

DOCKETED

Docket Number:	16-TRAN-01
Project Title:	SB 350 Transportation Electrification (Publicly Owned Utilities)
TN #:	213892
Document Title:	Presentation â€“ Revised SMUD Plug-in Electric Vehicles Integrated Resource Plan Inclusion by Bill Boyce
Description:	October 5, 2016 - *** THIS DOCUMENT SUPERSEDES TN 213884 ***
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Submitter Role:	Public Agency
Submission Date:	10/4/2016 1:28:07 PM
Docketed Date:	10/4/2016

SMUD Plug-in Electric Vehicles Integrated Resource Plan Inclusion

October 2016



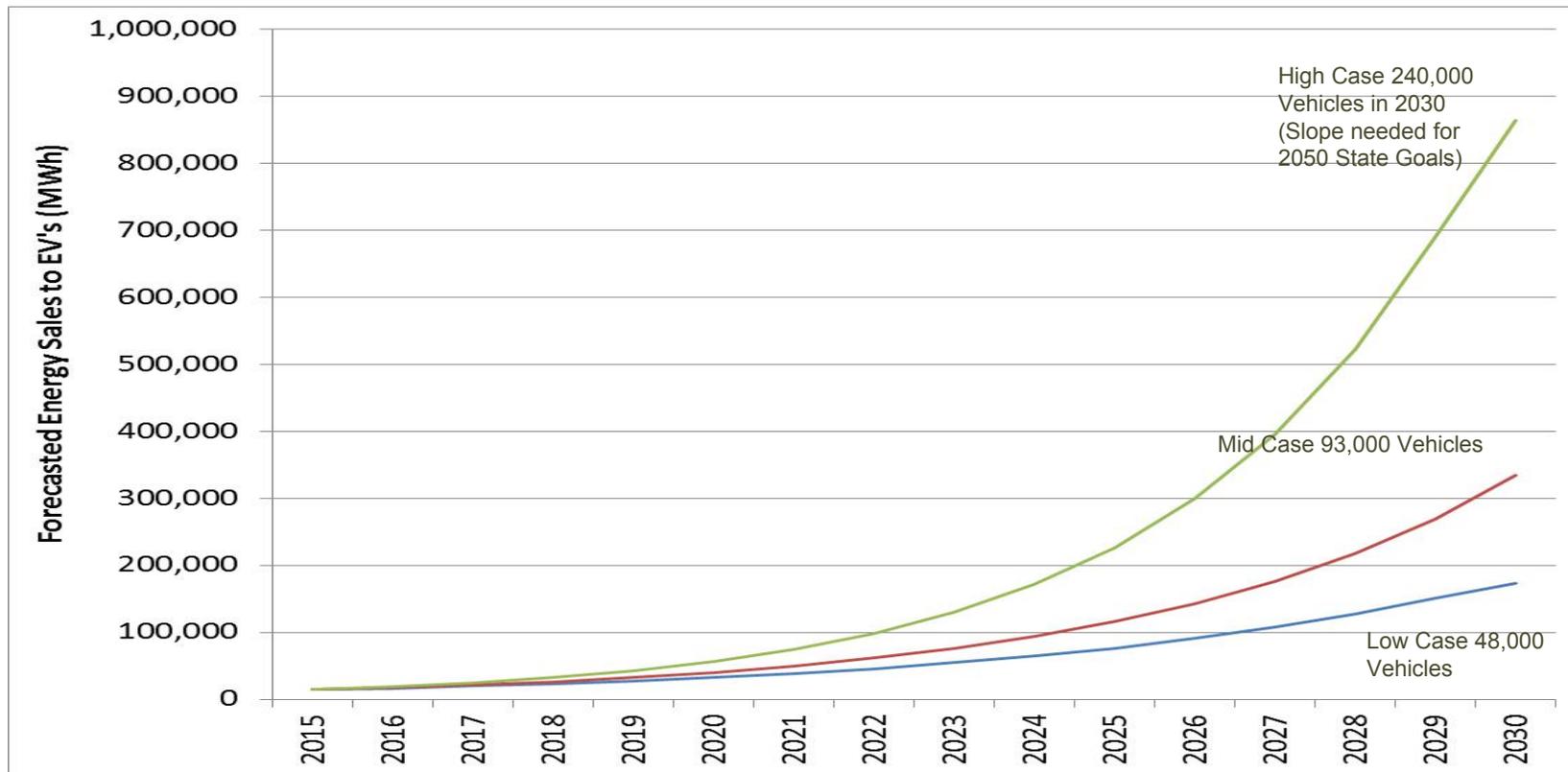
Powering forward. Together.



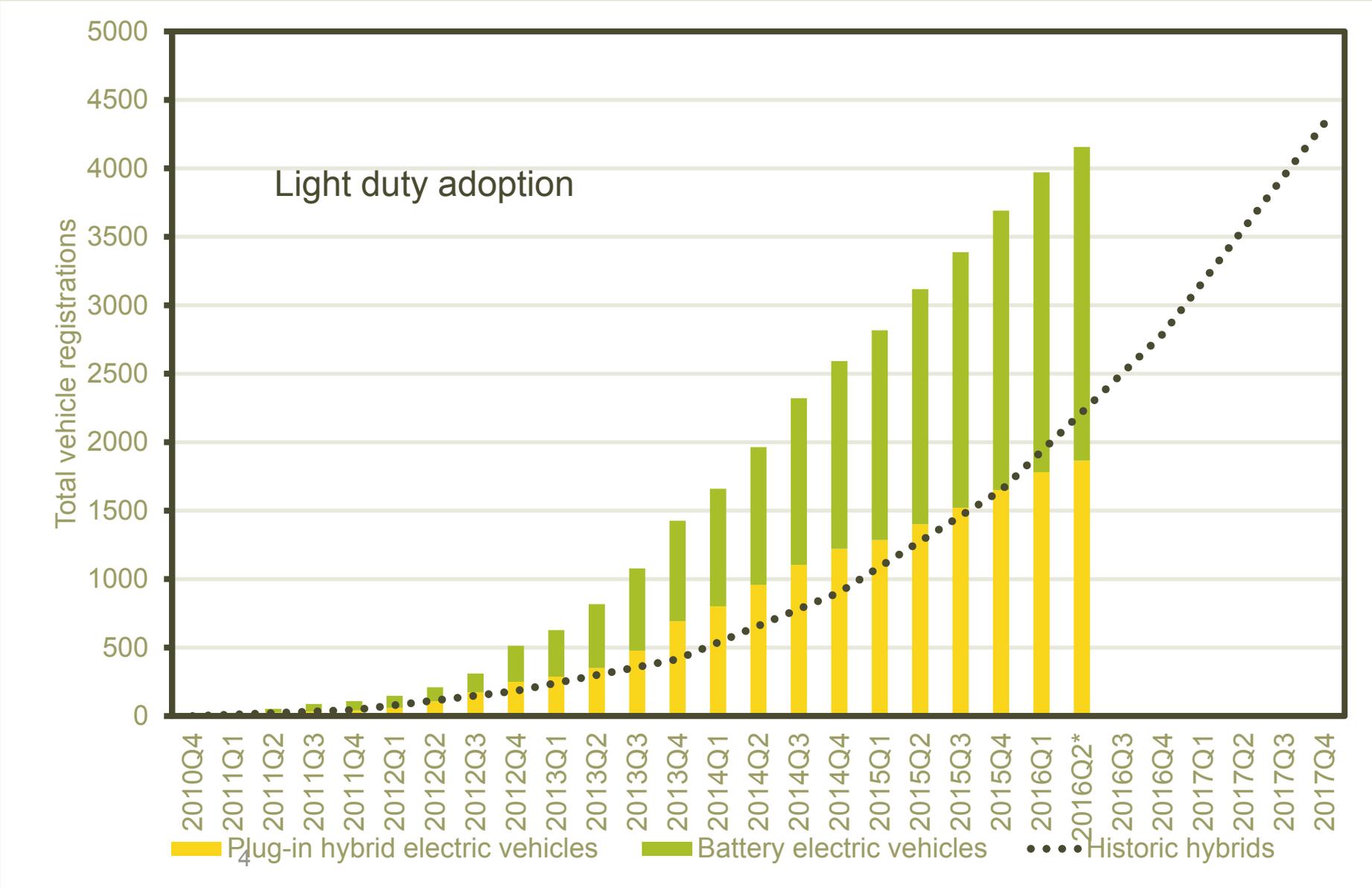
SMUD Transportation Electrification IRP Approach

- 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 Phase 1 Study
 - SMUD's market is 4% of the State's based on population density of Sacramento County

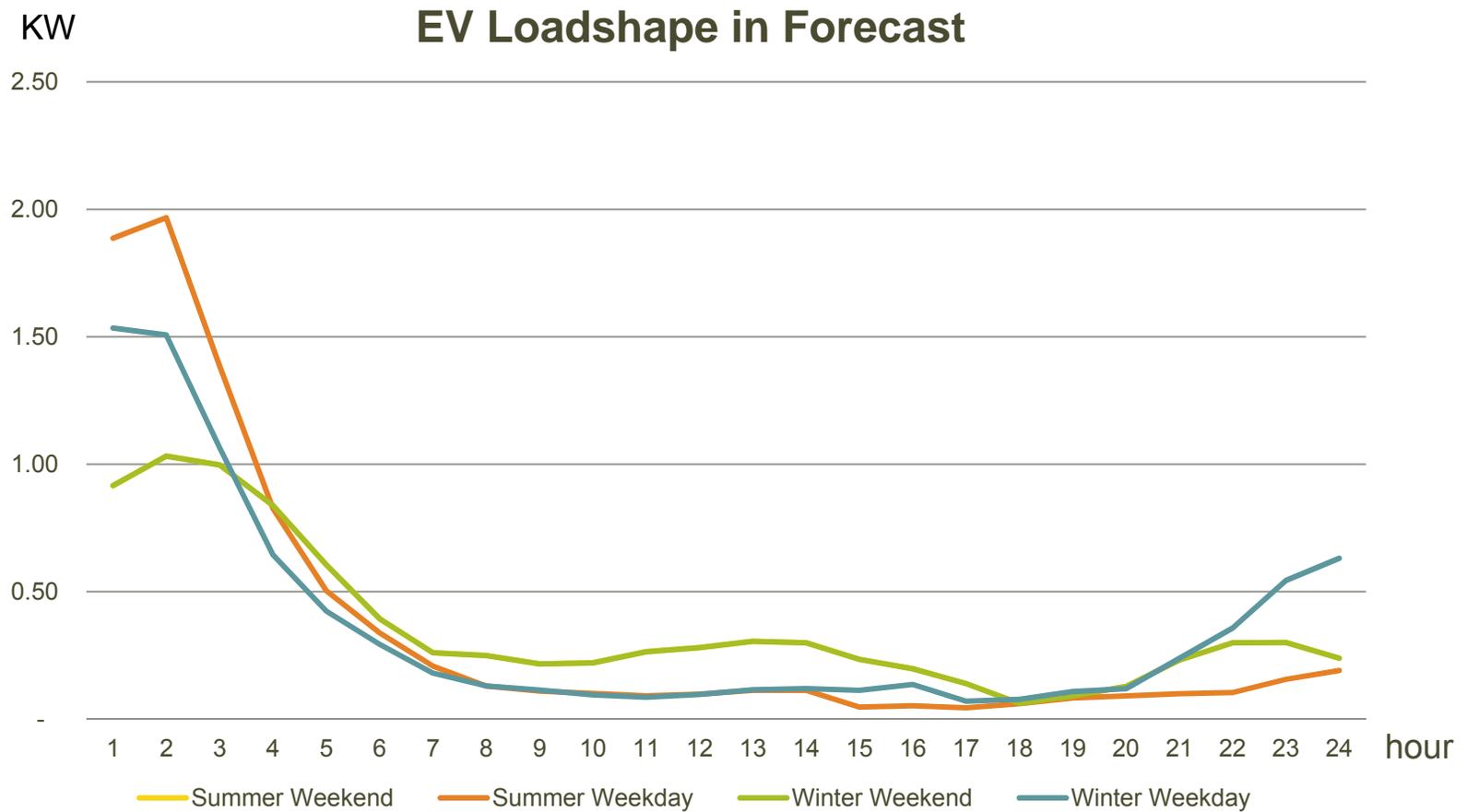
SMUD Market Adoption / Load Planning



SMUD Adoption Trends



SMUD EV Load profile



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

Current EV Fleet

Lt. Duty Sedan	19
SUV's	0
Lt Duty Pickups	0
Med/Hvy Pickups	0
Class 5 JEMS	4
Class 7 JEMS	3

Planned Expansion (over 5 years)

44 PEV's
7 PEV's
30 PEV's
16 (Zero RPM Technology)
41 Vehicles
8 Vehicles

Current EVSE

HQ Fleet	22
HQ Employee	19
ECOC Fleet	3 EVSE, 7 120V
ECOC Employee	0

Planned Expansion (over 5 years)

69
65
42 EVSE, 52 120V Plugs, 2 DCFC'ers
30

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