


SDG&E Clean Transportation  
SB 350 TE Application  
February 8, 2017



# SDG&E's Transportation Electrification Vision

- Seeks to maximize GHG reductions and minimize costs while continuing to provide safe and reliable power at reasonable rates
- EV charging should:
  - Be safe, widespread, affordable, reliable and easily accessible
  - Be grid integrated and leverage existing infrastructure
  - Take advantage of renewable energy and avoid dispatch of inefficient and/or high-emitting resources
  - Benefit EV drivers, ratepayers, and the environment
- Tools include:
  - Charging infrastructure investments/deployment
  - Grid integrated rates
  - Partnerships
  - Education and outreach
  - Data collection and analysis

# Benefits of SDG&E's Proposal

- Ensures availability & reliability of grid integrated charging infrastructure
  - Ensures assets/facilities are well maintained, used and useful
  - Mitigates the risk of insufficient maintenance, supplier bankruptcy or market exit
- Advances SB 350 goals and other state energy, environmental and transportation policies
  - Decarbonizes transportation sector
  - Integrates and promotes renewables
  - Reduces barriers to EV adoption
- Leverages Power Your Drive RFP process to qualify multiple vendors
  - Provides opportunity for growth of EVSP businesses
- Mitigates stranded asset risk:
  - Assets located to provide optimal customer benefit based on customer needs and commitments
  - Programs are customer-driven. Participants show commitment to using assets before infrastructure is installed by providing vehicles, easements, or allowing SDG&E to collect additional operational information through electric load research meters and data loggers.
-  Utility owned meters ensures high quality data collection for asset utilization analysis

# Overview of Proposed Projects

Projects	Description	Budget	Lifetime GHG Reduction
<b>Priority Review (6 projects, Total \$18.2M)</b>			
MD/HD and Forklift Port Electrification	Conduct 30-40 installations that include a combination of components such as EVSE, circuit, load research meter and data logger.	\$2.4M	4,102 MTCO <sub>2</sub>
Electrify Local Highways	Install grid-integrated Level 2 and DCFC EVSE at 4 Caltrans locations (88 total public charging stations). Site selection based on DAC and new construction.	\$4.0M	2,663 MTCO <sub>2</sub>
Dealership Incentives	Incent dealerships to increase their knowledge and sales of EVs. 1500 incentives will be offered (\$250 to salesperson and \$250 to dealership).*	\$1.8M	
Fleet Delivery Services	Install grid-integrated charging infrastructure to support 90 delivery vehicles at approximately 6 locations.	\$3.7M	14,019 MTCO <sub>2</sub>
Green Taxi/ Shuttle/ Rideshare	Install grid-integrated Level 2 and DCFC EVSE at 5 locations (15 total public charging stations) to encourage the adoption of EVs in Taxi/Shuttle/Rideshare fleet (4 Taxis, 2 Shuttles, 50 TNCs). Other incentives are offered to maximize electric miles driven.	\$3.5M	12,032 MTCO <sub>2</sub>
Airport Ground Support Equipment	Install 45 charging ports to support 90 vehicles. Metering and data loggers on 15 existing charging ports.	\$2.8M	25,130 MTCO <sub>2</sub>
<b>Standard Application (1 Project, Total \$226M)</b>			
Residential Charging	SDG&E will own, install, and maintain Level 2 EVSE at single family homes and small multi-unit dwellings. In turn, the residential customer will be on a whole-house grid integrated rate.	\$225.9M	1,341,609 MTCO <sub>2</sub>

\*Dealership Incentives impacts are not listed due to likely overlap with other projects and programs

# Key Learnings/Expected Outcomes/Partnerships

Sector	Projects	Key Learnings	Expected Outcomes	Partnerships
<b>Residential</b>	<ul style="list-style-type: none"> <li>Residential Charging</li> <li>Dealership Incentives</li> </ul>	<ul style="list-style-type: none"> <li>Insight into barriers of EV adoption</li> <li>Residential – Gather data on whole house energy usage choices under a grid integrated rate</li> <li>Dealership – Insight into impact of education &amp; outreach activities combined with performance metrics on EV sales and adoption of grid integrated rates</li> </ul>	<ul style="list-style-type: none"> <li>Acceleration of light duty EV market -&gt; GHG emission reduction</li> <li>L2 chargers will allow for increased charging flexibility and encourage charging behavior to reduce customer costs and mitigate grid impacts</li> <li>Increased dealer knowledge of EVs and grid integrated rates</li> </ul>	<ul style="list-style-type: none"> <li>Dealerships and salespeople</li> <li><b>New Car Dealers Association</b></li> <li><b>Auto Alliance</b></li> <li>Third Party to administer dealership incentive program</li> <li><b>IBEW</b></li> <li>EVSPs</li> <li>Manufacturers of “Smart Plugs” and “Smart Thermostats”</li> </ul>
<b>Goods Movement</b>	<ul style="list-style-type: none"> <li>MD/HD Forklift Port Electrification</li> <li>Fleet Delivery Services</li> <li>Airport Ground Support Equipment</li> </ul>	<ul style="list-style-type: none"> <li>Gather data on usage patterns and operational needs to identify optimal #/effectiveness of DCFC and L2 chargers</li> <li>Assess total cost of ownership</li> <li>Test commercial grid integrated rate for Fleet and evaluate proper rate design for Port and GSE</li> </ul>	<ul style="list-style-type: none"> <li>GHG emission reduction</li> <li>Accumulation of data to better understand operational needs</li> <li>Fleet – potential to scale up adoption</li> <li>GSE – load management plan</li> <li>Increased adoption of EVs</li> </ul>	<ul style="list-style-type: none"> <li><b>UPS, CALSTART</b></li> <li><b>SD Int’l Airport</b></li> <li><b>Airline Tenants</b></li> <li><b>SD Unified Port District</b></li> <li><b>SD Port Tenant’s Association</b></li> <li><b>IBEW</b></li> <li>EVSPs</li> <li><b>Terminalift LLC, CEMEX, Dole</b></li> <li><b>SD Air Pollution Control District</b></li> </ul>
<b>People Movement</b>	<ul style="list-style-type: none"> <li>Electrify Local Highways</li> <li>Green Taxi/Shuttle/Rideshare</li> </ul>	<ul style="list-style-type: none"> <li>Test effectiveness of public grid integrated rate</li> <li>Assess total cost of ownership</li> <li>Analyze different charging patterns between DCFC and L2, and associated grid impacts</li> <li>Cost to implement NIST standards</li> </ul>	<ul style="list-style-type: none"> <li>GHG emission reduction</li> <li>Charging station utilization increased when grid integrated hourly pricing easily communicated</li> <li>Increased adoption of EVs</li> <li>Awareness of NIST implementation costs</li> </ul>	<ul style="list-style-type: none"> <li><b>Caltrans</b></li> <li><b>SANDAG</b></li> <li><b>Maven/GM</b></li> <li><b>SD Int’l Airport</b></li> <li>Taxi Companies</li> <li>Electric Shuttle Companies</li> <li>TNCs</li> <li><b>IBEW</b></li> <li>EVSPs</li> </ul>



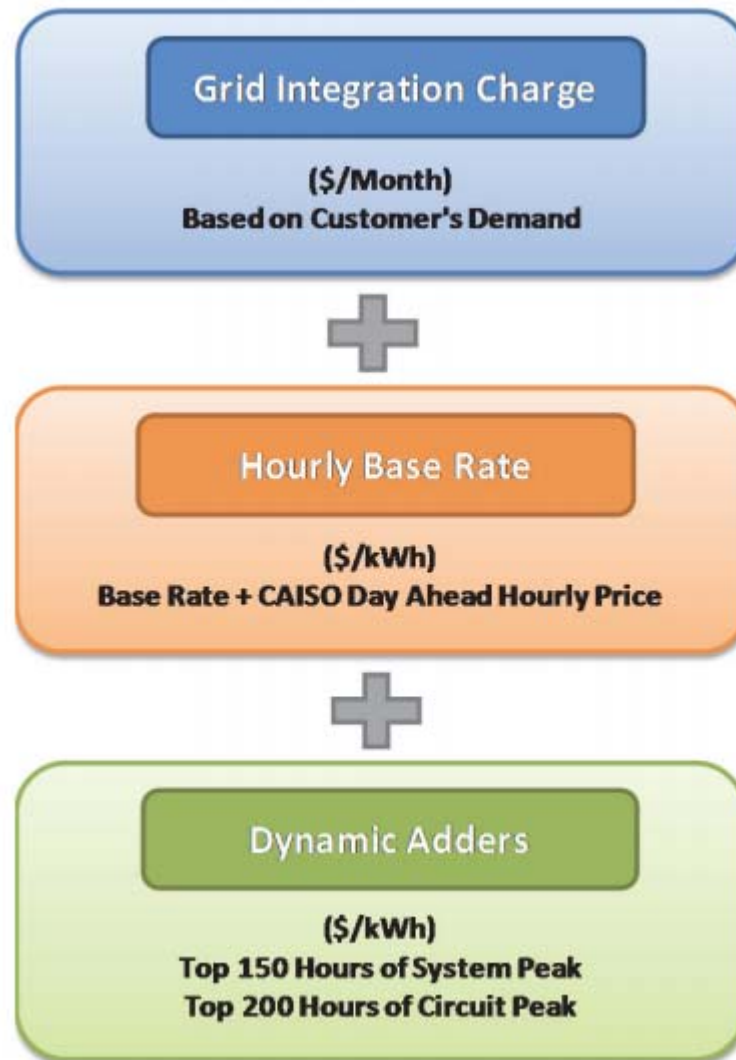
# Cost Effectiveness

- SDG&E hired E3 to conduct cost effectiveness analysis for its residential charging program
- Illustrative results show the following:
  - Utilizing the residential grid integrated rate results in lower electricity supply costs than using TOU or tiered rates. Rate design allows for greater integration of renewables.
  - Flexible EV charging can improve net load factor
    - Lower wholesale electricity costs for ratepayers
    - Deferral of new generation capacity investments
    - Deferral of distribution infrastructure investments
    - Spreading fixed costs over more sales
  - Potential for positive TRC, SCT and PCT test results

# SDG&E Ensures Customer, Employee and Public Safety

- Dedicated to providing safe, reliable service and equipment to support widespread growth of TE.
- Requirement that any utility owned charging infrastructure used in the proposed projects and residential charging program be approved by a Nationally Recognized Testing Laboratory (“NRTL”).
- Contractors engaged in construction, maintenance and operations have Electric Vehicle Infrastructure Training Program (“EVITP”) certification, be a signatory to the IBEW with a valid C-10 contractors license, and otherwise meet the utility’s rigorous safety standards.

# SDG&E's Proposed Day Ahead Rate Design





# What's Next

- Expedited Approval Required to Meet TE Goals
  - SDG&E's proposed projects directly support Governor's ZEV mandate and state's aggressive GHG emission reduction goals
  - SDG&E's estimated GHG reduction benefits from its proposals make only a small dent in what is needed for state to reach its goals
  - Learnings from our pilots will help inform future larger scale programs for those market segments
- Future SB 350 Filings:
  - Buses
  - Secondary Market
  - Medium Duty/Heavy Duty Electrification
  - Tourism