| **DOCKETED** |
|-----------------|-----------------|
| **Docket Number:** | 16-TRAN-01 |
| **Project Title:** | SB 350 Transportation Electrification (Publicly Owned Utilities) |
| **TN #:** | 213892 |
| **Document Title:** | Presentation "Revised SMUD Plug-in Electric Vehicles Integrated Resource Plan Inclusion by Bill Boyce |
| **Description:** | October 5, 2016 - *** THIS DOCUMENT SUPERSEDES TN 213884 *** |
| **Filer:** | Patty Paul |
| **Organization:** | Sacramento Municipal Utility District SMUD |
| **Submitter Role:** | Public Agency |
| **Submission Date:** | 10/4/2016 1:28:07 PM |
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SMUD Transportation Electrification IRP Approach

• SMUD has incorporated transportation electrification load into its demand forecast for resource planning since 2012

• Input is based on expected market adoption and SMUD specific load curves

• Market adoption curves are adapted from CalETC Transportation Electrification Assessment Assessment Phase 1 Study
  – SMUD’s market is 4% of the State’s based on population density of Sacramento County
SMUD Market Adoption / Load Planning

High Case 240,000 Vehicles in 2030 (Slope needed for 2050 State Goals)

Mid Case 93,000 Vehicles

Low Case 48,000 Vehicles
SMUD EV Load profile

EV Loadshape in Forecast

KW

hour

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

- 0.50 1.00 1.50 2.00 2.50

Summer Weekend  Summer Weekday  Winter Weekend  Winter Weekday
SMUD EV Load profile assumptions

- Light Duty residential charging only
  - Updated annually

- Load shape based off 220 customers on our submeter TOU rate and 341 customers on our whole-house TOU EV discount rate
  - Large discount for charging after midnight

- SMUD is strategically migrating toward TOU rates for all residential customers

- Average energy usage is 8.8kWh a day
Current SMUD PEV Activities

• Creating or adjusting PEV electricity rates

• Launched a new “free fuel for a year” residential incentive program in April ($300/vehicle)
  – LCFS based funding

• Developing new outreach and education activities (Awareness)
  – Expanded ride-n-drive program to get more customer exposure

• Deploying 6 Public DC Fast Chargers (Awareness)
  – 4 SMUD Funded (Original two funded with SMUD AB32 Allowance Credit Auction funding)
  – 2 CEC/SMUD/SMAQMD Funded

• Piloting workplace and multi-family incentive program (Awareness)

• Supporting Regional efforts on Electric Bus Deployment

• Truck Emission Reduction Pilot Efforts
  – Truck idle reduction at the 49er Travel Plaza
  – Truck refrigeration unit deployment at Penske Trucking
New 2017 Initiatives will try to drive adoption from the low-case toward the mid-case line

- Enhanced residential program (≈$599/year incentive)
- Doubling advertising and outreach awareness campaign
- Full Workplace/Multi-family dwelling EVSE incentive program
  - 200 incentive per year for L2 Charging, $1500 / each
- DC Fast Charger Incentive Pilot Program
  - 6 DC Fast Chargers per year (incentive level under development)
- Community Partners School Bus electrification support ($438K)
- Fleet / Workplace Charging / Assessment Tool research
- Managed charging research
- Medium and Heavy Duty Fuel Switching research
## SMUD EV Fleet and EVSE Expansion Plans

<table>
<thead>
<tr>
<th>Current EV Fleet</th>
<th>Planned Expansion (over 5 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lt. Duty Sedan</td>
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<tr>
<td>SUV’s</td>
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<tr>
<td>Lt. Duty Pickups</td>
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<tr>
<td>Med/Hvy Pickups</td>
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<tr>
<td>Class 5 JEMS</td>
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<tr>
<td>Class 7 JEMS</td>
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</table>

<table>
<thead>
<tr>
<th>Current EVSE</th>
<th>Planned Expansion (over 5 years)</th>
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<tr>
<td>HQ Fleet</td>
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</tr>
<tr>
<td>HQ Employee</td>
<td>19</td>
</tr>
<tr>
<td>ECOC Fleet</td>
<td>3 EVSE, 7 120V</td>
</tr>
<tr>
<td>ECOC Employee</td>
<td>0</td>
</tr>
</tbody>
</table>
SMUD EV Support in Disadvantaged Communities

- **SMAQMD / SHRA Share Car Project Support**
  - SMUD is installing of a 2nd DC Fast Charger at Sac Valley Station
  - CARB Grant Supported
  - SMUD Providing cost overmatch ($250,310)

- **SMAQMD / Twin Rivers/Elk Grove/Sacramento Unified School Districts (SMUD support $438K)**
  - SMUD supporting charging infrastructure scope
  - CARB Grant Supported

- **SMUD Fleet Expansion is located in a disadvantaged community**
SMUD support for Electric Vehicle Service Providers

- GFO 15-601 West Coast Electric Highway Proposal Support

- PON 14-310 Clean Alternative Fuels Proposal Support

- Sale for Resale policy allows outside entities to retail electricity sales for electric vehicle applications

- Commercial EV Rate development
State funding has supported SMUD efforts to-date

- **CEC AB118/ARRA Funding**
  - General Motors Volt Deployment and Regional Readiness
    - $2.11M Overall Scope, $454,853 of CEC funding
  - Chrysler PHEV Pickup Truck Demonstration Effort
    - $400,000 of Overall Scope, $100,00 of CEC Funding

- **CEC AB8 Funding**
  - DC Fast Charging Deployment
    - $895,351 Overall Projected Scope; $467,612 of CEC Funding

- **LCFS Projected Value to-date (based on market conditions)**
  - ≈$900,000
  - Being used to support SMUD EV incentive efforts.

- SMUD standalone funding for other DCFC efforts are +$1.2M
Issues regarding SB350 Transportation Electrification Objectives

- TE market growth is highly dependent on vehicle manufacturers
- Low price of oil hurts adoption
- LCFS Certainty
  - Vital in supporting POU infrastructure investment going forward
- Inadequate infrastructure and vehicles funding for current policy goals
- Cross sector shift of emissions between transportation and utility sectors should be accounted for properly
Summary

• SMUD has a long track record and expertise in electric transportation

• Transportation Electrification Load already in SMUD resource planning since 2012

• Currently focused on increasing market adoption
  • Developed new EV rates for residential and commercial customers
  • Launching new incentive and awareness programs in 2017
  • Deployment of DCFC to address range anxiety
    • Currently 3 operating and 3 more on-line by year end
    • Going to and incentive model in 2017

• Significantly more funding will be needed to meet state policy goals

• SMUD is investing to support the market (beyond Federal or State Gov't grants)

• LCFS funding is vital for supporting future infrastructure investment

• Accounting for carbon reduction shifts between the utility and the transportation sector will be important for meeting long term goals