EV Campaign. BAAQMD and ABAG will continue to provide support for the Campaign as possible. As the regional agencies assess the needs for consumer outreach and education and the impacts of the Campaign, the resources dedicated to the Campaign should be modified as necessary.

Create Cross-Jurisdictional Opportunities for Sharing Lessons Learned

Unlike with building and zoning, changes to the permitting process are not adopted through new code language, and instead depend heavily on the internal organization and staff capacity of a local government. Local governments should coordinate through the Tri-Chapter Uniform Code Committee (TUCC), ABAG, Clean Cities Coalitions, and other organizations to share and offer solutions to common PEV installation issues, and make recommendations regarding local permitting practices based on past experience.

Funding and Incentive Actions

A core strategy of the Plan is the use of incentives. This strategy leverages the Region's experience in the deployment of government funding (DOE, CEC BAAQMD, MTC, MBUAPCD and local government funding) which has provided the area with a significant edge in terms of the data available, and the number of EVSE and PEVs deployed to date. As envisioned here, use of future funds can incentivize and ensure the adoption of many of the recommendations in the Plan in both private and public sectors. The following two sections discuss the use of current and future incentives in the implementation of the Plan to enable local government readiness.

Air District Incentive Funding

At present, a substantial amount of the funding that goes towards PEV-related projects in the Region comes from Assembly Bill (AB) 434. This bill provides local air districts the ability to assess a \$4 DMV fee on vehicles registered within their jurisdictions and to use that funding to reduce criteria pollutants stemming from automobiles by directly funding projects that reduce tailpipe emissions and reduce vehicle miles traveled. In the Bay Area over the past three fiscal years, more than \$6 million from AB 434 funds have been devoted to PEV-related projects.

Based on results of this planning effort, additional incentive funding may be needed in a number of areas in order to execute the recommendations of the Plan. These are as follows:

- **Multi-family Dwelling Units (MDUs):** BAAQMD is currently participating in a working group at the California Plug-in Electric Vehicle Collaborative regarding EVSE deployment at MDUs. The working group is developing recommendations on strategies that would align air districts' and state agencies' incentive funding to be able to conduct pilot projects at different types of MDUs and to gather data and information for case studies with the goal of developing "best practices" for MDU property managers, HOA managers and MDU residents.

- **Workplace charging:** BAAQMD is also funding CALSTART to develop best practices for businesses to install and maintain workplace charging. This work will be improved upon by another workgroup at the California Plug-in Electric Vehicle Collaborative that is currently developing case-studies, improved resources for employers, and recommendations that will inform investment of air districts' funding (possibly to expand on the number of use cases) in this area.
- **Vehicle incentives:** Additionally, BAAQMD has previously provided grant funding for the replacement of older, polluting vehicles with new, clean air vehicles through a Vehicle Incentive Program. Based on the outcome of this planning effort, the BAAQMD's Board of Directors may consider future recommendations that would similarly provide incentive funding towards the purchase of PEVs for local Bay Area public agencies.

BAAQMD's Board may also consider additional strategies that would incentivize adoption of the PEV readiness recommendations contained in the Plan at the local government level. This approach coupled with the education, coordination, and training proposed in the Plan is designed to reward local governments who have adopted or pioneered the best practices proposed in the Plan.

Regional Transportation Funding and Incentives

MTC has been actively engaged with BAAQMD and ABAG in the deployment of PEVs and EVSE in the Region. Through Plan Bay Area, the region's Sustainable Community Strategy, MTC has prioritized the following three long term strategies specific to PEVs to help achieve the state mandated GHG emissions reduction target (on a per capita basis), including:

- **Vehicle Buyback & PEV Incentives Program:** This program couples fleet turnover with the deployment of PEVs. The vehicle buyback program is designed as a trade-in for older vehicles that are below a certain fuel economy threshold, with the eligibility restricted to consumers purchasing a PHEV or BEV. The incentive amount varies with the fuel economy of the vehicle being traded in (measured in miles per gallon) as well as the vehicle type being purchased (i.e., PHEV or BEV). The initial plan allocates \$120 million for this strategy over the span of 15 years.
- **Feebate Program:** This program is designed to provide feebates for the purchase of more fuel efficient vehicles, including PEVs. Although this measure is focused on increasing vehicle efficiency, there are provisions for the purchase of PEVs. When implemented in conjunction with the vehicle buyback program this will essentially eliminate the incremental cost of purchasing an EV over an ICE vehicle. The initial plan allocates \$25 million for the administration of this strategy.

- **Regional Public Charger Network:** With PHEVs likely to be deployed in significant numbers in the Bay Area, this strategy makes targeted investments to help increase the number of pure electric miles traveled by PHEVs while expanding the range of BEVs. The initial plan is to dedicate approximately \$80 million over the span of 15 years to support this program.

The intent of these strategies is to accelerate PEV adoption and increase usage over the long-term. However, MTC is also interested in pursuing short-term strategies to prepare for increased adoption rates. In order for MTC to implement the Sustainable Community Strategy programs highlighted above effectively and to increase the likelihood of success, communities must become PEV ready in the interim. In the next four years, the Climate Initiatives Program should consider including:

- A pilot version of the regional public charger network strategy to collect lessons learned and develop best practices prior to a region wide launch.
- Increased funding for the Go EV Marketing Campaign. There are still many misconceptions about PEVs and there are gaps in existing campaigns that the public sector can help fill. Marketing may prove to be a highly cost effective way to increase PEV purchases.
- A pilot program to install chargers in MDUs. Plan Bay Area calls for a highly focused growth pattern which will require significant amounts of attached housing in order to accomplish it. Without solving the problem of how to install EVSE at MDUs, a significant percentage of potential PEV buyers will face an additional barrier to adoption. This will make it much harder to increase adoption of PEV to the levels required to achieve the Region's GHG targets.
- Offering incentives for residential EVSE for PHEV buyers. The EV Project has collected a significant amount of data regarding BEV driver habits; however, there is much less information on PHEV drivers. If residential EVSE rebates were offered to PHEV drivers in exchange for access to charging and driving data, then future EVSE siting plans and marketing efforts could be more informed.

Funding for PEV readiness planning at the local level is recognized by MTC as critically important to make other investments in GHG reductions from PEV and charging infrastructure deployment worthwhile. While MTC has many limitations on eligible uses of fund sources that are likely to interfere with the ability to provide planning funds, the possibility of funding swaps or identification of additional funding sources should be investigated. A program for this work could be developed either within the Climate Initiatives Program, through other MTC programs, or by contributing funding to a BAAQMD program.

Monitor uptake of PEVs in Impacted/Environmental Justice Communities and consider additional incentives for EVSE deployment in those areas if necessary

As was previously mentioned, it has been determined that the deployment of EVSE under the NRG settlement (see Section 4 above) should be sufficient to meet the needs of PEV drivers in Impacted/Environmental Justice communities through 2015. However, due to the significant need to reduce health risk in those communities, it is strongly suggested that the regional agencies continue to monitor the uptake of PEVs in these communities and consider additional grants in these areas, should the demand for vehicles increase over the next few years.



Level 2 charging is available at Napa Premium Outlets.



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