# SB 350 Transportation Electrification Filing

David Sawaya, Principal, EV Program Design
February 8th, 2017

# Outline

- Background

- PG&E's transportation electrification (TE) portfolio

- FleetReady program

- Fast Charge program

- Priority review projects

- Metrics, data tracking, and evaluation

# Guiding Principles for Transportation Electrification

Ensure public, employee and contractor safety

Increase access to electricity as a transportation fuel

Enable TE market and support grid management using core utility capabilities

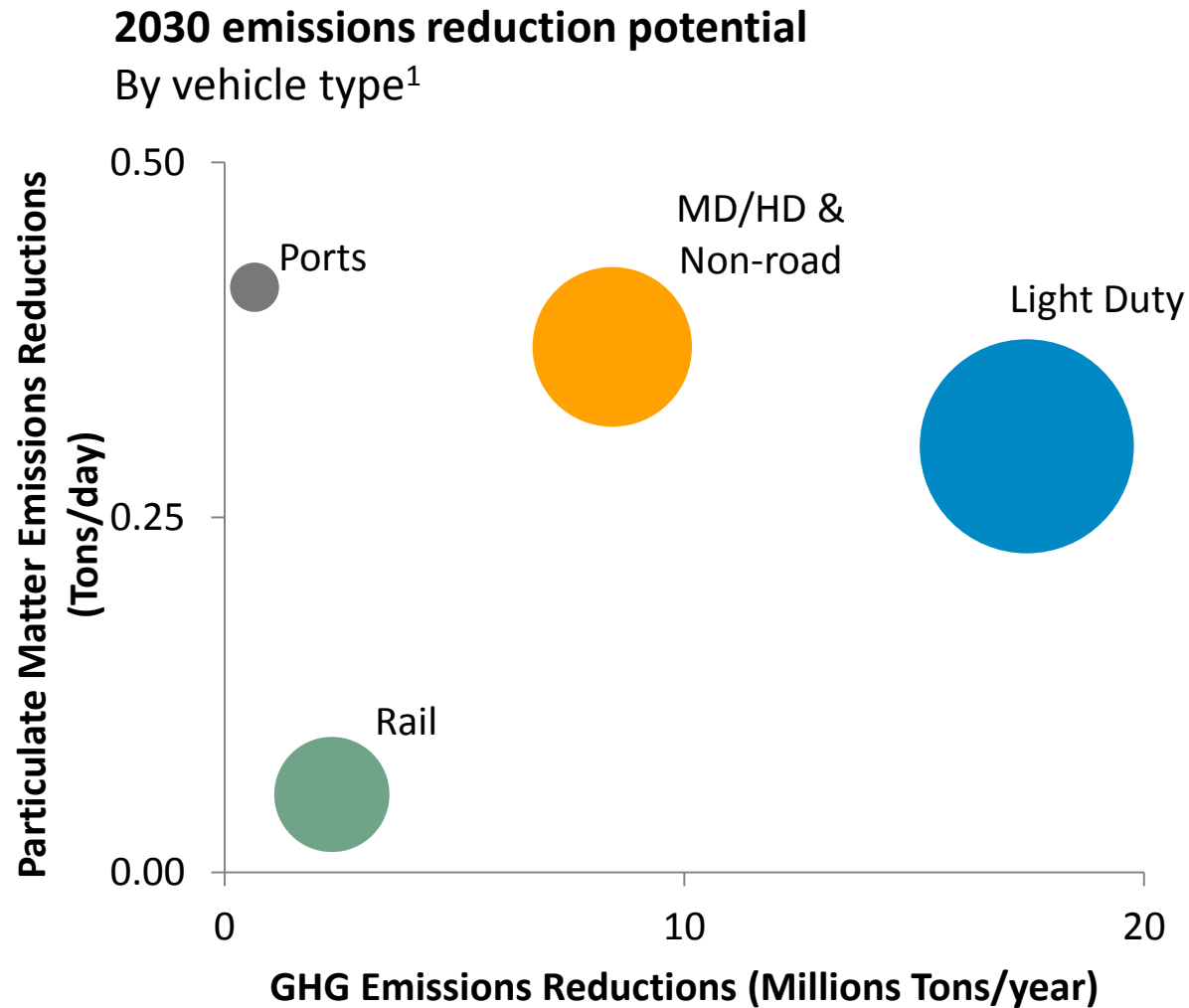Support California climate, air quality and equity policies

Target commercially ready sectors that will spur technology diffusion

Leverage state, federal and private funding

# Transportation sectors offer varied emissions reduction benefits

**2030 emissions reduction potential**

By vehicle type[1]

[1]Bubble size indicates annual electricity consumption (kWh)

**Source:** PG&E based on ICF, "aggressive adoption" scenario in ICF (2014), *California Transportation Electrification Assessment: Phase 1.*

# Addressing TE barriers with utility tools

**General Barriers to Widespread Transportation Electrification:**

- Vehicle availability, selection, and range

- Upfront vehicle costs

- Upfront costs of charging infrastructure

- Vehicle operating costs

- Access to charging

- Lack of awareness or understanding

**Utility tools are best suited to help address these barriers**

**Sources:** ICF International (2014), *California Transportation Electrification Assessment – Phase 1: Final Report*
ICF International (2014), *California Transportation Electrification Assessment – Phase 3 – Part A: Commercial and Non-Road Grid Impacts – Final Report*
CALSTART (2015), *Electric Truck & Bus Grid Integration: Opportunities, Challenges &*
CARB (2015), *Advanced Clean Transit*, https://www.arb.ca.gov/msprog/bus/workshoppresentation.pdf

# PG&E's transportation electrification portfolio

Initiatives in black will be included in PG&E's January SB350 Transportation Electrification (TE) application.
Initiatives in blue are part of PG&E's portfolio that are complete, underway, or expected to occur in the future.

| | Light-duty | Medium-/heavy-duty | Off-road | |
|---|---|---|---|---|
| **R&D** | BMW i ChargeForward<br>EV submetering<br>DC fast charger siting tool<br>Open vehicle-grid integration platform | A-1 transit bus rate pilot | Vehicle on-site<br>grid support system | **Priority<br>review<br>projects** |
| | Residential charger<br>information resource | Medium-duty customer demonstration<br><br>School bus overgen. demonstration | Idle-reduction<br>customer demonstration | |
| | Additional 1-year electrification projects via open RFP | | | |
| **Infra-structure** | EV Infrastructure and Education Program:<br><br>– Phase 1 (approved)<br>– Phase 2 (planned)<br><br>**"Fast Charge" DCFC make-ready program** | **"FleetReady" (non-light-duty make-ready) program**<br><br>▪ Public transit<br>▪ School buses<br>▪ Delivery fleets<br>▪ Private shuttles<br>▪ Other | ▪ Idle-reduction (truck-stops, truck refrigeration units)<br><br>▪ Class 1 forklifts<br><br>▪ Port, rail and airport equipment | **Standard<br>review** |
| **Product &<br>Rate Design** | Residential EV rates<br><br>Clean Fuel Rebate (LCFS) | PG&E 2017 GRC Phase II rate proposals | | |

# SB 350 TE Application forecast budget

**SB 350 Transportation Electrification application requests $253M over five years for three initiatives: FleetReady, Fast Charge and Priority Review projects**

- Program costs to be recovered through EV Program Balancing Account
- Proposal requests that programs be subject to overall cost cap; infrastructure deployment and costs will be dependent on customer demand and unspent funds returned to customers
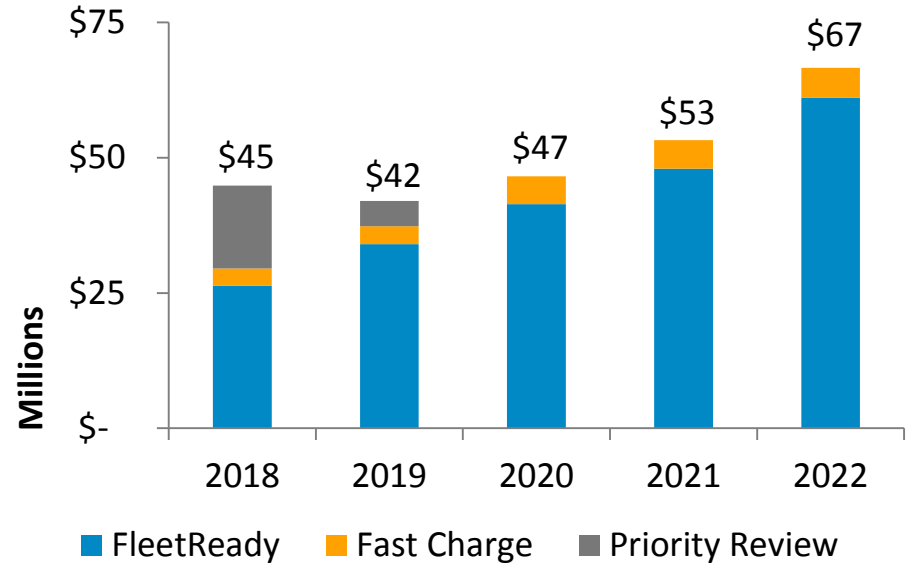
**Total application budget request**
Capital vs. expense
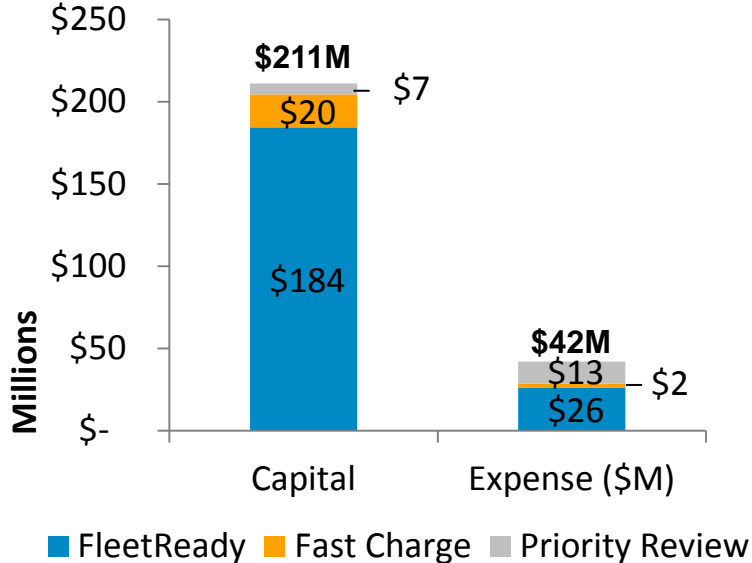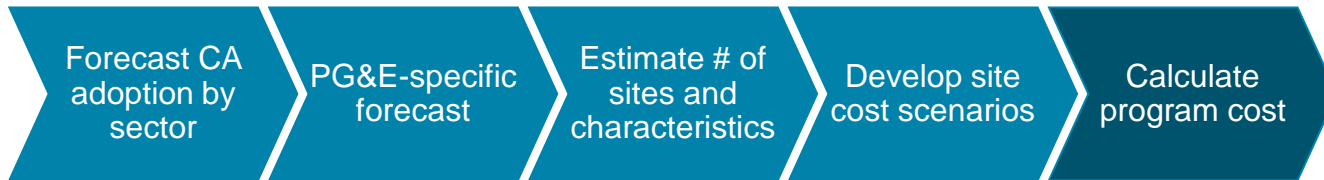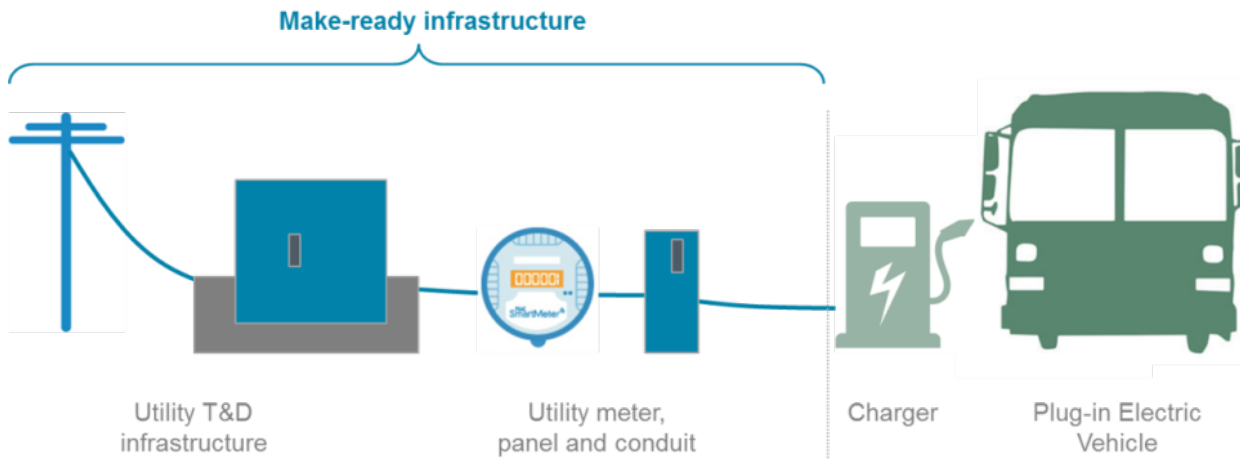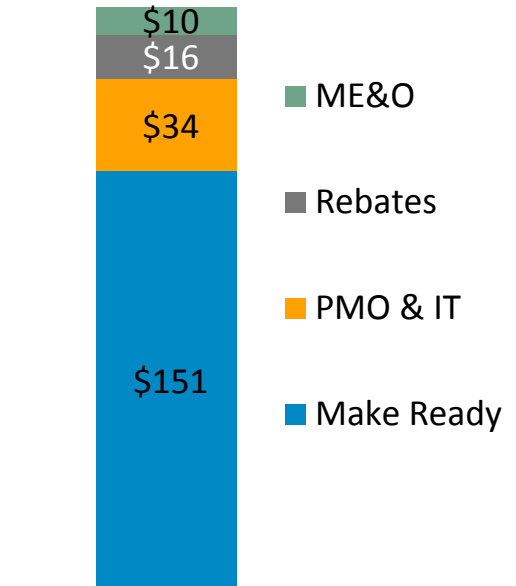


**Application budget request**
Annual cost estimates

# FleetReady Program Overview

- Make-ready infrastructure for non-light-duty fleets
- $211 million; 5 years
- Program sized to meet forecasted adoption
- Installations occur following customer acquisition of EVs and chargers
- Additional incentives for disadvantaged communities, school and transit buses

Forecast CA adoption by sector → PG&E-specific forecast → Estimate # of sites and characteristics → Develop site cost scenarios → Calculate program cost

**Make-ready infrastructure**

Utility T&D infrastructure | Utility meter, panel and conduit | Charger | Plug-in Electric Vehicle

**FleetReady Program Budget**
By cost type ($'s Millions)

- $10 — ME&O
- $16 — Rebates
- $34 — PMO & IT
- $151 — Make Ready

# Fast Charge Program Overview

- Make-ready infrastructure for public DC fast charging
- $22 million; 5 years
- Program sized to fill potential gap, both corridor and urban charging locations
- Installations occur following customer acquisition of chargers; modeled with a variety of power levels
- Additional incentives for disadvantaged communities

**Known significant DCFC deployments expected in PG&E service area**
Compared to expected 2025 need
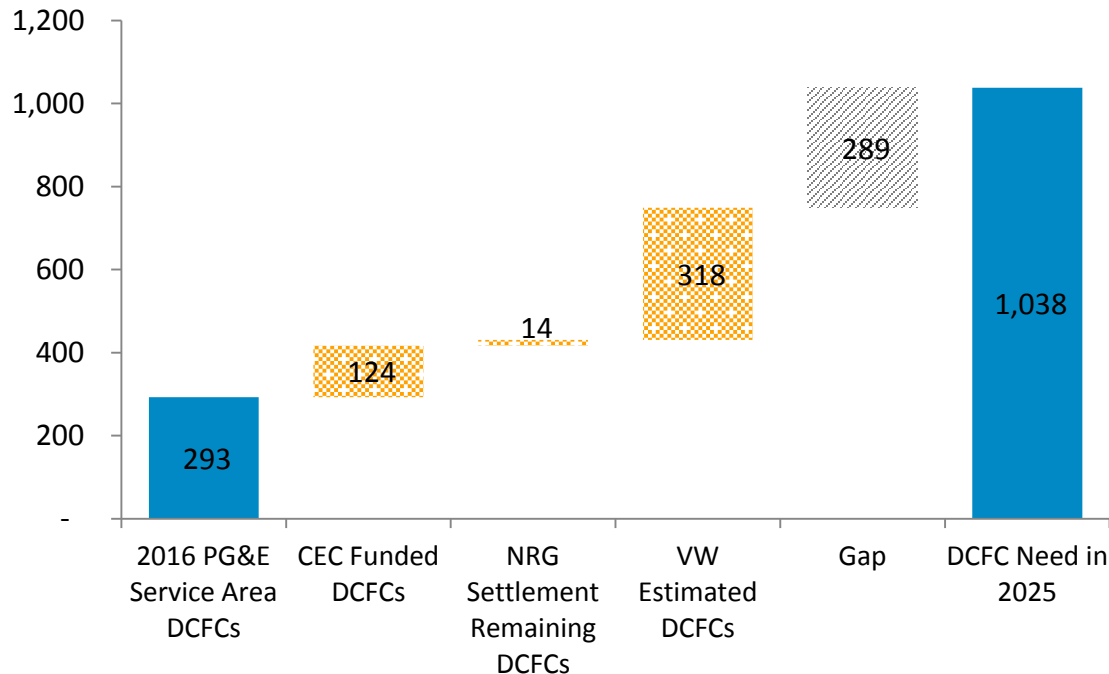
**Fast Charge Program Budget**
By cost type ($'s Millions)
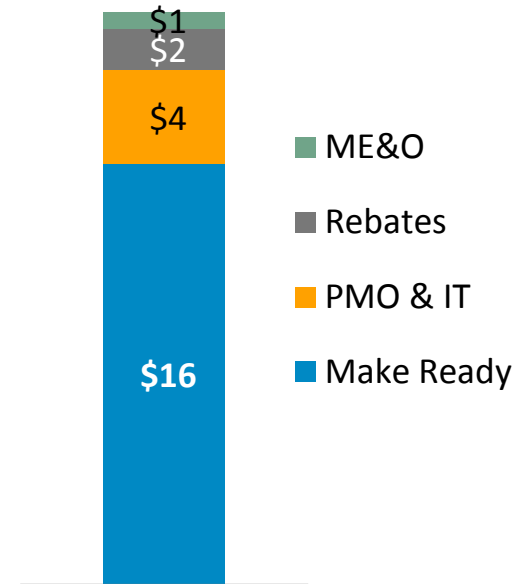
# Priority review projects and demonstrations

### Project 1: MD/HD Fleet Customer Demonstration

**Goal**: demonstrate lower total cost of ownership for customer fleet electrification with utility assistance

**Description**: Deploy make-ready infrastructure and charging management tools to minimize operating costs

### Project 2: Idle Reduction Customer Demonstration

**Goal**: demonstrate economic viability for technology deployment with utility assistance

**Description**: Deploy make-ready infrastructure and charging management tools to minimize operating costs

### Project 3: School Bus Over-generation pilot

**Goal**: test rate and incentive structures to target EV charging during periods of over-generation

**Description**: Leverage unique duty cycle of school bus fleet to charge vehicle mid-day for grid benefit

### Project 4: Home Charger Information Resource

**Goal**: simplify home charger purchase and installation process to lower barriers for new EV owners

**Description:** Develop online tool for homeowners to understand home charging needs and identify electrical contractors for charger installation

### Project 5: Open RFP

**Goal**: Identify additional projects for utility investment and encourage innovation and competition among 3rd parties

**Description**: Open, external request for proposals for 3rd party projects to fund

# Metrics, data tracking, and evaluation

PG&E will issue an annual report for the FleetReady and Fast Charge programs and a summary report for each priority review project

## FleetReady and Fast Charge

### Deployment

- Site enrollments and characteristics (e.g. number of vehicles and chargers)
- Deployment time
- Installation cost
- Disadvantaged community deployments

### Operational

- Utilization, usage data and estimated emissions reductions
- Customer kW profile and kWh usage by price
- Load management approaches, where applicable

### Descriptive

- Outreach efforts
- Key barriers to deployment of EV charging infrastructure
- Insights on effect of the program on the EVSE and EV market

## Priority Review Projects

### Technology demonstrations

- Evaluation of total cost of ownership
- Cost and savings of demand mitigation strategies
- Customer success and willingness to expand electric fleet
- GHG and criteria pollutant savings compared to the existing fossil-fuel fleet
- Comprehensive list of lessons learned which can inform future strategies for working with additional customers to electrify their vehicle fleets

### Home Charger Information Resource

- Website usage statistics
- Participation by installers