# Electric Utility EV Program Implementation Survey

MJB & A

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# Acknowledgements

## About M.J. Bradley & Associates

M.J. Bradley & Associates, LLC (MJB&A), founded in 1994, is a strategic consulting firm focused on energy and environmental issues.  The firm includes a multi-disciplinary team of experts with backgrounds in economics, law, engineering, and policy.  The company works with private companies, public agencies, and non-profit organizations to understand and evaluate environmental regulations and policy, facilitate multi-stakeholder initiatives, shape business strategies, and deploy clean energy technologies.

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# Executive Summary

Utilities play a critical role in every step of the electric vehicle (EV) process – from offering rebates that bring down the cost of both vehicles and chargers to providing the infrastructure that supports chargers and designing rates for the energy that powers EVs. The utility role will become increasingly important as EV adoption increases: surpassing 1 million EVs on US roads in October 2018, the number could reach nearly 19 million by 2030.[1] Through this report, M.J. Bradley & Associates distills information gathered from 12 utilities in a survey and follow-up interviews and explores various aspects of their utility EV programs and lessons learned. While the survey respondents mentioned a host of topics in both the survey and in the follow-up interviews, the seven listed below encompass points most often discussed across respondents.

## Key Components of Developing a Successful Utility Electric Vehicle Program

In building an EV program, utilities can focus on a handful of components that build support across the organization, streamline workflow, and keep projects on track. These internal processes can support the growth of an EV program from inception to developing a pilot and, ultimately, to establishing a permanent program.

### Engaging Executives

A leadership team that advocates for its EV program can help the EV team achieve its goals and create an atmosphere where a program can thrive. If senior leadership makes EV programs a priority, it can elevate the programs' importance across departments, which can help keep project timelines on track. This could be especially helpful when an EV team draws from multiple departments and relies on employees who do not dedicate their time fully to EV implementation.

### Improving Internal Processes to Track and Predict EV Growth

Effectively managing an EV program requires coordination of multiple project streams and departments across a utility. Frequent calls with team members across geographies or subsidiaries can help keep programs on track and initiatives aligned. Proprietary data tracking may be beneficial in preliminary stages, but advanced third-party tools like Salesforce and FleetCarma can help a program as it matures and expands. Other tools to help with program tracking could include capacity "heat" maps or centralized systems that aggregate EV service or upgrade requests coming in across a service territory.

### Scaling from Pilots to Permanent Programs

Launching a program that is new and unfamiliar to customers requires additional customer outreach and support as they adopt new technology. When a pilot becomes a permanent program or enters a second phase – often requiring thousands of charger installations rather than hundreds – automating parts of the process is key. Greater application and process automation goes hand in hand with program growth.

A successful EV program comes from adjusting program components when necessary. Several utilities noted that they have had to modify program components – rate structure, rebate process, rebate amount – to better fit the needs of their customer base in order to incentivize either their financing or infrastructure programs.

## Key Actions for Engaging Customers and Communities

Creating a successful program is contingent upon a utility's ability to not only create efficient internal processes and management but also engage effectively with its customers. Utility support and engagement can help customers navigate the EV process, which, for many, is a new, unfamiliar technology that requires

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[1] Edison Electric Institute (EEI), "EEI Celebrates 1 Million Electric Vehicles on U.S. Roads," 30 November 2018, https://www.eei.org/resourcesandmedia/newsroom/Pages/Press%20Releases/EEI%20Celebrates%201%20Million%20Electric%20Vehicles%20on%20U-S-%20Roads.aspx.

behavioral shifts and leads to changes from their standard electricity bill. Varying engagement based on different customer segments – fleet operators, multi-unit dwelling (MUD) owners and residents, low-income and disadvantaged communities – can help most effectively meet their needs.

## Supporting Customers through Multiple Channels

Creating a successful EV program relies on effective interaction and partnerships with customers. To do so, EV programs can rely on a host of interaction points. For marketing and recruitment efforts, large account managers can build off existing relationships with their clients or integrate EV offerings into newsletters. Once the process has begun, assigning a customer project manager (CMP) to customers can help guide them through the process. When developing a CMP process it is important to: 1) assign a single manager to a customer even if they have multiple projects; and 2) keep in mind that close support may be effective with smaller programs, but as scale increases, it becomes increasingly difficult to maintain the same degree of guidance. Finally, contractors who work face to face with customers during the installation process can help identify bottlenecks in the installation process. This knowledge sharing can help programs adjust over time to better meet customer needs.

## Preparing Customers for Bill Changes

Customers may be surprised by how their bill changes when they install a charger or switch to a new rate, particularly for public DCFC chargers. Customer education can help prepare them for how their bill could change over time and at certain times of day. Walking customers through these variations and offering estimates of how their bill could change can help customers better understand public charging costs.

## Partnering with Low-Income and Disadvantaged Communities for Transportation Electrification Needs

Utilities evaluate program success in a variety of ways, one of which is increasing EV access in low-income and disadvantaged communities. It is key, however, that utilities work with the communities they serve to understand their needs and interests rather than assuming EV chargers are the best approach to transportation electrification. Partnerships with community groups and opportunities for residents to share their experiences can further a utility's understanding of a community's transportation electrification needs and help the utility design programs that fits those needs.

## Increase Funding Opportunities for Customers by Leveraging External Resources

While utility action and investment is crucial in further developing the EV ecosystem, utilities should also leverage external resources. Utilities could direct customers to state funding – VW or other – to help reduce the upfront cost of chargers, which remain a barrier for many customers. With regard to marketing and workforce development, utilities can look to partner with dealerships – by themselves or through a group like Plug In America – and local colleges, respectively.

# 1. Introduction

## 1.1 Background & Goals

M.J. Bradley & Associates (MJB&A) conducted a survey on electric vehicle (EV) program implementation on behalf of the Electric Utility EV Initiative (EVU) – a group of leading electric utilities collaborating to address key market, regulatory, and technical factors affecting the growth of the EV market.

The goal of the survey and this report is to share insights and lessons learned from a wide variety of electric utilities that are in the process of administering and implementing EV programs. The survey targeted the country's leading electric utilities that are implementing EV programs and asked questions focused on a range of EV program types, including EV infrastructure rebates and incentives, EV charging rates and programs, and customer education. To highlight a wide variety of processes and program styles, MJB&A surveyed utilities that vary in utility ownership type, service territory size and number of customers, geographic location, and maturity of EV program(s). The sections below will discuss MJB&A's survey process and key takeaways.

## 1.2 Timeline

The survey process consisted of three distinct phases that took place between March and December of 2019: 1) survey development and distribution; 2) follow-up interviews; and 3) compiling survey and interview responses into a final report. In Phase I, MJB&A distributed the survey and outreach material to 23 utilities in June 2019 and accepted responses through the end of September. Phase II of the survey – follow-up interviews with respondents – began in mid-August. MJB&A shared survey updates with the EVU throughout the process but formally presented on preliminary findings in October after conducting the last interview at the beginning of the month.

## 1.3 Survey Process

MJB&A designed a questionnaire and gathered responses through SurveyMonkey®. In addition to sending the link to an online survey, MJB&A also sent participants a PDF version of the survey via email for reference. Survey focus areas included staffing and administration, marketing and education, implementation process, project identification, project construction, electric vehicle supply equipment (EVSE) capability requirements, EVSE network management, interoperability, performance metrics, charger utilization and data tracking, and lessons learned. The final survey distributed to participants is attached in Appendix A.

While the survey proved useful to gather data that could be presented visually and provided a uniform series of responses, MJB&A also conducted follow-up interviews with respondents to fill in gaps and further understand survey responses. Interview questions aimed to understand top lessons learned from specific EV program components (e.g., marketing and education, staffing), what participants would do differently for future programs, future electrification plans, in addition to thoughts on underserved or difficult to serve market segments. These conversations both supplemented data that may have been missing from responses and added new insights.

## 1.4 Limitations of the Survey

The length of the survey coupled with some technical difficulties limited the extent to which some respondents completed the survey. MJB&A conducted follow-up interviews with survey respondents in order to address some of these limitations but still had difficulty evaluating the overall trends for certain questions. For the purposes of this report, MJB&A has chosen to exclude certain questions and has chosen not to draw key takeaways for questions that received an insufficient number of responses.

## 1.5 Company Background

Each company was asked to provide baseline company data to offer insights into the similarities and differences within each program area. In addition to the more obvious differences in location and service territory size, the utilities surveyed also varied significantly with regard to number of customers served, number of employees, and programs offered. Figure 1 displays these high-level differences.[2]

| Figure 1 | Company Overview |

### Number of Customers
(% of respondents)

- 3-6 million: 46%
- 1-3 million: 38%
- .5-1 million: 8%
- 0-.5 million: 8%

### Number of Full Time Employees
(% of respondents)

- 10000+: 38%
- 5001-10000: 15%
- 1001-5000: 46%

### Program Status

- Pending Approval 23%
- Approved 77%

### EV Program Types Across Utilities

| EV Program Types | Number of Utility Programs |
|---|---|
| Rebate | 7 |
| Infrastructure | 10 |
| Education | 8 |
| Rate | 8 |

Respondents allowed to select more than one option.

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[2] The graphics in Figure 1 represent responses from all 13 utility programs.

## 2. Results

MJB&A received responses from 11 electric utilities – eight investor owned utilities and three municipal utilities—regarding 13 utility EV programs.[3] Of the 11, 10 utilities participated in follow-up interviews.[4] The 13 programs varied in type, program length, and budget as can be seen in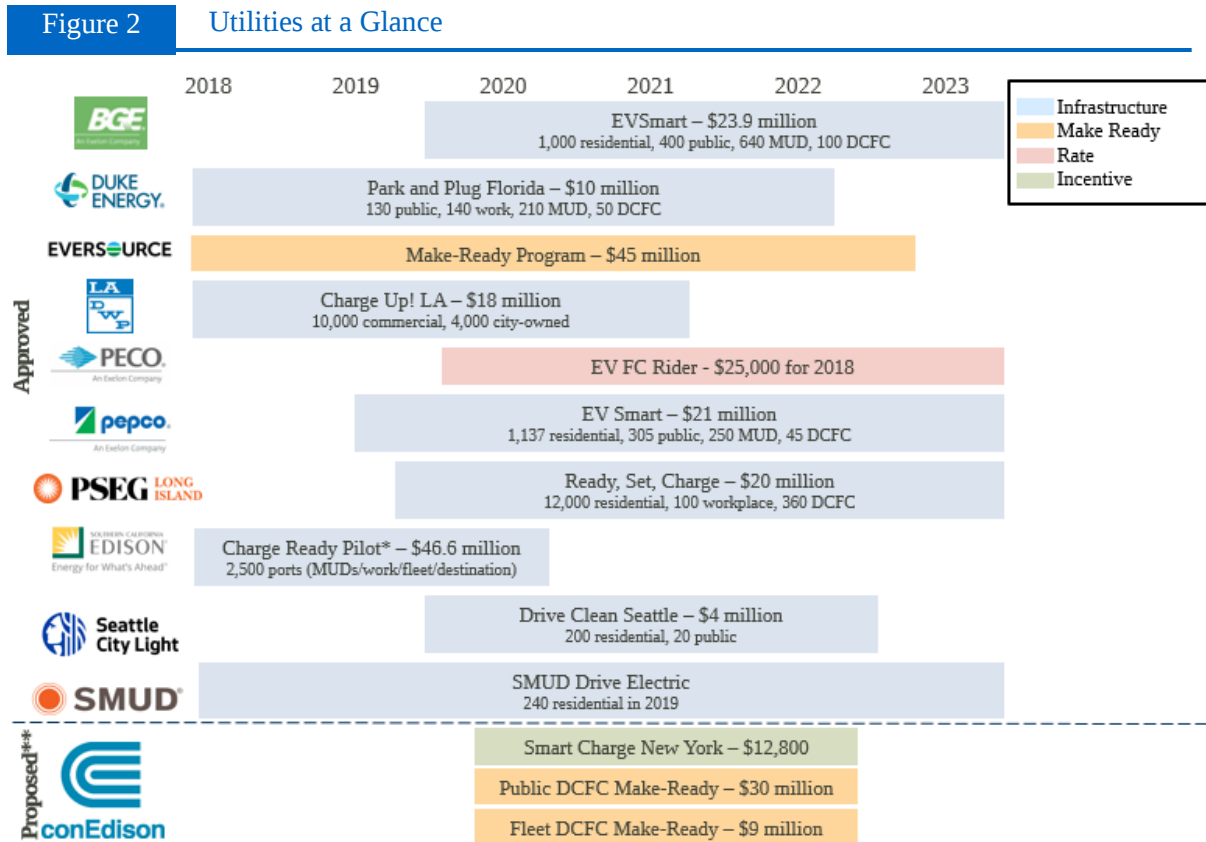 Figure 2.[5] Notably, 77 percent of the programs reflected in responses were approved and all but two survey respondents identified multiple components within their program.

| Figure 2 | Utilities at a Glance |
|---|---|



*SCE has proposed a permanent Charge Ready Program, integrating the findings from the Charge Ready Pilot, that is currently under consideration with the California Public Utilities Commission.

**Con Edison's programs described in the survey were proposed at the time of survey data collection. On January 16, 2020, the New York Public Service Commission approved Con Edison's expanded and new EV related programs.

*Note: The programs listed in this figure are not indicative of all the EV programs these utilities offer. This figure outlines the programs detailed by respondents in this survey.*

The following information summarizes the survey results by the nine overarching categories displayed within the survey.

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[3] Con Ed submitted three separate survey responses for three of their programs.

[4] In addition to the formal responses to the survey, one additional utility, ComEd, engaged in an introductory interview but did not fill out a survey. All but one utility that submitted a survey participated in a follow-up interview.

[5] Figure 2 displays each of the programs surveyed and highlights each program's dominant program type (infrastructure, make-ready, rate, incentive). Many of the programs listed in Figure 2 incorporate the other program types listed.

## 2.1 Organization and Program Structure

The survey asked a series of questions on utility organization and program structure.[6] Questions ranged from management structure and number of employees dedicated to EV program development to program resource support and trainings. A few key takeaways include:

1. *Most programs leveraged resources from other programs or departments.* Out of the 13 programs surveyed, 12 leverage resources from other programs.

   Several respondents noted that, depending on the location of a particular program and sometimes even on the time of year, program teams will grow and shrink to meet program needs. Several of the more nascent programs noted that they had to navigate program implementation on a program by program basis, often relying on other departments within the utility to assist with program implementation. Within the utility, respondents of all program sizes noted that they frequently leveraged resources and staff from energy efficiency departments. Respondents also drew from other departments, including: 1) account executives who help with site host recruitment; 2) distributed energy resources groups – especially those with skillsets in storage and solar installation that can be applied to DCFC installations; 3) construction design groups that work across business units; 4) transmission and distribution departments, particularly for execution of projects and contractor relations; and, 5) marketing departments, either within the EV program or within the larger utility marketing branch.

2. *Very few of the programs surveyed offer dedicated training to their employees.* Of the 13 surveyed, three respondents offer dedicated training for EV customer outreach and program staff. None of the programs offer training for construction or other technical EV resources.

   However, given the dynamic nature of a newly formed EV program, providing education and training opportunities to employees is key. Several utilities felt that EV education was particularly important when employees come from different departments. One respondent described bringing in staff from across utility departments and mentioned it would have been helpful to bring in peers to explain EV program-specific details. One example could include bringing in staff from the finance department to describe how and why the utility treats EVSEs as regulatory assets.

3. *"Most Senior EV Employee" title varied across respondents.* When identifying the "most senior EV employee," respondents most often selected "manager." Within the follow-up interviews, several respondents noted the need for support from leadership within the company to ensure that EV program development is prioritized.

4. *Number of full-time employees varied significantly across programs surveyed.* Of the programs surveyed, the number of full-time employees ranged from one to 27 dedicated staff members. Regulatory, program management, and marketing had the largest average program needs, though a few programs focused heavily on customer support (see Table 1 for breakdown by job type).

   Several survey respondents noted that as their EV programs and projects scaled, they needed a dedicated staff to manage the programs. Having a dedicated team enables a portion of staff to focus on the long-term goals and strategies of the EV program and status of the EV ecosystem as a whole rather than day to day program implementation. One participant mentioned that the number of full-

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[6] This section describes Questions 19-26 in the survey.

time EV staff tripled within a year due to their ability to convince upper level management that a separate e-mobility group was crucial to effectively serve its state and customers' EV needs. Creating a centralized system to monitor projects also enabled program staff to organize and track service requests, particularly where system constraints may emerge due to new load.

| Utilities | Marketing | Program MGMT | Customer Support | Application Review | Construction Project MGMT | Edu. & Outreach | Regulatory | Construction | Other | Contractor |
|---|---|---|---|---|---|---|---|---|---|---|
| Program 1 | 33% | 33% | 0% | 0% | 0% | 0% | 33% | 0% | 0% | 0% |
| Program 2 | 13% | 50% | 0% | 0% | 0% | 13% | 13% | 0% | 13% | 0% |
| Program 3 | 20% | 20% | 0% | 0% | 20% | 0% | 40% | 0% | 0% | 0% |
| Program 6 | 5% | 8% | 8% | 5% | 8% | 11% | 8% | 11% | 0% | 35% |
| Program 7 | 23% | 0% | 46% | 0% | 0% | 0% | 31% | 0% | 0% | 0% |
| Program 8 | 7% | 21% | 7% | 21% | 14% | 14% | 14% | 0% | 0% | 0% |
| Program 9 | 0% | 29% | 0% | 0% | 14% | 0% | 14% | 0% | 14% | 29% |
| Program 10 | 8% | 38% | 31% | 8% | 0% | 8% | 8% | 0% | 0% | 0% |
| Program 11 | 0% | 33% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 67% |
| Program 12 | 0% | 100% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |

Table 1 Percentage of Employees by Job Type

## 2.2 EV Program Implementation

The survey asked several questions related to capital and operations and maintenance (O&M) spending and components included within EV program budgets.[7]

The following information describes capital and O&M budgets for 2018 and for the first quarter of 2019. Only two survey responses detailed annual capital budgets for 2018, one with $375,000 and the other with $10,000,000. Four survey respondents listed their 2018 O&M budget, which ranged from $25,000 to $2,803,615. MJB&A received two responses related to projected O&M budgets for Q1 2019 which ranged from $40,000 to $608,513.

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[7] MJB&A received relatively few responses relating to questions on capital and operations and maintenance (O&M) budget and spending (Questions 27-30), receiving a low of one and a high of eight responses within the section. Due to the lack of responses, MJB&A has decided not to provide any key takeaways or trends and has instead chosen to display the data as it was received.

The following tables display the how utilities allocated capital and O&M spending.

| Table 2 Components Included in Capital Budget | | | | | |
|---|---|---|---|---|---|
| Utility | Rebates | Hardware | Infrastructure | Education & Marketing | Other |
| Program 1 | X | X | X | | |
| Program 2 | | X | X | | |
| Program 6 | X | X | X | | |
| Program 7 | | | | | EV Fleet |
| Program 8 | | | X | | |
| Program 11 | X | X | | X | |
| Program 12 | | | X | | |
| Program 13 | | | X | | |

| Table 3 Components Included in O&M Budget | | | | |
|---|---|---|---|---|
| Utility | Administrative | Rebates | Education & Marketing | Other |
| Program 1 | X | | X | |
| Program 2 | X | | X | |
| Program 5 | | X | X | |
| Program 6 | X | | X | System enhancements |
| Program 7 | X | X | X | |
| Program 10 | X | X | X | |

## 2.3 Rebates

The survey asked a series of questions related to rebate program offerings.[8] Of the nine programs that include a rebate component, eight offer EVSE rebates, and one offers make-ready infrastructure rebates. Of the eight programs that offer EVSE rebates, seven do so in the form of a rebate check. Only one offers a bill credit option to customers. Tables 4 and 5 display additional information on the EVSE rebates currently offered by the program's surveyed.

| Table 4 Total Number of EVSE Rebates Granted | | | |
|---|---|---|---|
| Utility | EVSE Rebates contingent on technical requirements | Total Number of EVSE Rebates granted? (2018) | Total Number of EVSE granted? (Q1, 2019) |
| Program 1 | Yes | Not Started | Not Started |
| Program 3 | Yes | NA | NA |
| Program 4 | Yes | 751 | 342 |
| Program 6 | Yes | 0 | 0 |
| Program 7 | Yes | 50 | 0 |
| Program 8 | Yes | 1,000 | NA |
| Program 10 | No | 321 | 163 |

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[8] This section describes Questions 31-43 in the survey.

In addition to the higher-level elements of the rebate programs, MJB&A asked survey respondents a series of questions related to the technical requirements of the survey. The elements considered when providing rebates are outlined below.

1. *Technical Requirements.* Of the six programs surveyed that had technical requirements that impacted EVSE rebate eligibility, survey respondents most frequently listed smart/Wi-Fi enabled technology and plug/connector type differences as a requirement for EVSE rebate eligibility. Respondents found requiring smart/Wi-Fi enabled chargers facilitated data collection for a utility. This requirement is sometimes directed by the Commission so the utility can collect data for future programs.

2. *Interoperability Standards.* A few programs (three of the nine programs with EVSE rebates) highlighted that an interoperability standard was required to receive a rebate. Of those three, each program required a different standard: OCPP, OCPI, or Open ADR.[9] Some utilities noted that they have looked to California's EV standards for guidance as they are viewed as a leader in the industry.[10]

| Table 5 Technical Requirements for EVSE Rebate Eligibility | | | | | |
|---|---|---|---|---|---|
| Utility | Smart/Wi-Fi Enabled | Interoperability | Plug/Connector Type | Demand Response Capable | Data Sharing Capabilities |
| Program 1 | X | | | | |
| Program 3 | X | | X | | X |
| Program 4 | | | X | | |
| Program 6 | X | | | | X |
| Program 7 | X | | X | | |
| Program 8 | | X | X | X | X |

Another challenge referenced in the follow-up interviews is creating an approved product list of chargers that meet both safety and interoperability standards. As new equipment comes to market and receives certification from an array of entities (e.g., NRTL certified, UL listed), utilities must determine if the chargers meet their program requirements. This can be highly time and resource consuming. To address this barrier, one respondent mentioned collaboration with the Electric Power Research Institute (EPRI) to create either a universally accepted certification label (similar to a Wi-Fi or USB certified labels) or a matrix of critical technology components that details what requirements the equipment meets. Third party certification would take both liability and additional testing out of the hands of the utility. For EVSE providers, it would require a one-time fee that would enable their technology to be approved across the country rather than having to prove to each utility that their chargers meet certain requirements.

3. *Plug Types.* Very few respondents provided detail on plug type requirements. Of the nine programs with EVSE rebates, four indicated plug types accepted, all of which accept both CHAdeMO and SAE CCS.

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[9] Open Charge Point Protocol (OCPP), Open Charge Point Interface (OCPI), and Open Automated Demand Response (Open ADR). For more information, see MJB&A's "Electric Vehicle Charging Interoperability" issue brief at https://www.mjbradley.com/reports/electric-vehicle-charging-interoperability.
[10] California's proposed standards can be found at https://ww2.arb.ca.gov/sites/default/files/2018-06/sb-454-may30-workshop.pdf.

4. *Vendor Preference.* One utility indicated the vendor they selected through an RFP preferred mobile apps to credit card readers because unlike gas stations, chargers are not protected from the elements, which could cause damage to the charger or credit card reader.

5. *Cooperation with Non-Utility Rebate Programs.* A few utilities noted that close coordination with state agencies helps avoid duplicative programs. One utility did so preemptively when setting up a rebate utilizing VW supplement funding. The utility designed its rebate to cover ineligible costs, like paying future electric bills or vendor contract costs, to ensure that the rebate would provide supplemental funding that would not detract from the overall grant amount allotted by the state. Changes can also be the result of a Commission decision: after one utility surpassed its workplace charger rebate goal, its Commission reviewed the proposal to expand and increase the rebate but ultimately closed the program and directed inquiries to a similar state EV program.

6. *Adaptation Ability.* Respondents indicated that rebate adaptation is important to encourage customer uptake. Some utilities have changed from a standard rebate to a rebate reservation model (see LADWP example below) while others have changed from an application to a point of sale method. Many respondents noted that to award a rebate, the customer must confirm when he or she has acquired a contract with a provider or energize the charger, both of which can be difficult to confirm. Simplifying the EVSE activation confirmation – potentially by integrating an instant activation code for online purchases – could facilitate and improve the application process for both the customer and utility.

## Rebate Process Case Study: LADWP Charge Up! LA

*"A rebate check approach can cause some customers to be weary of installing charging stations. Therefore, a rebate reservation process is being implemented to ease the mind of customers who are planning installations."* – LADWP survey response

**Budget**: $18 million

**Project Timeline**: Through 2021

**Service Territory (Sq. Miles)**: 472

**Program Highlight**: As utilities build out their EV programs, adjustment and re-calibration is essential to ensure utility programs best meet the needs of their customers. To facilitate the rebate experience for its customers, LADWP is adding additional rebate options to better align the application and installation processes. Originally, LADWP only offered customers the option to apply for a rebate after they installed a charging station. While this option will remain, the utility will now offer a rebate reservation model where customers can apply for a rebate before completing the deployment of a charging station. This system allows the customer to file the necessary rebate paperwork while installing the charger so that they are able to receive the rebate upon the completion of the installation. While both options require a program application and required documents (e.g., proof of purchase and installation of qualified equipment), the reservation process streamlines the customer application and installation processes.

**The new rebate model is described below**:

1. **Stage One:** After developing charging plans, completing a submittal package, and obtaining confirmation from LADWP's EV Service Design team, the customer applies for the reservation.
2. **Stage Two:** After receiving approval from LADWP, the host procures the charging station, finalizes the design, then applies for permits. Two months from the reservation approval, the host submits a copy of the permits to LADWP and deploys charging stations.
3. **Stage Three:** The host applies for the rebate and, six months from the permit issue date, submits proof of deployment.

This adapted flow allows the customer to submit the necessary paperwork at the appropriate time in the installation process, facilitating the exchange of information and streamlining customer and utility interaction.

In addition to adapting the overall process, LADWP has also experimented with the rebate amounts it offers. LADWP initially offered a $450 residential rebate but received very few applications. In response to the low application rates, LADWP increased the rebate to $1,500 with the hope of reaching more customers.

## 2.4 Rates

The survey asked a set of questions around charging rate types and offerings.[11] Eight utility programs offer a charging rate – six offer a time of use (TOU) rate, one offers a business incentive rate, and one is offering a demand charge relief fund.

In follow-up interviews, utility representatives voiced mixed reviews regarding EV TOU rates. On one hand, many that did not offer EV-only TOU rates noted that their customers had expressed interest in that rate type. One respondent that currently only offers an EV-whole house rate will begin offering an EV-only TOU rate in the coming year. The utility hopes this will curb customer exposure to peak rates and increase customer buy-in through increased marketing.

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[11] This section describes Questions 15-17 in the survey.

**Figure 3**    EV Rate Types Offered
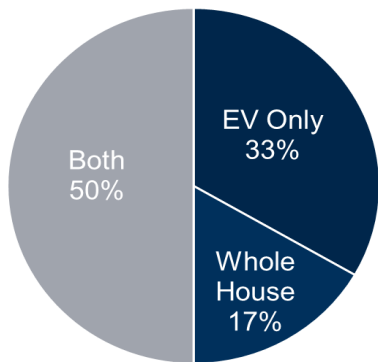


Six survey responses received

On the other hand, a few respondents spoke to the difficulties of installing and managing a separate meter associated with EV-only TOU rates. Summarizing this point, one respondent wrote in their survey that "dedicated meters are often not a cost-effective option for customers who would otherwise be interested in EV TOU rates." A separate meter can lead to more cost born by the customer or utility, depending on the rate structure. One respondent intended to include meters in every installation until they realized it would be twice the approved budget. The two respondents that offer EV-only rates indicated low interest and adoption levels.

## 2.6 Charger Information and Ownership

The survey asked questions regarding EVSE charger installation targets in addition to make-ready and charger costs and EVSE ownership models utilized. Responses were not uniform, so quantitative analysis is limited.[12] Some trends, however, are apparent. Notable takeaways include:

1.  *Make-ready infrastructure costs exhibited the greatest variation.* As shown in Figure 4 while there was some variation in costs within both L2 and DCFC charger costs, the more significant variation in utility costs occurred in the make-ready infrastructure costs. This was especially true for DCFC make-ready costs, with some utilities citing costs double the amount – up to $90,000 – of other utilities.

**Figure 4**    Utility Owned Infrastructure Costs
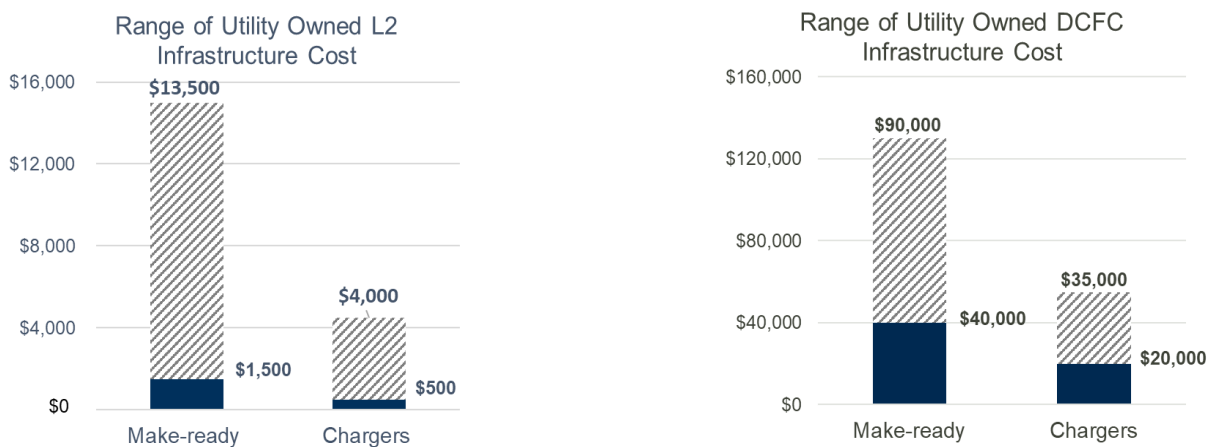


Costs displayed in both L2 and DCFC infrastructure graphics represent the minimum and maximum costs noted within the survey responses. MJB&A received six and five responses related to L2 make-ready and charger costs, respectively, and seven and six responses related to DCFC make-ready and charger costs, respectively.

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[12]  This section describes Questions 9-14 in the survey. Responses in the EV charger utility targets and ownership section (Questions 13-14) varied significantly regarding completion and content. Of the 13 programs surveyed, only two respondents addressed every question within this section. Approximately half of the respondents answered the majority of the questions within this section

During the follow-up interviews, one respondent discussed how they had addressed high installation costs by revising their line extension policy. The utility had previously required a deposit from customers for upgrade costs exceeding $10,000. Over 10 years, the deposit would be returned to the customer. The utility increased the threshold to $250,000 hoping to lower the customer barrier to entry going forward – not only with EV charging but also for data centers and distributed generation. Although only a few customers are currently aware of this policy, this adjustment may help future customers looking to install EVSE in places of insufficient capacity. This could be especially true as cost effective locations are utilized and only more costly locations remain.

2. *If a utility set a target for L2 chargers, it most frequently set a target around either residential or multi-unit dwellings (MUDs).* Of the eight programs that responded, three set a target for residential chargers, three set a target for MUDs, two set a target for public chargers, and two set targets for both. None set targets for private or workplace L2 chargers.

3. *If a utility set a target for DCFC chargers, it most frequently set a target around public chargers.* Of the six programs that responded, four set a target for public chargers and one set a target for both public chargers and chargers for MUDs.

4. *The programs that currently have a target around deployment in low-to-moderate income (LMI) communities are mandated to do so.* While several respondents highlighted that they consider LMI communities when implementing their programs, only one utility listed a target around LMI communities, which was mandated by the utility's PUC.

5. *Most programs surveyed offered a variety of ownership models.* Of the 13 programs surveyed, all programs offered more than one ownership model, with utility-owned infrastructure and customer owned EVSE being the most common ownership models.

## 2.5 EV Program Integration

The EV project review process questions varied from EV program integration to access to program applications.[13] Overall, EV program integration with other utility programs, such as clean energy and energy efficiency, varies from program to program. Seven of 13 programs integrate EV work with other utility run programs, such as energy efficiency programs. Of the seven, three programs integrate their EV program and energy efficiency programs, and four combine EV work with a larger climate program that includes clean energy, energy efficiency, and emissions reductions.

## 2.6 Implementation Process

The survey asked a series of questions related to EV project implementation and customer application cycle time.[14] Survey respondents shared where they have experienced bottlenecks in their process and offered solutions that could ameliorate factors inhibiting program implementation. Some of the key issues and suggested solutions discussed during these interviews are described below.

1. *For utilities with fragmented service territories, it can be difficult to keep track of electric capacity and project requests.* Use of customer management software or other automated services varied. Of the 11 survey responses received regarding implementation, five noted that they utilize a customer management software or other automated services to track project review and progress. Of those five, three use an in-house management software, one uses Salesforce, and one did not list which management software they use.

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[13] This section describes Questions 50-56 in the survey.
[14] This section describes Questions 57-62 in the survey.

At one utility, "load letters" go to the Energy Services department, which is unique to each segment of its service territory. The fragmented nature of these requests made tracking overall EV charger service requests difficult. The utility mentioned that one solution could be to create a centralized management system to monitor EV project load letters, creating one pipeline so that the EV team is aware of all requests. Another respondent mentioned that they are considering creating interactive capacity hosting map to reduce construction time, a process that has been used for distributed energy resources. The map would show where capacity levels have constraints—in red or yellow—or would display green coloring, indicating areas that would require less work. Another utility mentioned using EV registration data to keep track of or predict potential future congestion points.

2. *Utilities consider multiple factors when considering site eligibility.* Of the ten programs that responded, seven selected more than one factor. Customer segment was the most selected factor.

| Table 6 Main Factors that Determine Site Eligibility for Program Participation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Utility | Project Cost to Utility | Project Cost per Charger | Required Grid Updates | Geography | Customer Segment | LMI Community Status | Anticipated Project Time | No. of Chargers Installed | Other |
| Program 1 | | | | | X | | | | |
| Program 3 | X | | X | | X | | | | |
| Program 4 | | | | X | | | X | X | The rebate for level 2 charging stations to charge light-duty EVs is open to utility customers who are on a commercial account. Residential customers apply under a different rebate program for level 2 charging stations. |
| Program 5 | | X | X | X | X | | X | | |
| Program 6 | X | X | X | X | | | | X | Proximity to distribution system, other chargers, site barriers such as underground wells, etc. |
| Program 7 | | | | | X | | | | EVSE specifications |
| Program 8 | X | X | X | X | X | X | X | X | |
| Program 9 | X | | | | X | | X | | |
| Program 12 | | | | | X | | | X | Customer's desire to move forward with site. |
| Program 13 | X | | X | | X | | | | Total charger output |

3. *Pairing customers with a single point of contact is effective and necessary.* When asked to describe their utility's EV program customer journey from application to installation, responses varied depending on the program type. For DCFC chargers, the customer process begins with the customer

submitting a load letter whereas L2, survey respondents noted that the customer can often just apply. Some respondents have third party installation and delivery of the EVSE. For one program that uses FleetCarma, the utility mails a tracking device to the customer, the customer then installs or has a vendor install the device, and the device tracks monthly rewards so that the utility can apply the credit to the customer's card. Several programs noted that the customer can apply for a rebate either as they are in the process of applying for the EVSE or immediately after successful EVSE installation.

An account executive or program manager can help foster relationships with customers and make sure the timeline stays on track. While customer project managers (CMP) are very useful in assisting customers through the application process, one respondent noted that the process can be frustrating for developers. Utility's frequently assign a new CMP to each case, which can mean that developers have to interact with a new CMP for each of their projects. One respondent noted that changing the utility's internal process for determining CMP project assignment could improve the developer process.

Additionally, effectively packaging or minimizing the number of documents a customer must sign can help reduce delays on the customer side. While it may create more work internally, this could improve customer experience especially with municipalities.

4. *It can be difficult to balance the timelines of multiple project streams with the permit application process.* One utility found that while they pieced together the steps internally – setting up hosts as new business customers, partnering with electricians, and designing and identifying charger installation plans – they experienced significant delays with the municipal permitting process. The utility found that it was not aware of all of the county level permits needed by both the utility and the project electricians. This lack of understanding led to delays in the permitting process. To address this issue, the respondent advised bringing the project proposal to the county early in the permitting process to ensure that all necessary permits are acquired.

5. *Hiring engineers and contractors familiar with the intricacies of local codes and processes is critical to a successful implementation process.* One utility began their pilot in one state by hiring engineers from their headquarters located in another state. Not only was it difficult to manage the pilot across states but the service territory in which the pilot occurred had multiple unique engineering zones, adding complexity to the implementation process. After this experience, the utility recommended hiring local workers who understand the unique characteristics of their local jurisdictions.

Relatively few utilities responded regarding average application cycle time of installation stages. Received data is shown below without any additional analysis.

| Table 7 Application Cycle Time (Business Days) | | | |
|---|---|---|---|
| Utility | Public Level 2 | Public DCFC | Private level 2 |
| Program 6 | 150 | 150 | 105 |
| Program 7 | | | 15 |
| Program 8 | | | 260 |
| Program 9 | | | 20 |
| Program 10 | | | 2 |
| Program 12 | 135 | | |

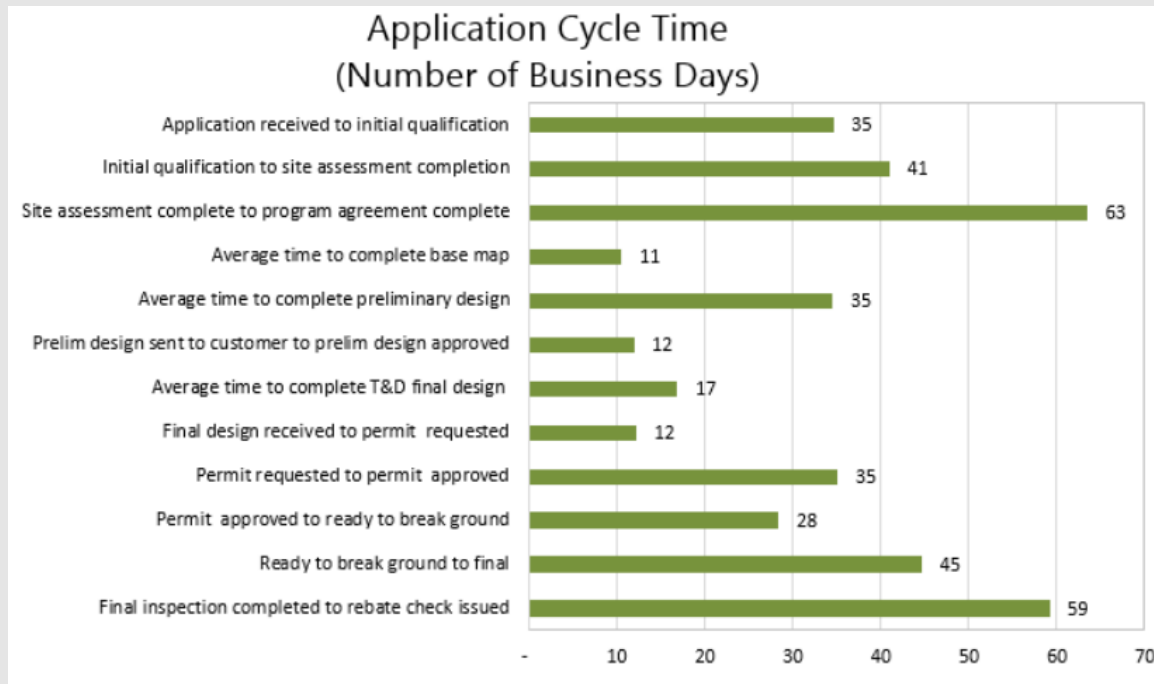# EVSE Installation Process Case Study: SCE Charge Ready

**Budget**: $46.6 million

**Project Timeline**: Through 2020

**Service Territory (Sq. Miles)**: 50,000

**Program Highlight**: As detailed in its Quarterly Report*, installations for Southern California Edison's Charge Ready pilot average almost 400 business days. Stages range from 11 days for "average time to complete base map" to 63 days for "site assessment complete to program agreement complete." The application cycle is distilled down to five steps:

1. **Notice of Intent** – For the first stage, the customer submits an application, signaling interest in pilot participation. After SCE receives the Notice of Intent, the utility conducts a feasibility assessment and proposes the number and deployment location of charging stations.
2. **Agreement** – Once the customer and site host approve the plan through a signed agreement, SCE reserves funding.
3. **Certification** – SCE conducts Planning and Design while the customer procures the qualified charging station, which varies between 33 days for a county customer and 69 days for a federal customer. Upon procurement, the customer provides proof of purchase to SCE. Before SCE begins construction, SCE and the customer engage in a pre-construction meeting. After SCE installs the infrastructure and it passes inspection, the selected vendor installs the charging equipment.
4. **Walk-Through Report** – To confirm the infrastructure and charging systems were deployed in accordance to approved plans, SCE conducts a walk-through report.
5. **Rebate Confirmation** – Upon confirmation, SCE issues the rebate.

## Application Cycle Time
### (Number of Business Days)

| Stage | Business Days |
| --- | --- |
| Application received to initial qualification | 35 |
| Initial qualification to site assessment completion | 41 |
| Site assessment complete to program agreement complete | 63 |
| Average time to complete base map | 11 |
| Average time to complete preliminary design | 35 |
| Prelim design sent to customer to prelim design approved | 12 |
| Average time to complete T&D final design | 17 |
| Final design received to permit requested | 12 |
| Permit requested to permit approved | 35 |
| Permit approved to ready to break ground | 28 |
| Ready to break ground to final | 45 |
| Final inspection completed to rebate check issued | 59 |

*The information gathered through the survey and follow-up interview is supplemented by SCE's Q1 2019 Quarterly Report. More information can be found at https://www.sce.com/sites/default/files/inline-files/SCE%20Quarterly%20Charge%20Ready%20Pilot%20Program%20Report%202019%20Q1%20WCAG.pdf.

## 2.7 Marketing and Education

The survey included a series of marketing and education questions which varied from customer education and recruitment channels to electrification advisory services provided to customers.[15] Utilities highlighted the importance of pursuing marketing and education through both individual utility outreach and utility collaboration with dealerships and other parties. Key findings are as follows:

1. *While all respondents use multiple channels to reach customers, direct emails that target current or prospective EV owners for utility program has been shown to be easily measurable while ride and drive events have proven highly effective in educating customers on EV lifestyle in general.* All 13 programs utilized more than one recruitment channel option with several selecting almost all the options provided. Ten of the 13 survey respondents noted that their programs conduct targeted outreach to educate customers on their EV programs. While utilities utilize a host of strategies, targeted emails allow the utility to measure success by quantifying how many customers are opening and clicking through the email. Ride and drives, on the other hand, may be most effective because they expand knowledge of EVs and utility programs by face to face interaction with utility experts. Several utilities noted that holding public events like Ride and Drives or events at universities, museums, or city functions has increased excitement around EV ownership.

   Respondents most frequently noted that cost reductions, either in the form of financial incentives or EVSE cost reductions, are the main drivers for customer participation in EV programs. The combination of these outreach strategies can help ensure customers are aware of available discounts.

| Table 8 Customer Education and Recruitment Channels | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Utility | Private & Public Sector Fleet Advisory | Internal Accounts Manager | Ride & Drive | Events | Third Parties | Utility EV Website | External Website | Social Media | Earned Media | City & State Coordination |
| Program 1 |  | X | X | X | X |  | X | X |  | X |
| Program 2 | X | X | X | X | X | X | X | X | X | X |
| Program 3 |  | X | X | X | X | X |  | X |  | X |
| Program 4 | X |  |  | X | X | X | X | X |  | X |
| Program 5 |  | X |  | X | X | X | X | X | X | X |
| Program 6 |  |  | X | X | X | X | X | X | X | X |
| Program 7 |  | X |  | X | X |  |  | X | X |  |
| Program 8 |  | X | X | X | X | X | X | X | X | X |
| Program 9 |  |  |  | X |  | X |  |  |  | X |
| Program 10 |  | X |  | X | X | X | X | X | X | X |
| Program 11 | X |  | X | X | X | X | X | X |  |  |
| Program 12 |  |  |  | X |  | X | X |  |  | X |
| Program 13 | X |  |  | X | X | X | X |  |  | X |

2. *Utilities can identify likely EV owners through a variety of strategies:*
   a. *Propensity models:* These models display the shared usage traits of EV owners, which allows utilities to identify potential future EV owners that could benefit from utility programs.

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[15] This section describes Questions 44-49 in the survey.

b. *EV drivers registered in a utility database:* One utility has given customers a $50 rebate for registering their EV since 2012, which has allowed the utility to track the growth EV ownership within its service territory and reach out to offer promotions.
c. *External databases:* Some utilities have contacted drivers who receive state EV incentives.

After identification of potential owners, many indicated that they engage in more targeted sector outreach. Of the nine programs that responded, respondents target residential, private fleet, and government sectors most frequently. Many respondents noted that outreach to certain customer segments like fleets and MUDs requires additional effort or different strategies. One way to reach these sectors is to dedicate sales representatives to work with and contact these groups.

For development within MUDs, size is often important. Larger, corporate MUDs with 60-80 units may be able to give up the two parking spots required for an ADA-compliant EV charger and may be easiest to contact first. A MUD with five to six units, on the other hand, may not. For these, decreasing the charging port requirement might make EVSE installation more accessible. One utility decreased the minimum port number from ten to two and saw increased interest. Although stakeholders pushed back because it increased the average cost per charging port, the reduction made the investment more manageable for landlords.

| Table 9 Customer Segments Utility is Targeting | | | | | | | |
|---|---|---|---|---|---|---|---|
| Utility | MUD | Workplace | Government | Private Fleet | DAC/LMI | Residential | Other |
| Program 1 | X | | X | | | X | |
| Program 2 | X | X | X | X | X | X | |
| Program 4 | X | X | X | X | X | X | |
| Program 5 | | X | X | X | | X | |
| Program 8 | X | X | X | X | X | X | |
| Program 10 | X | X | X | X | X | X | |
| Program 11 | | | X | X | | X | |
| Program 12 | | | | X | | X | Commercial parking facilities |
| Program 13 | | | | X | | X | |

3. *A utility's managed/large accounts representatives can conduct targeted outreach.* Having fostered close relationships with customers, these representatives can convey EV benefits or can integrate EV offers into newsletters or other informational materials. Survey respondents noted that it is important to identify the appropriate contact within the customer's organization prior to reaching out to the customer: it is likely that the utility accounts manager communicates with billing department who may not be involved in fleet conversion or workplace and public charger installation.

4. *Utilities most frequently offer electrification advisory services but also leverage third party expertise.* Of the 12 survey respondents that offer electrification advisory services, nine stated the utility offered the services themselves, eight stated a third party offered the services, and a few other programs noted that OEM and EVSP offered electrification services.

| Utility | Utility | OEM | Third Party | EVSP | Other |
|---|---|---|---|---|---|
| Program 1 | X | | | | |
| Program 2 | X | | X | | |
| Program 4 | | | X | X | |
| Program 5 | X | X | X | | |
| Program 6 | | | | | Digital toolkit of utility website. |
| Program 7 | X | | | | |
| Program 8 | X | X | X | X | OEM through 3rd party contractors promoting EVs at OEM dealerships. |
| Program 9 | X | X | X | X | |
| Program 10 | | | X | | |
| Program 11 | X | | X | | |
| Program 12 | X | | | | |
| Program 13 | X | | X | X | |

*Table 10 Electrification Advisory Service Providers*

5. *Although utilities utilize a host of marketing and education strategies, much of the EV experience is governed by the dealership experience: the success of utility marketing and education campaigns can be inhibited if a customer has a poor dealership experience.* One survey respondent noted that they coordinate their marketing campaigns with "car buying season" in the fall – when dealerships run their own promotions – particularly when auto manufacturers offer discounts on previous EV models. Others noted that they have sent dealerships marketing packets (informational fliers, banners, magnets, etc.) or have supported dealership trainings (see SMUD example below). Focusing on the dealership experience not only elevates the customers' understanding of EVs but also helps promote utility EV programs if dealers are knowledgeable on EV offerings.

### Marketing and Education Case Study: SMUD Drive Electric

**Project Timeline**: Currently implemented, end date undetermined.

**Service Territory (Sq. Miles)**: 900

**Program Highlight**: SMUD has made collaboration with the 19 dealers in their region a marketing priority. To implement an effective dealership engagement campaign, SMUD has partnered with Plug In America's PlugStar program to conduct seminars on the EV lifestyle. These sessions certify at least two dealers as "EV Specialists" not only on charging behavior but also on SMUD's EV rates, incentives, and programs. Dealers are then equipped to meet the needs of electric car buyers with information on both general EV ownership changes and specific utility programs that can make it more affordable. To incentivize this cooperation, dealers receive recognition and rewards. The PlugStar program helps elevate dealer EV expertise and sales capability, which in turn creates an "exceptional" shopping experience for potential EV owners. For more information about PlugStar, visit https://plugstar.com/.

## 2.8 Tracking Progress

The survey asked several questions related to tracking progress within EV programs. These questions ranged from how utilities are measuring EV program success to specifying the types of stakeholders that receive program updates. A few key takeaways are described below.[16]

1. *Most utilities surveyed use multiple indicators to measure program success.* Of the eleven responses received, seven respondents selected more than one indicator to measure program success.

| Table 11 Measuring Program Success | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Utility | No. Chargers Installed | EV Sales in Utility Service Territory | Reductions in GHG and Air Pollution Emissions | Investments in Infrastructure | Participation in Demand Response | Charger Utilization | LMI Community Charger Deployment | Other |
| Program 1 | X | | | | | | | |
| Program 3 | | | X | X | | | X | Number of chargers enabled. |
| Program 4 | X | X | X | X | | X | X | |
| Program 6 | X | X | | | | X | | |
| Program 7 | | | X | | | | | Rebate applications processed |
| Program 8 | X | X | X | | | X | X | |
| Program 9 | X | X | | X | | X | X | |
| Program 10 | X | X | X | X | | | X | |
| Program 11 | | | | | | | | MWs avoided from system peak |
| Program 12 | | | | X | | | | |
| Program 13 | | | | X | | | | |

2. *Several programs surveyed are tracking customer engagement with LMI customers.* Seven survey respondents noted that they are tracking engagement with LMI communities: three track the percentage of chargers deployed in DACs, one tracks total rebate amount disbursed, and one tracks three metrics – percentage of chargers deployed, total rebate amount disbursed, and percentage of applications received.

One utility initially aimed to install chargers exclusively in environmental justice communities and DACs, communities that had traditionally been overlooked by the private market. After collaboration with the EJ and DAC community members in their service territory, however, the utility heard that the community did not feel charging stations were the best solution. In addition to offering infrastructure and vehicle rebates, another utility mentioned that career development and trainings programs could be an effective partnership role for utilities by creating economic opportunities and investing in a strong EV workforce. Initiatives could include partnering with a local community college for repair service training. When discussing expanding EV access for EJ and DAC communities, utilities mentioned the importance of engaging in conversations with residents rather than approaching with assumptions and pre-baked solutions. Several respondents mentioned they are exploring how they can include rideshare, carshare, and transit bus electrification in their programs.

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[16] This section describes Questions 63-70 in the survey.

3. *About half the programs surveyed have a PUC mandated annual or semi-annual program report requirement.* Of the twelve survey responses received, five noted that they have a PUC mandated program report requirement while the remaining seven do not.

4. *Utility programs are using a wide range of sources to track data.* Of the twelve survey responses received, many programs are using many different types of sources to track data including several programs not listed as an option within the survey.

| Table 12 Main Sources of Data Used | | | | |
|---|---|---|---|---|
| Utility | EVSP | Program Participation | OEM | Other |
| Program 1 | X | | | |
| Program 3 | X | | | |
| Program 4 | X | | | |
| Program 5 | X | X | X | State Department of Motor Vehicles |
| Program 6 | X | | | EV Network- Greenlots |
| Program 7 | | X | | |
| Program 8 | | | | Internal PMO metrics of the programs |
| Program 9 | X | X | | EPRI |
| Program 10 | | X | | EPRI |
| Program 11 | X | | X | Fleet Carma |
| Program 12 | | X | | |
| Program 13 | | X | X | |

5. *Survey respondents gather data through both automated and manual processes.* Of the twelve survey responses received, two programs gather data manually only, two gather data through an automated process only, and seven use both automated and manual data tracking systems.

6. *The majority of programs surveyed provide routine updates and communication with stakeholders.* Of the twelve survey responses received, all survey respondents stated that they provide routine updates to stakeholders on EV program implementation and future program design.

| Table 13 Stakeholder Types that Receive Program Updates | | | | | | | |
|---|---|---|---|---|---|---|---|
| Utility | State and local agencies | Third party charging services | Consumer and ratepayer advocates | Environmental Advocates | Social Justice Advocates | Vehicle Manufacturers | Commercial building and MUD owners |
| Program 1 | X | | | | | | |
| Program 3 | X | X | X | X | X | X | X |
| Program 4 | X | | | | | | |
| Program 5 | X | X | X | X | X | | X |
| Program 6 | X | X | X | X | X | | |
| Program 7 | X | | | | | | |
| Program 8 | X | X | X | X | X | X | X |
| Program 9 | X | X | X | X | X | X | X |
| Program 10 | X | | | | | | |
| Program 11 | X | X | | X | | X | X |
| Program 12 | X | X | | | | | |
| Program 13 | X | X | | X | | X | X |

In follow-up interviews, some survey respondents noted that, while their utility currently has an in-house process to track data, they are in the process of transferring to a larger platform like Salesforce or

FleetCarma. Others noted they have had trouble getting individual customers to sign up with these larger platforms because they are slightly more complicated to use when compared to more manual processes.

# 3. Participant Conclusions and Lessons Learned

The final three questions of the survey focused on lesson learned in addition to key challenges and successes.[17] The three sections below synthesize the responses from utility participants.

## 3.1 Key Challenges

1. Site suitability variation can make finalizing cost estimates difficult and along with permitting can prolong the site acquisition process.
2. The inability to share data when using proprietary charging equipment can limit utility understanding of charging equipment usage.
3. Due to the limited market adoption to date, finding the most effective means to promote and market EVs has been challenging.
4. EVSE providers and OEMs not adhering to certification requirements has been a challenge for some utilities.
5. Steep upfront costs of charging station deployment has dissuaded customers from investing in charging infrastructure, therefore limiting growth.

## 3.2 Key Successes

1. Increased utility marketing efforts has resulted in increased usage of the EV programs by customers.
2. Turnkey charging services for residential customers have been a successful way to engage with customers for some utilities.
3. Promoting EV adoption through a combination of platforms (incentives, customer education, outreach, and ride and drive events) has been critical for many utilities.
4. Rebate incentives have been helpful in spurring EV charging station growth for some utilities.

## 3.3 Additional Lessons Learned

1. Buy-in from internal leadership on EV program processes as well as critical program inputs and expectations is essential.
2. O&M costs need to be factored in when installing utility owned and operated charging stations.
3. Utilities should limit downtime associated with operating and maintaining chargers. Prolonged downtime creates a negative EV experience for customers.
4. Modifying traditional EV TOU rates to incentivize off-peak charging has been helpful in encouraging customer usage for some utilities.

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[17] This section describes Questions 72-74 in the survey.

# Appendix A: Survey Questionnaire

## Introduction

The following survey has been developed for electric utilities who are implementing electric vehicle (EV) programs. Please complete the survey with one EV program in mind in order to provide results representative of a single type of program.

The goals of the survey are to assess how utilities are administering and implementing their EV programs, marketing to and educating market participants and customers, engaging with interested EV charging host sites, and lessons learned.

A final report will be prepared and shared with each participant that contains the responses, the participant's responses and responses from the other participants with their company names blinded. Summaries and analysis of the data collected will also be included.

If you choose to complete the online survey, we request that a single point of contact within your organization fill it out in order to ease the evaluation of responses.

## Company Overview

1. Company name

2. Service territory (sq. miles)

3. Number of customers

- 0-.5 million
- .5-1 million
- 1-3 million
- 3-6 million
- 6+ million

4. Number of full-time employees

- 0-1,000
- 1,001-5,000
- 5,001-10,000
- 10,001+

## EV Program Information

5. Is your program proposed or approved at this time?

- Proposed
- Approved

6. What is the name of the EV program?

7. What type of EV program is your utility implementing?

- Rebate (offering customers incentives for purchase of an EV or charging equipment)
- Infrastructure (support the build out of make-ready infrastructure)
- Education (develop and promote customer education and awareness programs)
- Rate (rate design specific to EV charging)
- Other (please specify)

8. Please provide the following information for the EV program

- Total budget
- Capital budget
- O&M budget
- Implementation timeframe

9. Does your EV program have EVSE installation targets?

- Yes
- No

10. Target number of Level 2 charger installations

- Residential
- Public
- Private
- Workplace
- MUD
- Percentage of utility owned and operated
- Percentage in Disadvantaged Communities or Low/Moderate Income Communities

11. Target number of DCFC charger installations

- Public
- Private
- Workplace
- MUD
- Percentage of utility owned and operated
- Percentage in Disadvantaged Communities or Low/Moderate Income Communities

12. Are you on track to achieve program targets?

- If yes, what has contributed to success?
- If no, what barriers inhibit success?

13. Which ownership model(s) does your program offer? Select all that apply.

- Utility-owned EVSE
- Customer-owned EVSE
- Utility-owned infrastructure
- Customer-owned infrastructure

14. What is the average cost of utility-owned:

- Level 2 make-ready infrastructure
- Level 2 chargers
- DCFC make-ready infrastructure
- DCFC chargers

15. Do you offer EV charging rates?

- Yes
- No

16. What type of EV rate do you offer?

- TOU
- Real time pricing
- Subscription plan
- Other (please specify)

17. Is the EV TOU rate:

- EV only
- Whole house

18. Please elaborate here on anything covered in this section regarding your utility's EV program. You will have an opportunity at the end of the survey to elaborate upon any elements not addressed.

## Organization and Program Structure

19. What level/title is the senior EV employee in the company?

- Senior VP
- Vice President
- Director
- Senior Manager
- Manager
- Other (please specify)

20. What level does she/he report to?

21. Specify the number of full-time EV program resources at the following levels:

- Manager
- Individual Contributors,
- Technical
- Professionals/Scientists
- Contractors
- Individual Contributors,
- Operations
- Individual Contributors,
- Analysts and Admins

22. Please complete the table below specifying the number of full-time and contract employees support this EV program for each workstream:

|  | Full-time Employees | Contract Employees |
|---|---|---|
| Marketing |  |  |
| Program management |  |  |
| Customer support |  |  |
| Application review |  |  |
| Construction project management |  |  |
| Education and outreach |  |  |
| Regulatory |  |  |
| Construction |  |  |
| Other |  |  |
| Total |  |  |

23. Does your EV program leverage resources from other utility programs or departments?

- Yes
- No

24. Does your utility provide dedicated training for EV customer outreach and program staff?

- Yes
- No

25. Does your utility provide dedicated training for construction and other technical EV resources?

- Yes
- No

26. Please elaborate here on anything covered in this section regarding your EV program organizational structure. You will have an opportunity at the end of the survey to elaborate upon any elements not addressed.

EV Program Implementation

27. Capital EV spend (2018 and Q1 2019 if available)

- Annual 2018
- Q1 2019

28. What is included in capital spend?

- Rebates
- Hardware
- Infrastructure
- Education and Marketing
- Other (please specify)

29. O&M EV spend (2018 and Q1 2019 if available)

- Annual 2018
- Q1 2019

30. What is included in O&M spend?

- Administrative
- Rebates
- Education and Marketing
- Other (please specify)

31. Does your program offer rebates?

- Yes
- No

32. Do you offer make-ready infrastructure rebates?

- Yes
- No

### Make-ready Rebates

33. How are make-ready infrastructure rebates offered?

- Point of sale
- Rebate check
- Bill credit
- Other (please specify)

34. Total number of make-ready infrastructure rebates granted:

- 2018
- Q1 2019

35. Do you offer EVSE rebates?

- Yes
- No

### EVSE Rebates

36. How are EVSE rebates offered?

- Point of sale
- Rebate check
- Bill credit
- Other (please specify)

37. Total number of EVSE rebates granted:

- 2018
- Q1 2019

38. Are your EVSE rebates contingent on technical requirements?

- Yes
- No

### EVSE Rebate Eligibility

39. Which of the following are technical requirements for EVSE rebate eligibility?

- Smart/Wi-Fi enabled
- Interoperability
- Plug/connector type
- Demand response capable
- Payment options
- Data sharing capabilities
- Other (please specify)

40. If applicable, which interoperability standards are accepted?

- OCPP
- OCPI
- ISO 15118
- Open ADR
- Other (please specify)

41. If applicable, which payment options are accepted? Select all that apply.

- Credit/debit/prepaid card
- Mobile app
- Toll free number
- Apple or Android pay
- Other (please specify)

42. If applicable, which plug types are accepted? Select all that apply.

- CHAdeMO
- SAE CCS
- Other (please specify)

43. Please elaborate here on anything covered in this section regarding program rebates. You will have an opportunity at the end of the survey to elaborate upon any elements not addressed.

### Marketing and Education

44. What are your customer education and recruitment channels? Select all that apply.

- Private and public sector fleet advisory
- Internal account managers
- Events
- Third parties (e.g. vehicle OEMs, charging station
- manufacturers, vehicle dealers)
- Utility EV website
- Directing customers to an external website (e.g. state EV
- education site, Plug In America)
- Social media
- Earned media
- City and state coordination
- Ride and Drive Events
- Other (please specify)

45. Is your utility conducting targeted outreach to specific customer segments to education on electrification?

- Yes
- No

## Customer targeting

46. Which customer segments is your utility targeting? Select all that apply.

- Multi-unit dwelling
- Workplace
- Government
- Private fleet
- Disadvantaged or low-income communities
- Residential
- Other (please specify)
- Customer Awareness

47. How are electrification advisory services such as EV charging energy modeling, rate analysis, or vehicle/charger availability provided to customers? Select all that apply.

- Utility
- OEM
- Third party
- EVSP
- Other (please specify)

48. Describe the top drivers for customers to participate in your EV program.

49. Please elaborate here on anything covered in this section regarding EV program education and outreach. You will have an opportunity at the end of the survey to elaborate upon any elements not addressed.

## EV Project Review Process

50. Is your utility's EV program implementation integrated with other utility programs such as clean energy and energy efficiency?

- Yes
- No

51. Describe how your EV program(s) are integrated into existing utility programs.

52. Do you provide an EV program application for potential host sites?

- Yes
- No

53. Is your EV program application available online?

- Yes
- No

54. If so, please provide a link to your EV program application.

55. Is your EV program application available as a paper copy?

- Yes
- No

56. How many applications have you received for the program in 2018 and through Q1 2019?

- 2018
- Q1 2019

57. What is the average cycle time (business days) for the following stages based on installation type?

| | Public Level 2 | Public DCFC | Private Level 2 | Private DCFC |
|---|---|---|---|---|
| Application to approval | | | | |
| Approval to start of construction | | | | |
| Start of construction to completion | | | | |

## Project Management Software

58. Do you leverage customer management software or other automated service(s) to track project review and progress?

- Yes
- No

59. Which customer management or other project management service do you use?

## Customer Journey

60. Describe your utility's EV program customer journey from application to installation.

## Site Eligibility

61. What are the main factors that determine site eligibility for program participation? Select all that apply.

- Project cost to utility
- Project cost per charger
- Required grid upgrades
- Geography
- Customer segment (e.g. public, multi-unit dwelling, etc.)
- Disadvantaged or low-income community status
- Anticipated project timeline
- Number of chargers installed
- Other (please specify)

62. Please elaborate here on anything covered in this section regarding EV program implementation. You will have an opportunity at the end of the survey to elaborate upon any elements not addressed.

## Data and Metrics

63. How do you measure program success? Select all that apply.

- Number of chargers installed
- EV sales in utility service area
- Reductions in GHG and air pollution emissions
- Investment in infrastructure ($)
- Participation in demand response
- Charger utilization
- Disadvantaged and low- and moderate-income community charger deployment
- Other (please specify)

64. What metrics are used to determine successful disadvantaged community and low- and moderate-income customer engagement or equitable roll out of transportation electrification in those communities? Select all that apply.

- Percentage of chargers deployed in disadvantaged communities
- Total rebate amount disbursed for projects in disadvantaged communities
- Percentage of applications received from disadvantaged community sites
- Other (please specify)

65. Do you have a PUC mandated annual or semi-annual program report requirement?

- Yes
- No

66. What are your main source(s) of data? Select all that apply.

- EVSP
- Program participant or customer
- OEM
- Other (please specify)

67. Do you gather data through an automated or manual system? Select all that apply.

- Automated
- Manual
- Other (please specify)

68. Do you provide routine updates to stakeholders on EV program implementation and future program design?

- Yes
- No

69. Specify the types of stakeholders that receive program updates. Select all that apply.

- State and local agencies
- Third party charging service providers
- Consumer and ratepayer advocates
- Environmental advocates
- Social justice advocates
- Vehicle manufacturers and dealers
- Commercial building and MUD owners
- Other (please specify)

70. Please provide a link to the latest stakeholder update.

71. Please elaborate here on anything covered in this section regarding data and reporting. You will have

an opportunity at the end of the survey to elaborate upon any elements not addressed.

## Lessons Learned

Please take some time to provide insights into key lessons learned to date regarding implementation of your utility's EV program(s).

72. Describe key successes to date that your utility has experienced in EV program implementation.

73. Describe key challenges to date that your utility has experienced in EV program implementation.

74. Describe any additional lessons learned to date regarding EV program implementation.

# Appendix B: Follow Up Interview Questions

MJB&A asked all respondents three general questions to guide follow up interviews, listed below. MJB&A also asked utility-specific clarifying questions based on the respondent's survey responses which also guided the conversation.

1. What is the top lesson you have taken away from:
   a. Marketing and education – which program has been most successful for outreach?
   b. The public charger installation process – what has been the greatest challenge or unforeseen obstacle?
2. What would you do differently for future programs?
3. What are your transportation electrification plans for the future? Are you planning on deploying additional programs in the future? Will you focus on any specific customer segments or vehicle types? Are there any gaps you see in the current utility transportation planning process?