SHIFT
SONOMA COUNTY
EV CHARGING INFRASTRUCTURE SITING FRAMEWORK
Acknowledgments

Project Partners:
Sonoma County Transportation Authority (SCTA)
Regional Climate Protection Authority (RCPA)

SCTA/RCPA Board of Directors
The SCTA/RCPA Board has representatives from all ten local jurisdictions in Sonoma County.

David Rabbitt, Sonoma County, Chair
Carol Russell, City of Cloverdale, Vice Chair
Mark Landman, City of Cotati
Brigette Mansell, City of Healdsburg
Kathy Miller, City of Petaluma
Jake Mackenzie, City of Rohnert Park
Chris Coursey, City of Santa Rosa
Sarah Glade Gurney, City of Sebastopol
Madolyn Agrimonti, City of Sonoma
Susan Gorin, Sonoma County
Shirlee Zane, Sonoma County
Sam Salmon, Town of Windsor

The SCTA and RCPA would also like to thank the advisory committees that reviewed the Plan.

With support from:
Nelson/Nygaard
ICF

The work upon which this publication is based was funded in whole or in part through a grant awarded by the California Strategic Growth Council.

Disclaimer:
The statements and conclusions of this report are those of the SCTA/RCPA and/or Subcontractor and not necessarily those of the California Strategic Growth Council or of the California Department of Conservation, or its employees. The California Strategic Growth Council and the California Department of Conservation make no warranties, express or implied, and assume no liability for the information contained in the succeeding text.
Contents

1. Overview ................................................................................. 1
2. Highlights ............................................................................... 2
3. Challenges ............................................................................. 4
4. Methodology ............................................................................ 5
5. Results ................................................................................... 12
6. Recommended actions ......................................................... 21
1. Overview

The Shift Sonoma County Low Carbon Transportation Action Plan was developed to explore new transportation strategies, including those that support and accelerate the transition to electric vehicles (EVs) in Sonoma County. In coordination with efforts to increase EV adoption, the Shift Plan also promotes expanded EV charging infrastructure.

The county-wide EV Charging Infrastructure Siting Framework supports the Shift plan by informing EV charging infrastructure investment for local governments, EV service providers, utilities, employers and developers.

The end goal is to provide accessible tools to help local stakeholders understand where to locate infrastructure and be ready and competitive for implementation funding. The Shift Plan can assist smarter EV charger infrastructure planning by providing a siting framework comprised of two elements:

» A forecasted range of charging infrastructure needed to support an EV fleet in Sonoma County that will displace 50% of petroleum consumption by 2030.
» An online, GIS based map of “hot spots” in the community where EVs are most likely to be used: at home, at work, and for fast charging.

1. Overview
Purpose of the Charging Infrastructure Siting Framework

2. Highlights
High-level takeaways

3. Challenges
Barriers addressed in creating the framework

4. Methodology
Methodology used to construct the EVSE Siting Framework

5. Results (jurisdiction maps)
Detailed results from the EVSE Siting Framework, including maps

6. Recommended actions
Actions from the Fuel Shift plan and other recommendations
2. Highlights

FORECASTED NEEDS

In order to meet the Fuel Shift goal of reducing county-wide petroleum use for transportation by 50%, there would need to be nearly 90,000 EVs in use by 2030. In order to support these EVs, as many as 11,000 charging ports could be needed at workplaces and public locations across the county.

Public Charging Demand by Jurisdiction - 2030 Forecast
While EVs sales in Sonoma County currently appear in line with reaching the goal for EVs (see Forecasted EV growth for Sonoma County), the county is below the lower estimate for charging infrastructure needed to support those vehicles.

**EV growth for Sonoma County - 2030 Forecast**

![EV growth graph](image)

**Charging Demand for Sonoma County - 2030 Forecast**

![Charging demand graph](image)
3. Challenges

Significantly more EV charging infrastructure is needed to accommodate existing driver needs and enable rapid growth of EVs. Home charging is essential to make EVs viable for most drivers. Ubiquitous, visible, and publicly accessible charging stations give drivers comfort in using vehicles for longer or unique trips, and help potential vehicle buyers believe that EVs can work for them.

Sonoma County, and the Bay Area, needs more charging infrastructure to support expected growth in EVs, let alone encourage more rapid adoption. The Bay Area Electric Vehicle Readiness Plan forecasts the need for a range of publicly accessible chargers to accommodate growth in EVs. The forecast need is framed as a range because of uncertainty regarding the behaviors and technologies that will dominate the market (e.g., longer range vehicles and plug-in hybrids may tilt behaviors towards home dominant charging). Regardless, the Bay Area needs a forecast minimum of 20,000 chargers to support the 2025 goal of 247,000 vehicles.

Unfortunately, ongoing evaluation of the Readiness Plan progress led by the Bay Area Air Quality Management District (BAAQMD) has found that while EV adoption is on pace or ahead of regional targets, the installation of charging stations has lagged even below the low end of the range of projected need, as represented by the figure below.

Bay Area Public EV Charging Infrastructure Needs

---

4. Methodology

Based on what is known about EV owners today, the Shift team has developed a methodology to characterize the likelihood that EVs will travel to a particular catchment area or geography. The methodology is based on socioeconomic indicators (discussed in more detail below) and the results of the Sonoma County Travel Model. The key socioeconomic indicators that are used to develop the charging infrastructure siting analysis are:

- **Income.** Market research suggests that households with higher incomes are more likely to purchase an EV. Because EVs tend to have higher upfront costs, income can also be a limiting factor. In other words, individuals with low income might not be able to afford an EV without targeted incentives.

- **Hybrid Electric Vehicle (HEV) Ownership.** Households that value non-economic benefits are more likely to purchase EVs. HEV owners show a willingness to pay to reduce gasoline use that goes beyond the economic benefits of using an HEV. A Ford Motors representative noted that typical Focus Electric buyers have purchased HEVs in the past.² Research from UC-Davis supports this assumption: 68.3 percent of EV owners surveyed either own or have owned an HEV and locations of HEV owners correlate with locations of EV owners.³

- **Property Ownership.** Households who own their property are more likely to adopt an EV than those who rent, according to market research by Nissan and Chevrolet and surveys by University of California, Davis (UC Davis) and Clean Vehicle Rebate Project recipients. Home ownership can reduce both financial and non-financial barriers to charging infrastructure deployment.

- **Dwelling Type.** Dwelling type (e.g., single-family detached, single-family attached, or multi-unit dwelling (MUD)) can help indicate EV ownership. The model assumes that consumers with a single-family detached home generally have fewer barriers to EV adoption. Consumers living in MUDs are more likely to encounter barriers (e.g., limited space for infrastructure installation, HOA restrictions, installation costs for trenching, additional metering requirements, power availability).⁴

These data are scored (as described in more detail below) and then subsequently combined with results from the Sonoma County Travel Model to identify the areas that are most likely to be destinations for EVs traveling in the region. The Plan addresses the potential for different types of charging, defined as residential charging, workplace charging, multi-family charging, and opportunity charging. The latter, opportunity charging, is distinguished between Level 2 charging and DC fast charging opportunities. Descriptions of these levels can be found in the Shift Plan.

Overview of Siting Methodology

**Data Sources**

Socioeconomic data are taken from the American Community Survey 2014, and are available at the Census Block Group (CBG) level for Sonoma County. These data include income, tenure or property ownership, and dwelling type. The team used vehicle registration data from IHS Automotive, also available at the Census Block Group level.

**Scoring Indicators**

The indicators used in the analysis are scored by using different weighting factors, which are linked to survey and market research of EV owners. The siting methodology uses a General Residential Charging Score or ResGeneral Score.

---

² Mike Tinsky, Associate Director, Sustainability and Vehicle Environmental Matters, Vehicle Electrification and Infrastructure, Ford Motor Company. Phone interview, April 9, 2012.
The most critical parameter in our analysis is income. The CBGs are scored against one another by comparing the share of different income groups; this provides more granularity to our analysis than simply comparing median incomes. Income accounts for 60% of the scoring.

The second most important parameter in our analysis is HEV ownership. We compare the percent of HEVs owned in a CBG against the percent ownership of HEVs in the entire County of Sonoma; CBGs with HEV ownership higher than the County median are scored higher in our analysis. HEV ownership accounts for 30% of the scoring.

It’s assumed that home ownership and the number of units in a residence are short- to mid-term indicators for EV ownership. As such, these are used exclusively to differentiate amongst areas with better than median income and HEV ownership profiles. In other words, if an area does not have a higher than median income, but has a higher than median rate of home ownership, then it does not impact the ResGeneral Score. For tenure, the siting methodology uses scored areas based on the rate of home ownership relative to the median rate of home ownership for Sonoma County. Similarly for dwelling type, the siting methodology uses scored areas based on the rate of single family units relative to the median rate of single family units. In either case, the higher the rate of home ownership or higher rate of single family units yields a higher ResGeneral Score. These parameters each account for 5% of the total score.

Combining Socioeconomic Data and Trip Data
The framework uses Origin-Destination trip tables from the Sonoma County Travel Model which indicate the number of trips from an origin traffic analysis zone (TAZ) to a destination TAZ. The trip types include home-based work (HBW), home-based other (HBO), and non home-based (NHB) trips.

- **Residential Charging Infrastructure Siting.** Linked exclusively to socioeconomic data for each TAZ which yields the ResGeneral Score outlined previously; there is no trip data incorporated into this assessment.
- **Workplace Charging Infrastructure Siting.** Multiplies the bundled ResGeneral Score for each TAZ by the number of HBW trips originating in the corresponding TAZ. The number of trips that end (i.e., the destination) in each TAZ are subsequently summed and used to develop the areas with the most likely workplace charging needs.
- **Multi-Family Charging Infrastructure Siting.** This is a new metric, referred to as ResMF Score in the Excel sheet, that the team developed as part of the Fuel Shift Plan; it filters for areas with high multi-family ownership by increasing the value of the weighting factor for dwelling type, \( \delta \), and changing the structure of the scoring to favor areas with above median income, above median hybrid ownership, and a high share of multi-family dwellings (instead of a higher rate of single family units). This filtering process eliminated about 90% of the TAZs in Sonoma County.
- **Opportunity Charging Infrastructure Siting.** The Shift team has focused on Level 2 charging infrastructure, recognizing that DC fast charging is a corridor travel option that is addressed via other initiatives. For Level 2 charging infrastructure, a methodology similar to the workplace charging analysis is used; however, instead of multiplying the ResGeneral Score by HBW trips, it multiplies by HBO trips as a proxy for opportunity charging.

5 The socioeconomic data are scored at the CBG-level and the trip data are available at the TAZ level. SCTA provided a look-up table linking each CBG with a TAZ, which was provided using the geographical center of both CBGs and TAZs; CBGs were linked to the TAZ with the nearest geographical center.

6 We increased the weighting factor to 25% from 5%, and decreased the weighting factors for income and hybrid ownership to 50% and 20%, respectively. These are currently in draft form and subject to change.
Mapping the Scores
The mapping of scores for each infrastructure siting analysis–residential, workplace, multi-family, and opportunity–is linked to the visual that SCTA/RCPA would like to convey. There are 915 TAZs in Sonoma County. To help differentiate amongst this many TAZs, The team used six levels of shading for the mapping, linked to the percentile of each TAZ’s score relative to the entire county. The ranking strategy highlighted in the table below; we’ve included the number of TAZs in each category in the ResGeneral Score for illustrative purposes.

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Shading</th>
<th>Residential Charging TAZ_Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-40%</td>
<td>1</td>
<td>366</td>
</tr>
<tr>
<td>40-60%</td>
<td>2</td>
<td>183</td>
</tr>
<tr>
<td>60-80%</td>
<td>3</td>
<td>183</td>
</tr>
<tr>
<td>80-90%</td>
<td>4</td>
<td>92</td>
</tr>
<tr>
<td>90-98%</td>
<td>5</td>
<td>76</td>
</tr>
<tr>
<td>98-100%</td>
<td>6</td>
<td>15</td>
</tr>
</tbody>
</table>

The Shift team employed the same percentile rankings for the workplace charging infrastructure siting analysis and the opportunity charging infrastructure siting analysis. Given the amount of TAZs (90+%) that were filtered out of the ResMF Score, a different set of parameters were used for that mapping. Regardless, ultimately the number of categories to include is up to SCTA/RCPA.

Forecasting Demand for Charging Infrastructure
The siting methodology outlined in the section above focuses on the likelihood of the need for charging in a given area; however, the methodology is not intended to inform the amount or level of charging required. With regard to the former, the amount of charging infrastructure needed, it still remains unclear to what extent public charging infrastructure will be required to support the EV market. The two extreme scenarios can be broadly characterized as: a) ubiquitously available EV charging is not needed because most people will charge at home anyhow and b) ubiquitous EV charging is required to alleviate range anxiety and demonstrate to hesitant prospective buyers that EVs can travel anywhere like a conventional gasoline vehicle.

Rather than advocate for one position over another, or some in-between scenario, the framework seeks to outline the considerations that impact how much charging is likely to be needed, and how that can be implemented using the siting analysis. This approach echoes a sentiment included in a presentation from National Renewable Energy Laboratory staff regarding a statewide infrastructure assessment that they prepared: “We do not yet have sufficient empirical market and consumer behavior data to develop a predictive model of EV charging infrastructure expansion; therefore, a scenario approach is warranted.” The methodologies reported below are simply scenarios that can be used to estimate the demand for charging infrastructure, and are not meant to be definitive. Ultimately, more data and improved understanding of consumer behavior will help the stakeholder community make more robust decisions regarding both siting locations and the quantity of charging required.

It’s assumed that the demand for charging will be a function of EV deployment (including vehicle architectures) and the type of charging considered (including residential, workplace, and away-from-home charging). As discussed in more detail below, estimates were developed based on these two factors–EV population and type of charging–and then distributed that amount of charging across Sonoma County based on the relative scoring from siting methodology.

**EV Deployment and Charging**

The framework does not include a specific forecast for EV deployment in Sonoma County and instead uses various scenarios for EV deployment focusing on a) a fair-share compliance with the requirements of California’s Zero Emission Vehicle (ZEV) Program, b) achieving some goal in 2030 such as 50% petroleum reduction, or c) aligning with other forecasts (e.g., via Bloomberg New Energy Finance or UC Davis). With regard to the Zero Emission Vehicle Program, data was extracted for Sonoma County from the The EMission FACtors (EMFAC) 2014 model, which includes what is referred to as a likely compliance scenario for the ZEV program. The California Air Resources Board updates its outlook for both EVs and fuel cell vehicles based on outreach to manufacturers and other market research, and the outlook for the program changes annually; however, the EMFAC model is not updated with the same frequency. The compliance scenario in the EMFAC model is several years old, and should be treated as one approach to achieve ZEV compliance, rather than a definitive forecast. The figure below illustrates the percent of new light duty vehicle sales presumed to be plug-in hybrid electric vehicles (PHEVs), battery electric vehicles (BEVs), and fuel cell vehicles in the likely compliance scenario.

It should also be noted that the EMFAC is “developed and used by ARB to assess emissions from on-road vehicles including cars, trucks, and buses in California, and to support ARB’s regulatory and air quality planning efforts to meet the Federal Highway Administration’s transportation planning requirements.” The model has a sophisticated fleet turnover component and emissions tracking modules. However, it is not a model that was designed to forecast electric vehicle or fuel cell vehicle populations. That is why it is fixed with a likely compliance scenario.

The approach Shift follows focuses on characterizing the demand for different types of charging depending on vehicle architecture, distinguishing between PHEVs and BEVs.

» It’s assumed that PHEVs will require more at-home charging and workplace charging to maximize the number of miles traveled using electricity. For longer trips, however, it’s assumed that PHEV drivers will simply drive the vehicle like they would a conventional vehicle, reaping the benefits of electricity for the first smaller portion of the trip and then switch to gasoline without necessarily seeking out additional charging opportunities along that trip.

» It’s assumed that BEVs will require at-home charging, and less workplace charging, with additional needs for corridor charging. The corridor charging is focused on DC fast charging, and is still a work in progress. The amount of DC fast charging needed is an area of research that is changing rapidly, as vehicles with longer ranges (e.g., 200+ miles) are being deployed.
Estimating the Infrastructure Needed

The team drew on existing research and modeling along with a presentation from the Electric Power Research Institute (EPRI) regarding the amount of charging infrastructure needed to satisfy the demand for EV charging.

» The team used an updated version of an EVSE deployment model that was developed for the Bay Area PEV Readiness Plan that decreases the demand for chargers over time to account for potential market saturation and the benefits of increased station utilization. This is a simple model with the structure as follows:

\[ \text{Infrastructure} = (\gamma \text{PHEV}_{\text{deployment}} + \text{BEV}_{\text{deployment}}) \times ae^{-\beta t} \]

Where PHEV_{deployment} and BEV_{deployment} represent the total number of EVs on the road, \(\alpha\) and \(\beta\) are constants and \(t\) is years from initial date of deployment. It’s noted that for the low and high scenarios, the value of \(\gamma\) varies, which accounts for the fact that it is unclear how much public charging will be required by PHEVs – this value varies between 0.1—1.0.

» Research at EPRI reviewed how much EV charging is needed, with a focus on workplace and public usage. EPRI reviewed the impacts of free charging and a benefits tested scenario on usage as a measure of charging stations per vehicle. EPRI’s analysis yields a benefits tested scenario in which the charging station-to-vehicle ratio ranged from 0.01 to 0.15 for BEVs and PHEVs, respectively.

Based on our own modeling and the vehicle-to-charger ratios from the aforementioned EPRI presentation, the Shift team estimated the charging infrastructure that would be required for the corresponding EV deployment scenario for a) workplace and b) opportunity charging. These estimates are not intended as forecasts or predictions of market outcomes. Rather, they are intended to portray the level of infrastructure that may be required to support the mix of PHEVs and BEVs in various scenarios.

For a point of comparison, consider an alternative approach employed by the National Renewable Energy Laboratory (NREL) in the *California Statewide Electric Vehicle Infrastructure Assessment*. In this document, NREL sought to estimate the demand for charging infrastructure in two scenarios:

» **Home Dominant**: In this scenario, most EV charging occurs at home, with workplace and public charging supporting only a fraction of total electric miles.

» **High Public Access**: In this scenario, NREL assumed that many EV drivers place a “high premium” on public available charging, and that the market responds with workplace and public charging stations.

In both cases, the modeling is based on parameters including, but not limited to, access to home charging, average miles traveled daily, load profiles, total number of charging stations per unit area, and the level of charging through consumer demand. Similar to our own results, the intent of the modeling outcomes presented by NREL is meant to capture a range of options, rather than represent an explicit forecast or market outcome.

For the point of comparison, NREL reports the following estimates for charging points by 2020 for the entirety of the San Francisco Bay Area by 2020, assuming the deployment of 149,000 PHEVs and 74,000 BEVs (representing 25% of the total statewide population). The table below highlights the results of NREL’s analysis.

---


Distributing the Demand Infrastructure

In the final step of the analysis, the team sought to distribute the quantitative demand for infrastructure across the county using the results from the siting methodology outlined above. In other words, the amount of infrastructure deployed to a given area, in this case a TAZ, was based on its score from the analysis related to workplace charging (which is a function of the number of home-based work trips and the ResGeneral score) and opportunity charging (which is a function of the number of home-based other trips and the ResGeneral score).
Illustrative Example of Methodology
Consider a scenario whereby it’s estimated, using the model and EPRI’s research, that 100 Level 2 charging stations are needed at workplaces and 100 Level 2 charging stations are needed for opportunity charging to support the forecasted EV deployment in 2025.

<table>
<thead>
<tr>
<th>TAZ</th>
<th>Workplace Charging</th>
<th>Opportunity Charging</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Work_Score</td>
<td>Level 2 EVSE Demand</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

This methodology is appropriate because it accounts for both EVs deployed and the likely destinations that those EVs will travel to. Furthermore, the estimates are not deterministic, rather they are meant to guide investments. For instance, this method does not recommend that one deploy 38 Level 2 charging stations for workplace charging at TAZ-3 before deploying any other charging stations for workplace charging. Rather, it provides some quantitative measure of the demand for Level 2 charging based on the EV population, and the likelihood that those EVs travel to a particular destination as a work trip or recreational trip.
5. Results

The EV Charging Infrastructure Siting Framework is driven by a model forecasting the likelihood that EVs will travel to a particular area. The model uses a combination of socioeconomic indicators and the Sonoma County Travel Model. The key socioeconomic indicators used are: income, hybrid ownership, property ownership, and housing type.

The Sonoma County Travel Model was used to indicate the number of trips from an origin to a destination. The trip types include home-based work, home-based other, and non home-based trips. The model shows the potential for different types of charging: residential, workplace, multi-family, and opportunity. While most types of charging are expected to be Level 2, opportunity charging also breaks out forecasted needs for DC fast charging.

Additional resources, including interactive maps can be found online: scta.ca.gov/shift

MAPS

Sonoma County EV Charging Suitability

Legend
ELECTRIC VEHICLE SUITABILITY
None
Low
Medium
High

Electric Vehicle Charging Suitability - 2030 EPRI
Updated 4-13-2017

Sources: Esri, USGS, NOAA
Santa Rosa EV Charging Suitability
Petaluma EV Charging Suitability
Rohnert Park and Cotati EV Charging Suitability
Sebastopol EV Charging Suitability
Sonoma Valley EV Charging Suitability
Windsor EV Charging Suitability
Cloverdale EV Charging Suitability
Healdsburg EV Charging Suitability
## 6. Recommended actions

### ACTIONS

<table>
<thead>
<tr>
<th>EV Charging Infrastructure Actions</th>
<th>Implementing Entities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use local data, tools, knowledge and relationships to plan for the scale and geographic distribution of charging needed to accommodate 100,000 EVs by 2030.</td>
<td>SCTA/RCPA, Sonoma Clean Power (SCP)</td>
</tr>
<tr>
<td>2. Create a map that highlights priority areas for multi-family, workplace, and opportunity charging.</td>
<td>SCTA/RCPA</td>
</tr>
<tr>
<td>3. Work with local utilities to ensure that charging infrastructure has minimal grid impacts and can be used as a grid resource.</td>
<td>SCTA/RCPA, local governments (planning &amp; community development), SCP</td>
</tr>
<tr>
<td>4. Establish siting criteria that affect the desirability of specific charging sites.</td>
<td>SCTA/RCPA, local governments (planning &amp; community development), NGO partners: electric utilities, EV drivers, and other groups</td>
</tr>
<tr>
<td>5. Conduct a survey of local EV drivers to better understand charging habits.</td>
<td>SCTA/RCPA</td>
</tr>
<tr>
<td>6. Create an online EV charging infrastructure siting database that tracks key potential charging locations.</td>
<td>SCTA/RCPA</td>
</tr>
<tr>
<td>7. Adopt EV Ready Community Resolution, establish consistency in local government policies in Sonoma County to encourage EV charging infrastructure development.</td>
<td>SCTA/RCPA, local governments, SCP</td>
</tr>
<tr>
<td>8. Incorporate EV readiness policies into general plans.</td>
<td>Local governments</td>
</tr>
<tr>
<td>9. Develop policies and incentives that require or encourage Level 2 charging stations in new residential construction.</td>
<td>Local governments, electric utilities</td>
</tr>
<tr>
<td>10. Develop policies and incentives to support installation of Level 2 charging stations in existing residential properties.</td>
<td>Local governments, electric utilities</td>
</tr>
<tr>
<td>11. Adopt requirements that exceed CalGreen Building Code requirements for charging infrastructure in multifamily and commercial buildings.</td>
<td>Local governments</td>
</tr>
<tr>
<td>12. Adopt an expedited permit process for EV charging stations, including a permitting checklist and guidelines for residential installations.</td>
<td>Local governments (planning and community development)</td>
</tr>
<tr>
<td>13. Allow EV parking to count towards minimum parking requirements.</td>
<td>Local governments (planning and community development)</td>
</tr>
<tr>
<td>14. Consider standardization of price structures for publicly owned EV charging stations countywide.</td>
<td>SCTA/RCPA, local governments</td>
</tr>
</tbody>
</table>

*The Shift EV Charging Infrastructure Siting Framework provides insights into priority charging areas in Sonoma County. More info: scta.ca.gov/shift*

*The Shift EV Policy Toolkit includes model policies for consideration. More info: scta.ca.gov/shift*
<table>
<thead>
<tr>
<th>EV Charging Infrastructure (continued)</th>
<th>Implementing Entities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coordination</strong></td>
<td></td>
</tr>
<tr>
<td>15. Participate in regional and state collaborations to share knowledge about EV charging infrastructure.</td>
<td>SCTA/RCPA</td>
</tr>
<tr>
<td>16. Participate in state agency proceedings that affect the expansion of EV charging infrastructure.</td>
<td>SCTA/RCPA</td>
</tr>
<tr>
<td>17. Participate in the Sonoma County Local Government EV Partnership and assign a jurisdictional representative to collaborate on policies and programs.</td>
<td>SCTA/RCPA, local governments</td>
</tr>
<tr>
<td>18. Engage utilities, charging network operators, and other third parties installing EV charging infrastructure to maximize utility of the Sonoma County siting framework and site database.</td>
<td>SCTA/RCPA</td>
</tr>
<tr>
<td>19. Engage with property developers about installing charging stations in new residential and commercial construction, including promoting incentives available.</td>
<td>Local governments</td>
</tr>
<tr>
<td><strong>Deployment</strong></td>
<td></td>
</tr>
<tr>
<td>20. Develop and implement a municipal workplace charging program.</td>
<td>Local governments</td>
</tr>
<tr>
<td>21. Develop and implement a fleet charging program.</td>
<td>Local governments</td>
</tr>
<tr>
<td>22. Identify opportunities to install publicly accessible EV charging stations in high priority locations.</td>
<td>SCTA/RCPA, Local governments, SCP</td>
</tr>
<tr>
<td>23. Install EV charging stations in new and existing public parking lots and garages.</td>
<td>Local governments</td>
</tr>
<tr>
<td>24. Develop and promote programs and incentives to reduce the barriers to EV charging infrastructure for all, especially low-income populations and communities of concern.</td>
<td>SCTA/RCPA, local governments, electric utilities, Air Districts</td>
</tr>
<tr>
<td>25. Encourage local employers to offer workplace EV charging stations.</td>
<td>SCTA/RCPA, electric utilities</td>
</tr>
<tr>
<td>26. Encourage demand response, smart charging and facilitate use of renewable energy, including promoting solar panel carports to provide electricity for EV charging stations.</td>
<td>SCTA/RCPA, local governments, electric utilities</td>
</tr>
<tr>
<td>27. Investigate next-generation charging technologies and systems.</td>
<td>SCTA/RCPA</td>
</tr>
<tr>
<td>28. Pursue funding to support expansion of EV charging infrastructure in Sonoma County.</td>
<td>SCTA/RCPA, local governments, SCP</td>
</tr>
<tr>
<td>29. Consider public-private partnerships to expand EV charging infrastructure in Sonoma County.</td>
<td>SCTA/RCPA, local governments, NGO partners: electric utilities, and other groups</td>
</tr>
</tbody>
</table>
NEXT STEPS

Through the Shift Implementation program, funded by the California Energy Commission, the RCPA will evaluate potential charging infrastructure host sites, referring to existing ZEV regional infrastructure plans if available and working closely with Sonoma Clean Power and Pacific Gas & Electric.

Existing analysis of EV charging infrastructure in Sonoma County has anticipated a need for more chargers along with the specific areas that will generate the highest need. This still leaves a gap for private and public organizations looking to install new EV charging infrastructure at specific locations in Sonoma County. Significant new funding for EVCS from PG&E, VW’s Electrify America program, and other sources, coupled with more private sector interest to install at their businesses, is expected in the next 1-3 years (highlighting the need for improved siting analysis).

Highly relevant to the Bay Area PEV Regional Readiness Plan that recommends to “provide resources to local governments for EVCS deployment”, the RCPA will create a detailed index of specific sites that show the most potential for future EVCS locations in Sonoma County as well as sites that would be helpful but lack potential due to certain barriers.

Creating the detailed siting index will build on the EVCS siting framework form the Sonoma County Fuel Shift Plan. This will include site visits and local meetings to review general heat maps and priority levels from the Fuel Shift framework. It will also involve working with Sonoma Clean Power and PG&E to review potential sites and provide understanding of potential costs for grid upgrades related to impact on stressed assets.

The index of potential EVCS will also highlight multi-family housing and disadvantaged communities. Although Sonoma County has no disadvantaged communities under the Cal Enviroscreen criteria, the SCTA has prepared an online map that can be used to view disadvantaged communities in Sonoma County using poverty level and a more detailed level of census geography. Using more detailed census block groups allowed more accuracy when identifying pockets of poverty in Sonoma County, especially in areas that are located in very large census tracts, or that are adjacent to very affluent areas. The project will work to highlight locations in our designated disadvantaged neighborhoods.

The highlighted locations will also be ranked based on certain criteria. For example, drivers may consider:

» Easy access to highways or a high-volume intersection
» Good signage and lighting
» Safe and easily monitored
» Nearby shelter from the elements (with restrooms)
» Safe place to walk (with pets)
» Nearby food or shopping
» Wifi and/or good cell reception

Operators and owners might want to consider:

» Cost of land or potential interest of owner
» Availability of power (strength of the grid)
» Inexpensive and/or clean power
» Room for expansion or design changes (cover, solar, battery backup, etc)
In order to obtain feedback on the index, the RCPA will conduct public workshops to review EVCS siting information with stakeholders. The RCPA will target retail businesses and owners of parking in project high demand areas for EVCS plus local EV enthusiasts (such as the North Bay Electric Auto Association) in order to receive focused feedback on potential EVCS locations. Local input on specific charging locations will be then solicited via an online mapping tool, to ensure 2030 charging needs outlined in the Sonoma County Fuel Shift Plan are met. RCPA will meet with each local jurisdiction to review possible locations in their region. RCPA will involve and coordinate with EVCS providers (i.e. ChargePoint) on gap analysis and the use of the online database.

In order to prepare a complete index, after locations are ranked, the RCPA will perform site visits to the top 20 sites ranked in Sonoma County (with at least one per jurisdiction); photograph location and reach out to property owners for input. This data will be available to partners for planning purposes with some level of information published online and shared with the public.
For More Information
Visit scta.ca.gov/shift for information and tools related to the Shift Sonoma County Low Carbon Transportation Action Plan.