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EVs: Charging Toward a New Future

Rates Application Solutions

APPA, September 2018

LADWP's Electric Transportation Program

FY 2017-2021

5 Year Goal: The equivalent of 145,000 Electric Vehicles in LA; 10,000 commercial chargers by 2021 (4000 on City Property)

Strategy:

1. Increase EV adoption to 15% of vehicle purchases
2. Count Public and Workplace Chargers as EV equivalent
3. Consider non-light duty electric vehicles as EV equivalent (i.e. Medium & Heavy Duty Trucks)

Residential EV Charging and Rates

- **Used Car Rebate $450 - NEW!!!**
- **EV Charger Rebates available since May 2011**
- **Additional EV Rebates**
  - Up to $500 per L2 (240V) charger
  - Extra $250 for dedicated electric service for EV rate discount
- **Developing Residential Smart EV charging pilot**
  - Pay customers to charge at the right time (no demand charges)
    - R1A Tier Rate
    - R1B TOU rate
      - 14 hours/day during weekdays
      - 24 hours/day during weekends.
      - 2.5 cents/kWh discount on off-peak rate
- **$/mile for typical EV passenger cars will cost less using electricity**

	kWh/mile	$/kWh		$/mile
EV	0.4	$0.20		$0.080
	mile/gal	gal/mile	$/gal	$/mile
Gasoline Car	25	0.04	$3.50	$0.140

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Residential EV Charging and Rates
Potential Solution for Multi-Family

Since the EV charging battery has a fixed capacity, the apartment owner can change a fix amount in a month. Most EVs cost less than $60 per month to charge, so the apartment owner can provide the charging station and electricity at a monthly cost of $100 to reduce billing and administration costs

Real Life Heavy Duty EV Examples

- LADOT purchased 4 EV DASH Busses
- Metro Planning to convert LA Orange Line Buses
- Port Of LA (POLA) doing a 5-year electric truck demo

Heavy Duty Commercial EV Rate Analysis:

Depot Charging: DWP has a great A3A "industrial rate" with no monthly demand charge during the Base period.

- 14 hours/day on weekdays
- 24 hours/day on weekends.
- 2.5 cents/kWh discount on off-peak rate

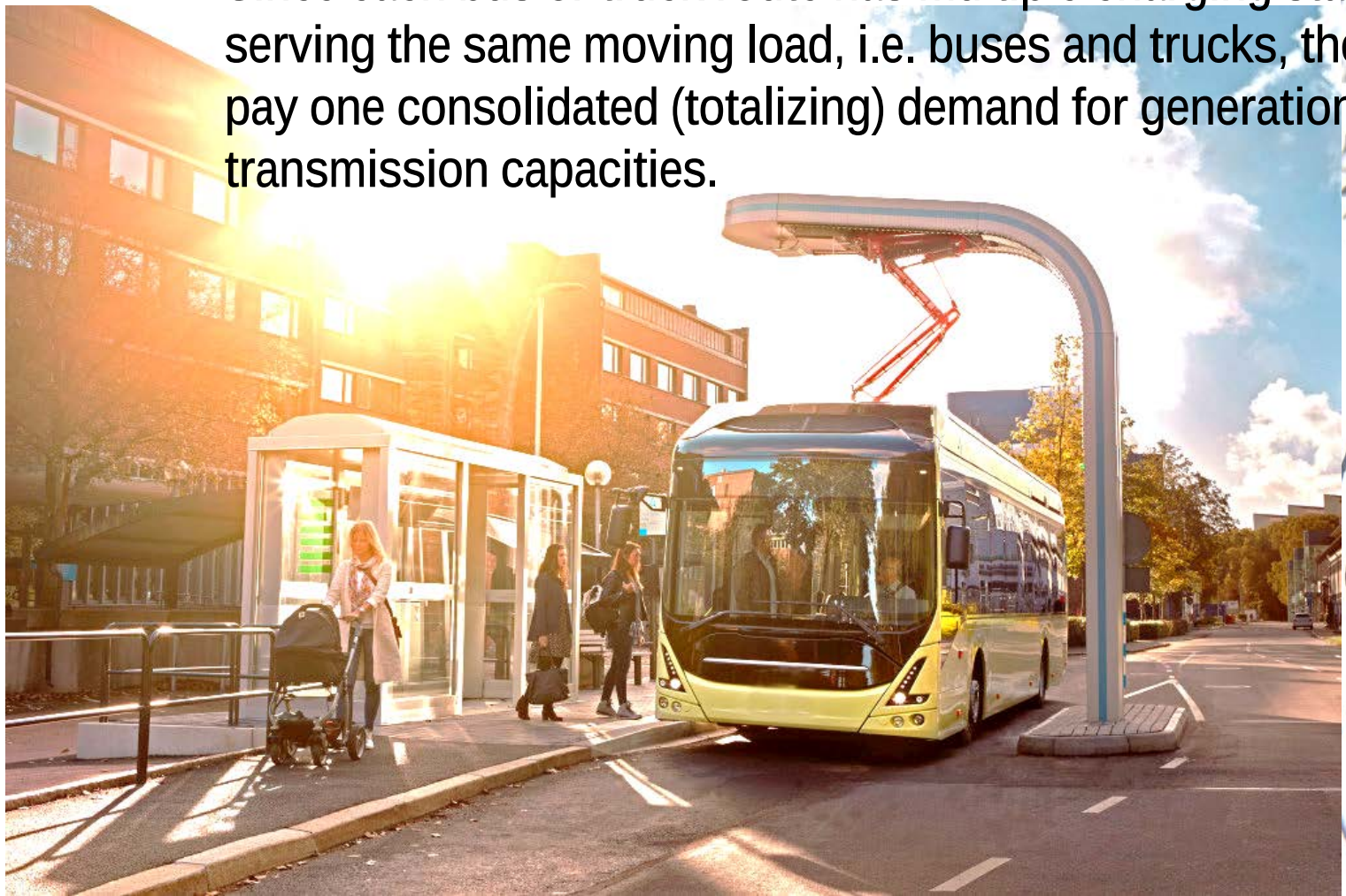
Even if the customer chooses to charge during the peak time,
as long as the charging time is over 5 hours per day (load factor over 20%),
the fuel cost is cheaper than CNG ($0.54/mile) and diesel ($0.69/mile).

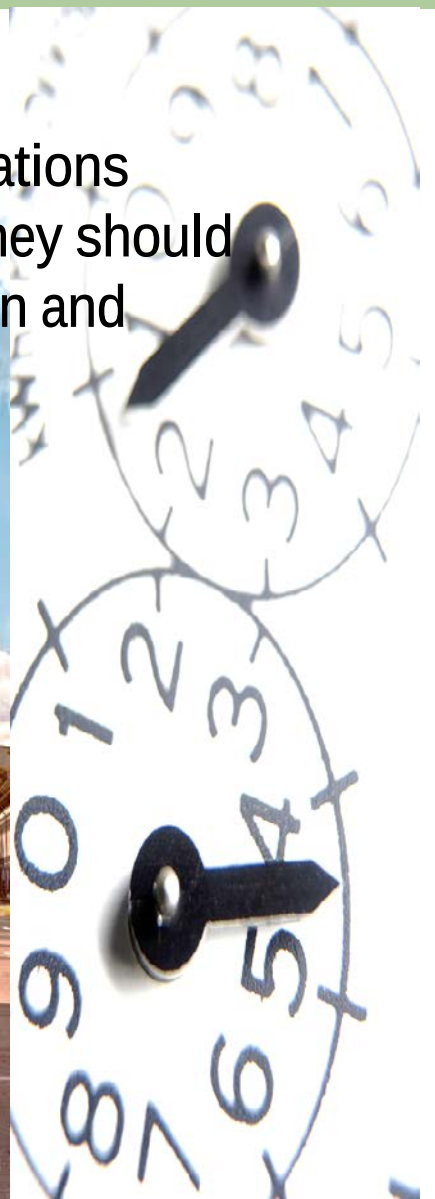
	Demand	100								
Charging Hours per Day	2.4	4.8	7.2	9.6	12	14.4	16.8	19.2	21.6	24
Load Factor	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
$/kWh including Demand and EV discount	$0.301	$0.198	$0.163	$0.146	$0.136	$0.129	$0.124	$0.120	$0.118	$0.115
2.7 kWh/mile	$0.812	$0.534	$0.441	$0.395	$0.367	$0.348	$0.335	$0.325	$0.317	$0.311
3.5 kWh/mile	$1.052	$0.692	$0.572	$0.512	$0.476	$0.452	$0.434	$0.422	$0.412	$0.404

Heavy Duty EV Rates
Potential Demand Savings

Consolidated (totalizing) Metering Approach:

- Since each bus or truck route has multiple charging stations serving the same moving load, i.e. buses and trucks, they should pay one consolidated (totalizing) demand for generation and transmission capacities.





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LADWP's Current PEV Infrastructure And Metering Solution

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First US Utility Pole EV Charger and Metering Solution

LADWP EV Program 5-year Results

Expected Program Results:

- The equivalent of 145,000 plug-in EVs in Los Angeles
- LA's visible support for EV Technology through 10,000 City and Private Commercial Chargers for Public, Workplace, Multi-Unit Dwellings and 1600 City Plug-in vehicles
- Support Residential Charging (5000 chargers)
- Assist in attaining utility's goals including GHG emission reductions, help absorb excess solar energy, better utilization of assets, and customer savings

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Simplify EV Metering Installation

- To bill the potential 145,000 EVs in Los Angeles, we need a simple metering solution

- Propose to partner with Itron to develop an Open-Way and ERT prototype meter to reduce the size and cost of metering installation using current technology

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Questions