LADWP Electric Transportation Program

Supporting Transit Agency Electrification
October 10, 2019

Yamen Nanne, P.E.
Electric Transportation Program Manager

www.ladwp.com

LADWP's Strategic Goal:

Facilitate Adoption of Electric Transportation in Los Angeles and Southern California

Zero-Emissions Vehicle Adoption:

- 145,000 EVs by 2022
- 25% ZEVs by 2025, 80% by 2035, 100% by 2050

Publically Available Chargers:

- 10,000 by 2022 (4,000 at City & LADWP property)
- 28,000 by 2028

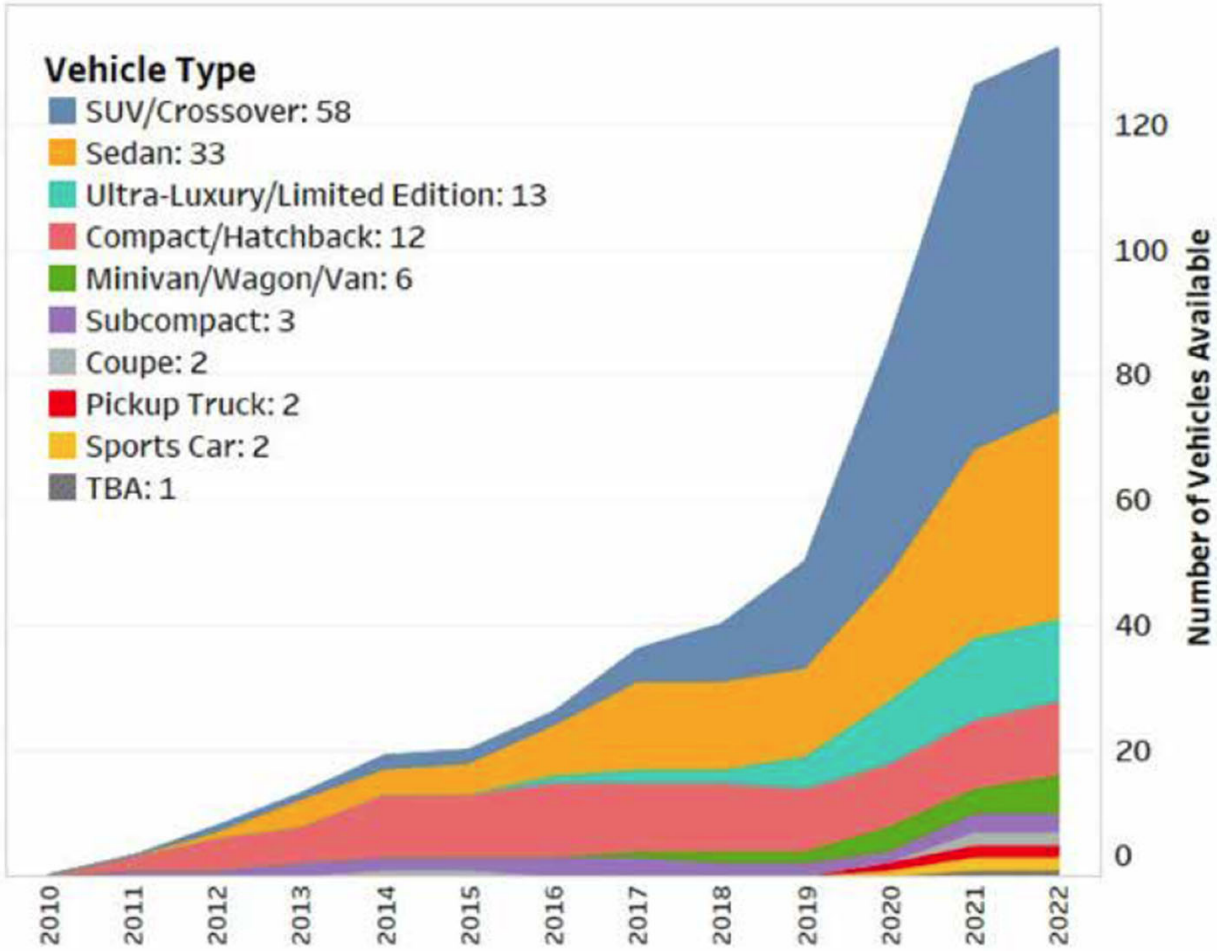
Electrification of Busses and City Fleets:

- 100% of LADOT and MTA busses by 2030
- 100% of City Fleets by 2028 (where technically feasible)

Automaker Efforts

- 41 PEV models available in 2019
- 132 EV models projected by 2022
- Automaker investments likely to reach $100B by 2025
- Electrified model commitments announced by:

EV Momentum

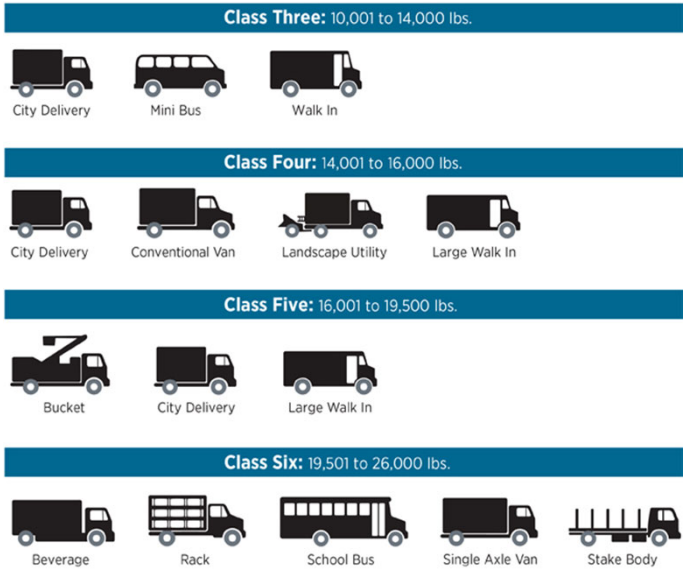


Source: EPRI's 2019 EV Consumer Guide

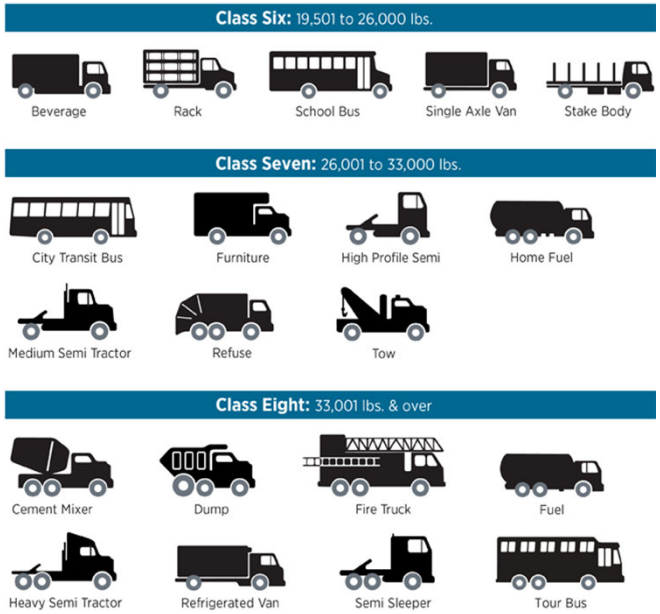
Vehicle Classes

Light-duty Vehicles

Medium-duty Vehicles

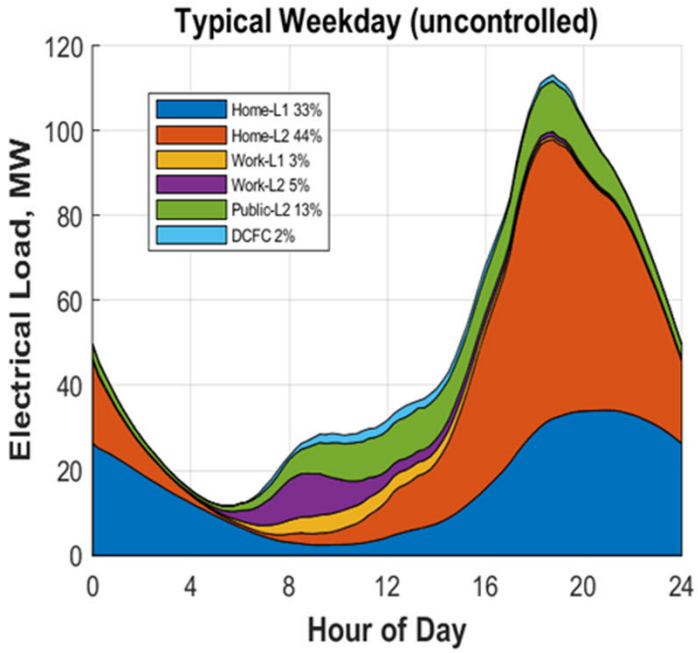


Heavy-duty Vehicles

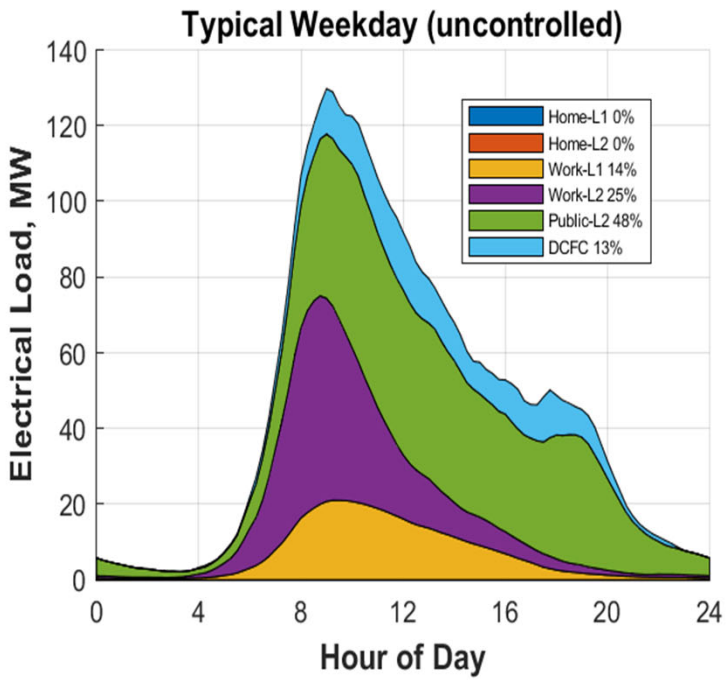


Impact on Power Systems

Focus on Home Charging



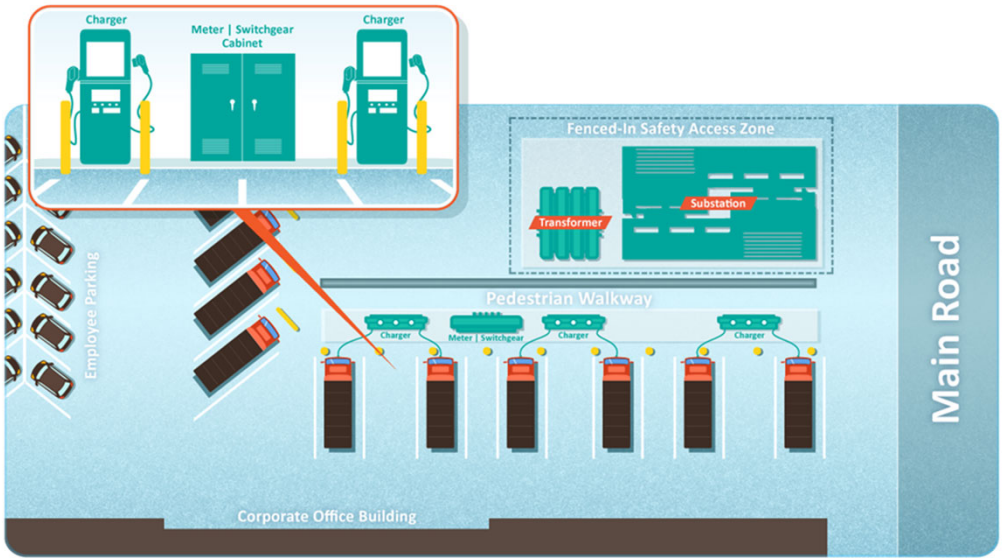
Focus on Work Charging



*Graphs courtesy of NREL

Bus Charging Infrastructure

	Plug-in	Overhead	Wireless
Activation	Manual	Automated	Automated
Connection	Conductive	Conductive	Wireless
Power Range	Up to 350 kW	Typically 350-500 kW	Up to 250 kW
Voltage Type	AC, DC, and AC + DC	DC	AC



Supporting Transit Bus Electrification

LADWP is in the process of establishing a strategy to support transit agency fleet electrification goals. These efforts include:

- Planning initiative to perform a system-level forecast to meet the need for distribution system infrastructure upgrades to serve medium- and heavy-duty charging loads.
- Support through the medium- and heavy-duty charging station rebate to offset the cost of the charging stations and installation for up to $125,000 per station based on the technical specifications and vehicle eligibility.
- Developing a Memorandum of Understanding (MOU) with LADOT & MTA to offset the cost of purchasing and installing BEB charging stations.
- Offering the new pilot contract rate to provide innovative options to lower the operational cost to charge BEBs.
- Support integration of clean grid technologies and optimal load management at charging depots where feasible.
- Increase customer awareness to begin early communications with Transit Agnecies to better align LADWP planning with transit planning efforts.

EV Incentives & Rebates for Customers

Residential EV Charger Rebate	• Up to $1,000 toward cost of charger & installation + $1000 for dedicated meter
Commercial EV Charger Rebate	• Up to $5,000 toward purchase and installation of chargers
Used EV Rebate (Pending)	• Up to $1,500 toward purchase of used EV
DC Fast Charger Rebate	• Up to $75,000 to apply toward the purchase and installation of the charger
Medium/Heavy-Duty Charger Rebate	• Up to $125,000 toward purchase and installation of the charger

Qualifying Charging Stations: Medium and Heavy-duty EVs

MD/HD: New!

- **Output power:** 6 kW or more for AC charging stations and 20 kW or more for DC charging stations
  - Up to $30,000 for AC charging stations
  - Up to $125,000 for DCFC
- **Connector standard**: No requirement
- **Certification:** Certified/listed by NRTL or field tested (recognized national safety standards). Approval by LA Building and Safety Electrical Testing Laboratory (LADBS-ETL) or testing agency recognized by LADBS-ETL required for field testing

Must be purchased and installed between July 1, 2018 and June 30, 2022

Vehicle and Access Requirements

- **Vehicles:** Must charge on-road MD/HD plug-in EVs:
  - Class 3 to Class 8 Vehicles
  - Must acquire at least one new MD/HD EV for each charging station rebate. The vehicle(s) must be eligible for financial incentives by a government agency of the state of California
- **Access**: No requirement

Rebate Amounts:
Medium and Heavy-duty EV Charging Stations

Charging Station Type	Output (kW)	Maximum Rebate Amount (per charging station)
DC Fast Chargers for Light-Duty EVs		
Tier 1	50 - 99	$50,000
Tier 2	100 +	$75,000
Charging Stations for Medium Duty - and Heavy-Duty EVs		
AC-1	6 - 49	$10,000
AC-2	50 - 99	$20,000
AC-3	100 +	$30,000
DC-1	20 - 49	$35,000
DC-2	50 - 99	$60,000
DC-3	100 - 149	$100,000
DC-4	150 +	$125,000

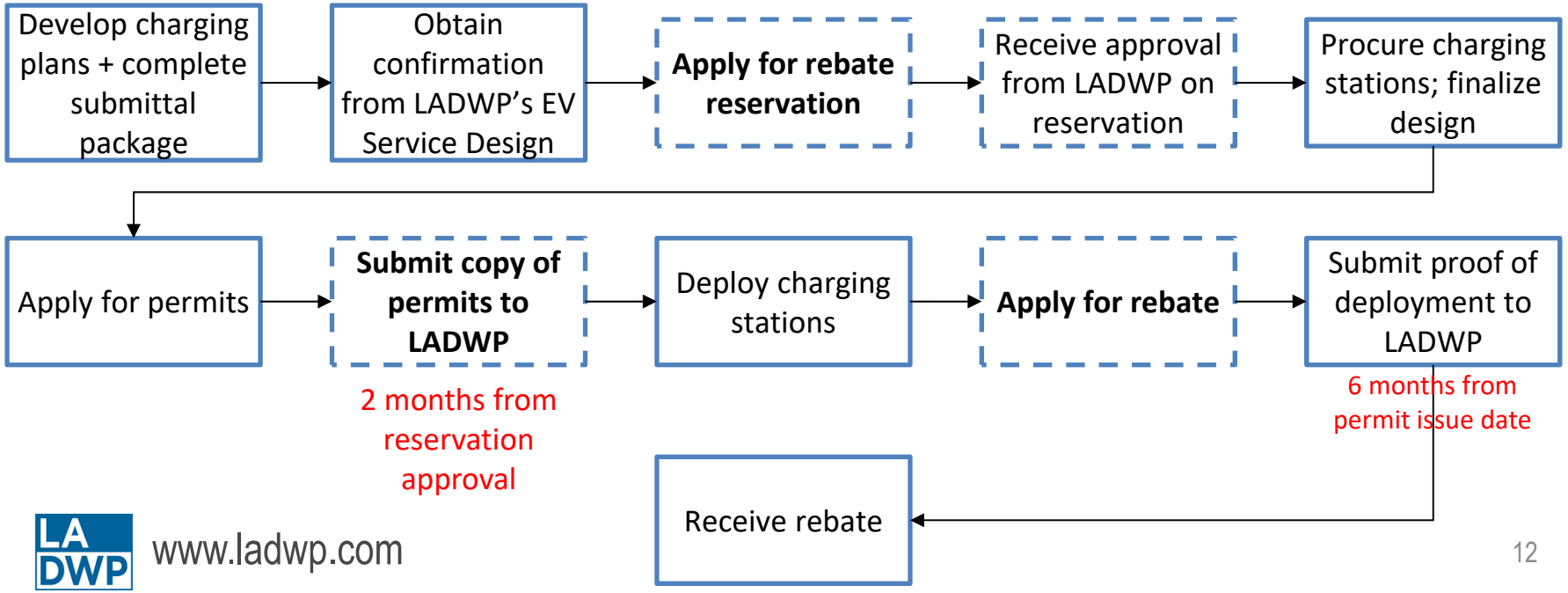
End-to-end Customer Process

Customers may apply for a:

- Rebate *reservation* before completing deployment of charging stations, or
- Rebate after completing deployment of charging stations

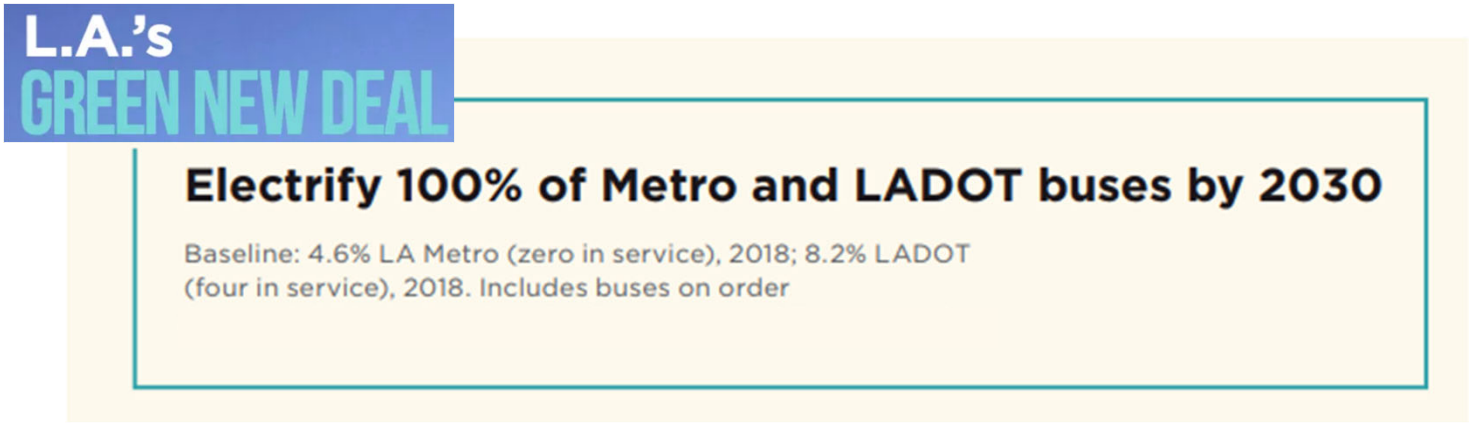
In both cases, customers must submit:

- Program application
- Required documents (including proof of purchase and installation of qualified equipment)



LA's Bus Electrification Efforts

LADWP is an active partner helping transit agencies meet their electrification goals. This supports LA's Green New Deal Initiative.



Source: LA's Green New Deal, http://plan.lamayor.org/sites/default/files/pLAn_2019_final.pdf
Note that some of Metro's electric buses charge outside the LADWP service territory.

LADWP worked with Navigant to develop a five-year pilot electric rate with four options to support progress toward the City's Green New Deal bus electrification goals.
The proposed rate also supports electrification of commercial transport fleet vehicles.

RATE DESIGN STRUCTURAL COMPONENTS

Each rate option consists of multiple components to capture the cost of service.

OPTION	ELECTRIC CHARGES			SPECIAL CHARGES	
EV-Bus 1	Facilities Service	Demand	Energy		
EV-Bus 2	Connection	Demand	Energy	Storage	
EV-Bus 3	Connection	Demand	Energy	Storage	Tier 3 REC Option
EV-Bus 4	Connection		Peak Base		Tier 3 REC Option