



# **Southern California Edison Company's**

## **Charge Ready Program Pilot**

### **Quarterly Report**

**4th Quarter, 2018**

**March 1, 2019**

# CHARGE READY PROGRAM PILOT QUARTERLY REPORT

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# CHARGE READY PROGRAM PILOT QUARTERLY REPORT

## Background

The Charge Ready and Market Education programs were developed to support California's policies to reduce greenhouse gas (GHG) and air pollutant emissions, in an effort to meet the state's Zero-Emission Vehicle (ZEV) goals. The Charge Ready program deploys electric infrastructure to serve qualified electric vehicle (EV) charging stations throughout Southern California Edison's (SCE) service territory, while the Market Education program targets car buyers, to help them gain awareness of EVs and the benefits of fueling from the grid.

The Market Education program also includes a launch of SCE's advisory services, to include specific education and support related to electrifying fleets, EV charging, reducing GHG footprints, and other related transportation electrification (TE) areas for business customers. Each program was designed in two phases, with a smaller-scope Phase 1 Pilot to prepare for a broader Phase 2.

The Pilot's objectives are to inform and refine the program's design and cost estimates and develop success measures for a subsequent Phase 2. The Pilot's quarterly reports include key metrics and updates about progress, achievements, and lessons learned.

## 1. EXECUTIVE SUMMARY

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### 1.1. Program Description

Charge Ready was developed to reduce barriers to EV adoption by deploying electric infrastructure to serve EV charging stations (EV supply equipment, or EVSE)<sup>1</sup> at long dwell-time locations where EVs are usually parked for at least four hours. These locations provide adequate time for most EV drivers to fully recharge their vehicles.

The Pilot was open to eligible non-residential customers in the following long dwell-time location market segments:

- Workplaces
- Multi-Unit Dwellings (MUDs), such as apartment buildings
- Fleets
- Destination centers, such as sports arenas or malls

Through Charge Ready, SCE installed, owned, maintained, and paid all related costs for make-ready stubs serving EVSE, including:

- Electric distribution infrastructure, such as transformers, service lines, and meters dedicated to EV charging equipment deployed under the program.
- Customer-side infrastructure, such as panels, step-down transformers, wiring and conduits, and stub outs, to allow for EVSE installations.

Participating customers were responsible for procuring, installing, and maintaining qualified EVSE, including electrical energy and networking costs, but received rebates applicable against some or all of the EVSE and installation costs.

SCE established an Advisory Board comprised of customers, industry stakeholders, and representatives of disadvantaged communities (DACs). The board provided useful input and guidance to SCE during the pilot implementation and execution.

### 1.2. Pilot Summary for Quarter

By the end of the fourth quarter in 2018, SCE reserved funding for a total of 1,280 charge port commitments at 79 sites. Of the 1,280 committed charge ports, 617 charge ports (48%) are located in DACs, which is considerably higher than the Pilot's requirement to deploy 10% of charge ports in DACs.

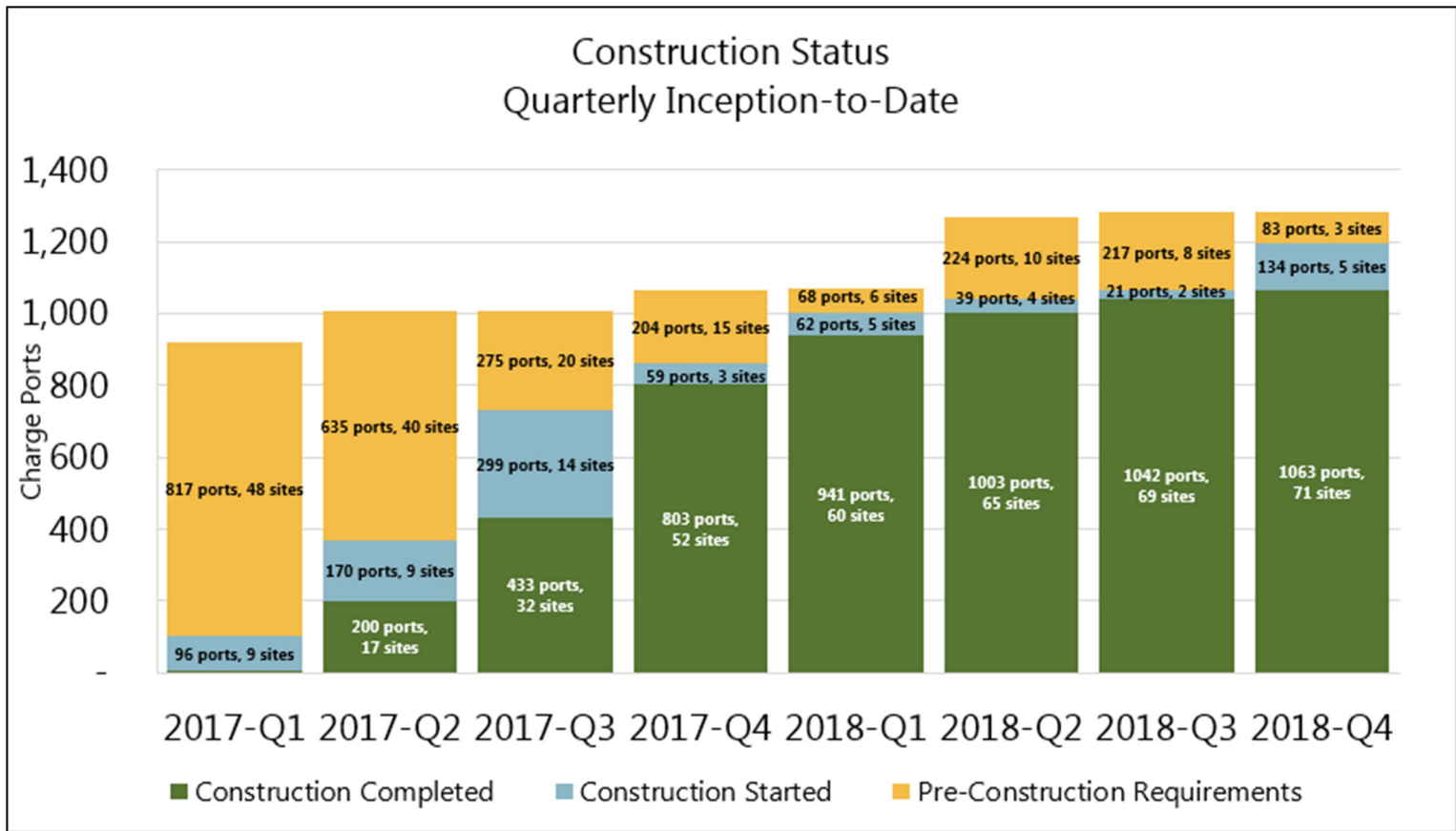
Several projects continued forward through the construction and installation

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<sup>1</sup> As EVSE may typically include one, two, or four charge ports, with varying costs and demand (kW), SCE uses charge port (rather than EVSE) as the preferred unit to provide detailed reporting about Charge Ready.

process. SCE efforts included infrastructure construction and post-installation verification to confirm equipment installation while customers continued procuring qualified charging stations, granting easements in the property where the charging infrastructure will be deployed, and completing the charging station installations. Figure 1.1 shows 71 sites with 1,063 ports where SCE completed infrastructure. SCE has started construction at 5 sites with 134 charge ports. Lastly, 3 sites for 83 charge ports were gathering pre-construction requirements such as permitting and easements.

Figure 1.1 Construction Status Quarterly Inception-to-Date



The following table summarizes the Pilot's costs recorded as of the end of Q4 2018.

Table 1.1 Pilot Summary for Quarter 4, 2018

	Planning Assumptions	Inception-to-12/31/18	Variance to Planning Assumptions	% Variance
<b>Capital</b>				
Utility-side Infrastructure	\$ 3,469,474	\$ 2,250,281	\$ 1,219,193	35%
Customer-side Infrastructure	\$ 7,586,387	\$ 11,606,115	\$(4,019,728)	-53%
Other Infrastructure Costs <sup>2</sup>	\$ 593,503		\$ 593,503	100%
Total Capital	\$ 11,649,364	\$ 13,856,395	\$(2,207,031)	-19%
<b>Operations and Maintenance</b>				
Rebates	\$ 5,850,000	\$ 1,101,005	\$ 4,748,995	81%
Labor	\$ 284,090	\$ 375,061	\$ (90,971)	-32%
TE Advisory Services	\$ 316,800	\$ 312,959	\$ 3,841	1%
ME&O	\$ 665,000	\$ 587,174	\$ 77,826	12%
EV Awareness	\$ 2,830,600	\$ 2,128,679	\$ 701,921	25%
Cancelled Projects		\$ 917,383	\$ (917,383)	0%
Uncollectible		\$ 39,907	\$ (39,907)	0%
Total Operations and Maintenance	\$ 9,946,490	\$ 5,462,169	\$ 4,484,321	45%
<b>Total Program</b>	<b>\$ 21,595,854</b>	<b>\$ 19,318,564</b>	<b>\$ 2,277,290</b>	<b>11%</b>

## 2. PILOT OPERATIONS

### 2.1. Process Overview

The Pilot's end-to-end process can be described in six stages: Engagement, Evaluation, Confirmation, Planning and Design, Construction, and Verification.

- **Engagement** begins with a customer submitting an application indicating their interest in participating in the Pilot. The application the customer submits is called the **Step 1 – Notice of Intent**.
- **Evaluation** follows the application submission. SCE conducts on-site assessments to evaluate the feasibility of deploying charging stations through the Pilot.
- **Confirmation** of the customer's participation includes approval by the customer of the number of charging stations and deployment location at each site (as proposed by SCE). SCE reserves funding (if available)

<sup>2</sup> Other Infrastructure Costs include capitalized labor for program management/delivery and charging station testing.



upon receipt of **Step 2 – Agreement** signed by the customer and property owner.

- SCE then conducts **Planning and Design** for the approved site while the Customer Participant procures qualified charging stations. At the end of the procurement period, Customer Participants must provide the required proof of purchase using **Step 3 – Certification**.
- SCE then conducts **Construction** for the approved site. A pre-construction meeting is held with the Customer Participant before construction begins. Once the infrastructure is completed and passes inspection, the Customer Participant’s selected charging station vendor installs the charging stations.
- Finally, **Verification** takes place to ensure that electric infrastructure and charging systems were deployed in accordance with approved plans (using **Step 4 – Walk-Through Report** and **Step 5 – Rebate Confirmation**); SCE then issues the rebate.

## **Waitlist Process**

SCE established a waitlist for customers that did not meet program timelines, or whose applications exceeded funding availability. Waitlisted projects can move forward in the process if other projects with reserved funding drop out or if previously reserved funding becomes available (for example, if a project with reserved funding has cost underruns).

## **2.2. Status Overview**

### **Pilot Re-Opening**

On March 9, 2018, SCE released unused funds reserved for completed sites and re-opened the Pilot to new applications. Since the re-opening, the Pilot has received 149 applications requesting 2,172 charge ports. By December 2018, from the new applications received, Pilot has reserved funds for 8 sites and 214 charge ports.

### **Bridge Funding**

On December 13, 2018, SCE received an additional \$22M (2014\$) to continue implementing the Pilot. SCE continues to receive new applications from customers and started preparations to progress waitlisted customers forward in the application process.

### **Overall Status**

By the end of the fourth quarter in 2018, SCE reserved funding for a total of 1,280 charge port commitments. Of the 1,280 committed charge ports, 617 charge ports (48%) are located in Disadvantaged Communities, which is considerably higher than the Pilot’s requirement to deploy 10% of charge

ports in Disadvantaged Communities. The following three charts provide the charge port distribution per the category noted for the 1,280 charge ports that have reserved funding.

Figure 2.1 Charge Port Distribution by Market Segment

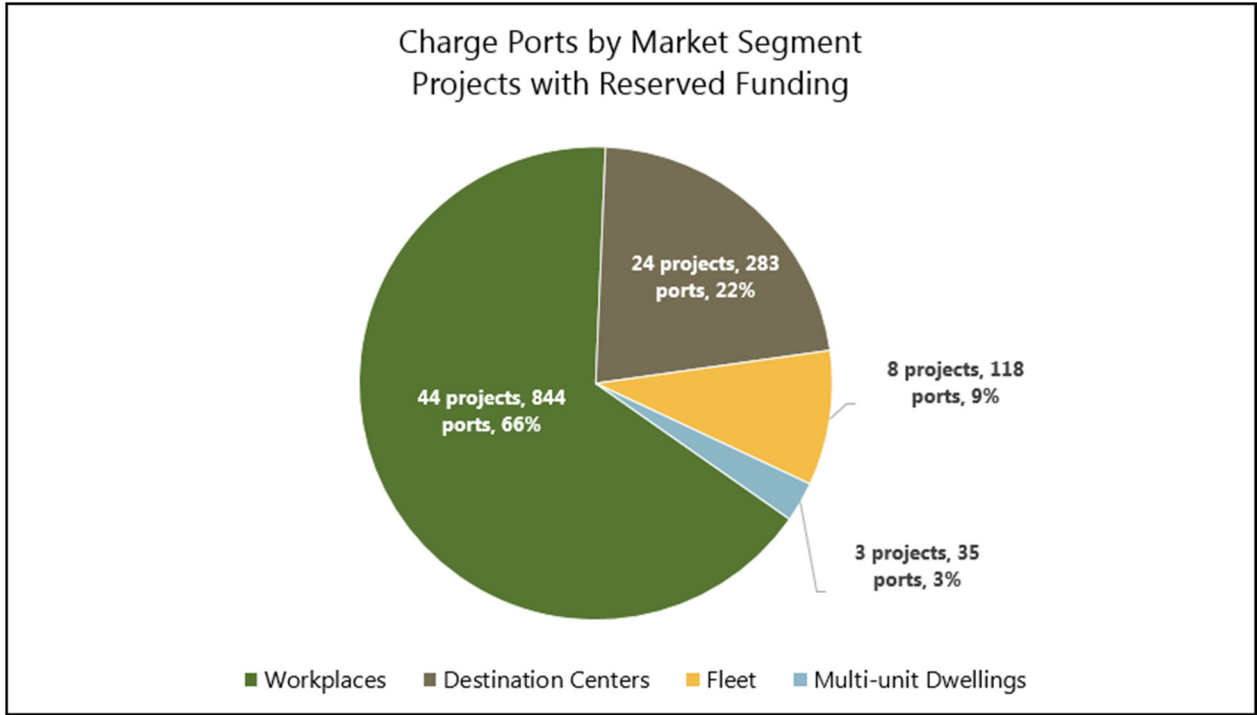


Figure 2.2 Charge Port Distribution by Customer Type

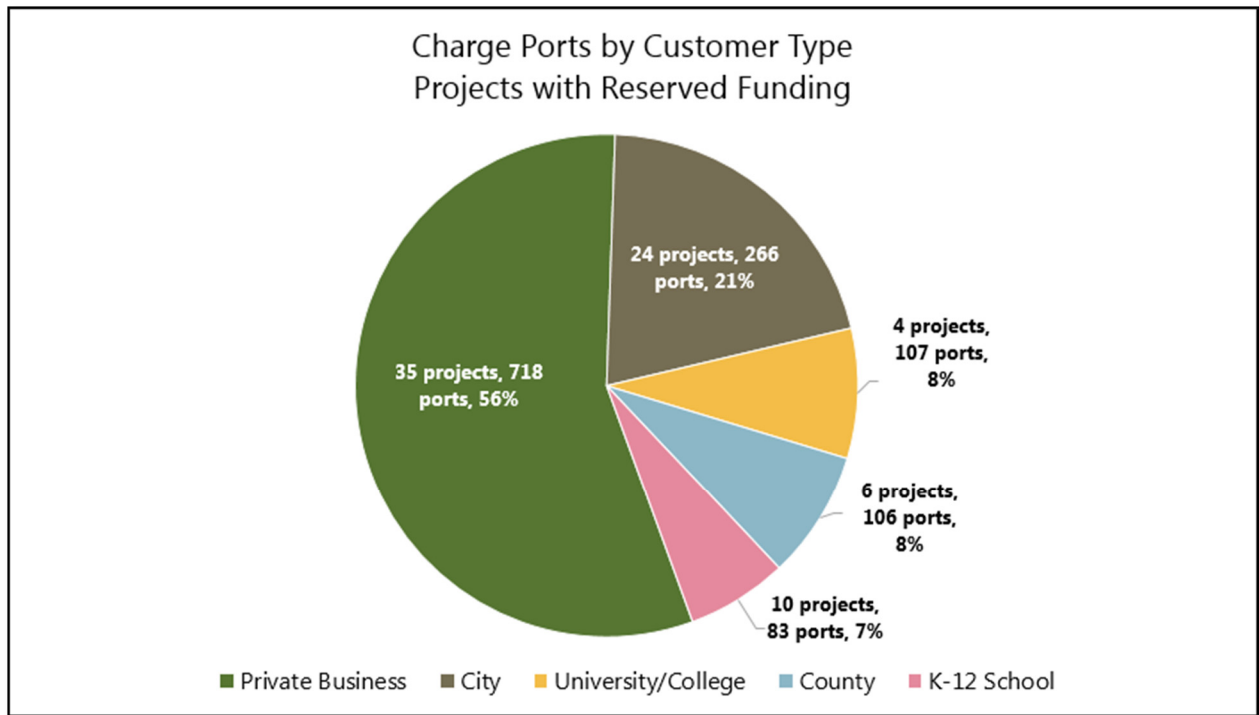
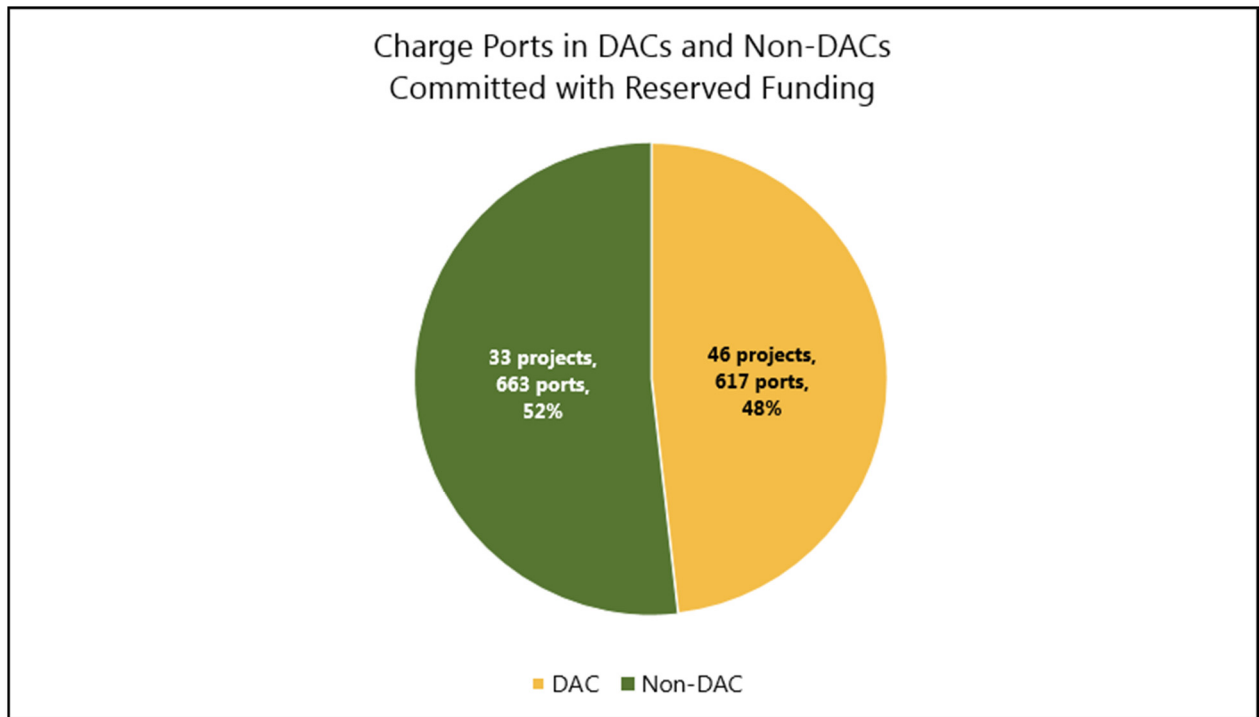
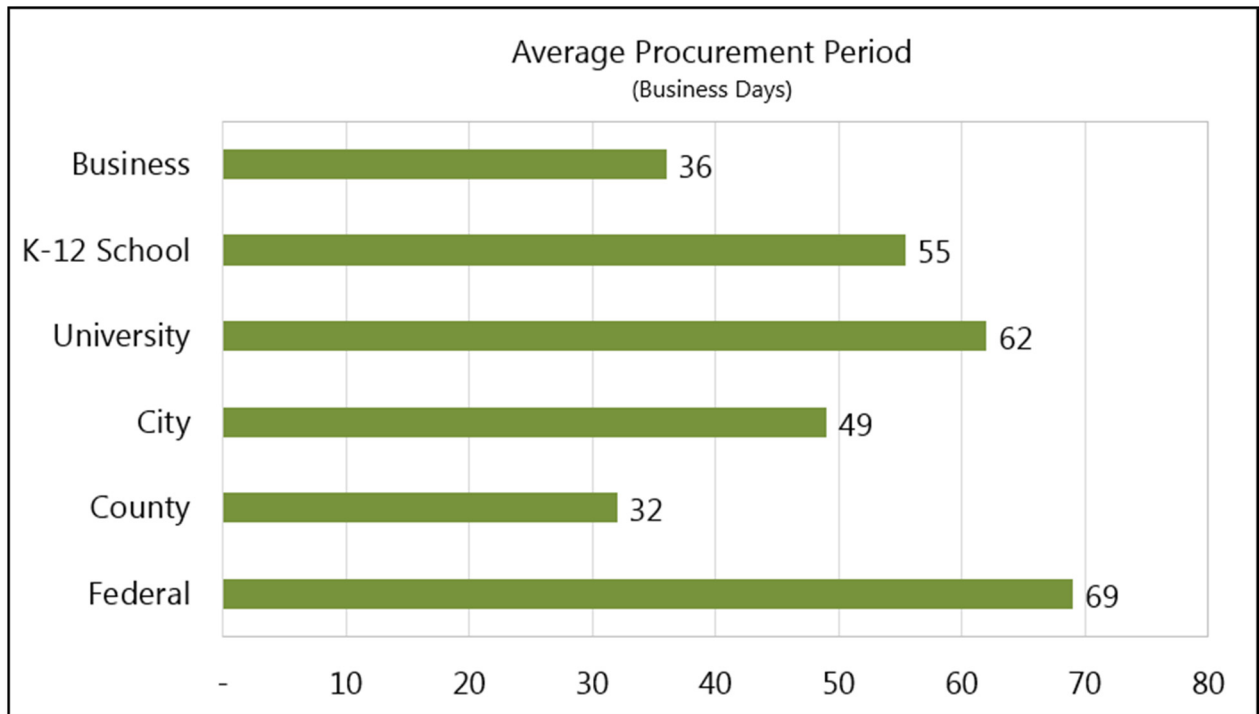


Figure 2.3 Charge Port Distribution DAC and Non-DAC



By the end of Q4, 77 customers with 1,224 charge ports had submitted their procurement documents for the charging stations. The average procurement period was 44 business days with the majority of customers submitting the allowed two extension requests. The average procurement period by organization type are shown in Figure 2.4.

Figure 2.4 Average Procurement Period



The following two charts provide a snapshot of the Pilot’s operational metrics relating to customer applications in Charge Ready Program Pilot. The data reflected in the following charts capture project activity from the launch of the Pilot in May of 2016, through the end of Q4, 2018. The distribution across market segments is provided.

Figure 2.5 Applications Received

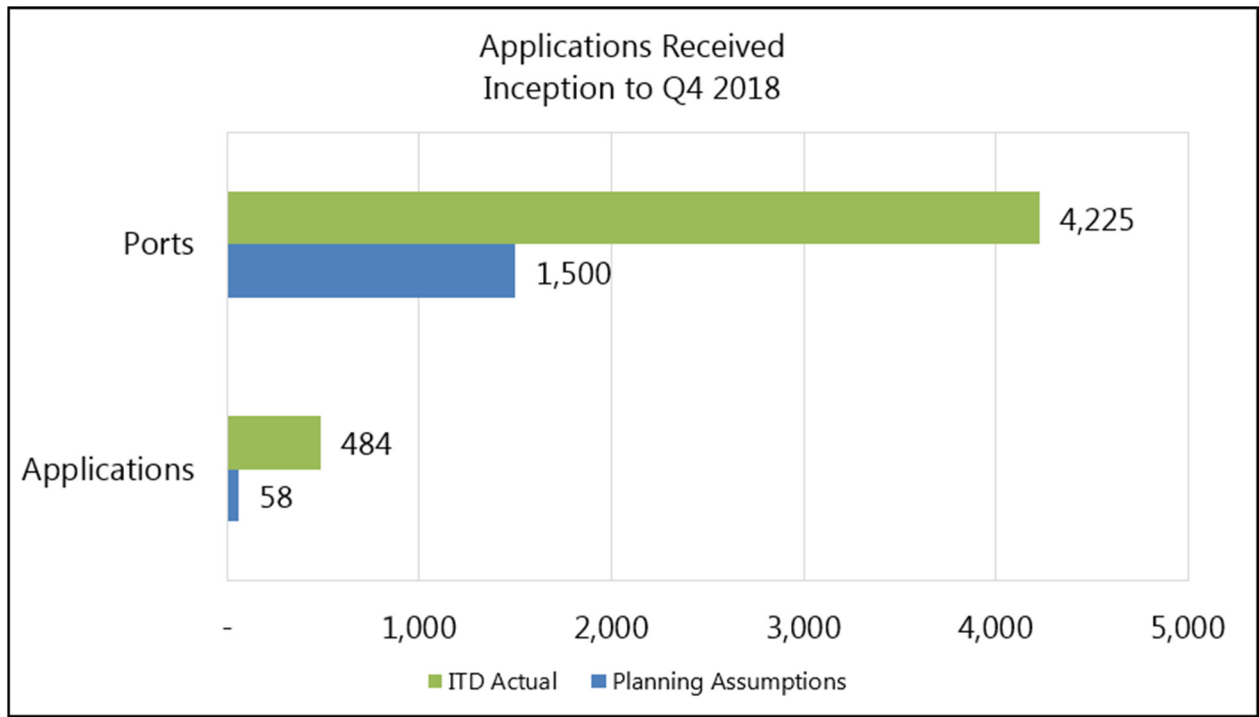


Figure 2.6 Projects with Reserved Funding

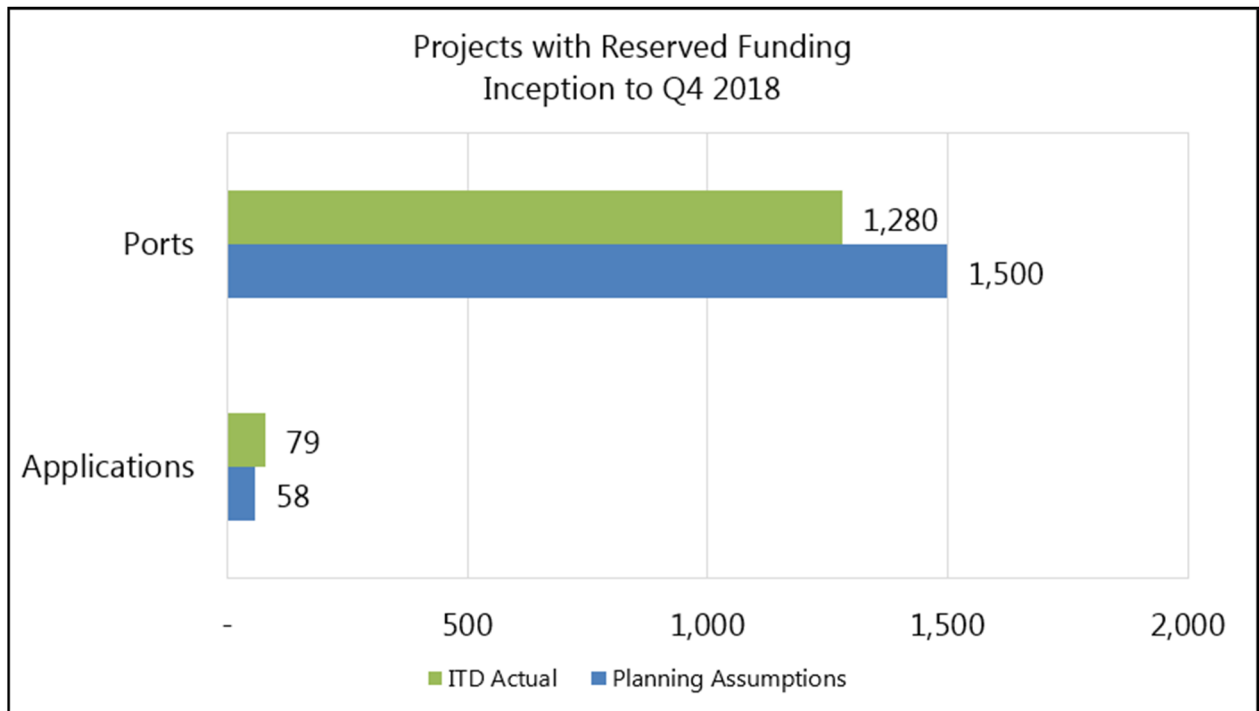


Table 2.1 Pilot Operational Metrics for Quarter

**Total Number of Applications Received**

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	58 projects 1,500 charge ports	13 projects 96 charge ports	484 projects 4,225 charge ports	834% 282%
Disadvantaged Communities	n/a	38%	43%	n/a
Destination Centers	n/a	0%	23%	n/a
Workplaces	n/a	77%	66%	n/a
Fleet	n/a	23%	6%	n/a
Multi-Unit Dwellings	n/a	0%	5%	n/a

**Percentage of Charging Stations Requested**

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	58 projects 1,500 charge ports	13 projects 96 charge ports	484 projects 4,225 charge ports	834 % 282 %
Disadvantaged Communities	10%	10%	34%	n/a
Destination Centers	n/a	0%	24%	n/a
Workplaces	n/a	100%	56%	n/a
Fleet	n/a	0%	6%	n/a
Multi-Unit Dwellings	n/a	0%	14%	n/a

**Number of Applicants Rejected**

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	n/a	1 project 0 charge ports	130 projects 1,169 charge ports	n/a
Disadvantaged Communities	n/a	0%	38%	n/a
Destination Centers	n/a	0%	25%	n/a
Workplaces	n/a	100%	68%	n/a
Fleet	n/a	0%	0%	n/a
Multi-Unit Dwellings	n/a	0%	6%	n/a

### Number of Applicants Withdrawn

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	n/a	1 project 4 charge ports	172 projects 818 charge ports	n/a
Disadvantaged Communities	n/a	0%	45%	n/a
Destination Centers	n/a	0%	21%	n/a
Workplaces	n/a	0%	67%	n/a
Fleet	n/a	0%	6%	n/a
Multi-Unit Dwellings	n/a	100%	6%	n/a

### Number of Applicants Withdrawn After Signing Step 2 Agreement

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	n/a	0	15	n/a
Disadvantaged Communities	n/a	0	7	n/a
Destination Centers	n/a	0	5	n/a
Workplaces	n/a	0	9	n/a
Fleet	n/a	0	1	n/a
Multi-Unit Dwellings	n/a	0	0	n/a

### Average Number of Charge Ports per Site with Completed Infrastructure

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	n/a	11	15	n/a
Disadvantaged Communities	n/a	5	12	n/a
Destination Centers	n/a	16	11	n/a
Workplaces	n/a	5	18	n/a
Fleet	n/a	0	12	n/a
Multi-Unit Dwellings	n/a	0	12	n/a

### Total Number of Projects with Completed Infrastructure

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	58 projects 1,500 charge ports	2 projects 21 charge ports	71 projects 1,063 charge ports	122% 71%
Disadvantaged Communities	n/a	50%	62%	n/a
Destination Centers	n/a	50%	32%	n/a
Workplaces	n/a	50%	54%	n/a
Fleet	n/a	0%	10%	n/a
Multi-Unit Dwellings	n/a	0%	4%	n/a

### Average Number of Charge Ports per Site with Customer Installation Completed

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	n/a	18	15	n/a
Disadvantaged Communities	n/a	13	13	n/a
Destination Centers	n/a	0	11	n/a
Workplaces	n/a	13	19	n/a
Fleet	n/a	31	12	n/a
Multi-Unit Dwellings	n/a	0	12	n/a

### Total Number of Projects with Customer Installation Completed

	Filing Assumptions	Quarter 4, 2018	Inception-to-Date Actual	Percentage to Filing Assumptions
	58 projects 1,500 charge ports	4 projects 70 charge ports	65 projects 989 charge ports	112% 66%
Disadvantaged Communities	n/a	75%	62%	n/a
Destination Centers	n/a	0%	32%	n/a
Workplaces	n/a	75%	52%	n/a
Fleet	n/a	25%	11%	n/a
Multi-Unit Dwellings	n/a	0%	5%	n/a

Table 2.2 Customer Participant Request

Customer Participant Request 3		
	Filing Assumptions	Year-to-Date Actual
Average number of total parking spaces per site	N/A	632 parking spaces/site
Percentage of total number of parking spaces located in parking structures	N/A	19%
Average fleet size <sup>4</sup>	N/A	6 (Fleet Segment Only) 4 (All Segments)
Percentage of applications received with charging systems already installed at the site	N/A	19%

<sup>3</sup> Based on customer-provided information on application.

<sup>4</sup> Applicants from all segment categories may indicate the number of fleet vehicles at their site (All Segments). Applicants in the fleet category intend to use the new charging station for their EV fleet (Fleet Segment Only).



Average number of charging systems already installed at the site	N/A	10
Average number of charge ports requested per site	26	13.6
• Disadvantaged Communities	N/A	11.2
• Destination Centers	N/A	12.7
• Workplaces	N/A	12.2
• Fleet	N/A	14.7
• Multi-unit Dwellings	N/A	32.3

Table 2.3 Pilot Costs

Pilot Costs			
	Filing Assumptions <sup>5</sup>	Inception-to-Date (Recorded)	Percentage to Filing Assumptions
Total Pilot costs (Infrastructure plus rebates paid)	\$16,792,136	\$14,957,400	89%
Average cost per site (Utility + Customer infrastructure + rebate) <sup>6</sup>	\$291,070 (\$11,195 * 26 charge ports)	Average Cost per Site: \$205,330 Average No. Charge Ports per Site: 15	71% 58%
Average cost per port (Utility + Customer infrastructure + rebate) <sup>7</sup>	\$11,195	\$13,645 (\$12,537 2014\$)	112%
Total rebates paid <sup>8</sup>	\$5,850,000	\$1,101,005	19%
Average rebates paid per site <sup>9</sup>	\$101,400 (\$3,900 * 26 charge ports)	\$17,276	17%
Total infrastructure costs	\$10,942,136	\$13,856,395	127%
Average infrastructure per site	N/A	\$188,054	N/A

<sup>5</sup> Some items did not have filing assumptions but actual costs are being tracked and reported.

<sup>6</sup> Based on projects completed with recorded infrastructure costs and rebates.

<sup>7</sup> Based on completed projects with recorded infrastructure and rebate costs.

<sup>8</sup> Includes recorded and accrued rebates.

<sup>9</sup> Based on 62 sites.

▪ Average actual infrastructure costs for projects with all Level 1 charging systems	N/A	\$169,762	N/A
▪ Average actual infrastructure costs for projects with all Level 2 charging systems	N/A	\$188,354	N/A
▪ Average actual infrastructure costs for projects with hybrid charging systems (both Level 1 and Level 2)	N/A	N/A	N/A
Total SCE site assessment costs for rejected and withdrawn applicants (prior to signing Step 2)	N/A	\$320,589	N/A
Average SCE site assessments cost for rejected and withdrawn applicants (prior to signing Step 2)	N/A	\$1,113	N/A
Total SCE site assessment, design, permit, and easement cost for rejected and withdrawn applicants (after signing Step 2)	N/A	\$250,291	N/A
Average SCE site assessment, design, permit, and easement cost for rejected and withdrawn applicants (after signing Step 2)	N/A	\$17,878	N/A
Total construction costs for withdrawn applicants	N/A	\$23,252	N/A
Average construction costs for rejected and withdrawn applicants	N/A	\$3,875	N/A

Figure 2.7 Pilot Cycle Times<sup>10</sup>

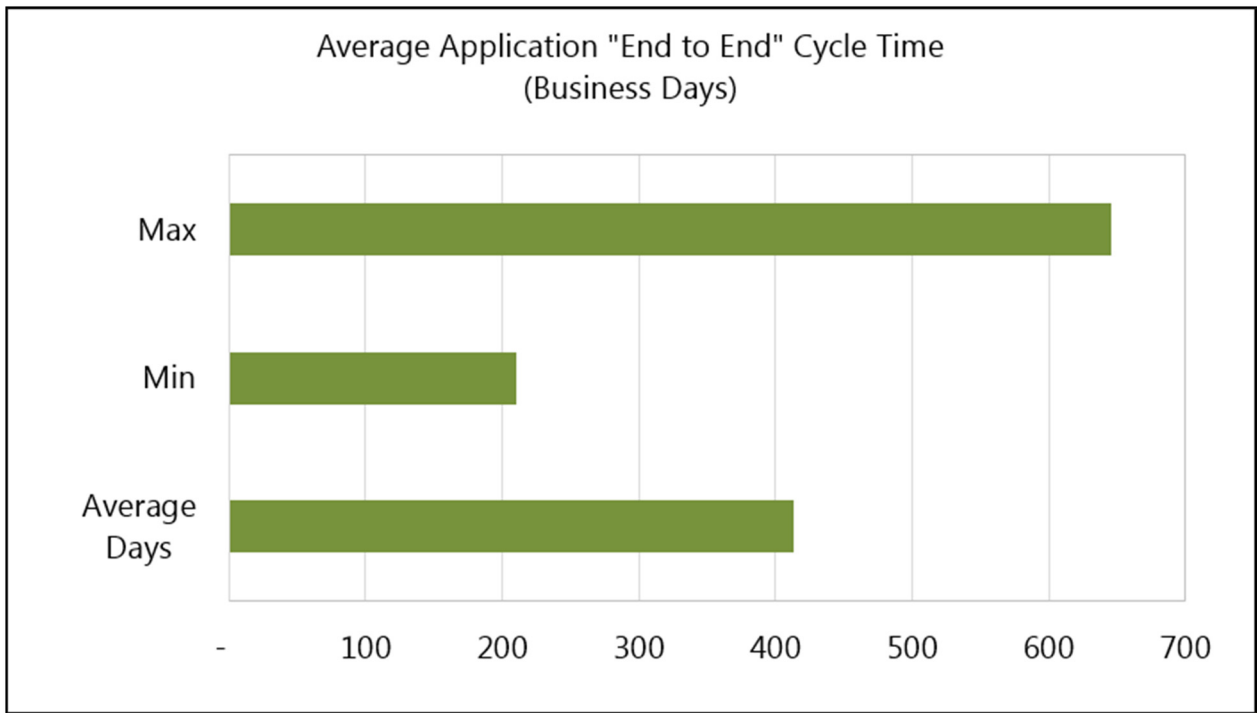
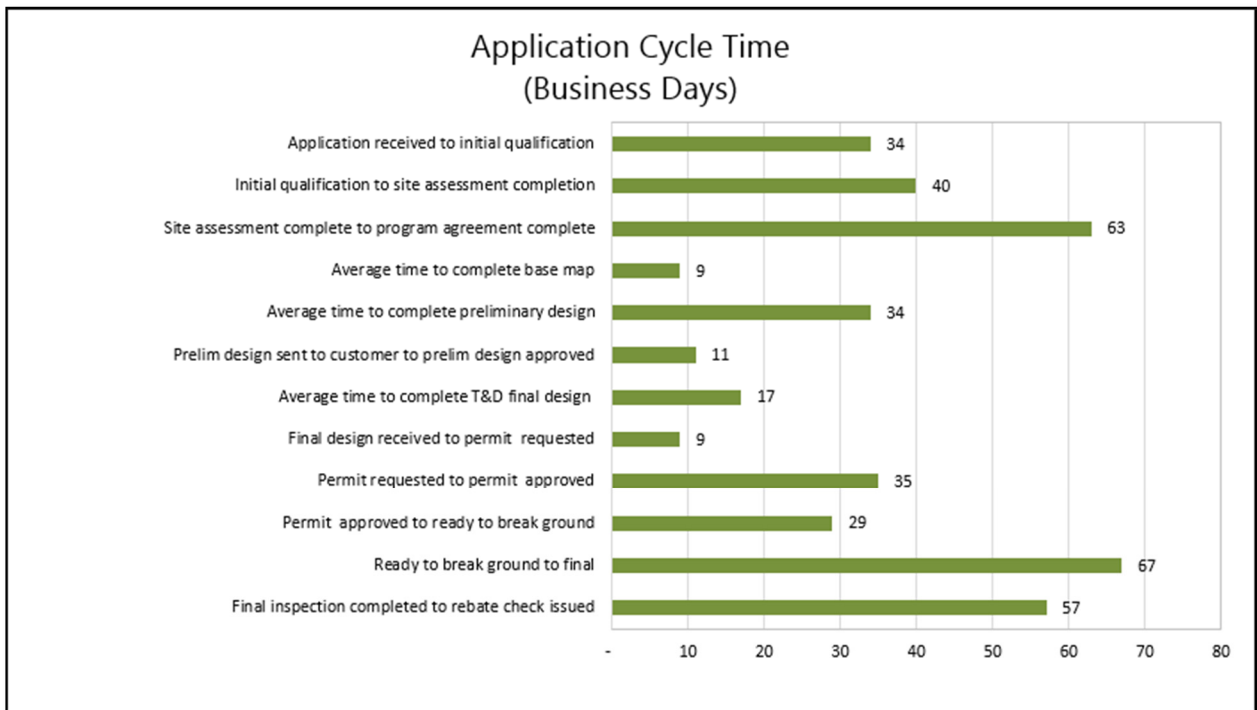


Figure 2.8 Average Application Cycle Time



<sup>10</sup> Based on 59 projects with rebate checks issued.

## 2.3. Supplier Diversity

In the Charge Ready Pilot, to date 74% of spend has been contracted with Diverse Business Enterprises (DBE).

The Charge Ready Pilot was previously at 100% DBE spend prior to conducting a second-round RFP to source additional general contractors to support the construction of EV infrastructure.

## 2.4. Training and Safety

SCE values safety, and ensured the utility and the customer participant site infrastructures were installed and maintained in safe working order. The Pilot requires SCE employees and subcontractors installing the make-readies to follow these safety requirements:

- All general contractors must prepare and adhere to a job specific Job Hazard Analysis (JHA).
- All general contractors must have a dedicated safety officer or manager who regularly visits the job site.
- Safety tailboards must be held daily, to discuss the work to be performed and any potential risks.
- All general contractors must submit a monthly safety report to SCE.
- SCE personnel must follow all site safety regulations including wearing appropriate personal protective equipment (PPE).
- Subcontractor electricians must hold valid California C-10 licenses.
- Electricians preparing the make-readies must be EV Infrastructure Training Program (EVITP) certified.

For infrastructure safety, all site plans were submitted to their authorities having jurisdiction (AHJs) for approval and permitting. Some AHJs required multi-agency (for example, Building & Safety, Electrical, and Fire Department Planning) approval. For charging station safety, all installations were completed per AHJ-approved plans, and inspected by AHJ inspectors.

## 3. CHARGING STATIONS

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### 3.1. Overview

The Charge Ready Pilot qualifies three different types of charging system profiles:

1. Level 1 charging system, without network capability,
2. Level 2 "A" charging system, with network capability integrated into

the EVSE, and

3. Level 2 "B" charging system, with network capability provided by an external device (such as a kiosk or gateway) shared among multiple stations.

Through a Request for Information (RFI) process, SCE conducts technical tests on proposed charging systems. In accordance with the terms and conditions of the RFI, qualified vendors (manufacturers, distributors) for the Pilot are required to offer Customer Participants:

- Qualified charging systems that meet SCE's technical requirements
- Networking services, including transactional data reporting and demand response (DR) services

The Pilot's Approved Package List<sup>11</sup> summarizes the vendors and EVSE models available to Customer Participants as of Q4 2017. By December, 2018, the Pilot offered 62 options for charging stations from 13 EVSE vendors and 8 network providers, maintaining customer choice and market-neutral customer engagement.

Table 3.1 Number of Approved Charging Station Models

Charging System Type	Total Number of Approved Models
Level 1	5
Level 2 "A"	15
Level 2 "B"	42
Total	62

Table 3.2 EVSE Model Summary

Average number of ports per EVSE	1.5
Average number of circuits per EVSE	1.3
Average number of ports per circuit	1.1
Number of wall EVSE units	18
Number of pedestal units	29
Number of both wall and pedestal units	15

<sup>11</sup> The Pilot's Approved Package List can be found on the landing page at <https://on.sce.com/chargeready>.

The base cost of qualified EVSE for the Charge Ready Program Pilot is defined as “the best value offered for a charging station and its installation within each defined profile [of EVSE].”<sup>12</sup> SCE determines a price per port for each of the qualified models and configurations. SCE then selects the lowest price per port within each charging system type (using only those EVSE models that passed SCE’s technical evaluation) to determine the base costs. The base cost values as of Q4 2017 are shown in Table 3.3.

Table 3.3 Base Cost of Charging Systems

Charging System Type	Base Cost Per Port
Level 1	\$1,396
Level 2 “A”	\$2,188
Level 2 “B”	\$1,611

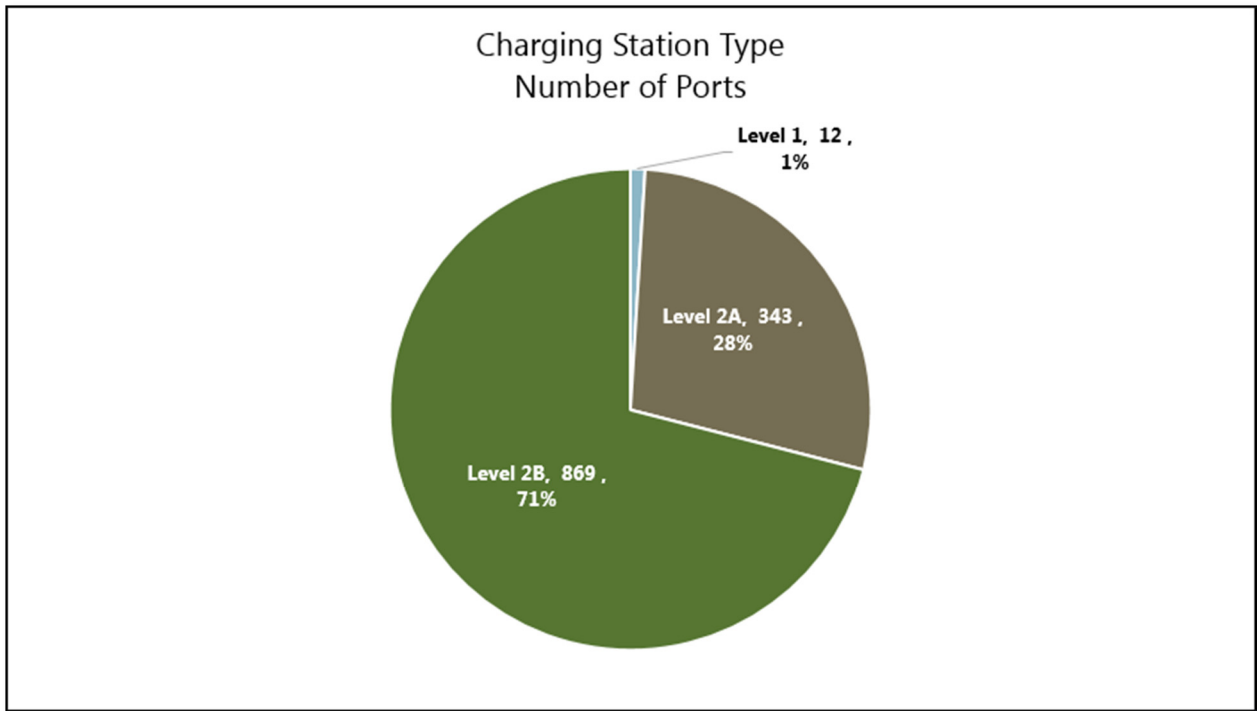
### 3.2. Customer Charging Stations

By the end of Q4 2018, 77 customers with reserved funding for 1,224 charge ports had submitted their proof-of-procurement documents for the charging stations. The vast majority of participants selected L2 “B” charging station systems that have network capability provided by an external device (such as a kiosk or gateway), which is shared among multiple stations. The second most popular L2 configuration included stations that have integrated networking capability. The following chart displays customer preferences for types of charging stations.

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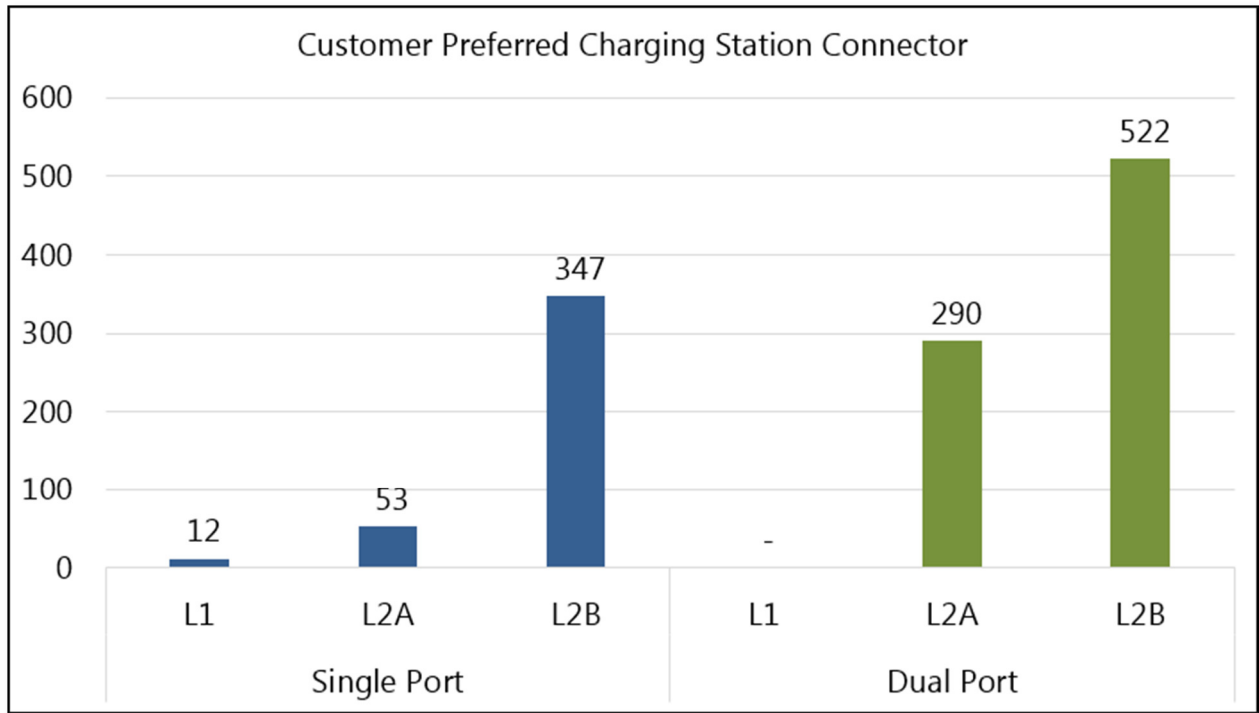
<sup>12</sup> In the Step 2 Agreement, the applicant indicates the requested number of Level 1 EVSE to be approved and installed under the Program. The number of installed Level 1 EVSE must match the number of Level 1 EVSE requested in Step 2 Agreement.

Figure 3.1 Charge Ports per Type



More than twice as many customer participants selected and procured dual-port charging station configurations than those that acquired single-port systems. Figure 3.2 depicts the distribution of purchases across various charging station configurations.

Figure 3.2 Customer Preferred Charging Station Connector



### 3.3. Rebates

As of December 31, 2018, a total of 65<sup>13</sup> rebate payments were made, representing 989 charge ports.

Table 3.4 provides a summary of charging station requests and rebates, as of December 31, 2018.

Table 3.4 Charging Station Requests and Rebates

Charging Station Requests and Rebates	
Number of Level 1 charge ports requested <sup>14</sup>	12
Number of Level 2 charge ports requested <sup>15</sup>	1,268
Number of total charge ports approved	1,280
<ul style="list-style-type: none"> <li>▪ Average number of Level 1 charge ports approved per Level 1 site</li> </ul>	12

<sup>13</sup> Includes recorded and accrued rebates.

<sup>14</sup> In the Step 2 Agreement, the applicant indicates the requested number of Level 1 EVSE to be approved and installed under the Program. The number of installed Level 1 EVSE must match the number of Level 1 EVSE requested in Step 2 Agreement.

<sup>15</sup> In the Step 2 Agreement, the applicant indicates the requested number of Level 2 EVSE to be approved and installed under the Program. The number of installed Level 2 EVSE must match the number of Level 2 EVSE requested in Step 2 Agreement.



<b>Charging Station Requests and Rebates</b>	
▪ Average number of Level 2 charge ports approved per Level 2 site	16.3
Rebates reserved for Level 1 ports	\$19,356
Rebates reserved for Level 2A ports	\$375,358
Rebates reserved for Level 2B ports	\$969,169
Rebates paid for Level 1 ports	\$19,356
Rebates paid for Level 2A ports	\$358,454
Rebates paid for Level 2B ports	\$723,195

#### **4. CHARGING STATION OPERATION**

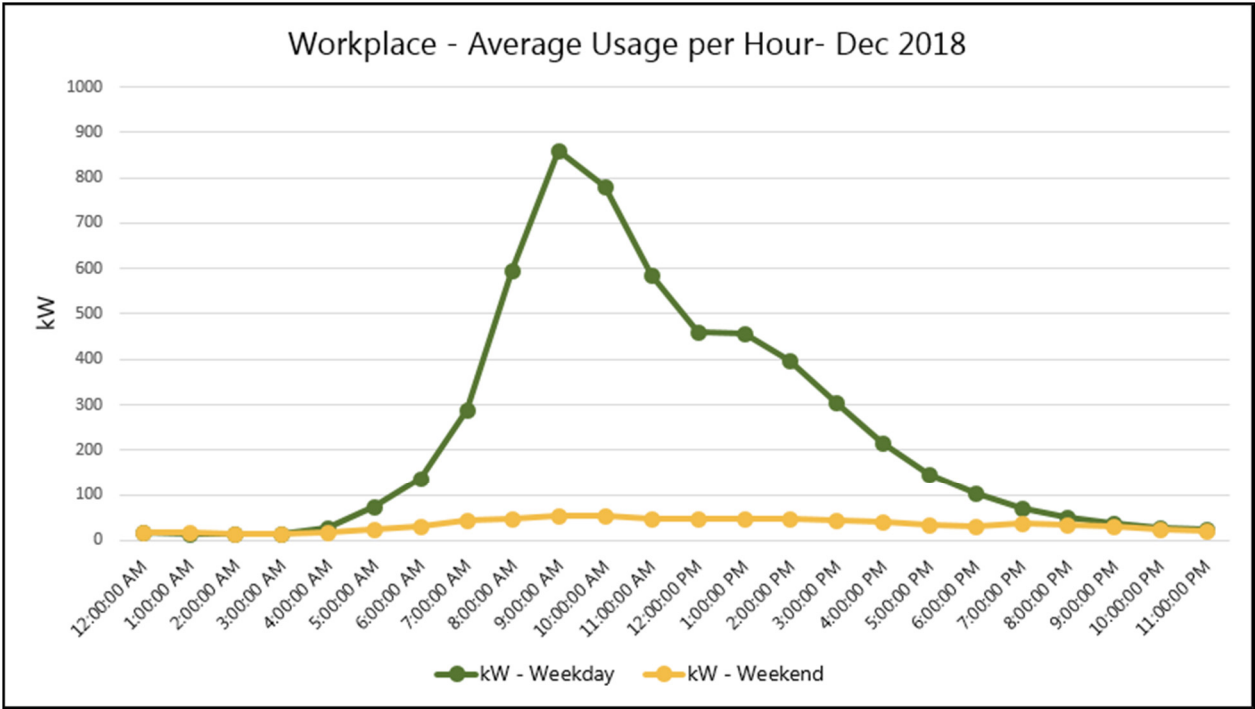
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##### **4.1. Charging Station Energy Usage**

Average load shapes for each segment (based on SCE meter data) are analyzed each month in order to determine when electric vehicles are being charged and when EV load may be available for curtailment or shifting. These load shapes have remained fairly consistent over time as more charging ports have been added to each segment. All figures below are based on Pacific Standard Time.

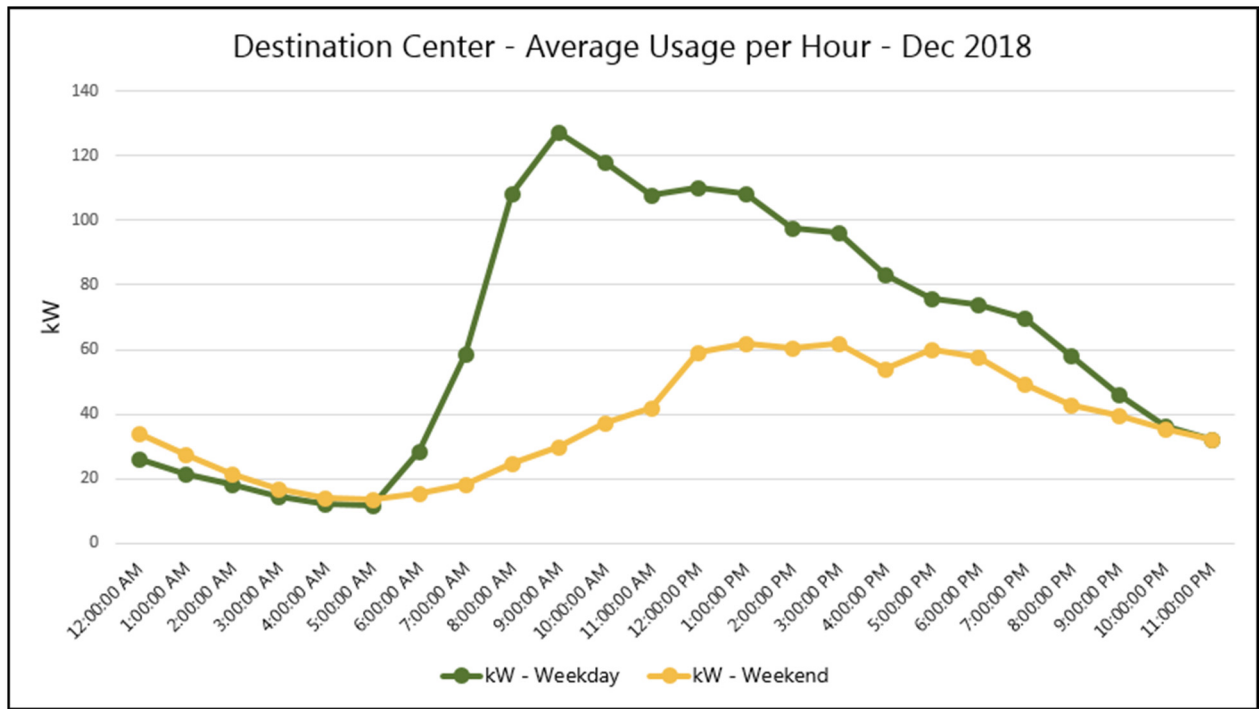
During the month of December 2018, charging ports at workplaces were used primarily during morning hours with average peak usage occurring at 9am on weekdays. As expected, very little load occurred on weekends since workplaces typically operate Monday through Friday. Workplaces may be good candidates for load shifting since there is substantial load in the morning that could be shifted to later in the day when more renewable generation is available.

Figure 4.1 Workplace Average Usage per Hour in December: 32 sites/625 ports



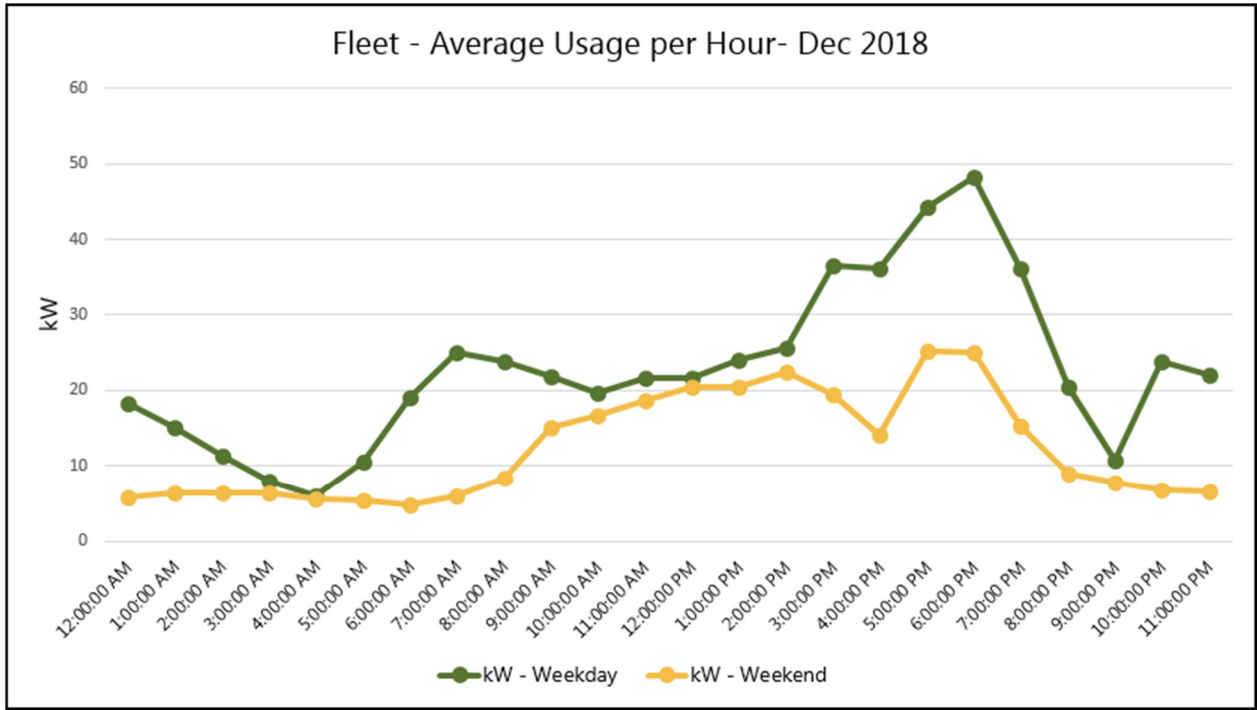
During the month of December 2018, charging ports located at Destination Centers were used throughout the day on both weekdays and weekends with average peak usage occurring at 9am on weekdays. With fairly consistent loads observed during the day on both weekdays and weekends, the morning peak on weekdays may be a result of these sites being used by employees of neighboring workplaces since the load mirrors the load seen at Charge Ready workplace sites. Based on available load during the morning and evening, Destination Centers may be good candidates for both shifting morning load to later in the day and reducing evening load to help manage the evening ramp.

Figure 4.2 Destination Center Usage per Hour in December 2018: 22 sites/234 ports



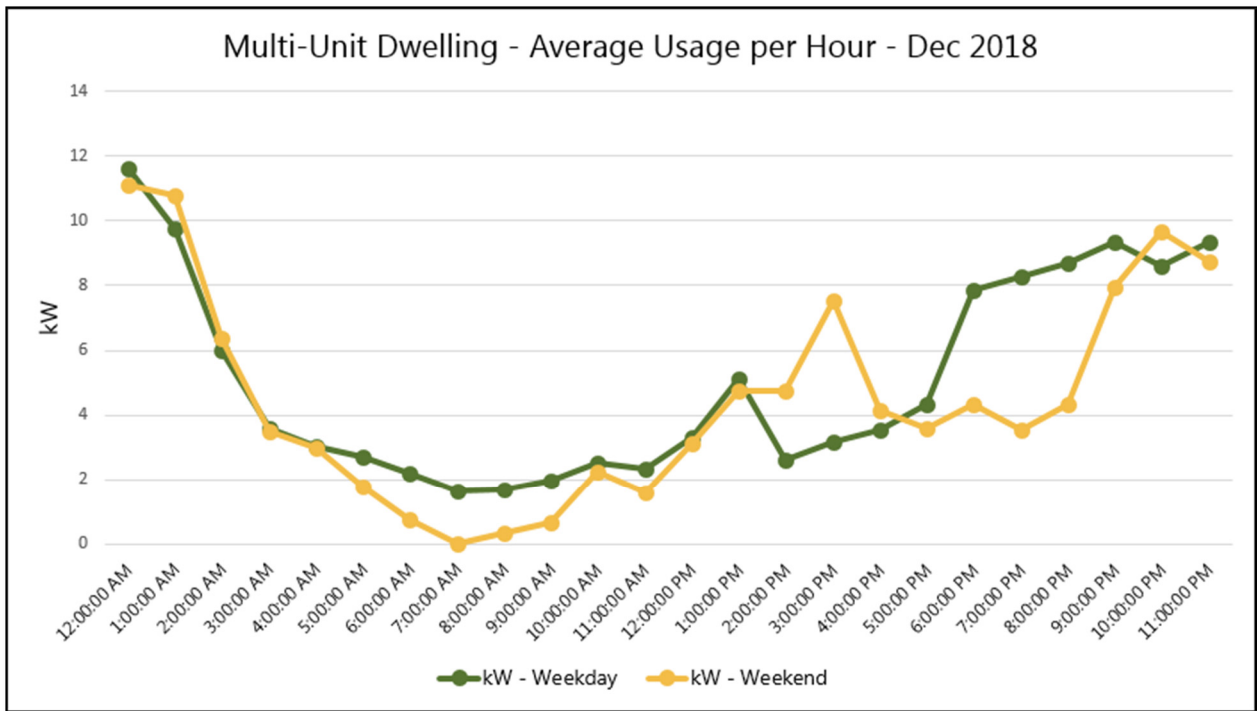
During the month of December 2018, charging ports at fleet sites were used primarily during late afternoon and evening hours with average peak usage occurring at 6pm on weekdays. Some usage also occurs during morning hours on weekdays and throughout the day on weekends. Some morning load may be available for load shifting, but based on load shape fleets appear to be better suited for reducing load during evening ramping periods.

Figure 4.3 Fleet Usage per Hour in December 2018: 7 sites/83 ports



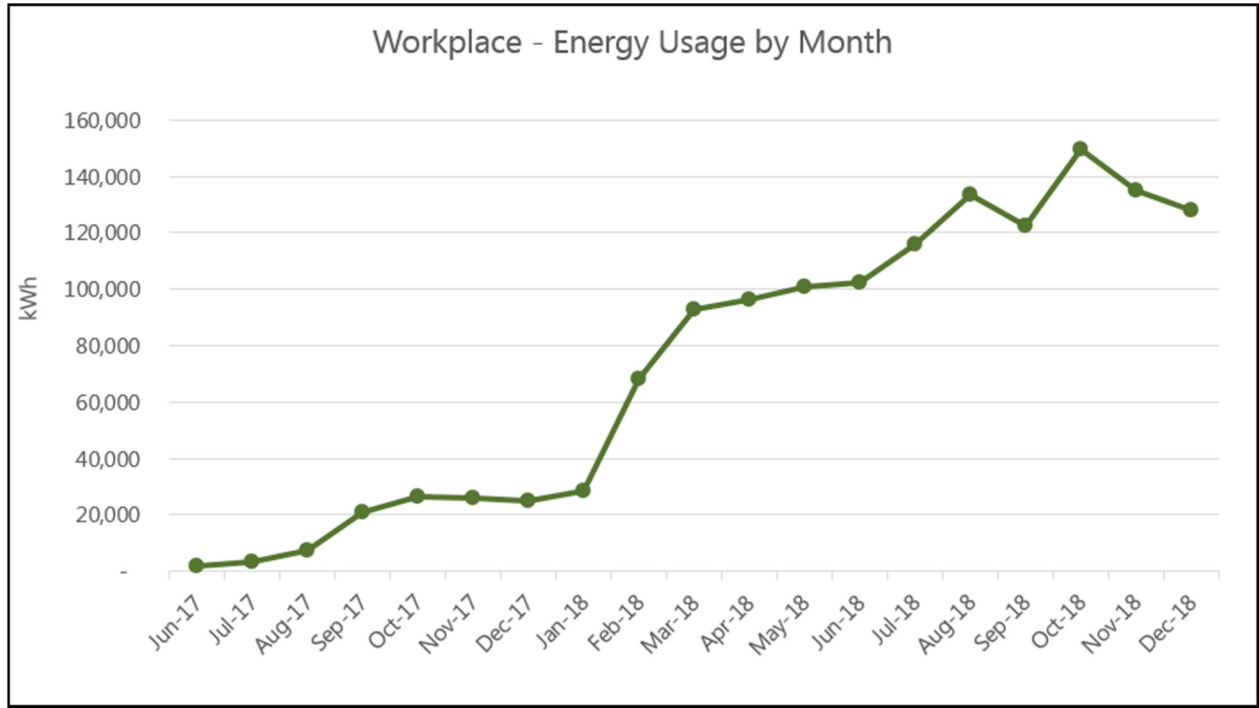
During the month of December 2018, charging ports at Multi-Unit Dwellings were used primarily during weekday evenings and early morning hours on weekdays and weekends with average peak usage occurring at 12am on weekdays. The load shape remained similar during both weekdays and weekends as expected since residences are typically occupied every day of the week. Very little morning load is available for shifting, but there is load available during evening hours that could be reduced to help manage the evening ramp.

Figure 4.4 Multi-Unit Dwelling Usage per Hour in December 2018: 3 sites/35 ports



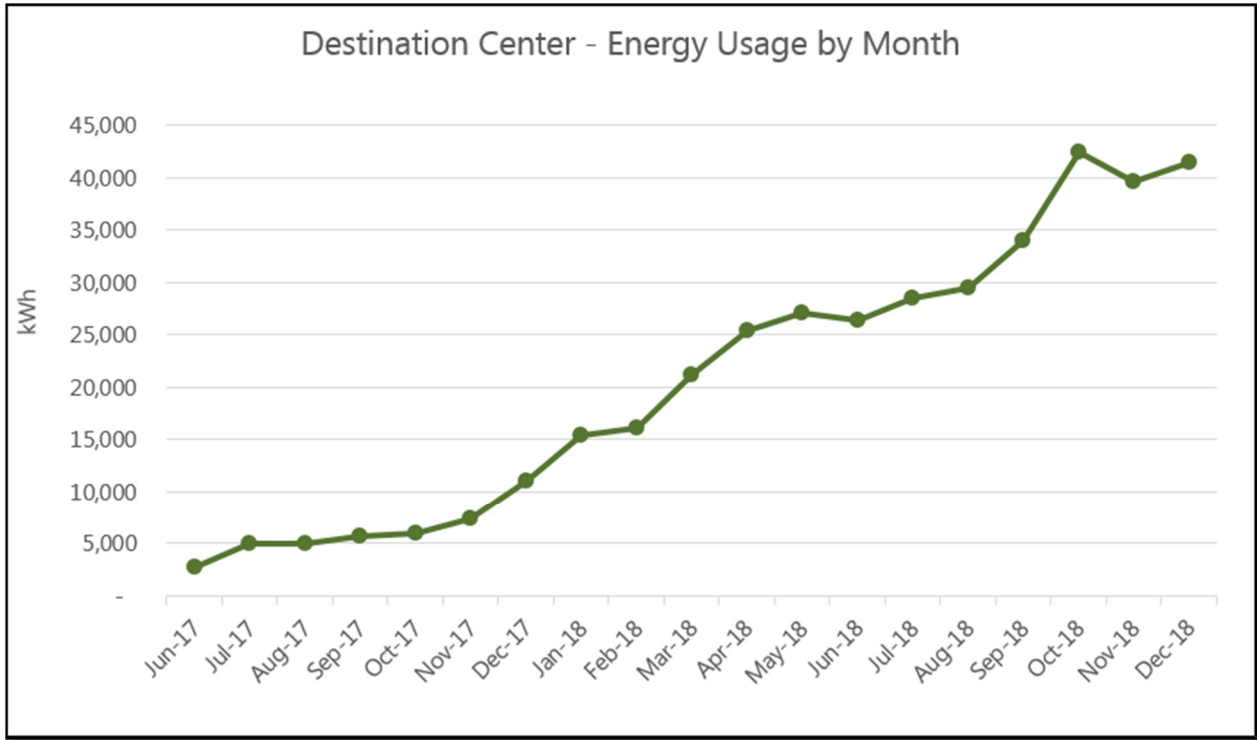
Growth in the number of participating sites and charging ports in Charge Ready and corresponding electricity consumption has been fairly consistent in all segments. This growth represents significant environmental benefits and progress toward meeting the state of California’s GHG reduction goals. The months of November and December 2018 showed a slight decrease in overall kWh consumption as a result of lower usage in all segments. This is most likely a result of holidays during the months of November and December.

Figure 4.5 Workplace Energy Usage by Month



Year	2017									2018									
Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site Count	3	5	7	9	11	14	16	20	21	25	27	27	28	29	29	29	29	29	32
Port Count	40	46	179	197	224	265	307	354	434	528	552	552	576	596	596	596	596	596	625

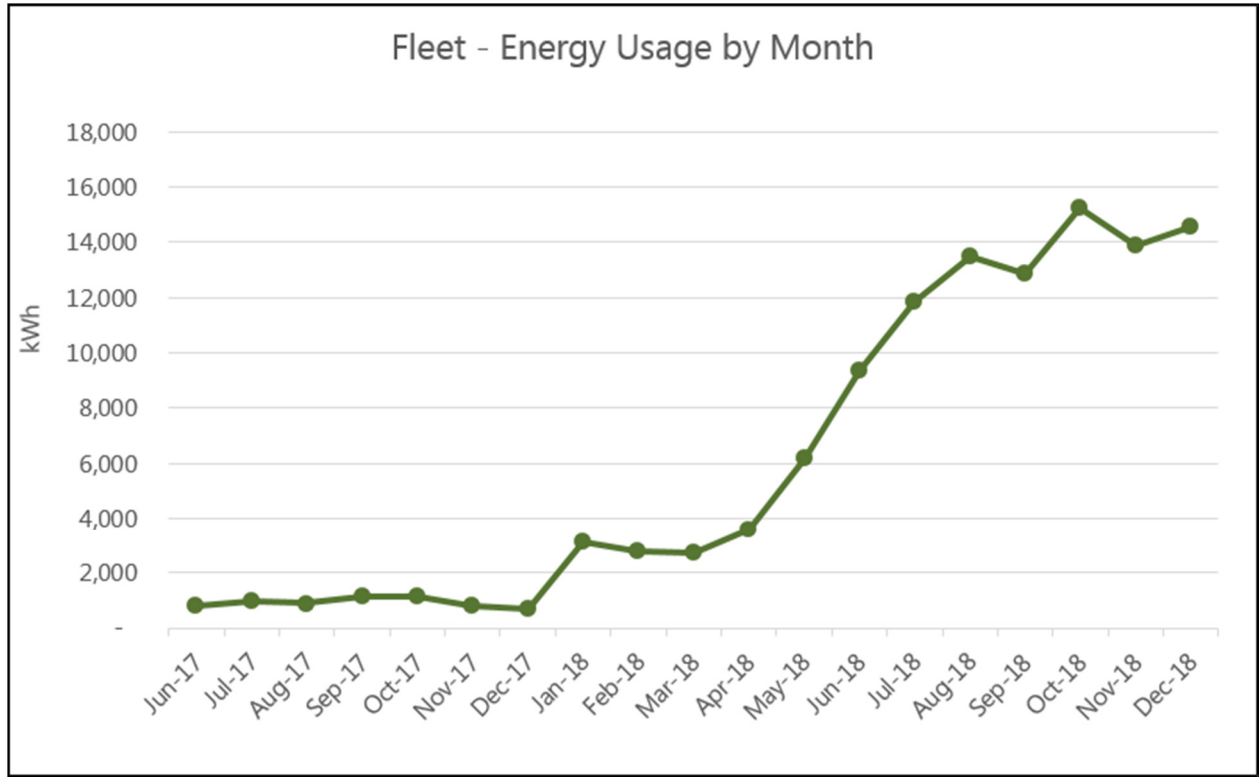
Figure 4.6 Destination Center Usage by Month<sup>16</sup>



Year	2017								2018										
Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site Count	6	12	12	14	14	16	16	20	21	21	21	21	21	22	22	22	22	22	22
Port Count	42	99	97	117	117	141	141	199	222	222	222	222	222	234	234	234	234	234	234

<sup>16</sup> One site excluded in August 2017 due to data issues.

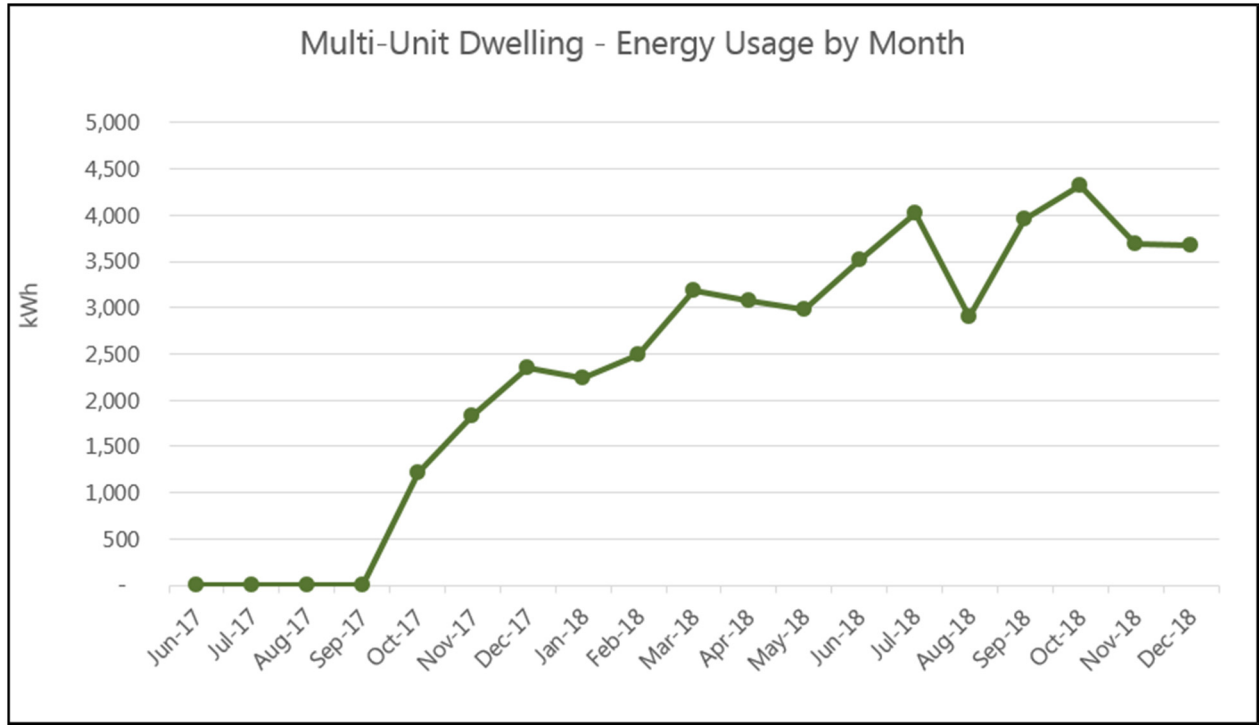
Figure 4.7 Fleet Usage by Month



Year	2017								2018											
Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Site Count	2	2	3	3	3	3	5	5	5	6	7	7	7	7	7	7	7	7	7	
Port Count	15	15	22	22	22	22	46	46	46	77	83	83	83	83	83	83	83	83	83	



Figure 4.8 Multi-Unit Dwellings Usage by Month



Year	2017								2018										
Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site Count	0	0	0	0	1	1	2	3	3	3	3	3	3	3	3	3	3	3	3
Port Count	0	0	0	0	10	10	22	35	35	35	35	35	35	35	35	35	35	35	35

## 5. CUSTOMER OUTREACH AND ENROLLMENT

### 5.1. Charge Ready Education & Outreach

Charge Ready education and outreach efforts are designed to promote the Pilot to SCE customers. SCE continued to track marketing channels in preparation for a subsequent phase of Charge Ready.

Table 5.1 presents the data collected for the Charge Ready Program Pilot Landing Page to measure the traffic of the website from Q1 2017 to Q2 2018. A decrease in website activity was expected since marketing and outreach for new applicants ceased on January 3, 2017.

**Table 5.1 Charge Ready Program Pilot Landing Page Metrics**

Metric	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
Unique Visitor Count	939	935	910	835	1,300	1,878	2,573	1,382
Repeat Visitor Count	381	419	254	234	545	793	602	564
Page Views	1,477	1,479	1,444	1,317	2,045	3,408	3106	2,251
Bounce Rate	51.01%	51.85%	47.86%	50.59%	57.81%	63.92%	64.32%	56.10%

## 5.2. Market Education

Separately from its education and outreach efforts to support enrollment in Charge Ready Pilot, SCE also communicates about EVs and the benefits of fueling from the grid to a broad audience through its “What’s Your Electric Vehicle (EV) IQ?” campaign. Through the EV IQ messaging, SCE aims to intrigue and engage customers by challenging them with fun mini-quizzes to overcome barriers and misconceptions about EVs, and provides an opportunity to inform them of EV benefits that could prompt them to consider driving one. The campaign utilizes a number of channels, including:

- Paid Media: digital banners, search engine marketing (SEM), sponsored social media ads, and radio.
- Local Sponsorship: booth sponsorship and ride and drives at EV-related events.
- Direct Messaging: email to targeted customer populations.
- Other channels: bill inserts, messaging on SCE.com, and organic social media.

Customers exposed to these channels are driven to relevant information on the updated SCE.com EV website, which includes content in English, Spanish, Korean, Chinese, and Vietnamese. Customer site interactions were tracked, to improve and optimize the experience.

The following table includes metrics capturing traffic for key campaign pages within the site. Web traffic decreased as expected as there was no mass media in market during Q2 2018.

Table 5.2 Charge Ready EV Awareness Website Metrics

EV Awareness	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
<b>Electric Vehicle Overview Page on SCE.com<sup>17</sup></b>						
Unique Visitor Count	9,138	7,986	14102	7,484	8,152	8,508
Repeat Visitor Count	3,407	2,851	10388	3,390	3,971	3,176
Page Views	13,029	11,526	3714	11,466	11,760	11,995
Bounce Rate <sup>18</sup>	39.52%	41.46%	635	25.87%	24.41%	24.25%
Multi-page Visits	7,773	6,674	8,334	7,786	8,481	8,732
<b>Electric Vehicle Campaign Landing Page on SCE.com<sup>19</sup></b>						
Unique Visitor Count	9,175	8,518	354	334	162	44
Repeat Visitor Count	653	743	184	180	101	24
Page Views	11,931	10,944	487	487	226	65
Bounce Rate	86.95%	87.08%	20%	13.54%	19.47%	43.48%
Multi-page Visits	1,378	1277	341	344	164	39

For SCE’s Market Education efforts, customer awareness of electric vehicle benefits and messaging are tracked using SCE’s Customer Attitude Tracking (CAT) survey. The CAT survey is a quarterly tool designed to assess and track attitudes, brand favorability, and awareness of relevant marketing messages among SCE customers. This telephone survey is conducted with 450 randomly-selected SCE households and 250 small businesses by an independent marketing research firm. Customers are asked to recall and rate messaging around the benefits of electric vehicles and preparing to buy or lease an electric vehicle, as well as SCE’s role in supporting and advancing electric transportation. Since the campaign fully

<sup>17</sup> <https://www.sce.com/wps/portal/home/residential/electric-cars/>

This page provides an overview of the EV-related content for residential customers on the website, and includes links to pilots (Submeter, Charge Ready) and EV content for businesses. Customers can navigate to this site without a vanity URL.

<sup>18</sup> Bounce rate is the percentage of single page visits.

<sup>19</sup> <https://www.sce.com/wps/portal/home/residential/electric-cars/EV-Assessment-Campaign-Page/>

This page was visible only by clicking through on digital and social media ads, or by using a vanity URL provided in radio ads.

launched in late August 2016, the data collected from the 2016 Q1, Q2, and Q3 CAT surveys was used to establish a baseline around message recall.

The following table summarizes the CAT survey baseline data. Respondents were asked, "In the past three months, do you recall seeing, hearing, or reading about any ads about SCE and the benefits of electric vehicles?"

Table 5.3 CAT Survey Results

Response	Baseline (Q1-Q3 2016)	Q2 2017	Q3 2017 <sup>20</sup>	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
Total Respondents	1,354	450	600	600	600	600	450	450
Yes	189 14%	54 12%	92 15%	92 15%	132 22%	99 17%	82 18%	84 19%
No	1,147 85%	378 84%	489 82%	476 79%	441 74%	480 80%	353 78%	344 76%
No Response	18 1%	18 4%	19 3%	32 5%	27 5%	21 4%	15 3%	22 5%

### 5.3. Transportation Electrification Advisory Services

SCE created TE Advisory Services (TEAS) to provide business customers with a dedicated "one-stop shop" for specialized education, awareness, and support on such issues as federal, state, and local incentives, vehicle and charging equipment financing opportunities, vehicle types, and charging installation programs.

TE Advisory Services includes:

Updated web content on SCE.com business section, which includes information on:

- Vehicle types
- Charging Infrastructure
- SCE's EV Rates
- Information specific to MUDs, Fleets, Workplaces, and Public sites
- Links to additional tools, resources and fact sheets
- Calls to action to reach out to SCE for more information and support (Account Manager or 800#)

Self-service online tools to assist customers:

<sup>20</sup> Sample size increased in Q3 2017 to allow for additional testing related to other corporate campaigns.

- The Charge Port Estimator, which estimates the number of charge ports customers may need at their sites
- A Rate Analysis Tool, based on customers' numbers of estimated charge ports and segment types
- A customer self-administered EV survey for workplaces and MUDs

**Fact Sheets: Customer-facing PDFs** covering the following TE topics, including links to additional resources:

- Transportation Electrification Overview
- Fleet Conversion
- MUDs
- Vehicle to Grid Integration
- Planning for Charging Infrastructure
- Understanding GHG Emissions from Transportation
- Overview of Fleet Segments and available EV alternatives

In addition to the above, TEAS completed in-person services for approximately 78 business customers in 2018. Services included the following:

- An initial fleet assessment (including GHG savings calculations) to help customers evaluate business cases for converting fleets of vehicles to TE technology
- A Low Carbon Fuel Source Calculator was added to the Fleet Assessment Report to help customers identify the estimated credit value per kW used.
- Infrastructure Assessments to assist customers in evaluating a potential deployment of charging equipment

Customers selected were those who had shown a commitment to sustainability, potential for a larger scale conversion/deployment, and had participated in multiple discussions with their Account Managers to confirm their interest in TE. A combination of government entities and commercial businesses were selected to include a representative mix of customers. SCE is tracking web traffic and has established the following baselines presented in the table below to compare against as more outreach is conducted.

Table 5.4 TEAS web traffic

		Unique Visitor Count	Page Views	Multi-Page
Q4 2017: Baseline	Workplace	292	507	346
	Public	121	188	143
	Fleet	138	281	165
	MUD	69	162	111
Q1 2018	Workplace	360	587	388
	Public	174	236	167
	Fleet	139	220	141
	MUD	105	143	112
Q2 2018	Workplace	434	683	443
	Public	188	263	167
	Fleet	193	310	194
	MUD	146	206	129
Q3 2018	Workplace	403	675	425
	Public	190	270	149
	Fleet	206	360	219
	MUD	129	203	136
Q4 2018	Workplace	307	503	157
	Public	110	157	51
	Fleet	144	221	67
	MUD	88	122	41

#### 5.4. Outreach Events

SCE participated in four outreach events in Q4 2018. SCE employees who attended the events provided an estimated number of customer interactions. The table below shows the event for Q4 2018.

Table 5.5 Outreach Events

Event Date	Event Name	Location	Estimated Customer Interactions
October 2, 2018	SCE Consumer Advisory Panel		15
October 3, 2018	West Coast Electric Fleets	Webinar	100
October 3-4, 2018	Building Industry Show	Pechanga Resort and Casino, Temecula, CA	75
October 9-11, 2018	Re-Imagine, California Association of Realtors Conference	Long Beach Convention Center, Long Beach CA	200
October 10, 2018	EVs & the Grid Summit	West Hollywood, CA	60
October 16, 2018	National Latina Business Conference	Rancho Cucamonga, CA	204
October 17, 2018	SCAG Electrifying Transportation in SoCal: Opportunities & Challenges for 2030	Los Angeles, CA	50
October 24, 2018	San Bernardino EV Blueprint Working Group	San Bernardino, CA	20
October 29, 2018	Ventura County EV Ready Coalition Kickoff Meeting	Camarillo, CA	25
November 8, 2018	Water Conference	Tulare, CA	15
November 15, 2018	Industrial Summit	Tulare, CA	15
November 15-17, 2018	LA CoMotion	Los Angeles, CA	1,000
December 12, 2018	Ventura County EV Ready Coalition Kickoff Meeting	Camarillo, CA	25

## 6. CONCLUSION

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In this quarterly report, SCE provided data and updates on progress in implementing and executing the Pilot. Projects with executed agreements continued forward through the construction and installation process. By the end of the fourth quarter of 2018, SCE had completed infrastructure at 71 sites that support 1,063 charge ports. SCE had started construction at 5 sites with 134 charge ports. Lastly, 3 sites for 83 charge ports were gathering Pre-Construction Requirements, such as permits and easements. SCE will also continue to learn from the energy usage of the charging stations deployed under the Charge Ready Program Pilot.

## 7. APPENDIX

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Pilot Participants with Reserved Funding

Table 7.1 Summary by Market Segment in Disadvantaged Communities

Disadvantaged Communities		
Segment	Number of Ports	Number of Sites
Destination Center	80	12
Workplace	497	29
Fleet	28	4
Multi-Unit Dwelling	12	1
<b>Grand Total</b>	<b>617</b>	<b>46</b>

Table 7.2 Summary by Market Segment in Non-Disadvantaged Communities

Non-Disadvantaged Communities		
Segment	Number of Ports	Number of Sites
Destination Center	203	12
Workplace	347	15
Fleet	90	4
Multi-Unit Dwelling	23	2
<b>Grand Total</b>	<b>663</b>	<b>33</b>

Table 7.3 Pilot Operational Metrics for Quarter

Customer Participant Request		
	Filing Assumptions	Inception-to-Date Actual
Average number of total parking spaces per site	N/A	632 parking spaces/site



<ul style="list-style-type: none"> <li>Average number of total parking spaces per site for Disadvantaged Communities</li> </ul>	N/A	439 parking spaces/site
<ul style="list-style-type: none"> <li>Average number of total parking spaces per site for Destination Centers</li> </ul>	N/A	882 parking spaces/site
<ul style="list-style-type: none"> <li>Average number of total parking spaces per site for Workplaces</li> </ul>	N/A	571 parking spaces/site
<ul style="list-style-type: none"> <li>Average number of total parking spaces per site for Fleets</li> </ul>	N/A	368 parking spaces/site
<ul style="list-style-type: none"> <li>Average number of total parking spaces per site for Multi-unit Dwellings</li> </ul>	N/A	591 parking spaces/site
Percentage of total number of parking spaces located in parking structures	N/A	19%
<ul style="list-style-type: none"> <li>Total number of parking spaces located in parking structures for Disadvantaged Communities</li> </ul>	N/A	12,204
<ul style="list-style-type: none"> <li>Total number of parking spaces located in parking structures for Destination Centers</li> </ul>	N/A	11,764
<ul style="list-style-type: none"> <li>Total number of parking spaces located in parking structures for Workplaces</li> </ul>	N/A	39,413
<ul style="list-style-type: none"> <li>Total number of parking spaces located in parking structures for Fleets</li> </ul>	N/A	2,382
<ul style="list-style-type: none"> <li>Total number of parking spaces located in parking structures for Multi-unit Dwellings</li> </ul>	N/A	3,967

Average fleet size <sup>21</sup>	N/A	6 (Fleet Segment Only) 4 (All Segments)
Percentage of applications received with charging systems already installed at the site	N/A	19%
Average number of charging systems already installed at the site	N/A	10
Average number of charge ports requested per site	26	13.6
<ul style="list-style-type: none"> <li>▪ Average number of charge ports requested per site for Disadvantaged Communities</li> </ul>	N/A	11.2
<ul style="list-style-type: none"> <li>▪ Average number of charge ports requested per site for Destination Centers</li> </ul>	N/A	12.7
<ul style="list-style-type: none"> <li>▪ Average number of charge ports requested per site for Workplaces</li> </ul>	N/A	12.2
<ul style="list-style-type: none"> <li>▪ Average number of charge ports requested per site for Fleet</li> </ul>	N/A	14.7
<ul style="list-style-type: none"> <li>▪ Average number of charge ports requested per site for Multi-unit Dwellings</li> </ul>	N/A	32.3

Table 10.4 Charging Station Request & Rebate

Charging Station Request & Rebate	
<ul style="list-style-type: none"> <li>▪ Average Number of Level 1 charge ports approved per site</li> </ul>	12
<ul style="list-style-type: none"> <li>▪ Average Number of Level 2 charge ports approved per site</li> </ul>	16.3
Average Number of total charge ports approved per site	16.2
Number of Level 1 EVSE stations bought	12

<sup>21</sup> Applicants from all segment categories may indicate the number of fleet vehicles at their site (All Segments). Applicants in the fleet category intend to use the new charging station for their EV fleet (Fleet Segment Only).

▪ Average number of ports per Level 1 EVSE station	1.0
Number of Level 2A EVSE stations bought	198
▪ Average number of ports per Level 2A EVSE station	1.7
Number of Level 2B EVSE stations bought	608
▪ Average number of ports per Level 2B EVSE station	1.4
Number of Level 1 EVSE stations installed with infrastructure complete	12
Number of Level 2A EVSE stations installed with completed infrastructure	187
Number of Level 2B EVSE stations installed with completed infrastructure	504
Number of Level 1 EVSE stations installed with completed customer-installation	12
Number of Level 2A EVSE stations installed with completed customer-installation	184
Number of Level 2B EVSE stations with completed customer-installation	457