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

<table>
<thead>
<tr>
<th>Projects</th>
<th>Description</th>
<th>Budget</th>
<th>Lifetime GHG Reduction</th>
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</thead>
<tbody>
<tr>
<td><strong>Priority Review (6 projects, Total $18.2M)</strong></td>
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<tr>
<td>MD/HD and Forklift Port Electrification</td>
<td>Conduct 30-40 installations that include a combination of components such as EVSE, circuit, load research meter and data logger.</td>
<td>$2.4M</td>
<td>4,102 MTCO₂</td>
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<tr>
<td>Electrify Local Highways</td>
<td>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.</td>
<td>$4.0M</td>
<td>2,663 MTCO₂</td>
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<tr>
<td>Dealership Incentives</td>
<td>Incent dealerships to increase their knowledge and sales of EVs. 1500 incentives will be offered ($250 to salesperson and $250 to dealership).*</td>
<td>$1.8M</td>
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<tr>
<td>Fleet Delivery Services</td>
<td>Install grid-integrated charging infrastructure to support 90 delivery vehicles at approximately 6 locations.</td>
<td>$3.7M</td>
<td>14,019 MTCO₂</td>
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<tr>
<td>Green Taxi/Shuttle/Rideshare</td>
<td>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.</td>
<td>$3.5M</td>
<td>12,032 MTCO₂</td>
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<tr>
<td>Airport Ground Support Equipment</td>
<td>Install 45 charging ports to support 90 vehicles. Metering and data loggers on 15 existing charging ports.</td>
<td>$2.8M</td>
<td>25,130 MTCO₂</td>
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<td><strong>Standard Application (1 Project, Total $226M)</strong></td>
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<td>Residential Charging</td>
<td>SDG&amp;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.</td>
<td>$225.9M</td>
<td>1,341,609 MTCO₂</td>
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*Dealership Incentives impacts are not listed due to likely overlap with other projects and programs*
### Key Learnings/Expected Outcomes/Partnerships

<table>
<thead>
<tr>
<th>Sector</th>
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<th>Key Learnings</th>
<th>Expected Outcomes</th>
<th>Partnerships</th>
</tr>
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<tbody>
<tr>
<td>Residential</td>
<td>Residential Charging • Dealership Incentives</td>
<td>• Insight into barriers of EV adoption • Residential – Gather data on whole house energy usage choices under a grid integrated rate • Dealership – Insight into impact of education &amp; outreach activities combined with performance metrics on EV sales and adoption of grid integrated rates</td>
<td>• Acceleration of light duty EV market -&gt; GHG emission reduction • L2 chargers will allow for increased charging flexibility and encourage charging behavior to reduce customer costs and mitigate grid impacts • Increased dealer knowledge of EVs and grid integrated rates</td>
<td>• Dealerships and salespeople • New Car Dealers Association • Auto Alliance • Third Party to administer dealership incentive program • IBEW • EVSPs • Manufacturers of “Smart Plugs” and “Smart Thermostats”</td>
</tr>
<tr>
<td>Goods Movement</td>
<td>MD/HD Forklift Port Electrification • Fleet Delivery Services • Airport Ground Support Equipment</td>
<td>• Gather data on usage patterns and operational needs to identify optimal #/effectiveness of DCFC and L2 chargers • Assess total cost of ownership • Test commercial grid integrated rate for Fleet and evaluate proper rate design for Port and GSE</td>
<td>• GHG emission reduction • Accumulation of data to better understand operational needs • Fleet – potential to scale up adoption • GSE – load management plan • Increased adoption of EVs</td>
<td>• UPS, CALSTART • SD Int’l Airport • Airline Tenants • SD Unified Port District • SD Port Tenant’s Association • IBEW • EVSPs • Terminalift LLC, CEMEX, Dole • SD Air Pollution Control District</td>
</tr>
<tr>
<td>People Movement</td>
<td>Electrify Local Highways • Green Taxi/Shuttle/Rideshare</td>
<td>• Test effectiveness of public grid integrated rate • Assess total cost of ownership • Analyze different charging patterns between DCFC and L2, and associated grid impacts • Cost to implement NIST standards</td>
<td>• GHG emission reduction • Charging station utilization increased when grid integrated hourly pricing easily communicated • Increased adoption of EVs • Awareness of NIST implementation costs</td>
<td>• Caltrans • SANDAG • Maven/GM • SD Int’l Airport • Taxi Companies • Electric Shuttle Companies • TNCs • IBEW • EVSPs</td>
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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.
Note: the Grid Integration Charge is not applicable to SDG&E’s proposed Public Charging GIR.
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