EVS26
Los Angeles, California, May 6-9, 2012

A Mutual Customer: Aligning EV Stakeholders

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Abstract

"Put a plug on the car, and suddenly you've brought two 125 year old industries together for the first time," said Ed Kjaer, Director of PEV Readiness at Southern California Edison, at a recent automotive conference in Detroit. This statement made in the heart of automotive country was meant to remind our automotive partners that utilities, as fuel providers, have a significant stake in ensuring that our customer is satisfied.

At SCE we have worked with automakers, EVSE manufacturers and cities to develop and align customer friendly processes; the goal of which is help support the adoption of EVs within our service territory. For the customer who chooses to fuel at home with a Level 2 charger one of the biggest differences in purchasing an EV versus an internal combustion engine vehicle is the number of stakeholders and steps involved in preparing for home fueling. I will share SCE's approach to building stakeholder relationships, defining collaborative processes and executing the agreed upon plans. I will also cover the effect on the grid and why it is important for all stakeholders to work together, so that the utility can maintain grid reliability and safety.

Keywords: car, charger, battery, training, education, California

1 Introduction

"Put a plug on the car, and now you have brought two 125 year old industries together for the first time," said Ed Kjaer, Director of PEV Readiness at Southern California Edison, at the Automotive News Green Car Summit in Detroit, June 2011. This message delivered in the heart of the U.S. automobile industry was meant to remind our automotive collaborators of the important role utilities play as fuel providers in ensuring that our mutual customer is satisfied.

For more than two years, Southern California Edison (SCE) has been leading a comprehensive Plug-in Electric Vehicle (PEV) Readiness program which has produced significant results for new PEV adopters. Our primary objective is to provide a positive experience to customers we share with automakers, and their vendors, throughout the EVSE installation process and whenever PEV charging occurs. To achieve our objective, we will need to maintain grid reliability for battery electric or plug-in hybrid vehicle (PEV) adopters and their neighbors. Close collaboration with stakeholders is critical to succeed. We are working with automakers, EVSE manufacturers & installers (Electric Vehicle Supply Equipment), and local communities within our service territory to develop and align customer friendly processes. For the customer who chooses to fuel at home, particularly with a Level 2 (240v) charger, one of the biggest differences in purchasing a PEV versus

an internal combustion engine vehicle is the number of stakeholders and steps involved in preparing for home fueling. Even for Level 1 (120v) charging, there are some actions the customer should take, such as contacting their local utility, which may offer a significant benefit to them. **"A Mutual Customer: Aligning EV Stakeholders"** shares SCE's approach to building stakeholder relationships, defining a collaborative process and executing agreed upon plans. First, let's review the effect on the grid and why it is important for all stakeholders to work together.

2 Effect of PEVs on the Grid

PEV load is like any other household load. Utilities have dealt with load growth for years: interior lighting, electric appliances, air conditioning, and the increasing number of consumer electronics, all have been incorporated into utility load over time. The big difference with PEV's is that depending on the type of car, the size of the battery, the charger in the car and the speed at which a customer chooses to fuel, it can be the largest load in the home *(Figure 1)*. The utility's primary goal is maintain grid reliability and safety – keeping the lights on for our customers in a safe and cost efficient manner.

Many people ask, "Is the grid ready for PEVs?" The short answer is yes, the grid has the capacity to handle PEVs, but there are some sections that may need upgrading. In SCE's service territory we do not anticipate any capacity issues with power generation, transmission, and during the early years of PEV adoption distribution. What we are concerned about it is at the local residential level: from the utility pole to a customer's home *(Figure 2)*. The key pieces of equipment that need to be checked are transformers, secondary lines and service drops. What can go wrong? Without proper notification of where PEVs will be charging and appropriate grid upgrades if necessary, PEV charging could result in overloading or potential failure of this equipment, and cause grid instabilities, such as:

- Power outages and voltage drops
- Damage to homes and equipment (customer and utility owned)

In order to be cost effective, utilities want to plan system upgrades into their regular maintenance schedules, thus avoiding costly emergency replacement of equipment borne by ratepayers. In order to ensure system reliability it is important that utilities receive a "heads up" from automakers or EVSE installers on where the PEV's will be charging, preferably before the customer brings their new car home. Currently at SCE we send a service planner to a customer's location for every PEV notification we receive. The planner evaluates infrastructure for potential upgrades, and summons a utility crew to perform the upgrades if necessary. To date we have found that 10% of SCE visits to customer premises triggers a work order to upgrade infrastructure and although it is not always the PEV that is the reason for the upgrade, it is because of the PEV that we found the problem. The bottom line: working together stakeholders prevent a negative customer experience, expensive emergency work, and minimize any potential detrimental impact to PEV customers and their neighbors.

Figure 1

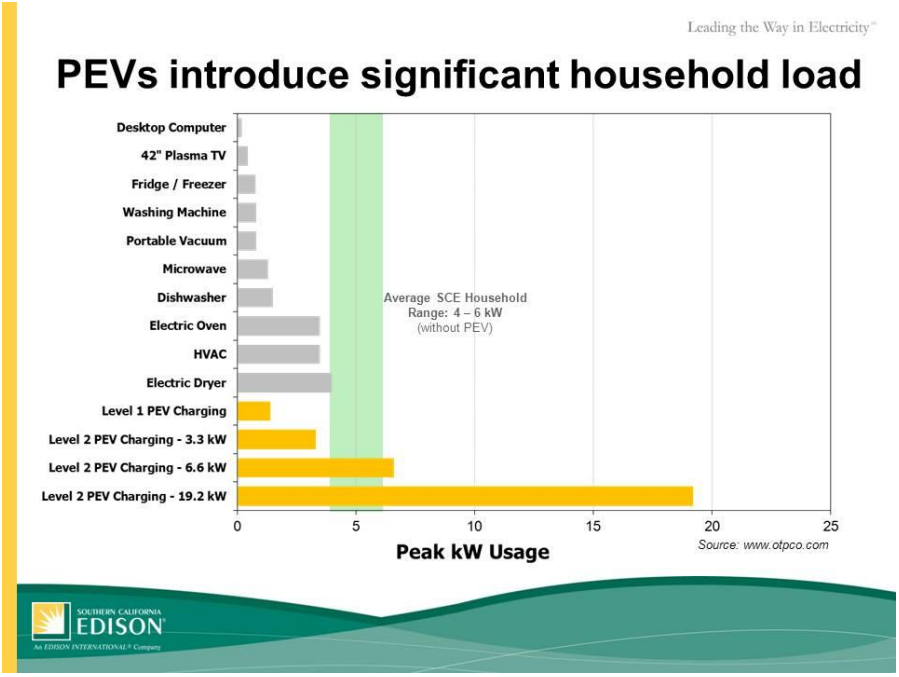
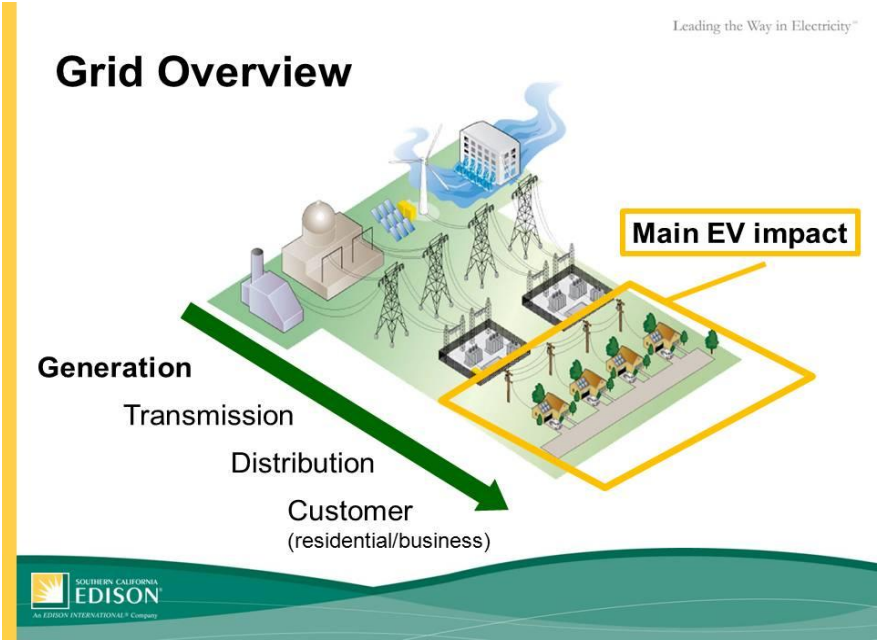


Figure 2



3 Defining the Stakeholders and their Goals

PEVs have introduced a new paradigm where multiple stakeholders share a mutual customer. The automaker customer who purchases a PEV is the utility customer who fuels their PEV at home with electricity. The first step in building a collaborative stakeholder process is to recognize that the customer is not "owned" by any one stakeholder. Since we share the customer at different points in the PEV ownership cycle it is important that stakeholders are aligned in order to deliver a great customer experience. There are four key stakeholders that support the PEV customer *(Figure 3)*:

- Automakers and their Dealers
- EVSE Manufacturers and Installers
- Local Communities (city and county government)
- Utilities

3.1 Automakers and their Dealers

Each stakeholder has slightly different goals, which affect the utility in different ways. The Automaker's/Dealer's main goal is to sell as many cars as possible. For utilities it is necessary that the locations where PEVs are sold are identified. Automakers can help by including a system within the PEV purchase process that captures a customer's data and passes it along to the appropriate utility. We call this process "customer data notification." A notification process helps provide data to the utility for grid infrastructure checks and customer follow up on rate choices or utility incentives. Automakers can also help direct PEV customers to their utility for more information by including a "contact your utility message" in their marketing efforts and in their dealer training.

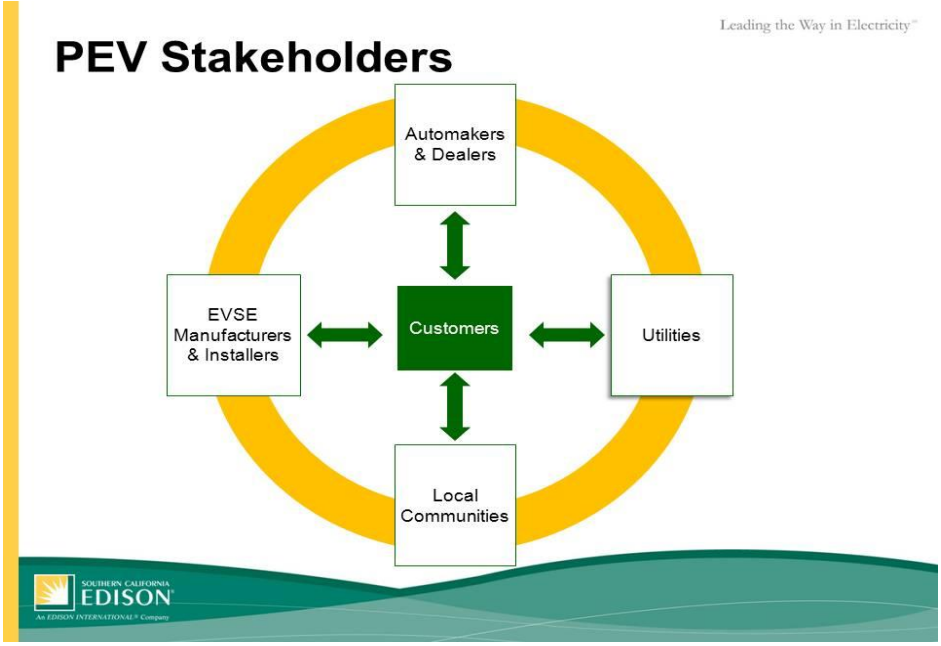
3.2 EVSE Manufacturers and Installers

For EVSE manufacturers/installers, their goal is to sell and safely install a charging station for a customer. This affects the utility in a number of ways. First, it is important that the EVSE installer understand and be trained on utility specific installation issues. Second, it is important that the utility and the installer understand each other's business processes in order to coordinate the overall installation process. By understanding each other's processes a common approach can be set and the development of best practices can be put in place. Finally, in some cases, the automaker relies on the EVSE installer to capture customer data for utility notification, so processes need to be set up accordingly.

3.3 Local Communities (City and County Governments)

With local communities, their key goal is oversight of the EVSE installation process. Cities want to make sure that EVSE installations meet code requirements and are done in a safe manner. Utilities and the other stakeholders want to ensure cities have a streamlined EVSE permitting and inspection process, so the customer's install is not unnecessarily delayed. Utilities are also interested

Figure 3



in a city's level of PEV preparedness and what they are doing to educate their citizens on PEVs.

3.4 Utilities

The utilities goal is to ensure safe, reliable service and if they have EV friendly rates and/or incentives, be able to communicate those to customers. Utilities play a key role in customer satisfaction and are in a unique position between all the stakeholders to help facilitate the customer installation process. SCE takes an active role in educating customers on what they need to do to get their homes ready for PEV fueling. We also actively engage with the other PEV stakeholders to try and improve the end-to-end customer EVSE installation process.

Understanding each other's goals and needs is an important step to working collaboratively together. The key to a customer friendly procedure is to ensure good processes, good handoffs and good communication between stakeholders. Working together automakers, utilities, EVSE installers and local communities can meet customer satisfaction expectations during the EVSE installation and throughout vehicle ownership.

4 Building a Collaborative Stakeholder Process

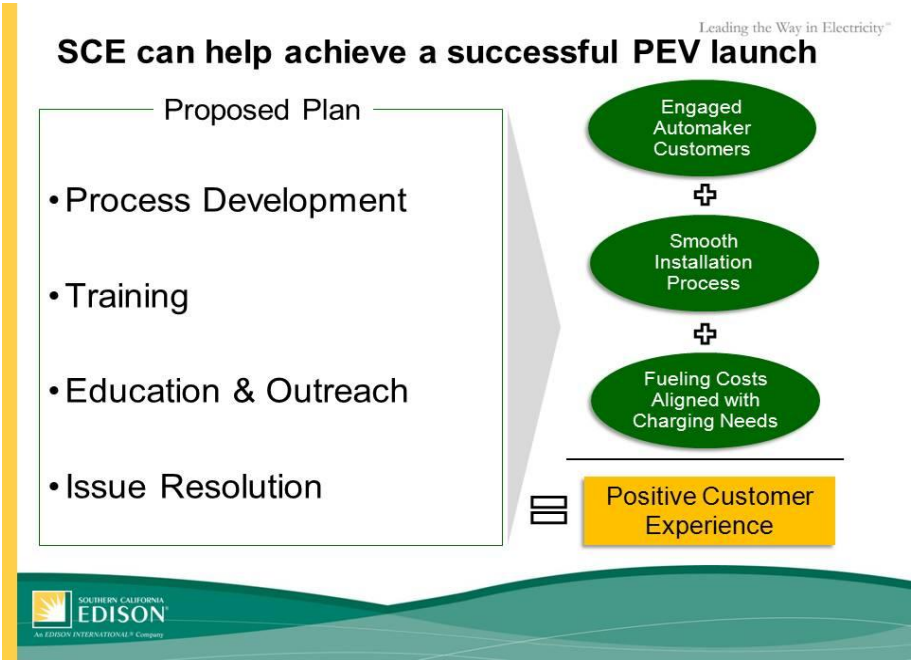
In building stakeholder relationships, SCE has one approach for automaker/EVSE installers and a slightly different one for local communities. For the automaker/EVSE installers there are four key areas SCE focuses on to help support them in successfully launching their PEVs *(Figure 4)*:

- Process development
- Training
- Education & Outreach
- Issue resolution

4.1 Process development

At SCE our initial engagement with automakers begins 18 months prior to vehicle launch. We work with the automaker and their EVSE installer partner focusing first on process development. Here we communicate the utility need for customer data notification and work with them to establish a process that works for both sides. Often there are multiple parties at the automaker that need to be involved in the decision: marketing, legal, sales operations, etc. Frequently the question comes up regarding customer privacy. We place a high priority on customer privacy and as a government regulated body we must meet state regulations around the handling of customer data.

Figure 4



To address the privacy issue customers are given the choice to provide notification of their PEV purchase and home address to their local utility. Only those customers who have approved sharing their data get passed onto the utility. As of this writing, all in-market automakers are committed to providing notification data to SCE.

4.2 Training

In order to facilitate a smooth EVSE installation process, we work with the automaker and their EVSE install partner to develop a process for the facilitation of handoffs between SCE and the installation partner. Training is central to establishing a good process. We train the EVSE installer partner on issues related in the installation of EVSEs in SCE's service territory. To date, most of the installers have participated, and our training has also been included in several Clean Cities Electric Vehicle Infrastructure Training Program (EVITP) sessions. We also provide training to the automaker's Dealers on understanding utility related issues and why it is important for the PEV customer to contact the utility. Training is available in-person in a workshop format upon request, or can be accessed through our PEV website: www.SCE.com/ElectricVehicle.

4.3 Education and Outreach

There is a tremendous need to better educate customers about the PEV ecosystem: vehicle technology, home readiness, regional infrastructure, incentives and utility issues are all required elements to produce a well-informed customer. Collaboration on customer communications about utility issues (EV rate savings, meter selection, grid reliability) is critical in supporting a successful PEV launch. At SCE, we ask that a generic "contact your local utility" message be included in automakers/EVSE installers marketing materials and as part of the EVSE installation process. To date about 50% of customers who own a PEV contact SCE to learn more about our fueling programs. Of those customers who have contacted us, over 90% selected a time-of-use rate. This represents a significant savings to the customer and a welcomed shift in electrical load to off-peak periods. Most people do not think of contacting their utility as part of the vehicle purchase process, so a consistent and regular reminder is necessary at this time. SCE has supported several manufacturers at their customer "Ride & Drive" PEV experience events. When requested, we provide subject matter experts to answer customer's questions about fueling PEVs at home. To date we have supported events held by Chevrolet, Nissan and Mitsubishi. Finally,

dealership support is critical. We have participated in Dealer training sessions held by Nissan, Chevrolet, Mitsubishi, Fisker and Coda. We also have recently launched a dealer training video online, a dedicated Dealer section on our website and have created handout materials that dealers can give to customers. All these materials can be found within the "Dealer" content section on www.SCE.com/ElectricVehicle.

4.4 Issue Resolution

The PEV market is in a nascent stage. Everything is new and there are few areas where a cookie cutter approach works. As we execute our defined plans with stakeholders, we figure out what works and what does not. We learn something new every week, every month, so it is important to identify issues, share information and cooperate to improve processes during a vehicle's launch period. The overall goal of SCE's approach is to deliver a positive customer experience by engaging the automaker buyers, executing a smooth installation process, and aligning our customer's fueling costs with their charging needs.

At SCE, we are very active with local communities. Our plan for working with cities in our service territory is pyramid-like, with each level adding a more meaningful commitment to PEV readiness *(Figure 5)*. At the base of the pyramid, our initial engagement is to discuss three topics: streamlining, education and outreach, and infrastructure. With streamlining, we are focused on encouraging a timely city process for permitting and inspection of Level 2 EVSE's. We consider the ideal timing to be an "over the counter" permit and "next day" inspection (i.e. call today to receive an inspection tomorrow). For education and outreach, we inquire about what cities can do to help educate their citizens on PEV readiness. Many cities have sustainability or "green" initiatives and PEVs fit well within these programs. Lastly, we question the city on any plans they have to install public EVSE infrastructure. To date, we have met with 141 cities in our service territory out of 180. Moving up the pyramid, the next level of engagement is for cities to submit a "Verified Plan for PEV Readiness." Verified plans are defined by five criteria a city must meet. These are:

- Implement streamlining process for single day permit & inspection for EVSE installation
- Implement public education and outreach program
- Actively participate in Regional PEV readiness initiatives
- Implement PEV infrastructure preparedness
- Establish a designated PEV point of contact (for SCE)

To date we have 40 cities that have verified plans for PEV readiness. At the top of the pyramid is a "Champion City." Champion Cities are distinguished by having achieved the highest level of PEV readiness, as defined by SCE. A Champion City must meet all the verified plan guidelines and in addition:

Figure 5

- Install PEV Infrastructure
- Participate in regional incentives for infrastructure funding
- Initiate Title 24 (Cal Green) city codes to ensure new building construction is PEV ready
- Create a PEV readiness team to plan and implement activities (i.e. support funding to encourage residents to buy PEVs, integrate PEVs into community long term planning, put PEVs into city fleets)

To date two cities have achieved Champion City status: Seal Beach and Beverly Hills. These cities are recognized by SCE with an award ceremony, plaque, receive press coverage and are held up as examples to other cities of what can be achieved.

SCE's approach to stakeholder engagement has been to focus on local communities, automakers and EVSE manufacturers/installers. It is a lot of work and requires a significant team commitment to achieve success. Utilities following a similar approach will benefit from a stakeholder process that emphasizes communication, proper handoffs and understanding of each other's processes in order to deliver a great customer experience.

5 Future Improvements

We are in the early days of the PEV market. In 2010 very few vehicles were sold. 2011 featured the first full year of PEV sales. Volumes were not what the automakers forecasted, but overall were very good by historical standards. There is much work to do, and many things to improve. Here are some recommendations looking forward.

5.1 Improve the Notification Process

Automakers/EVSE installers should have clear language, with a strong call for customer action included in their notification process. Ideally a customer benefit as to why it is important to allow the customer data to be passed to their local utility should be included. Also, if a customer chooses not to pass their information on, a two-step process should be implemented that asks "are you sure?" before allowing the customer to opt-out. There is no downside for a customer to allow their info to be passed to the utility and this needs to be emphasized within the execution of the process. Today the notification process is the best single data source for utilities to determine PEV locations. While utilities may use it differently, they all find the data extremely valuable.

5.2 Education and Outreach

More customer education is necessary in order to support PEV adoption. The inclusion of a "contact your utility" in all automaker and EVSE marketing materials will help remind customers of actions they need to take to get PEV ready. Emphasizing this message when the customer purchases the car at the Dealer is also critical. It needs to be part of the recommended Dealer "pitch."

5.3 Training

Dealer training and retraining to accommodate staff turnover is also necessary. Automakers need to embrace the fact that many customer questions regarding infrastructure are going unanswered by the Dealers. Dealers do not need to be utility or infrastructure experts, but they do need to make sure these topics are discussed during the sale and/or delivery process. This is a weak point in the stakeholder process and it needs to be addressed.

There will be more opportunities to improve the customer process this year. The good news is that to date with 1700+ cars in the SCE service territory, there have been no grid failures or customer service interruptions. This is due to the efforts of diligent employees working hard to ensure SCE is PEV ready.

Author

Christopher Vournakis is a Senior Project Manager for Southern California Edison's Plug-in Electric Vehicle Readiness Group where creates and maintains relationships with Automakers, EVSE makers and installers, and local communities in support of PEV readiness. Mr. Vournakis received his BA from the University of Rochester and an MBA from Pepperdine University.