

## DOCKETED

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# SMUD Medium/Heavy Duty Electric Vehicle Integrated Resource Plan Elements SB350 Input

April 27, 2017

Powering forward. Together.



# SMUD Medium and Heavy Duty Electric Vehicle Planning Status

- SMUD Medium and Heavy Duty Electric Vehicle market assessment study just completed by Black & Veatch
- Medium/Heavy Duty planning approach is significantly different than Light Duty Vehicle scenarios
  - Light duty can use a bulk/homogenous type of planning approach
  - Med/Heavy duty is more dependent on specific business activity
    - Example: SMUD does not service any major port facility
    - Mission duty cycles and charging levels have wide variations
- SMUD's service area is dominated by smaller vehicle classes and local work trucks versus long haul and short haul trucks

# SMUD Approachable Market Assessment

## Number of Electric Vehicles

	Light-Duty Fleets		Class 2b/3 Vans & Trucks		Class 3-8 Urban		Class 3-8 Rural		Class 3-8 Worksite		Class 7-8 Short-Haul Tractor		Class 7-8 OTR Tractor	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
<b>2020</b>	435	847	62	18	0	9	0	11	0	6	0	7	0	9
<b>2025</b>	1,128	2,315	128	531	20	61	0	24	12	59	0	14	0	19
<b>2030</b>	1,919	4,470	495	1,511	37	119	0	49	23	154	27	3	0	36

## Total Annual Energy Required (GWh/yr)

	Light-Duty Fleets		Class 2b/3 Vans & Trucks		Class 3-8 Urban		Class 3-8 Rural		Class 3-8 Worksite		Class 7-8 Short-Haul Tractor		Class 7-8 OTR Tractor	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
<b>2020</b>	1.03	14.19	0.58	0.55	0.00	0.64	0.00	0.99	0.00	0.23	0.00	1.34	0.00	0.00
<b>2025</b>	2.55	36.29	1.09	7.31	0.40	4.51	0.00	2.02	0.19	2.43	0.00	2.50	0.00	0.00
<b>2030</b>	4.11	64.36	3.79	19.24	0.67	7.84	0.00	3.76	0.33	5.55	2.17	2.72	0.00	0.00

# Medium and Heavy Duty EV Support Activities To-date

- Electric School Bus Deployment Project Support
  - CARB/SMAQMD/Sac-City/Twin Rivers/Elk Grove Project
  - Electricity Service and Infrastructure support role
- 49er Travel Plaza Truck Stop Electrification
  - 24 parking spots Electrified
- Truck Refrigeration Unit (TRU) pilot efforts
  - Penske Trucking
  - Raley's / Ozark Trucking
- Fleet Assessment Tool Evaluation ongoing
- Commercial EV electricity rate already established
  - Flat rate without a demand charge (up to 299kW load)
- SMUD's own Fleet Electrification Planning



## Ongoing Medium Heavy Duty Planning Efforts

- Identifying target markets and developing business plans for market support
  - Focusing on local delivery fleets and utility/communication vehicles
  - Business cases will be used to establish program support approaches
- Supporting proposal activity for customers going after grant funding
  - Example: EV Community Partners (School bus electrification project)
  - Planning for additional pilot project support within the next two years
- Collecting data to support business cases and IRP Planning
  - Technology applications / Charging Characteristics / Market Penetration
    - Example: Fleet Assessment Tool
- Supporting State Proceedings on Med/Heavy Duty Fleet GHG Reduction
  - CARB Proceedings

# 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

# Summary

- Medium and Heavy Duty Market Assessment Completed
- Approachable electrification market segments being identified
  - Data will be used to craft IRP planning input
- Business cases and support approaches under development
- Supporting state policy development around Med/Hvy Duty Fleet GHG reduction
- Additional Research and Development activity ongoing
- “Walking the Talk” with our own Fleet Electrification Plan