



MEMORANDUM

To: SCTA/RCPA Staff
From: Philip Sheehy and James Choe
Date: September 2015
Re: Fuel Shift: Program and Policy Needs Assessment (Draft)

Introduction

The deployment of plug-in electric vehicles (PEVs or EVs) 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 vehicles and charging infrastructure, and the associated planning required by stakeholders. The transition towards higher rates of PEV adoption and deployment of the corresponding charging infrastructure requires a broad range of stakeholders to prepare and plan for deployment. The Transportation Fuel Shift Plan in Sonoma County is a critical component of this broader effort.

The objective of this memo is to identify and assess potential barriers to EV use in Sonoma County that could be addressed via local policies or programs to promote EVs and EVCI. The initial sections of this memo present a snapshot of the current market for EVs in Sonoma County, covering issues such as EV and charging infrastructure deployment to date, a review of readiness planning at the local- and county-level, and a review of relevant state-level initiatives.

Vehicles and Infrastructure

Vehicles

There are at least 2,000 PEVs in Sonoma County, with a 60/40 split between BEVs and PHEVs (as shown in the table below). To date, this represent about 1.6% of the PEVs sold in California, slightly greater than the County's share of the population. There are likely closer to 2,500 PEVs on the roads in Sonoma County, the data in the table below are retrieved from the Clean Vehicle Rebate Project. However, on a statewide basis, CARB reports that the CVRP project only accounts for about 70% of PEVs deployed. In other words, there are consumers who purchase a PEV, but do not opt for the rebate.

Table 1. PEV Counts in Sonoma County, from Clean Vehicle Rebate Projects

Geography	As of	Cumulative Count (since 3/2010)		
		PHEV	BEV	TOTAL
Sonoma County	Sep 2013	197	305	502
Sonoma County	Aug 2015	772	1,142	1,914

The Center for Climate Protection estimates that about 16,000 PEVs will need to be on the road by 2020 to achieve the Governor’s goals of 1 million EVs on California roads.

Infrastructure

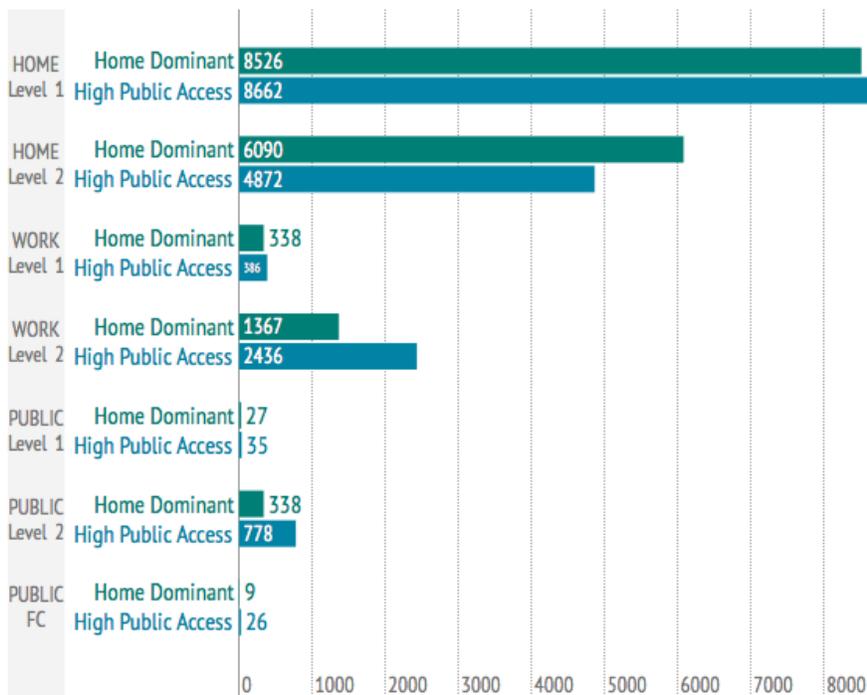
The table below includes the number of electric vehicle charging stations in Sonoma County, based on data from the Alternative Fuel Data Center’s (AFDC) station locator.

Table 2. PEV Charging Infrastructure in Sonoma County

Charging Infrastructure	Public	Private
Level 1	39	9
Level 2	114	11
DC Fast Charging	22	--

The Center for Climate Protection estimates an anticipated expansion of charging infrastructure for Sonoma County consider Level 1, Level 2 and DC fast charging (DCFC) equipment. The scenarios were characterized as home dominant and high public access.

Figure 1. Estimated build out of charging stations in Sonoma County¹



Review of PEV Readiness in Sonoma County from 2012

Zoning, Parking, and Permitting

As part of the readiness planning at the regional level, the Bay Area Air Quality Management District (BAAQMD) conducted a survey of local governments, from March to August 2012, to understand their level of

¹ Center for Climate Protection, Electric Vehicles in Sonoma County, White Paper on Status and Paths to Adoption, 2015. Available online at <http://climateprotection.org/wp-content/uploads/2015/08/EVWhitePaper-SonomaCounty-Final.pdf>

PEV readiness. The survey sought to answer questions across the key areas of PEV readiness, including the following areas, with an introduction to each PEV readiness element below:

- ▶ Building Codes
- ▶ Stakeholder Training and Education
- ▶ Permitting and Inspection
- ▶ Consumer Education and Outreach
- ▶ Zoning, Parking, and Local Ordinances
- ▶ Incentives for Charging: MDUs, Workplace, and Public

The results reveal that the Bay Area at large, and Sonoma County as well, were 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; Santa Rosa ranked as one of the five highest rated municipalities in responding to that survey. The table below summarizes the results.

Table 3. Sonoma County responses to 2012 BAAQMD Survey

City/ County	Permitting				Other	
	Permit Fee (single family)	Timeframe	Application	Permitting Process	Building Codes	Public Charging
City of Cloverdale	\$251–\$500	6–10 days	Over the counter	Intermediate and post- inspection	Not started	—
City of Healdsburg	\$251–\$500	2–5 days	Over the counter	Post-inspection	Looking at other agencies	—
City of Rohnert Park	—	—	—	—	Not started	Yes; Coulomb Tech ARRA grant
City of Santa Rosa	\$101–\$250	Same day	Over the counter	Intermediate and post- inspection	—	Yes; DOE Grant
City of Sebastopol	\$101–\$250	Same day	Over the counter	More than one pre- inspection	Best practice	Yes
City of Sonoma	\$251–\$500	3–5 weeks	Over the counter	Pre and post inspection	More info	Yes; County of Sonoma
Sonoma County	—	Same day	Over the counter	—	—	Yes

Notes:

- Santa Rosa and Sonoma County were the only agencies to have started updating zoning and/or parking rules.
- None of the cities listed above provide incentives.
- The City of Cotati provided mostly blank responses to the survey.
- ICF was not able to get a hold of the City of Petaluma and Town of Windsor.

ICF developed specific parking requirements as part of the Bay Area PEV Readiness Plan, as shown in the table below.

Table 4. ICF recommendations for PEV parking requirements

County	Multifamily Residential		Workplaces		Opportunity Charging Locations	
	EVSE	Pre-wired	EVSE	Pre-wired	EVSE	Pre-wired
Sonoma	0.5%	3.5%	0.5%	0.5%	0.5%	0.5%

Update on State-Level Actions

The Governor’s Office of Planning and Research (OPR) developed and updates California’s Roadmap to 1.5 million Zero Emission Vehicles. The most recent update highlights state-level initiatives in the PEV space, including the following relevant achievements:

- ▶ Policy Initiatives
 - Multi-State ZEV Action Plan (May 2014) towards 3.3 million ZEVs by 2025, seven states signed Memorandum of Understanding (MOU)
 - Governor’s CA Charge Ahead Initiative, 1M ZEVS by 2020, benefit disadvantaged communities
- ▶ Incentives
 - Dealers can obtain HOV stickers in advance to provide to EV buyers at point of sale
 - CVRP rebates extended
 - HOV stickers expanded and extended
 - Underlying funding programs have been extended: Air Quality Improvement Program (AQIP) and Alternative and Renewable Fuel and Vehicle Technology Program (ARFVT)
 - IOUs sell LCFS credits generated by PEVs
- ▶ Fleets
 - Governor signed Executive Order for government EV fleets
- ▶ Parking, Codes, Signage
 - EV parking benefits at state-owned properties
 - CA Building Code changes to support EVs
 - Caltrans directive standardizing station signage
- ▶ Infrastructure deployment
 - CEC developed statewide DCFE corridor gap analysis for West Coast Electric Highway

Barriers to PEV Growth

ICF has identified the following critical barriers to PEV growth; ICF notes that these are not all barriers that can be addressed through local readiness planning and action. The next section regarding recommendations focuses on those issues which can be targeted.

- ▶ **Gasoline prices / Potential saturation of early market.** It is well known that gasoline prices have been significantly lower over the last year; however, the prices have dropped less in California than in other places because we have higher fuel taxes and because of carbon pricing via the cap-and-trade program. PEV sales have likely slowed as a result of this short-term phenomenon. The other component of this issue that is not as well understood, and posed more as a hypothesis by ICF than a finding, is that some markets may be seeing some levels of saturation as a result of early PEV success. It is conceivable that PEV adoption will look more like a step function than a continuously smooth curve, as is often projected by analysts.
- ▶ **Upfront vehicle cost / Consumer buying patterns.** Consumer surveys indicate the manufacturer's suggested retail price (MSRP) of a vehicle is of paramount importance, with nearly 70% claiming it is the most important factor in deciding their purchase.² Additionally, consumers expect PEVs to be cost-competitive with similar internal combustion engine (ICE) vehicle models, with a majority desiring a sticker price under \$30,000.³ While there have undoubtedly been decreases in battery prices, which have in turn lowered EV pricing, the price differential between a PEV and a conventional vehicle (or even a hybrid electric vehicle) remains too high to increase EV sales. The other component that ICF considers critical is changing consumer buying patterns. Consumers are holding on to vehicles longer (in part an artefact of the Great Recession) and a lower percentage of the population is accounting for the new vehicles purchased. This makes it challenging to deploy EVs in a fleet that is turning over slower than in years' past.
- ▶ **Consumer awareness.** Consumers are becoming increasingly familiar with the idea of electric vehicles. However, when consumers' familiarity is tested at a level more in-depth than generic high-level messaging, there is a general lack of awareness of PEVs in the consumer market today. Sonoma County specific numbers are unclear, but data from other sources indicate that even in consumer markets with high levels of PEV deployment such as San Francisco, less than 50% of respondents were "very familiar" or "somewhat familiar" with EVs.
- ▶ **Charging infrastructure availability.** The Center for Climate Protection notes that the Sonoma market may be overlooked by private infrastructure developers who focus on more densely populated areas. In a study for the California Electric Transportation Coalition,⁴ ICF explored the challenges that third-party owners and operators of charging infrastructure face. Our review focused on the following challenges: a) The underlying revenue model for charging infrastructure is based on the resale of electricity, a commodity that is inexpensive compared to the high cost of infrastructure for PEV charging and b) the demand for non-home charging is unclear due to a variety of variables, including BEV vs. PHEV deployment, battery technology, availability of free charging, consumer willingness to pay, and driver behavior (e.g., non-residential dwell time and daily VMT). There are other issues associated with availability, such as visibility and signage which also require attention.

² Deloitte Touche Tohmatsu Ltd, "Gaining Traction: A Customer View of Electric Vehicle Mass Adoption in the U.S. Automotive Market," 2010.

³ Ibid.

⁴ ICF International, California Transportation Electrification Assessment, Phase 1, 2013. Available online at http://www.caetc.com/wp-content/uploads/2014/09/CalETC_TEA_Phase_1-FINAL_Updated_092014.pdf

ICF Recommendations

As part of the Fuel Shift Plan, ICF is charged with identifying the most important aspects of current conditions for Sonoma County to consider in scoping local strategies to increase PEV use. There are clearly issues over which Sonoma County and its partners have little control e.g., gasoline prices. The recommendations below focus on areas of which Sonoma County and its partners have more influence.

- ▶ **Local readiness is still a factor.** ICF stresses the need to get all communities in Sonoma County updated on PEV readiness elements such as zoning, permitting, and building codes. In some cases, these are simple changes to codes or enshrining EV considerations in existing planning documents. The primary objective is to ensure that the county and its municipalities are primed for receiving attention from private stakeholders (e.g., Sonoma Clean Power or PG&E) or position themselves to receive public incentives/funding. ICF believes that both private and public stakeholders will look to the communities that have a combination of consumer potential and charging infrastructure readiness. Adoption has been modest-to-good to date across the entire state; however, the ZEV program has not even been initiated in earnest yet (starts in full force in 2017). The current period of transportation electrification should be viewed as the runway in advance of accelerated adoption in the next 2-4 years; and it is incumbent upon planners to take advantage of resources now rather than wait.
- ▶ **Focus on workplace charging.** It is increasingly clear that infrastructure providers and utilities are looking to workplace charging as the next phase of infrastructure expansion. There will be incentives and other funding opportunities here as well; but it also is possible for Sonoma County to engage workplaces directly to make sure they have the resources they need to express interest to the proper stakeholders (e.g., Sonoma Clean Power, PG&E, NRG, etc.). ICF also recommends updating the regional infrastructure siting analysis performed for the Bay Area PEV Readiness Plan to focus on Sonoma County; the update will incorporate current/forecasted adoption rates and any information available on the use of existing charging infrastructure in Sonoma County.
- ▶ **Consumer education and outreach.** There are a variety of initiatives related to consumer education and outreach; these should continue and be expanded to the extent feasible. There is a lot of information available online to consumers; however, it is often in multiple places—at the utility website, or with air pollution control districts, permitting departments, OEMs, state agencies, etc. There are information aggregators that have started to emerge; however, the efficacy of these remains unclear. Regardless of the number of existing initiatives, however, Sonoma County and its municipalities need to continue to seek opportunities to engage with PEV ecosystem partners to educate consumers about the benefits of EV ownership. These include engagement with automobile manufacturers (OEMs), utilities, EV charging industry market participants, car dealerships, and fleets.
- ▶ **Municipal government fleets.** Although fleet vehicles make up a small component of the overall fleet, there is clearly interest amongst public officials and public fleet managers to switch to EVs. One of the limiting factors to date has been related to readiness, with a focus on site assessments for potential charging infrastructure deployment. ICF recommends an expedited review of existing infrastructure and capacity at municipalities interested in deploying charging infrastructure. In some cases, these charging locations could serve other employers or as a public charging opportunity as well.