Q4 2018 Clean Transportation Program Advisory Council Meeting

December 12, 2018

Together, Building a Better California

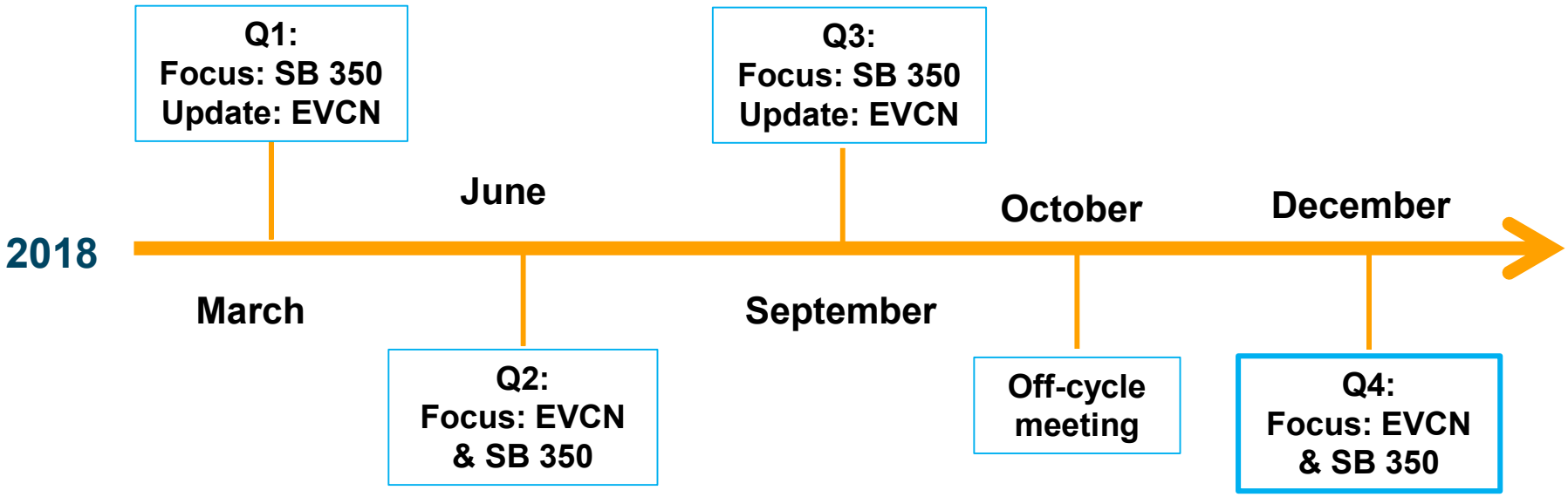
Agenda

Safety/ Introductions	9:00 – 9:10
Meeting Overview / EV Market Update	9:10 – 9:20
EV Charge Network Program Update	9:20 – 10:20
BREAK	10:20 – 10:30
SB 350: Priority Review Projects	10:30 – 11:00
Coalition of Utility Employees Presentation	11:00-11:30
SB 350: Standard Review Projects	11:30 – 12:00

Clean Transportation Program Advisory Council

Overview

- PG&E is expanding efforts on transportation electrification, with a number of filings and programs in development
- CPUC has directed PG&E to consult a Program Advisory Council in the development of these pilots and programs to gain feedback from industry stakeholders
- This platform will serve to gather insight and feedback to PG&E's proposals and on-going programs



EV Market Update

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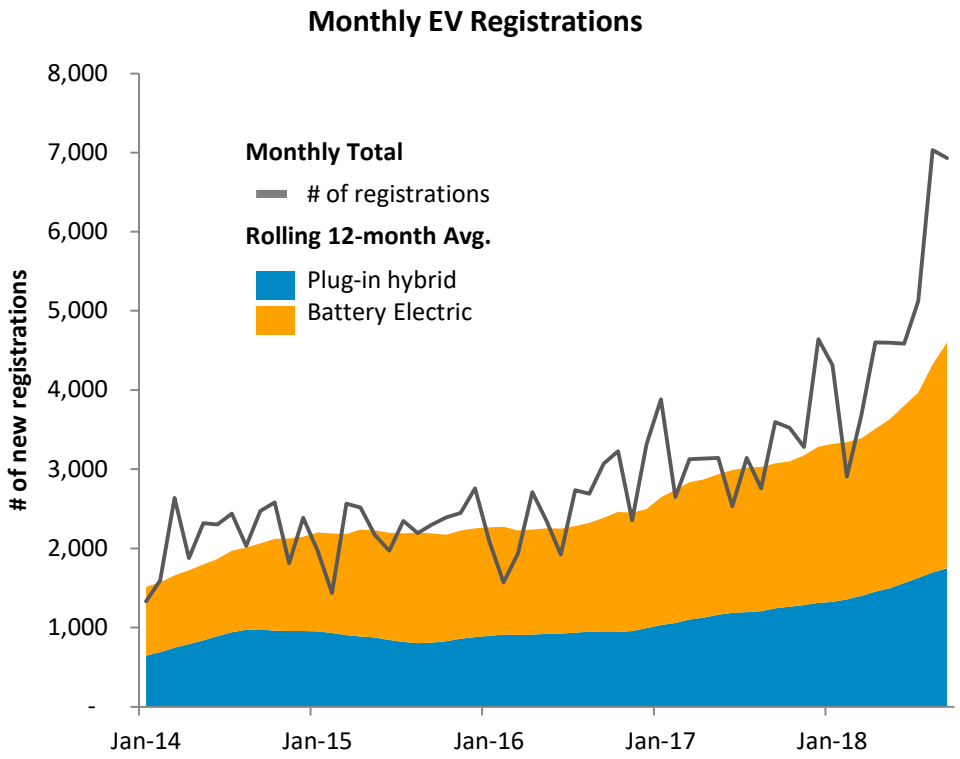
EV registration growth

194,872 **EVs registered** in PG&E service territory, through Q3 of 2018



An influx of Model 3 registrations surged EVs to **11.5%** of total new vehicle registrations in Q3.

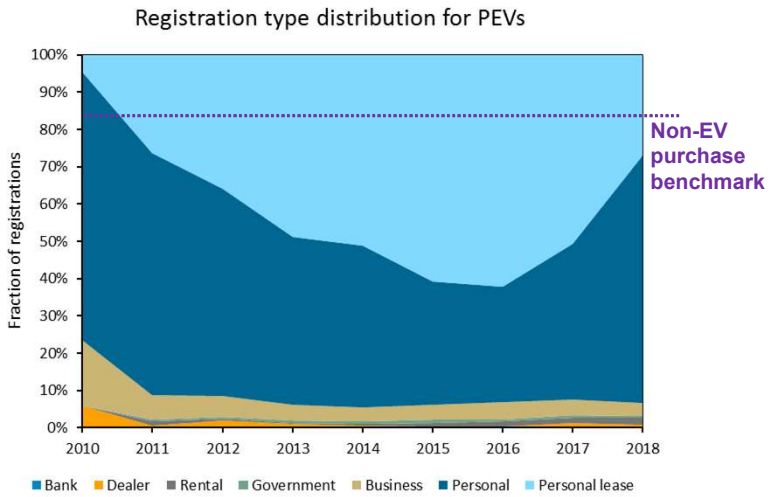
Three vehicle models (Model 3, Prius Prime, and Bolt) **account for 48% of the new EVs** registered in 2018.

PG&E estimates that **plug-in vehicles now account for approximately 1.5%** of the total vehicle population in its service territory. Traditional hybrids account for ~3.5%.

Source: EPRI, Based on external registration data

Snapshots of an evolving EV market

To lease or not to lease?



Early EV adopters were highly likely to purchase their vehicle. Over several years, **leases grew to outpace personal EV purchases**, but that trend has since begun to reverse since 2016.

Class is the question

EVs make up 9% of new car registrations in PG&E's service area this year, but **within vehicle classes, there is a wide disparity of EV uptake**

	EV% of 2018 new registrations	YTD 2018 new registrations
Sports car	.03%	13,632
Car	20%	199,560
CUV	3%	150,266
SUV	0%	30,896
Van	5%	19,849
Pickup	0%	63,453

Source: EPRI, Based on external registration data

EV Charge Network

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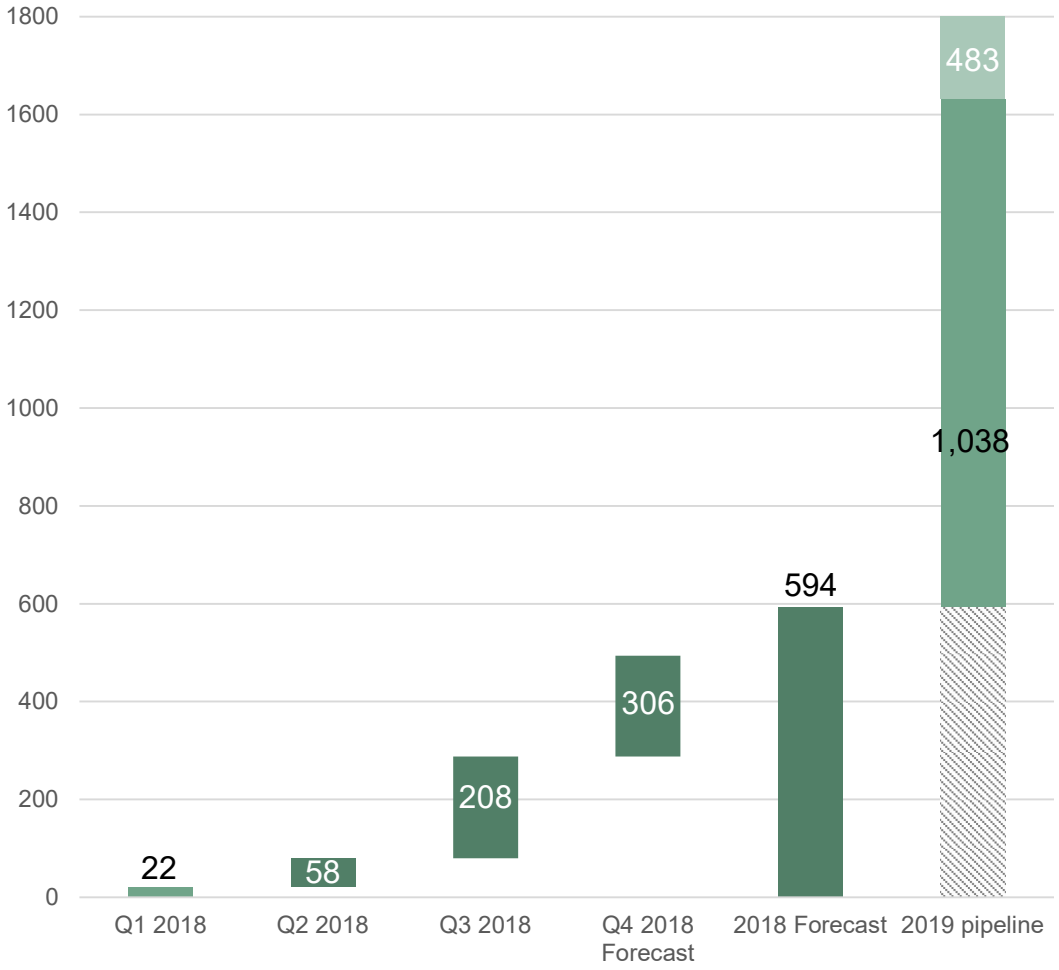
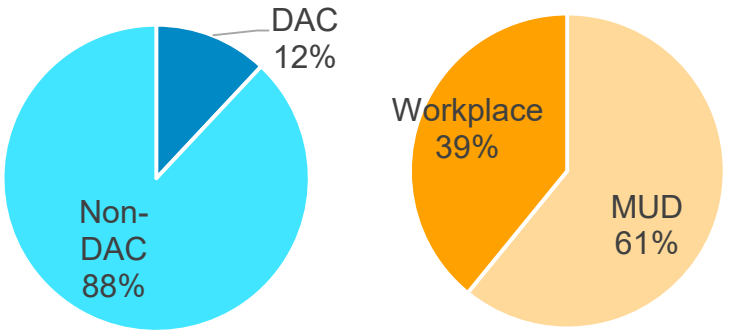
Despite falling short of Year 1 targets, we are positioned for a strong start to 2019

Current charging ports installed or in pipeline



- 2018 forecasts of **594** installed ports fall short of our Year 1 targets
- As we look to 2019:
  - **1,038** ports are scheduled for construction
  - **483** additional ports have completed preliminary design
  - Additionally, applications for **~3,000** ports are currently being processed

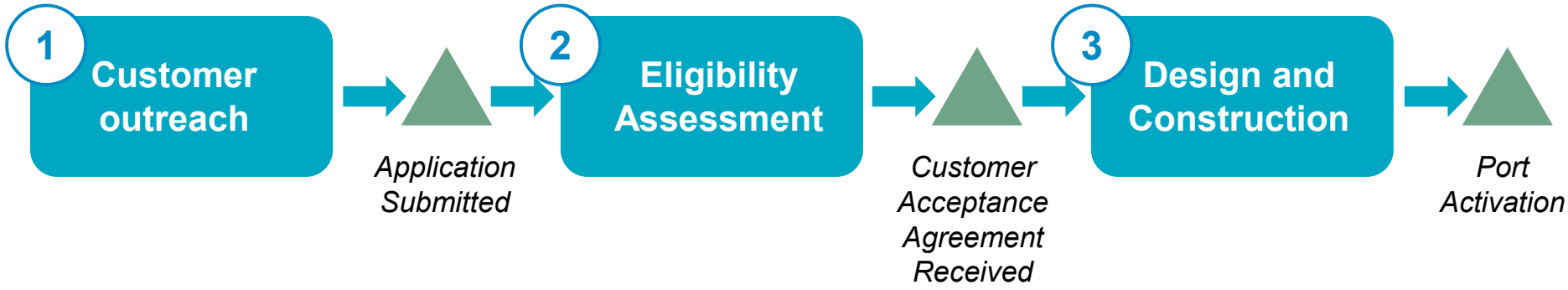
Installed port portfolio[1]



1 As of November 30, 2018

We are continuing to improve the process across the funnel

EV Charge Network process flow



Illustrative Process Improvements

1 Improve customer outreach
- Expand geographic outreach
- Better facilitate third party outreach
- Target sites with higher likelihood of viability

2 Enhance the eligibility assessment process
- Dedicate resources to onboard customers
- Establish standard cadence with customers

3 Implement efficiencies in design and construction
- Moved site walk earlier in the customer review process
- Developed behind-the-meter design template

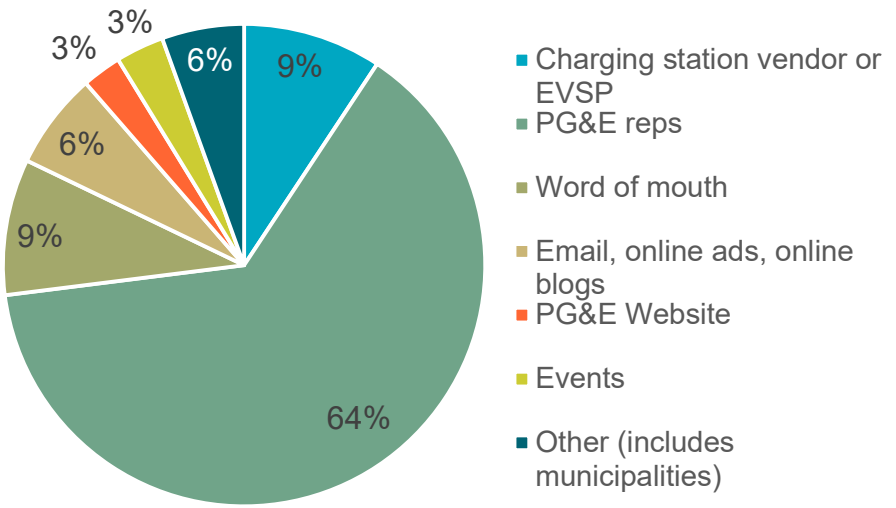
1 Improve customer outreach

Expand outreach by PG&E representatives to customers in 16 cities

- PG&E representatives have expanded outreach to customers in 16 cities
- Customer applications continue to be accepted across the territory

Better facilitate outreach by third parties

Applications received by channel[1]



- Majority of applications submitted to date come from PG&E representatives
- PG&E seeks to improve support for third parties conducting outreach related to EVCN

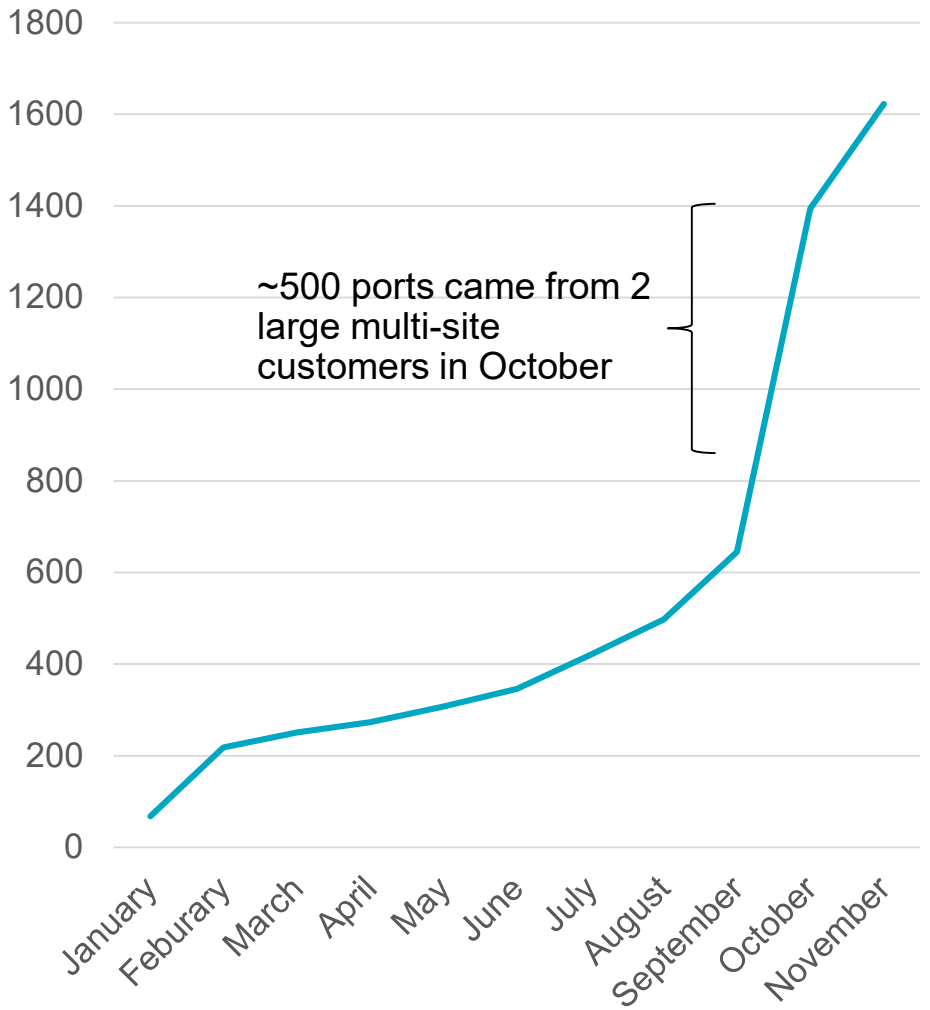
Target sites with characteristics likely to improve site viability. Characteristics to look for include:

- Parking lot size
- Transformer capacity
- Trenching distance
- Padmount vs. overhead transformer
- Parking lot grade
- Presence of other utilities

1 As of November 30, 2018

2 Enhance eligibility assessment process

Monthly viable ports, cumulative[1]



Dedicated teams focused on:

- Reducing cycle time and attrition while improving customer experience
- Evaluating customer pain points and quickly improving processes

1 As of November 30, 2018

3 Implement efficiencies in construction

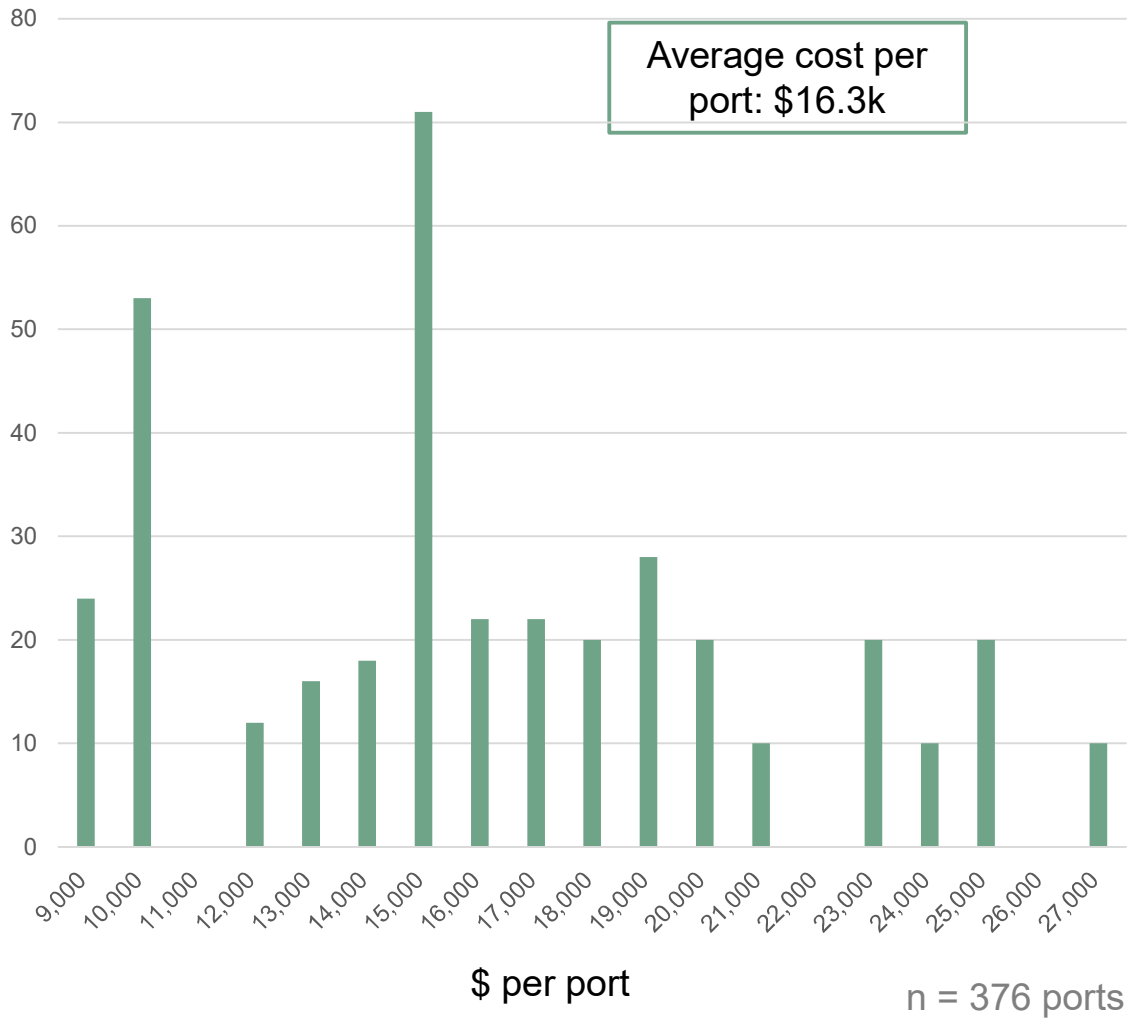
Example cost drivers:

- Trenching
- ADA Improvements
- Materials

Actions to reduce costs:

- Align City/County ADA requirements with site acquisition process
- Directional boring
- Hydro Excavation
- Pre-fabricated charger bases
- PG&E's "hockey-puck" meters & low-profile switch gear
- Leverage PG&E volume materials pricing
- Value engineering

Number of ports by cost per port[1, 2]



1 Combination of actual costs and construction estimates
2 As of October 31, 2018. November budget estimates not yet finalized

Customer Acquisition Profile *(as of 11/30/2018)*

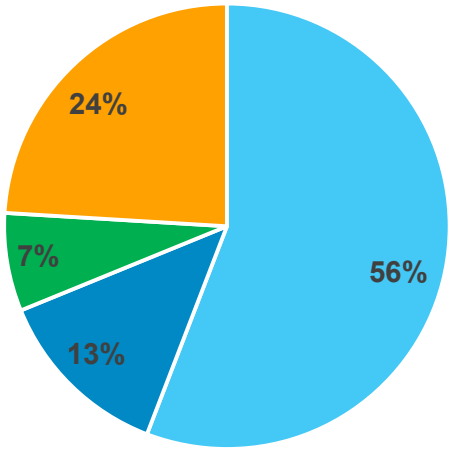
Application Stage	Submitted*	Viable	Activated
Total Applications	**525**	**110**	**23**
Workplaces	*371 (71%)*	*78 (71%)*	*10 (43%)*
MUDs	*154 (29%)*	*32 (29%)*	*13 (57%)*
DAC	*147 (28%)*	*30 (27%)*	*4 (17%)*
Sponsor	*131 (25%)*	*25 (23%)*	*9 (39%)*

Total Ports	**7838**	**1914**	**322**
Workplaces	*5571 (71%)*	*1400 (72%)*	*133 (41%)*
MUDs	*2267 (29%)*	*514 (27%)*	*189 (59%)*
DAC	*2278 (29%)*	*560 (29%)*	*50 (16%)*
Sponsor	*1923 (25%)*	*415 (22%)*	*133 (41%)*

**Includes Cancelled and Waitlisted*

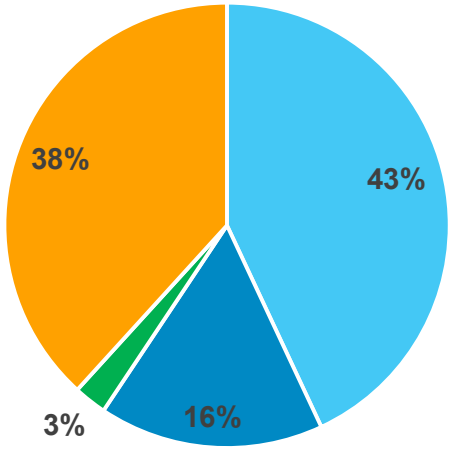
Application performance: MUD vs. workplace; DAC vs. non-DAC

MUD applications by stage[1]

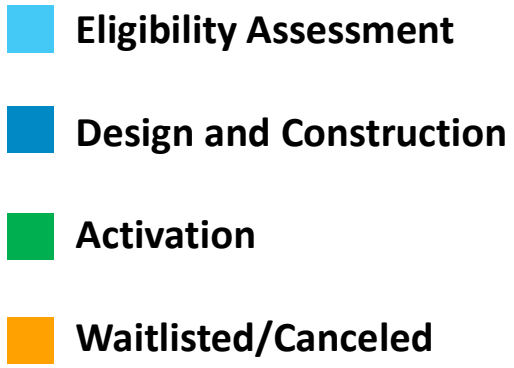


Total applications: 154

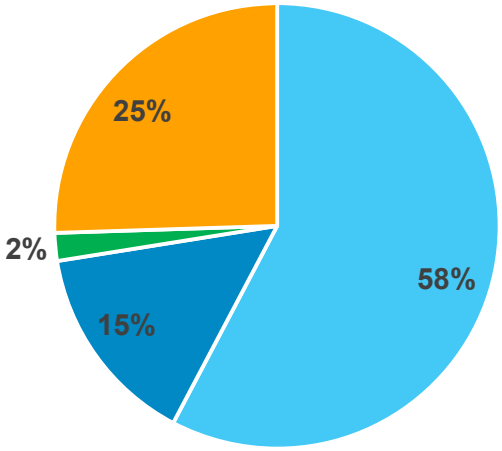
Workplace applications by stage[1]



Total applications: 374

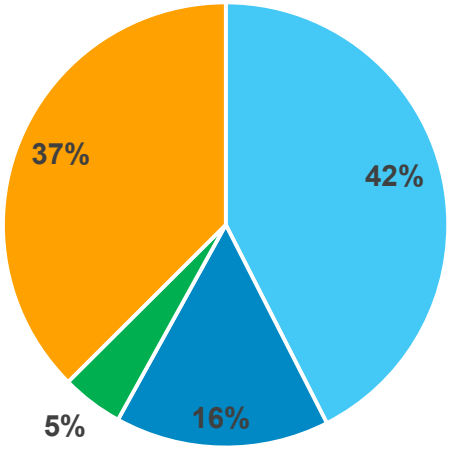


DAC applications by stage[1]



Total applications: 149

Non-DAC applications by stage[1]

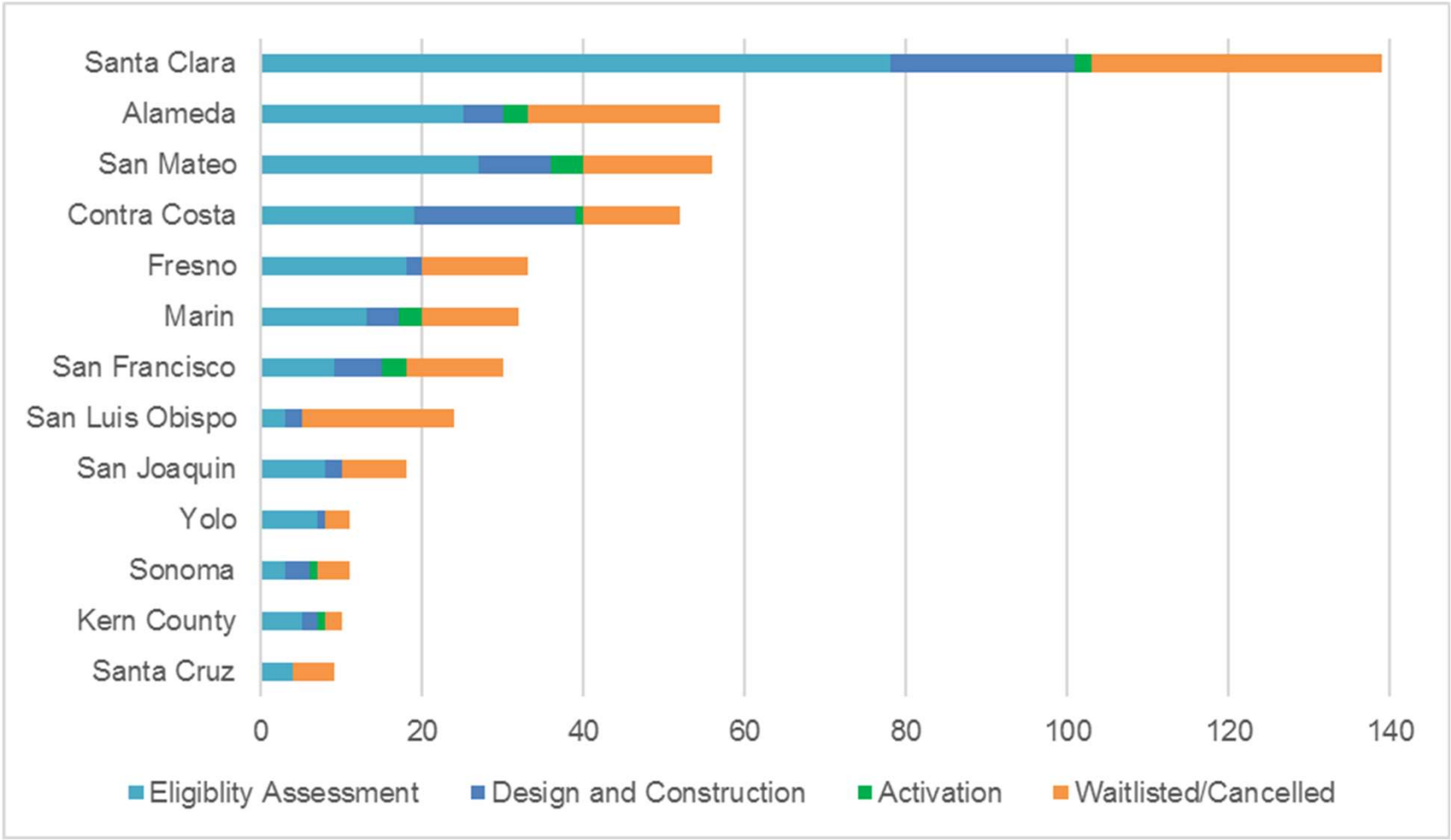


Total applications: 379

1 As of November 30, 2018

Stage of submitted applications by county

Stage of submitted application by county[1, 2]

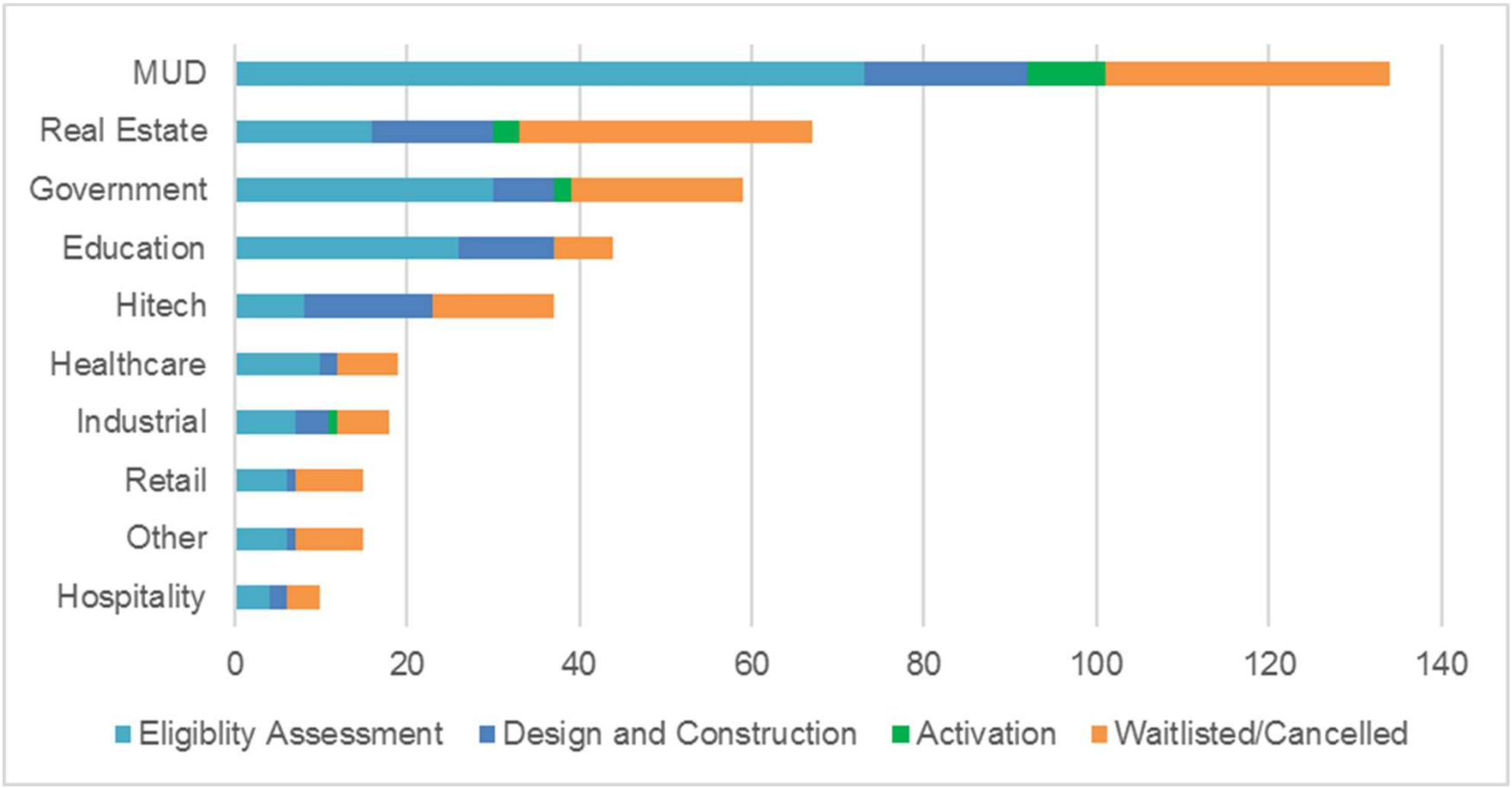


1 Excludes counties with <10 applications submitted

2 As of November 30, 2018

Stage of submitted applications by commercial segment

Stage of submitted applications by commercial segment[1, 2]



1 Excludes segments with <10 applications submitted and unsegmented applications

2 As of November 30, 2018

Exception for Sites Surrounded by DAC Eligible Communities

Challenge:

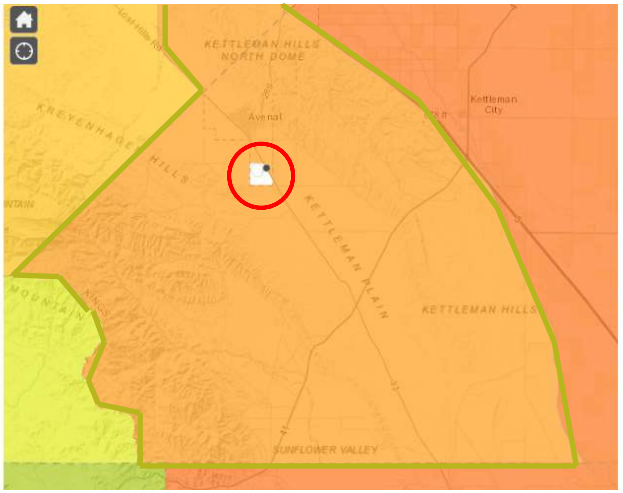
- There are interested sites that do not have enough census data to meet CalEnviroScreen criteria to establish a score.

Background:

- Consulted with the CPUC about how to determine eligibility and reporting needs and agreed to the following approach:
  - Site completely surrounded by one single census tract that meets DAC criteria (top quartile).
  - Site will be reported as a DAC site only but **will not** receive associated EVSE rebate.

Justification:

- Reporting to properly document investment benefits as the location shows similar pollution levels of surrounding DAC census area.



Example: *Central Valley DAC census surrounding a census tract with no score*

Update on Approved EVSE Vendors

2017 RFQ	Completed RFQ
2nd QTR RFQ	17
3rd QTR RFQ	1
4th QTR RFQ	6
2018 RFQ	**Completed RFQ**
1st QTR RFQ	4
2nd QTR RFQ	4
3rd QTR RFQ	3
4th QTR RFQ	0

Update on RFP 2nd Vendor Selection:

- 20 vendors approved for the EV Charge Owner option
- Number of vendors that apply each quarter has come down significantly

Should we move to a bi-annual RFQ process?

Update on RFP 2nd Vendor Selection:

- In final stages of negotiations with a secondary charger vendor.
- Announcement will follow immediately following closure of contract language.

Total Cost of Ownership Tool
(EV Savings Calculator)

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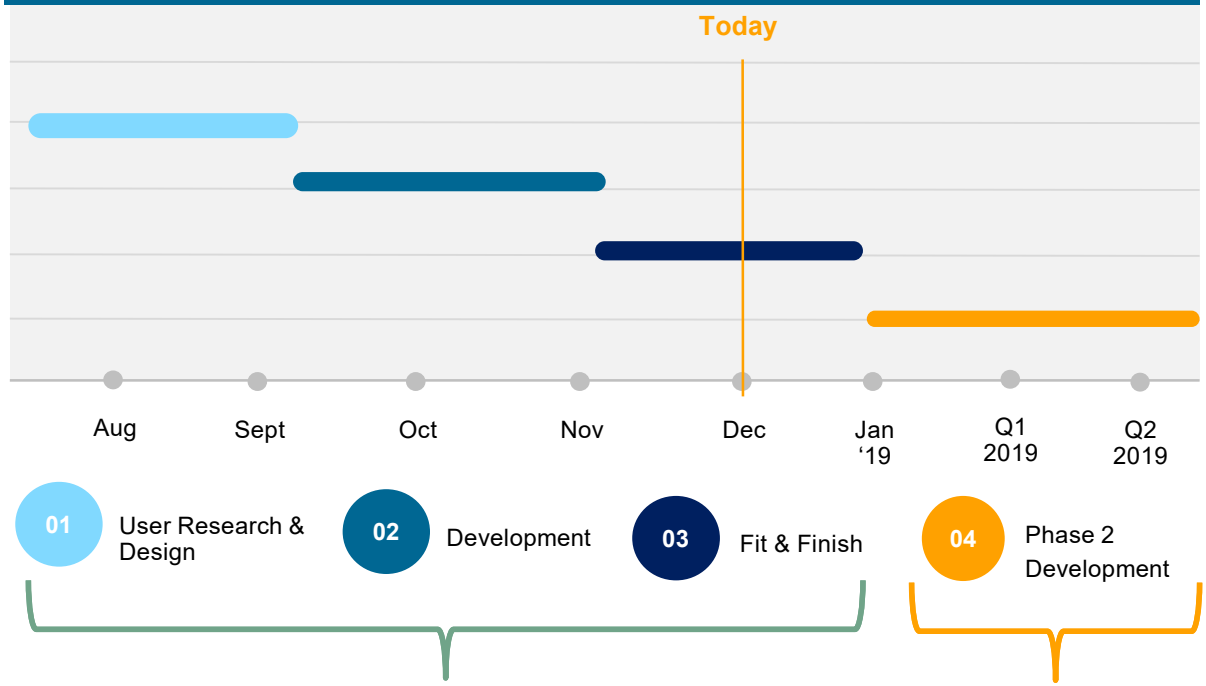
Total Cost of Ownership Tool

EV Savings Calculator Timeline



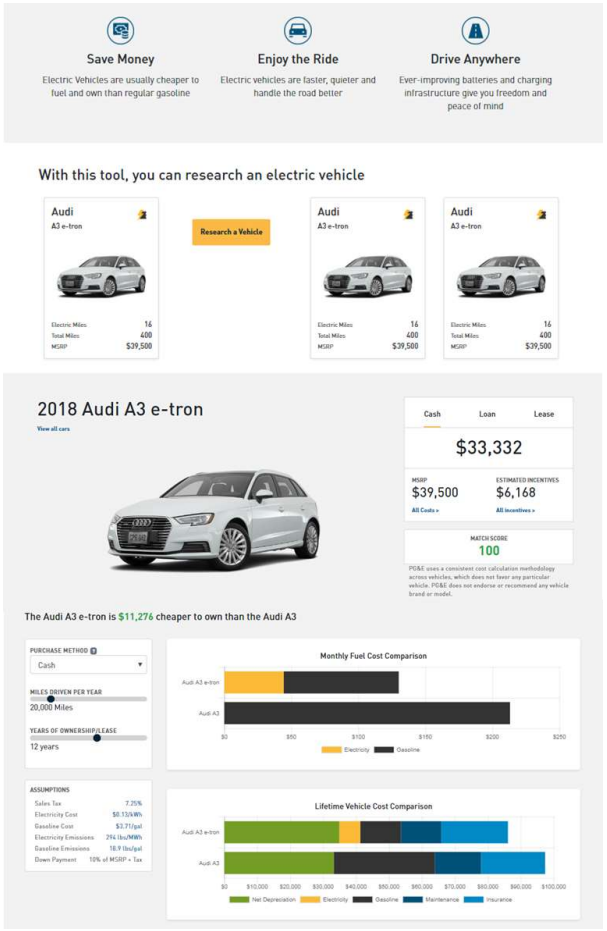
Phase 1 deploying:

- Range Confidence
- Incentive Tool
- Total Cost of Ownership

Phase 2 deploying:

- Electricity Rate Comparison Tool
- Enhancements

Sample content subject to change



SB 350
Priority Review Projects

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PG&E SB350 Priority Review Projects

		Regulatory Status
1	Home Charger Information Resource Pilot **Web Content Development Underway**	Approved
2	Electric School Bus Renewables Integration **Construction Underway**	Approved
3	Medium/Heavy Duty Fleet Customer Demonstration **Pre-construction Underway**	Approved
4	Idle Reduction Technology **Design Phase Underway**	Approved

Home Charger Information Resource Pilot

Pilot Goals

1. **Empower customers to install residential charging through:**
   a) **Updating website and checklists:** Translating these resources into Spanish and Chinese to support DACs
   b) **Installer Tool:** 3rd party tool which empowers customers to find qualified contractors and compare costs with remote bids

1 Info & Survey

Customer completes survey with Installer Tool and photographs their panel

2 Contractor Review

Contractors review customer info and bid on the work remotely

3 Customer Selection & Install

Customer selects winning bid and contractor completes installation

Quick Facts

Market Segments
Residential

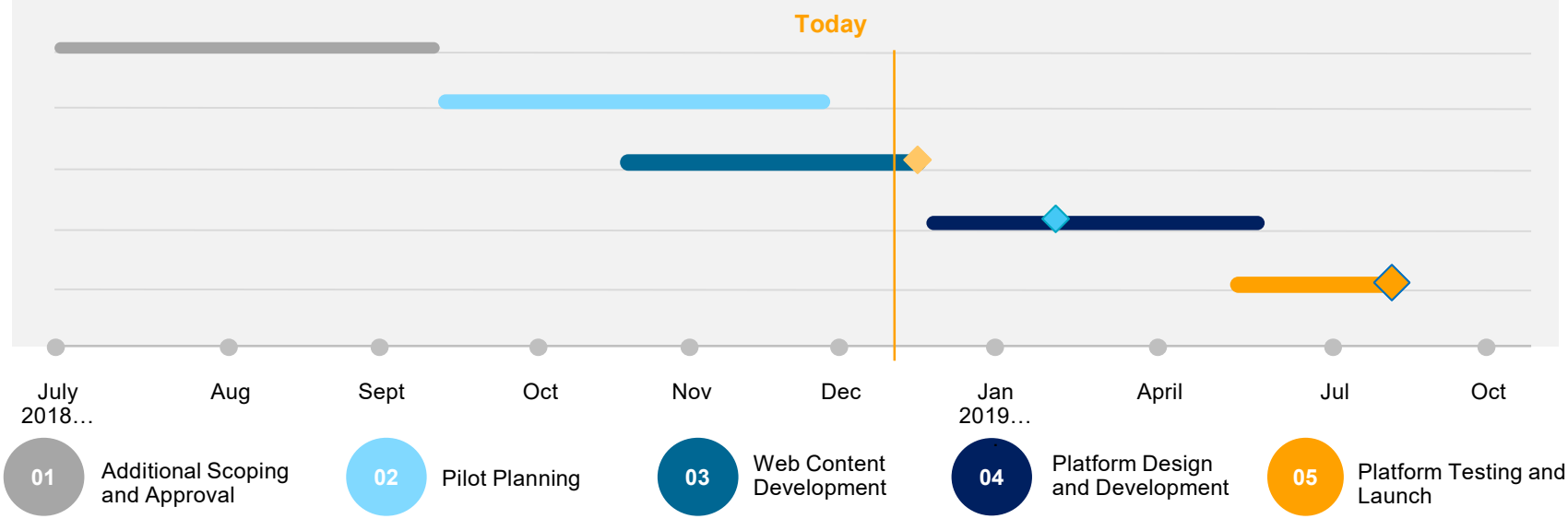
Implementation
Update website and launch Installer Tool. Increase adoption and spread awareness in 2019 and 2020.

Cost
$500,000

Business Model
Qualified contractors receive referrals from Installer Tool

Home Charger Information Resource Pilot

Pilot Implementation Timeline



Key Upcoming Milestones

- **Finalize website content changes..... 12/15/2018**
- **Finalize scope of work for platform development.....02/01/2019**
- **Final platform launch.....07/01/2019**

High Level Pilot Goals

Engage disadvantaged and minority communities

Education on home installation

Marketplace for qualified contractors

Electric School Bus Renewables Integration

Project Partner

Pittsburg Unified School District

- Construction nearing completion, scheduled to be operational **12/22/2018**
- Completed site **Communications Design**
- PV & Wind generation complete, **interconnection process underway**
- Pittsburg hosted eLion Ride and Drive event **12/5/2018**
- Static bus schedules based on current rates to be testing beginning in **January 2019**

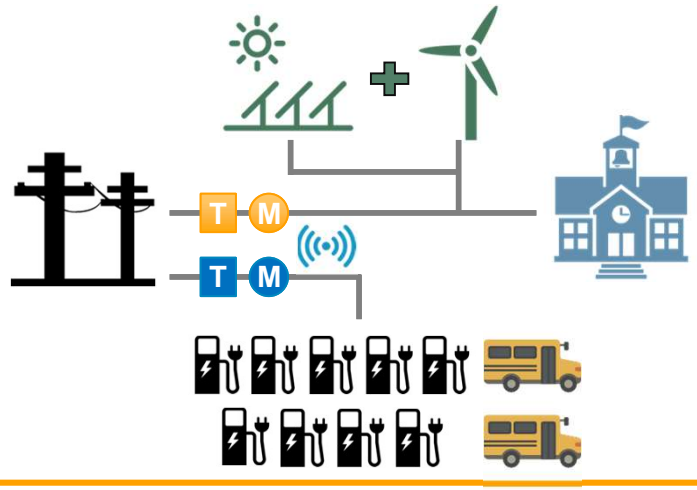
Project Scope

ClipperCreek, Inc.

olivine

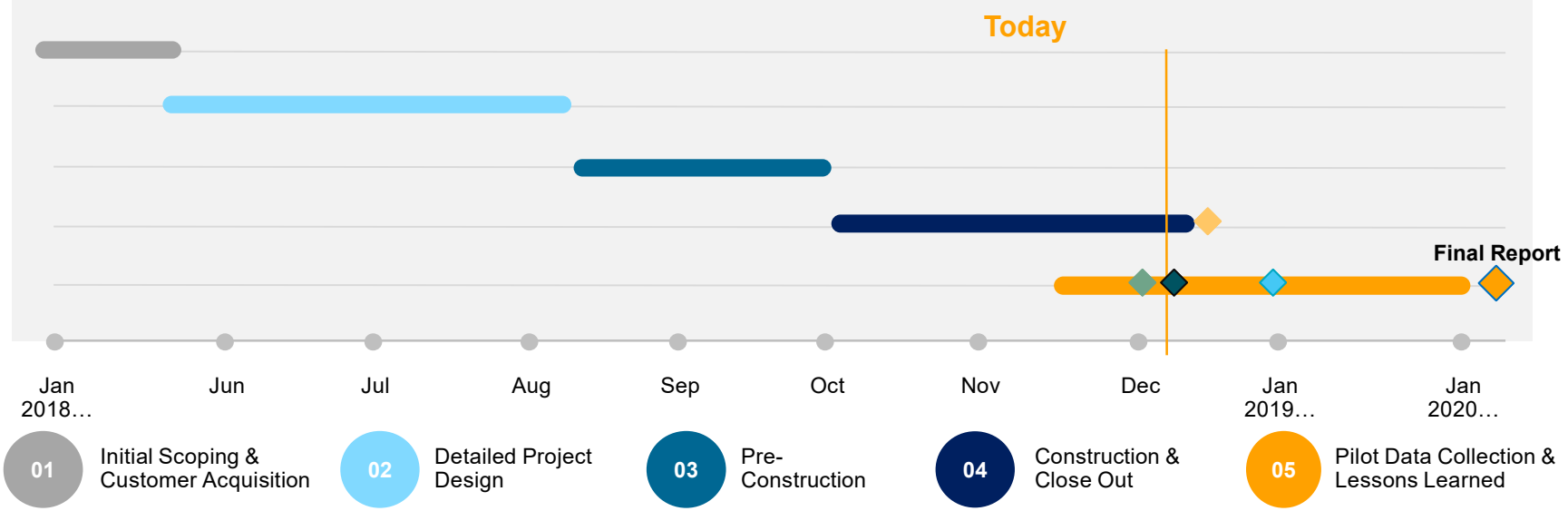
Liberty Plugins

- **9 Level 2 Chargers (180 kw)**
- Charge management software and platform to **optimize charging** for economics and GHG reductions
- Architecting **novel communications design** to integrate onsite renewables



Electric School Bus Renewables Integration

Pilot Project Construction and Data Collection Schedule



Key Upcoming Milestones

- Construction complete, chargers operational*.....12/22/2018
- Communications Design Finalized.....11/30/2018
- Pittsburg Energy Needs Assessment Complete 12/15/2018
- Testing Begins.....01/10/2018

**Construction completion impacted by fire restoration efforts, slipped by 1 month*

High Level Pilot Goals

Optimize renewables with low TCO | *Best practices for schools* | *Readiness for Fleet Ready Program*

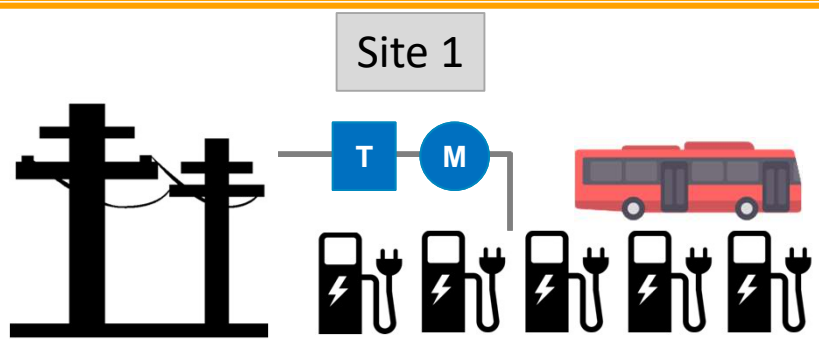
Medium/Heavy Duty Fleet Customer Demo

Project Partner

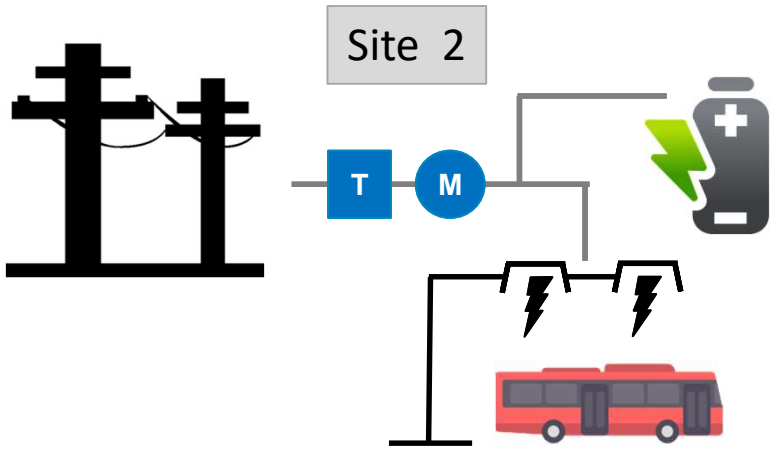
San Joaquin Regional Transit District (SJRTD)

- SJRTD is located in and serves a **Disadvantaged Community**
- Current fleet has **12 electric buses**
  - Charged using two overhead **extreme fast chargers**
  - Future charging will occur at one of three sites
- Additional five electric buses on order, bringing total fleet to **17 electric buses** by end of 2018
- Plan for **all-electric bus fleet** (~100 buses) by 2025

Project Scope



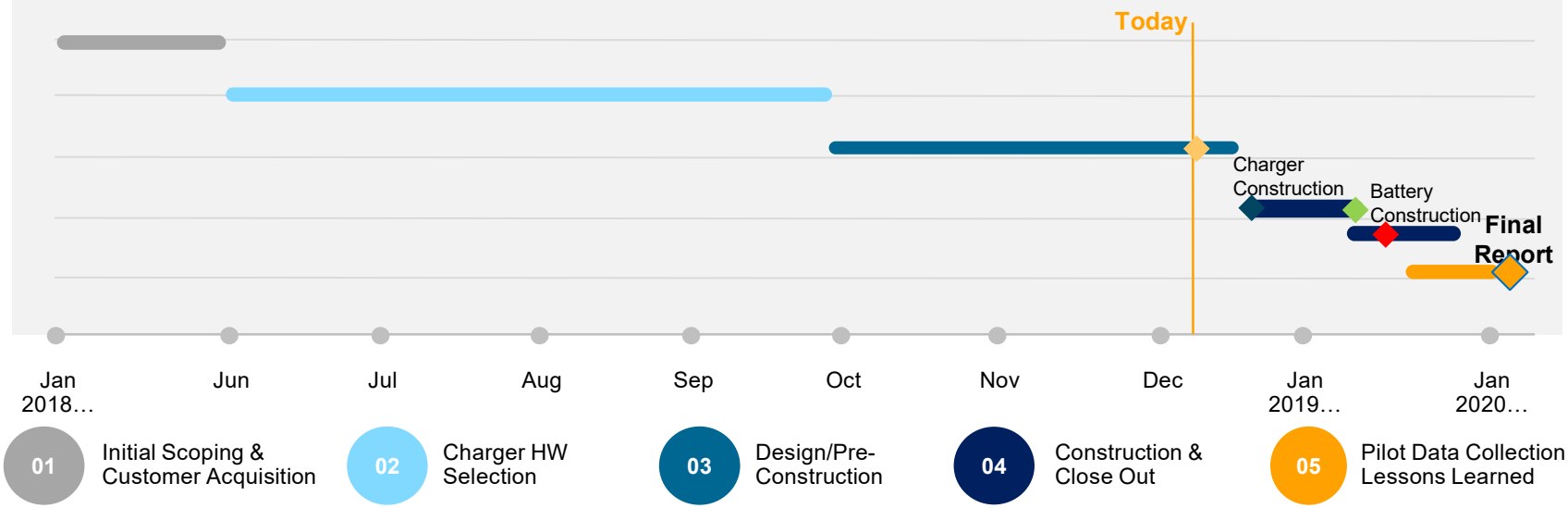
- **Deployment of five 60 kW** overnight depot chargers



- **Battery energy storage system** paired with existing extreme fast chargers

Medium/Heavy Duty Fleet Customer Demo

Pilot Project Construction and Data Collection Schedule



Key Upcoming Milestones

- Battery RFP Issued……12/12/2018
- Begin Site Construction……1/14/2018
- Complete Depot Construction……2/15/2019
- Battery Delivered……2/20/2019

High Level Pilot Goals

Transit Operator Electrification | *Battery Storage Integration* | *Readiness for Fleet Ready Program*

Idle Reduction Technology

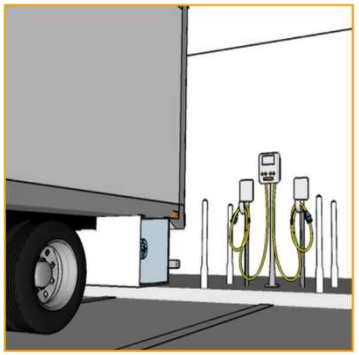
Project Partner

Food Distribution Service Center Facility

- Facility is located in and serves a **Disadvantaged Community**
- Facility is **2.2 million square feet**
- Facility has roughly **313 dock spaces**
- Current fleet
  - Consists of **664 trucks**
  - 232 trucks with eTRU units capable of running on diesel or electricity
- Plan for 550 – 600 **eTRU ports** if pilot is success

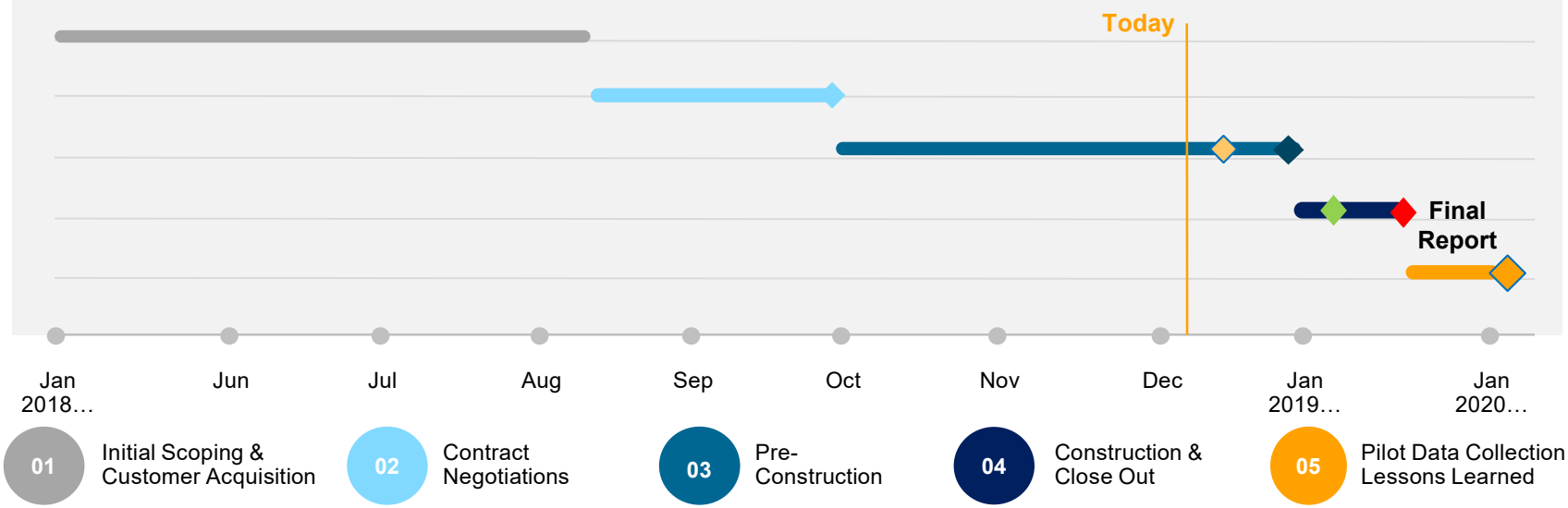
Project Scope

- **Deployment** of 25 electrified receptacles for eTRU connection (each 15-17 kW, adding a total load up to 425 kW)
- Demonstrate building off of customer owned infrastructure
- Demonstrate minimizing fuel costs by reducing diesel idling
- Understand deployment of eTRU technology and impact of site operations



Idle Reduction Technology

Pilot Project Construction and Data Collection Schedule



Key Upcoming Milestones

- Idle Reduction Design Review……12/19/2018
- Design Finalized……12/31/2018
- Begin construction of site installation……1/15/2019
- Commission charging ports……5/1/2019

High Level Pilot Goals

eTRU Technology Adoption

Minimizing Fuel Cost

Readiness for Fleet Ready Program

SB350
Standard Review Program

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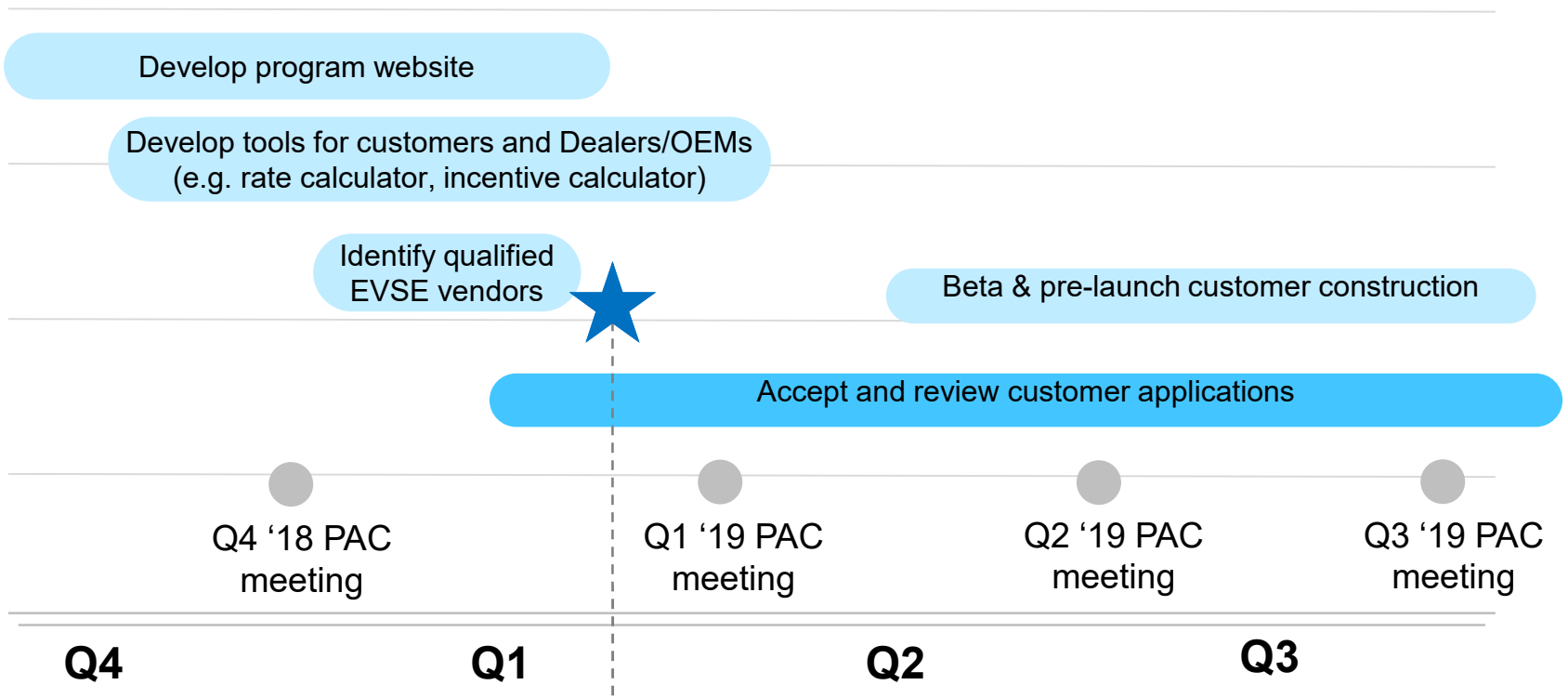
FleetReady Timeline



Program launch event

Potential event targeting Fleet owners and EV OEMs to launch PG&E program with several objectives:

- Generate public awareness of CA clean transportation goals
- Educate customers and OEMs on FleetReady program
- Allow customers to meet OEMs and understand EV options to meet their fleet's needs
- Showcase successful PG&E beta customer projects to encourage adoption by other fleet owners

Pre-launch Customer Engagement

Early Learnings

1. It is important to spend time talking to customer about what their business is and how their fleet operates – even small things like how the vehicles are washed at night can affect the charging design

2. It is helpful to confirm customers' decision-making process (e.g. who signs of on decisions, do multiple departments need to be coordinated, etc.) and plan outreach accordingly

3. With so many different grants available for medium/heavy duty EVs, PG&E should be cognizant of external deadlines for funders (e.g. BAAQMD) and prioritize PG&E timelines accordingly

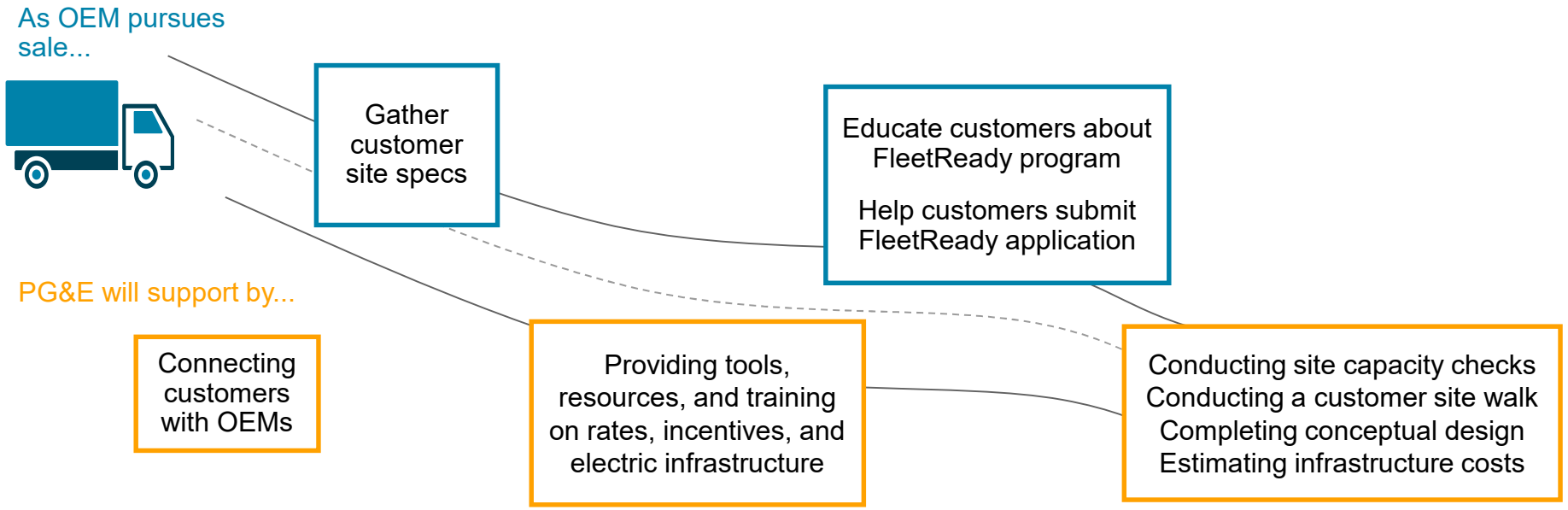
Sales Acceleration Initiative

Integrate FleetReady program education into electric vehicle OEMs and dealers' sales process to encourage customers to electrify by reducing the cost of infrastructure

Establish a closer working relationship with OEMs and dealers

PG&E Sales Acceleration Leads will

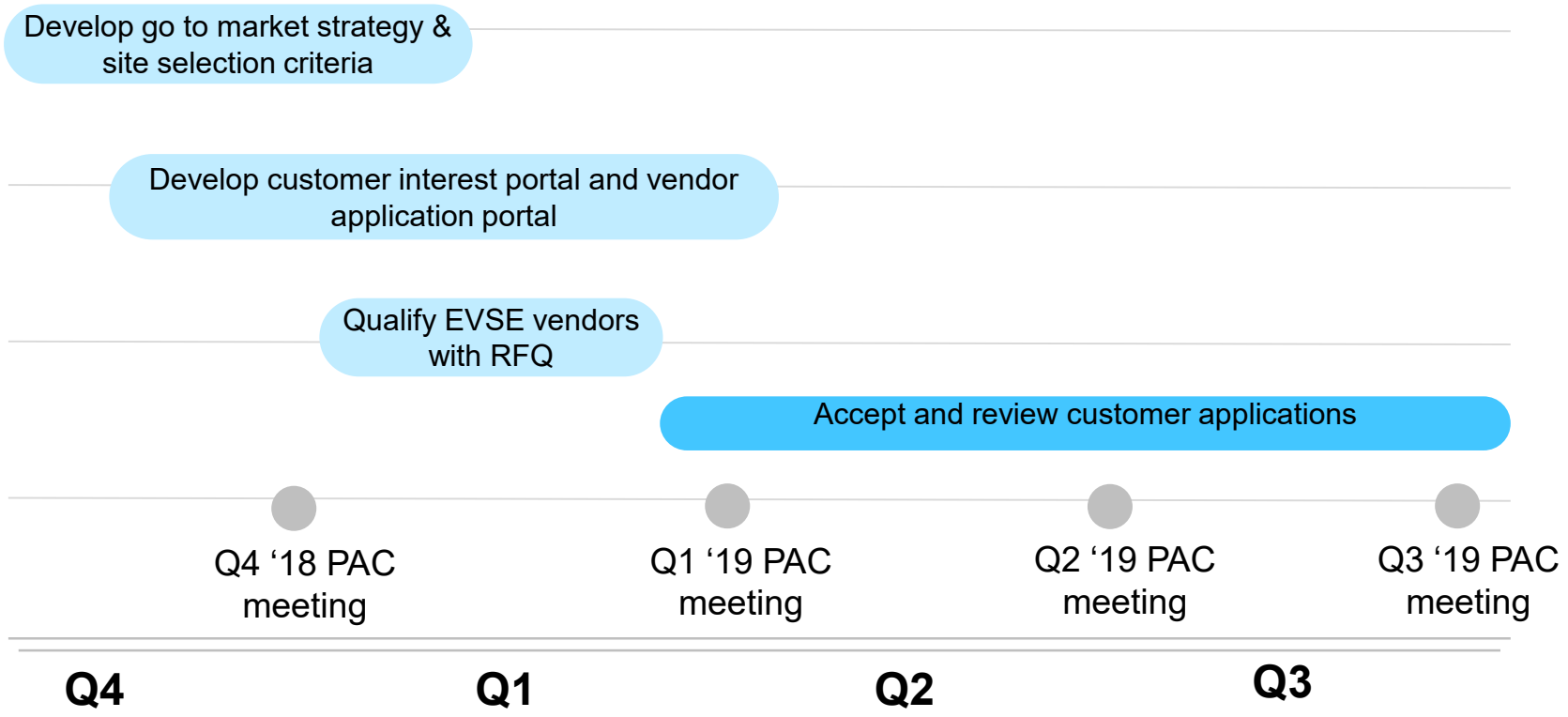
- Identify and onboard SAI participants
- Develop and maintain strong relationships with SAI participants
- Enable SAI participants with education, guidance, and tools to effectively help customers participate in the FleetReady program



Fleet Ready Next Steps

- Complete Beta and prelaunch customer preliminary designs
- Launch program website
- Hold launch event
- Initiate charging station vendor RFQ
- Build online tools to support customer education
  - Rate calculator
  - Rebate calculator
  - External funding filter tool

Fast Charge Timeline



Program details

- Customers express interest in program through website
- Approved EVSE vendors listed on website for customer consideration
- Once customer selects approved EVSE vendor, vendor submits complete application on behalf of customer

Fast Charge Next Steps

Q4 ‘18 – Q1 ’19

- Issue RFQ to qualify charging station vendors
- Finalize application process and participant journey
- Develop online customer interest form and program application form