



SB 350 Transportation Electrification Filing

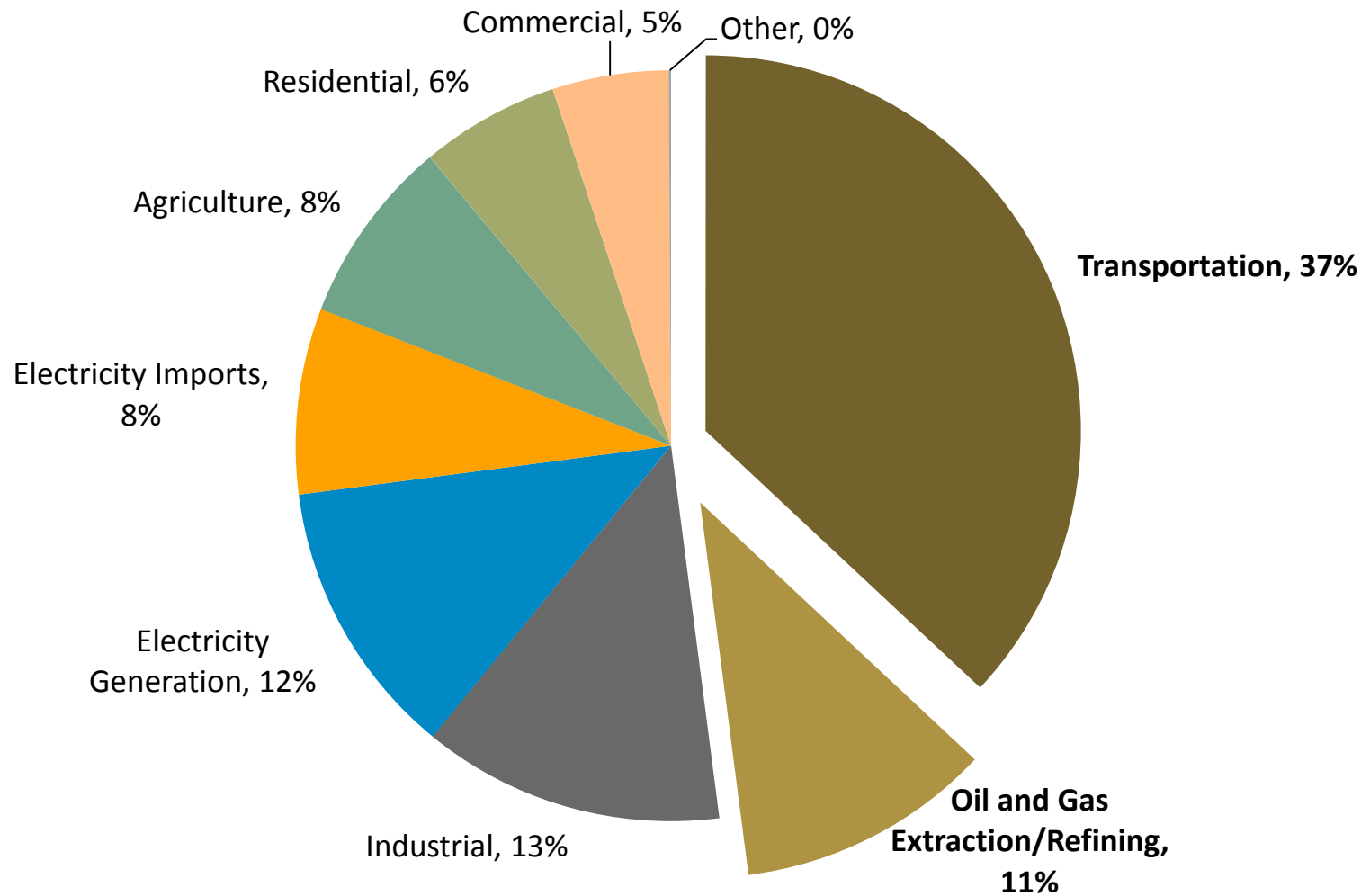
David Sawaya

April 25th, 2017





California's GHG emissions



California Greenhouse Gas Emission Inventory (2014)



Addressing TE barriers with utility tools

General barriers to widespread transportation electrification:

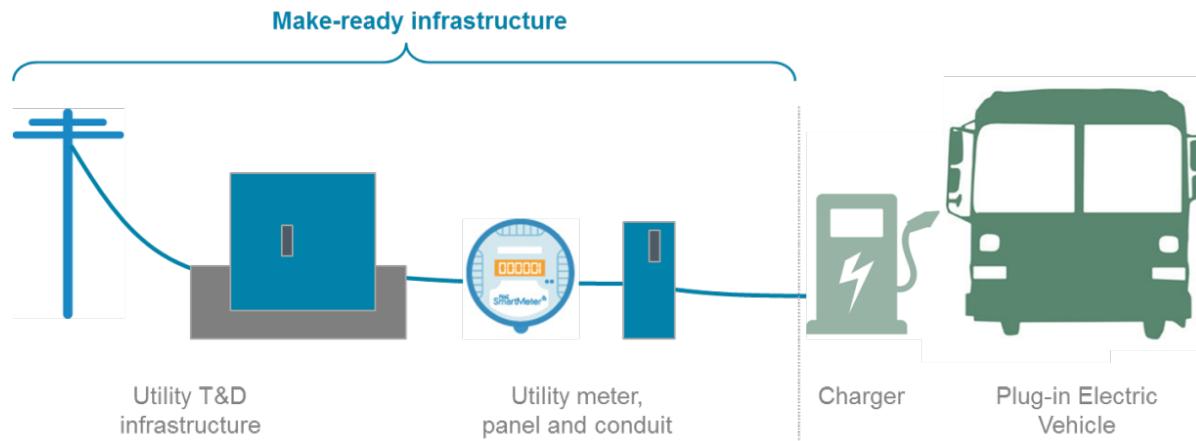
- Vehicle availability, selection, and range
- Upfront vehicle costs
- Upfront costs of charging infrastructure
- Vehicle operating costs
- Access to charging
- Lack of awareness or understanding

Utility tools are best suited to help address these barriers



FleetReady: non-light-duty EV make-ready program

- Program budget: \$211 million over 5 years
- Goal: Provide make-ready infrastructure in non-light-duty transportation sectors
 - Meet market deployment of non-light-duty electric vehicles (medium- & heavy-duty, and off-road)
 - Provide make-ready equipment when site host has committed to purchasing vehicles and chargers
 - Offer additional targeted incentives (e.g. rebate) for disadvantaged communities and “beach head” sectors (school and transit buses) to propagate technology developments



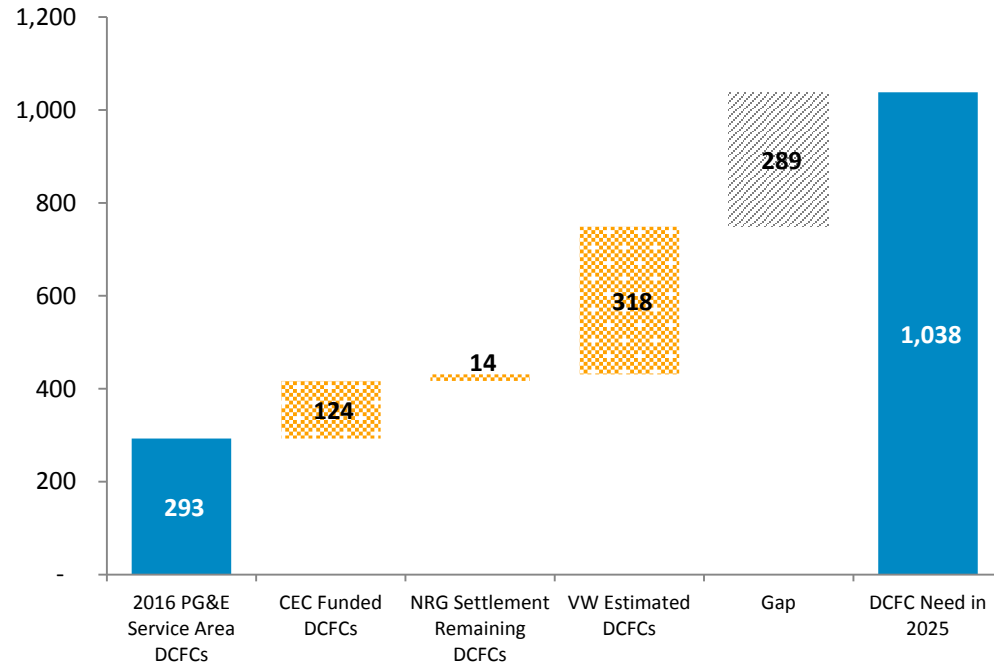
- Program is designed to minimize costs and maximize benefits
 - Ensures co-funding for all projects (through the make-ready approach)
 - Limits incentives to high-impact sectors
 - Ensures that infrastructure installations follow customer decision to electrify and avoid risk of stranded assets



Fast Charge: public DC fast charger make-ready program

- Program budget: \$22M over 5 years
- Goal: Provide make-ready infrastructure for public DCFCs
 - 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 (50 – 350 kW chargers)
 - Program will also provide a \$25,000 rebate for installations in disadvantaged communities

Known significant DCFC deployments expected in PG&E service area
Compared to expected 2025 need





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



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

Project 5: Open RFP

Contact information:

David Sawaya – DUST@pge.com





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 EV submetering DC fast charger siting tool Open vehicle-grid integration platform Load management for ridesharing EVs	A-1 transit bus rate pilot	Vehicle on-site grid support system	Priority review projects
	Residential charger information resource	Medium-duty customer demonstration School bus overgen. demonstration	Idle-reduction customer demonstration	
Additional 1-year electrification projects via open RFP				
Infra-structure	EV Infrastructure and Education Program: – Phase 1 (approved) – Phase 2 (planned)	“FleetReady” (non-light-duty make-ready) program		Standard review
	“Fast Charge” DCFC make-ready program	<ul style="list-style-type: none"> ▪ Public transit ▪ School buses ▪ Delivery fleets ▪ Private shuttles ▪ Other 	<ul style="list-style-type: none"> ▪ Idle-reduction (truck-stops, truck refrigeration units) ▪ Class 1 forklifts ▪ Port, rail and airport equipment 	
Product & Rate Design	Residential EV rates Clean Fuel Rebate (LCFS)	PG&E 2017 GRC Phase II rate proposals		