



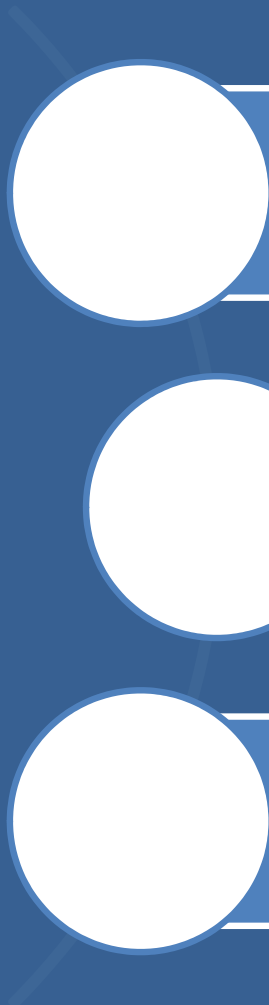
NASEM EV Workshop

**Electricity Generation and Load Profiles for
EV Charging, and Related Impacts**

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Presentation Overview



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EV Load Growth Forecast

EV Charging Impact on Load Profile

LADWP's Strategies to Supply and Manage Transportation Electrification Loads

EV Load Growth Forecast

State and Local ZEV Goals

Governor Newsom's Executive Order (N-79-20):

- Requires 100 percent of California sales of new passenger car and trucks be zero-emission by 2035.
- Electrify Freight Trucks by 2035 and Medium & Heavy Duty Fleets by 2045.

Assembly Bill 2127 EV Charging Infrastructure Assessment:

- Baseline: 700K public and shared private EV chargers are needed to support 5M EVs by 2030.
- High: 1.2M chargers will be needed for the 7.5M EVs required by 2030 in CA.

City of Los Angeles Electric Vehicle Adoption Targets:

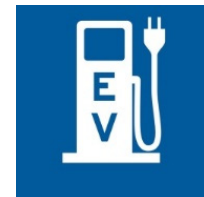
- 250,000 LDV and 4,000 MD-HD EVs by 2025
- 550,000 LD EVs by 2028
- 750,000 LD and 12,000 MD-HD EVs by 2030

Commercial EV Charging Infrastructure:

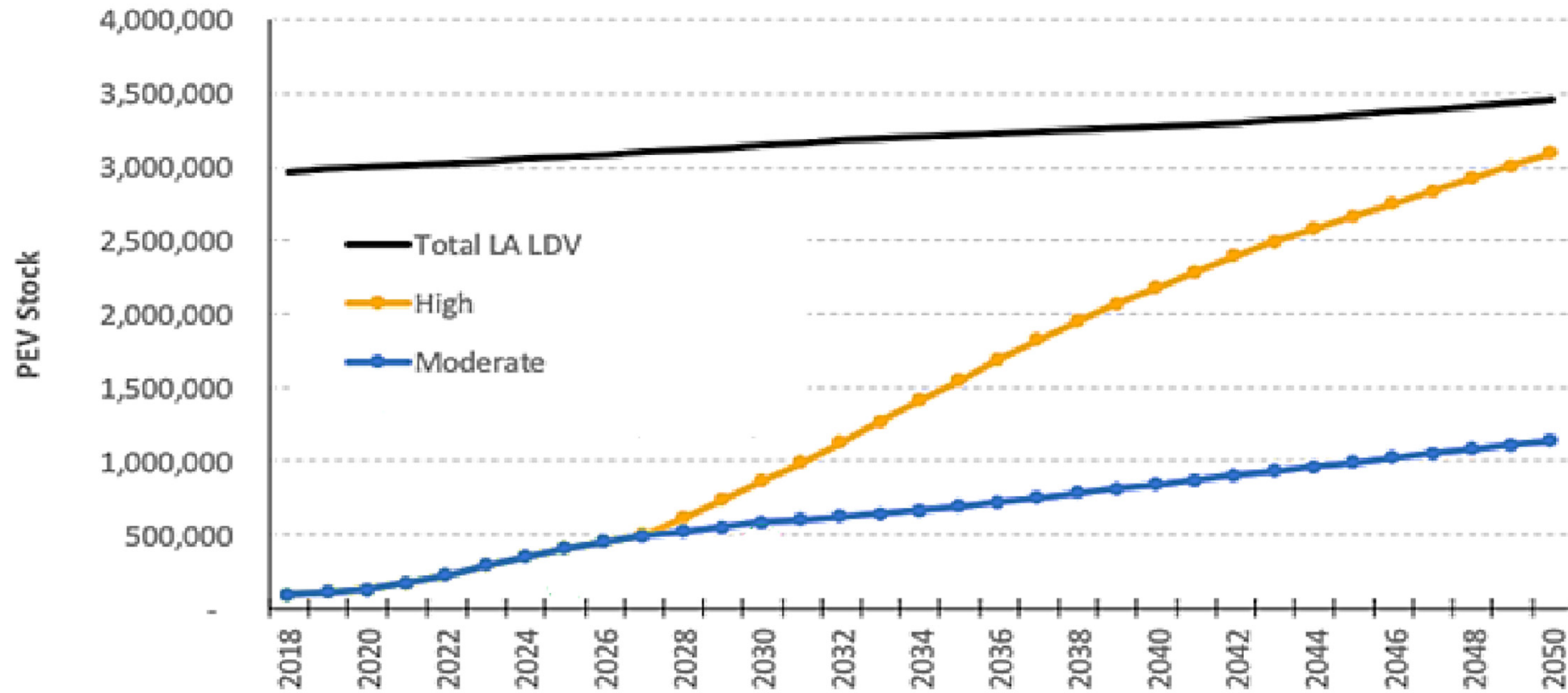
- 45,000 Charging Stations by 2025 - Including 1,000 DC Fast Chargers
- 120,000 Charging Stations by 2030 - Including 3,000 Fast Chargers

Electrification of City and Transit Fleets:

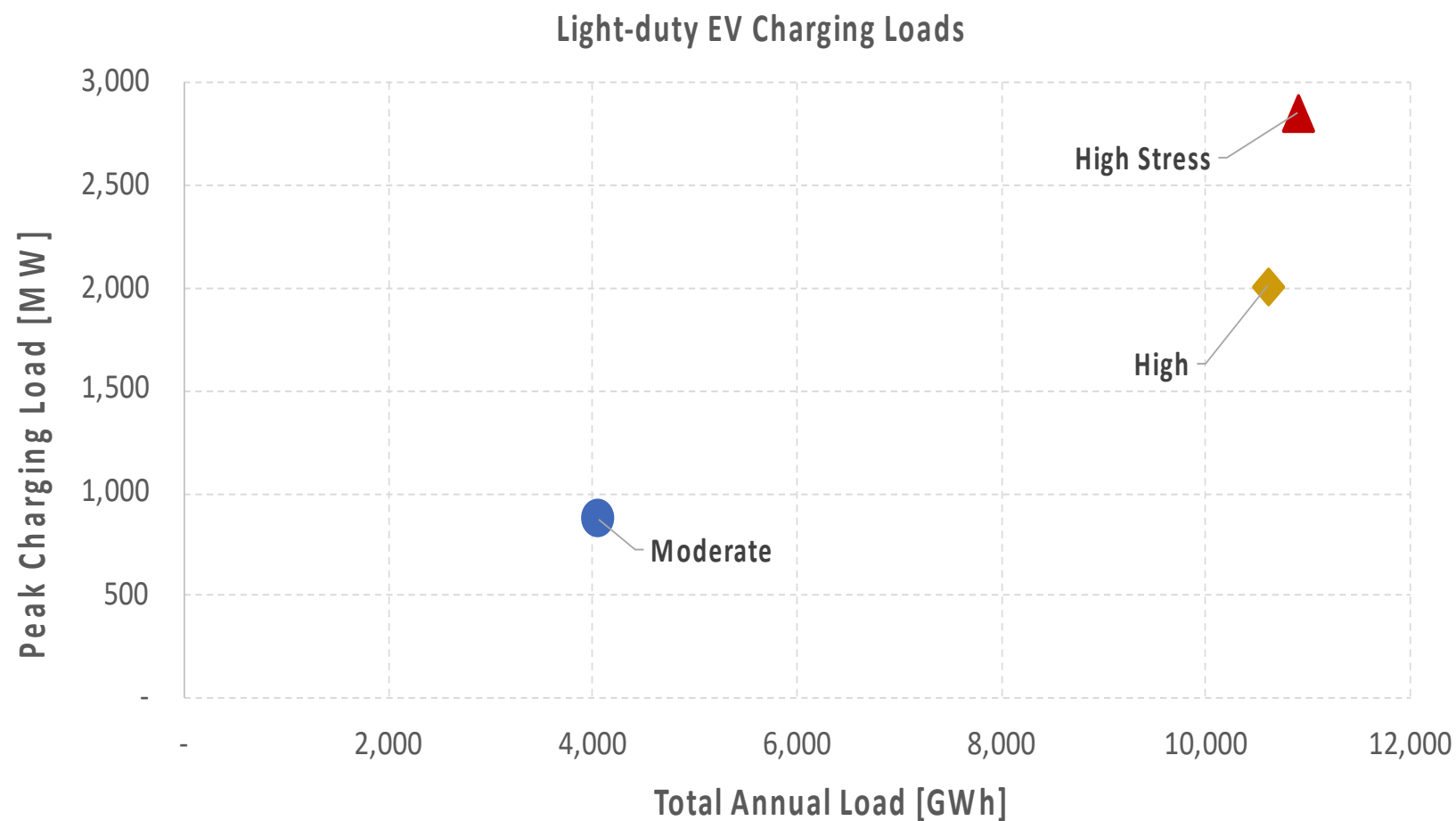
- Mayor's Executive Directive 25 – Electrify all new City light duty sedans in 2021
- Electrify 100% of City of LA's commercial medium and heavy duty fleet by 2028



LA100- Light Duty Vehicle (LDV) Adoption Projections



LA100- Light Duty EV Charging Annual Energy Consumption and Peak Demand, by projection, in 2045



Moderate
75% access to residential, 25% access to workplace charging
High
60% access to residential, 50% access to workplace charging
Stress
90% access to residential, 15% access to workplace charging

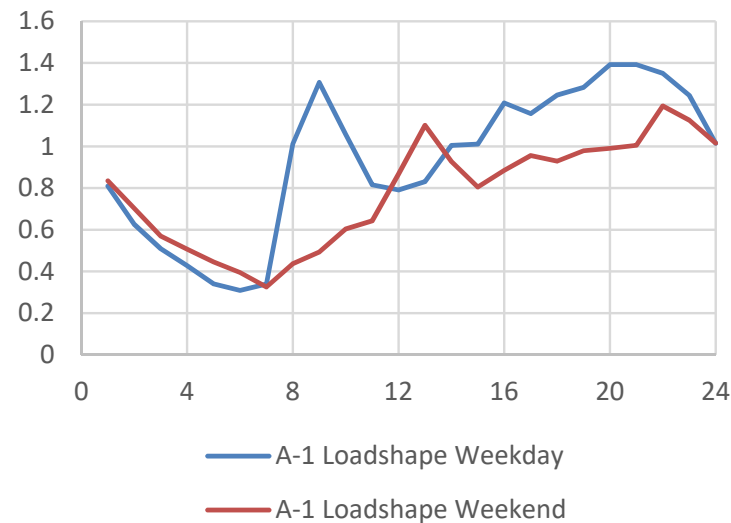
EV Charging Impact on Load Profile

Load Shape Sample for Time of Use Rates

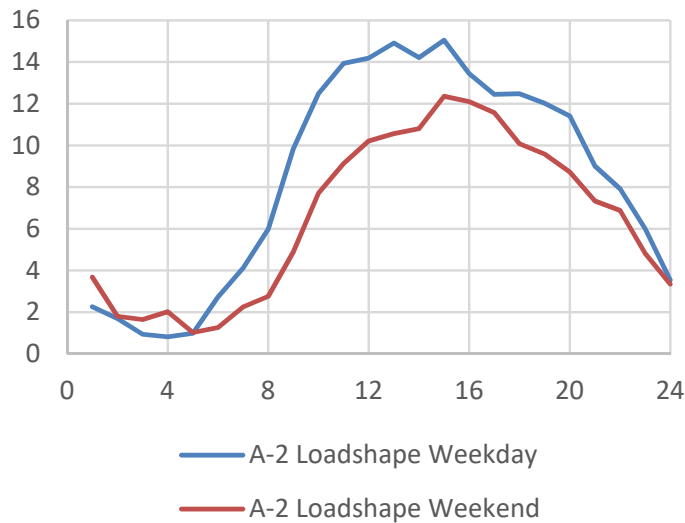
LADWP offers electric vehicle commercial charging service rate options to encourage charging during Off-Peak & Mid-Peak hours.

	Standard TOU Rate Periods	EV TOU Rate Periods
Peak	1pm – 5pm	4pm – 9pm
Mid-Peak	10am – 1pm 5pm – 8pm	7am – 4pm 9pm – 11pm
Off-Peak	8pm – 10am	11pm – 7am

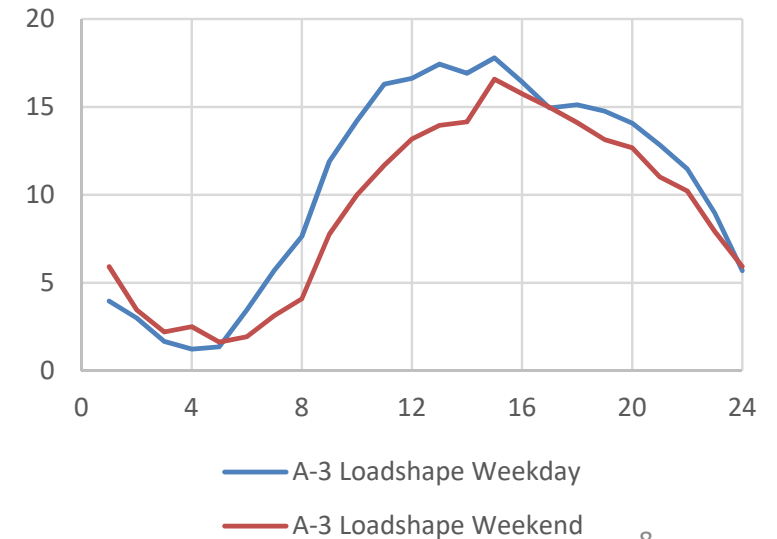
A1 Load Shape



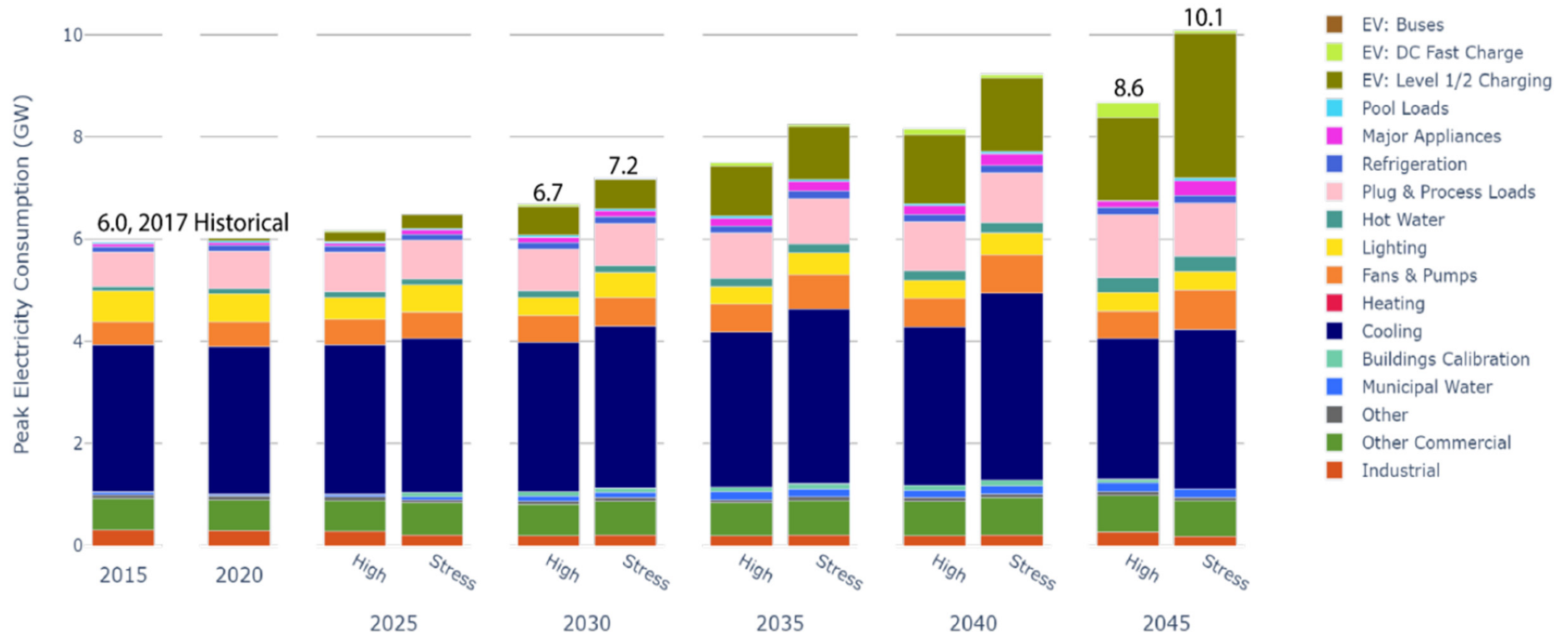
A2 Load Shape



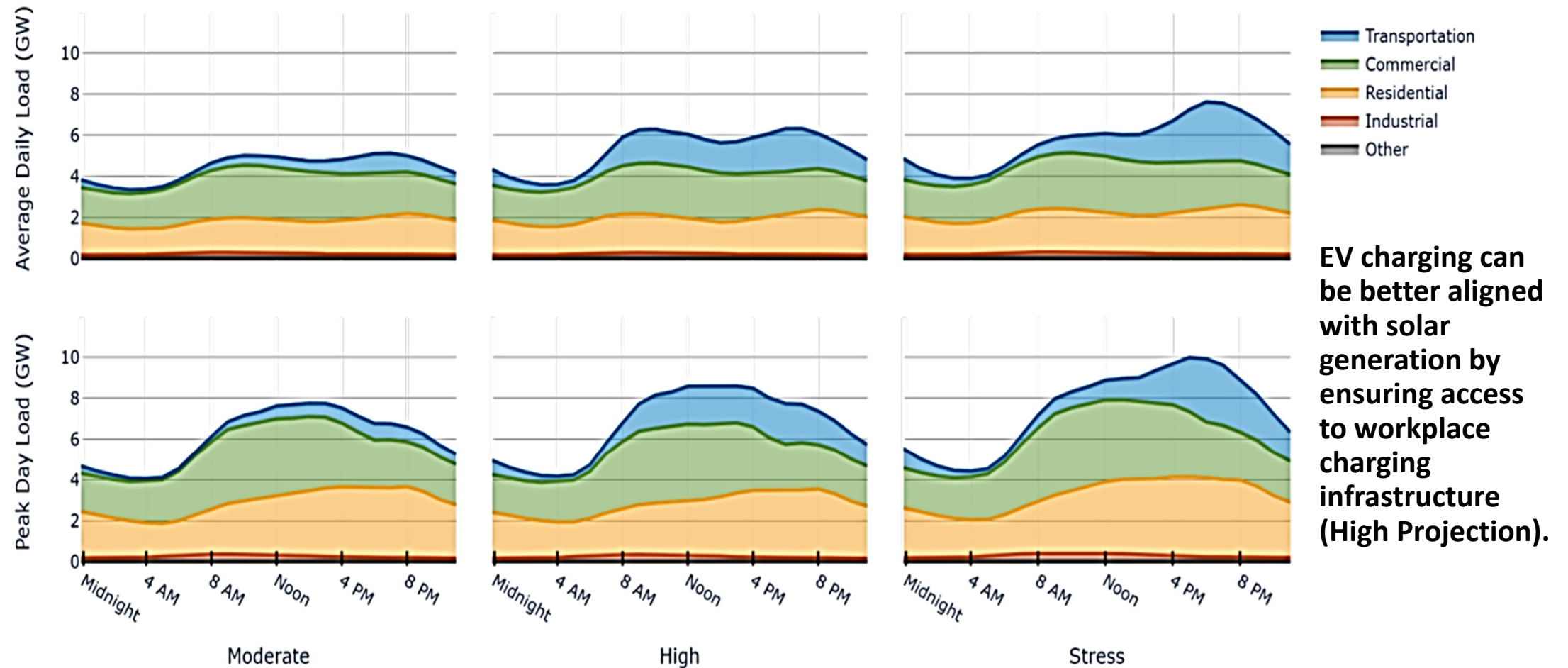
A3 Load Shape



LA100- Peak electricity Consumption Details



LA100 Projected System Load Profile



Average daily profiles for 2045 by projection-year and sector

Strategies to Supply & Manage Transportation Electrification Load

Supply Side approach to meeting EV Demand

Common Investments Across All Scenarios



Electrification
Efficiency
Flexible Load



Customer
Rooftop Solar



Renewable
Energy



Storage



Transmission,
Distribution



Renewably Fueled
Dispatchable
Turbines

+>2,600 MW
(in basin)

Solar: + >5,700 MW
Wind: + >4,300 MW

+ >2,600 MW

New Generation and
Distributed Energy
Resources

Natural gas

Today:
Daily

Biofuel/ hydrogen

Future:
Infrequently

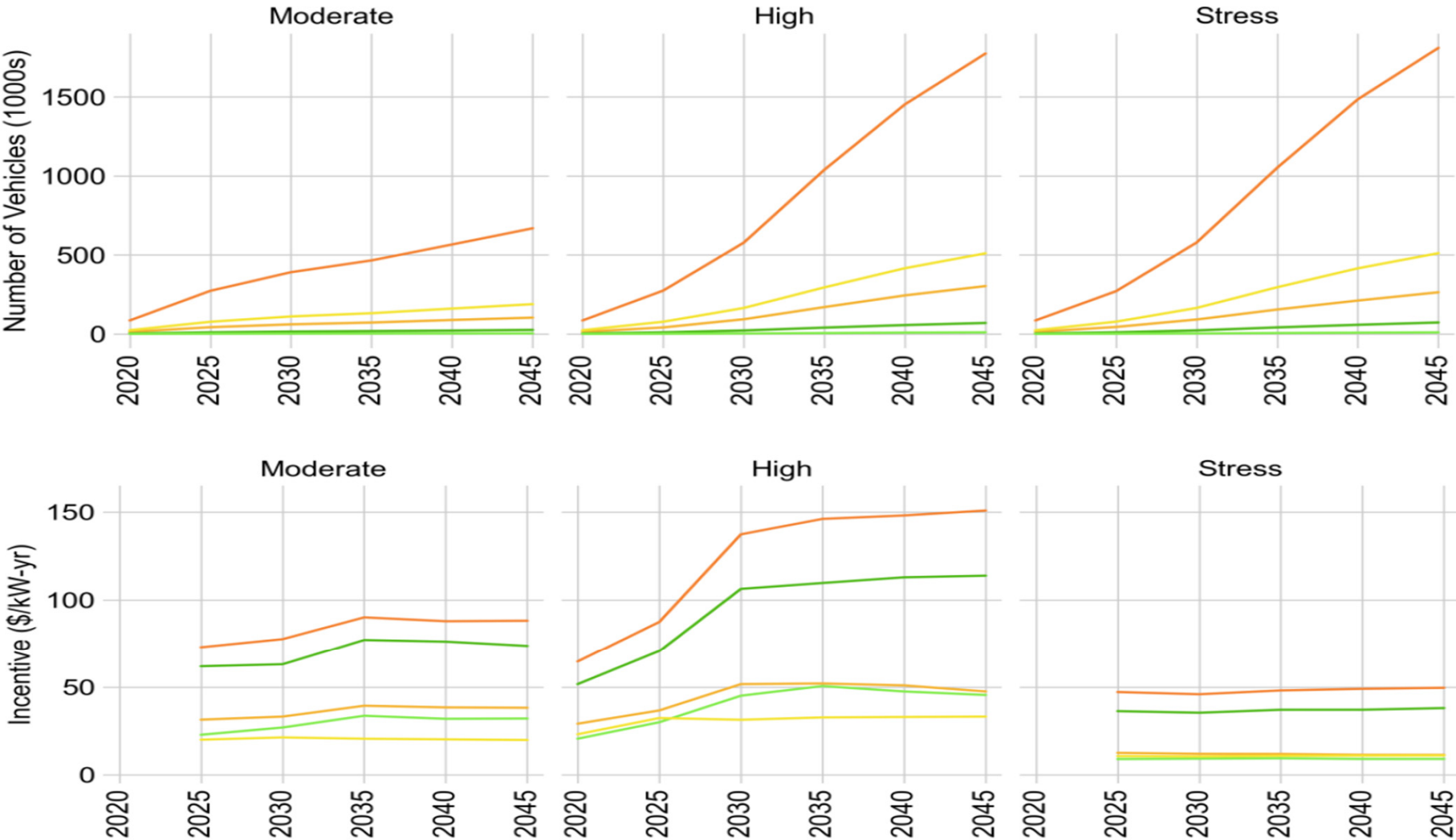
EV Demand Response Assumptions

Number of vehicles
per charger type
that is eligible for
scheduling

- EV Public L2
- EV Work L1
- EV Work L2
- EV Home L1
- EV Home L2

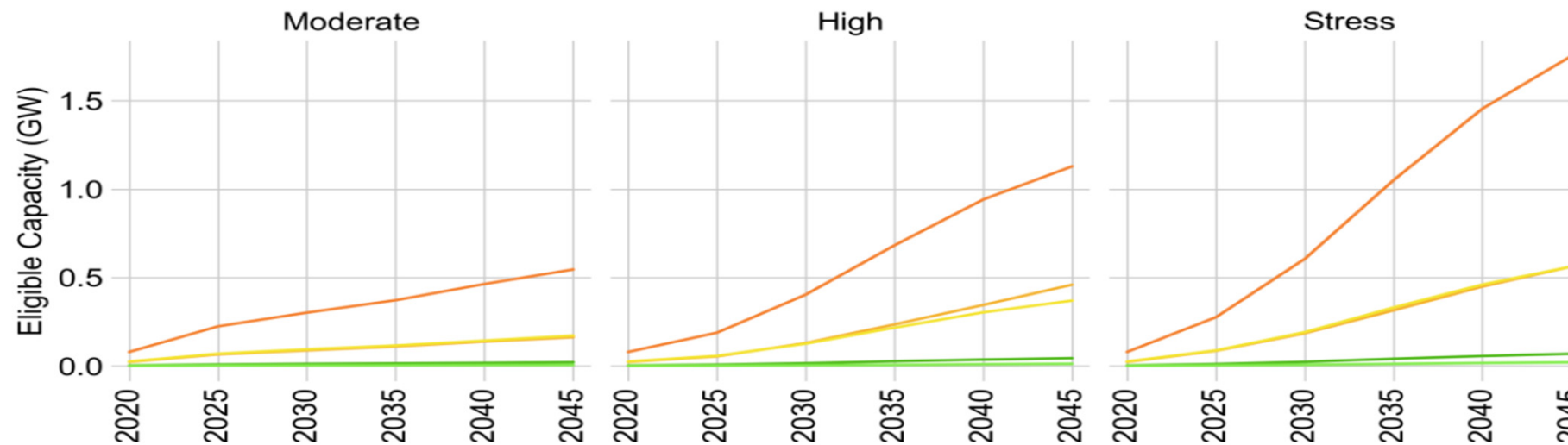
Assumed schedulable
EV charging demand
response incentives,
in \$/kW-yr

- EV Public L2
- EV Work L1
- EV Work L2
- EV Home L1
- EV Home L2

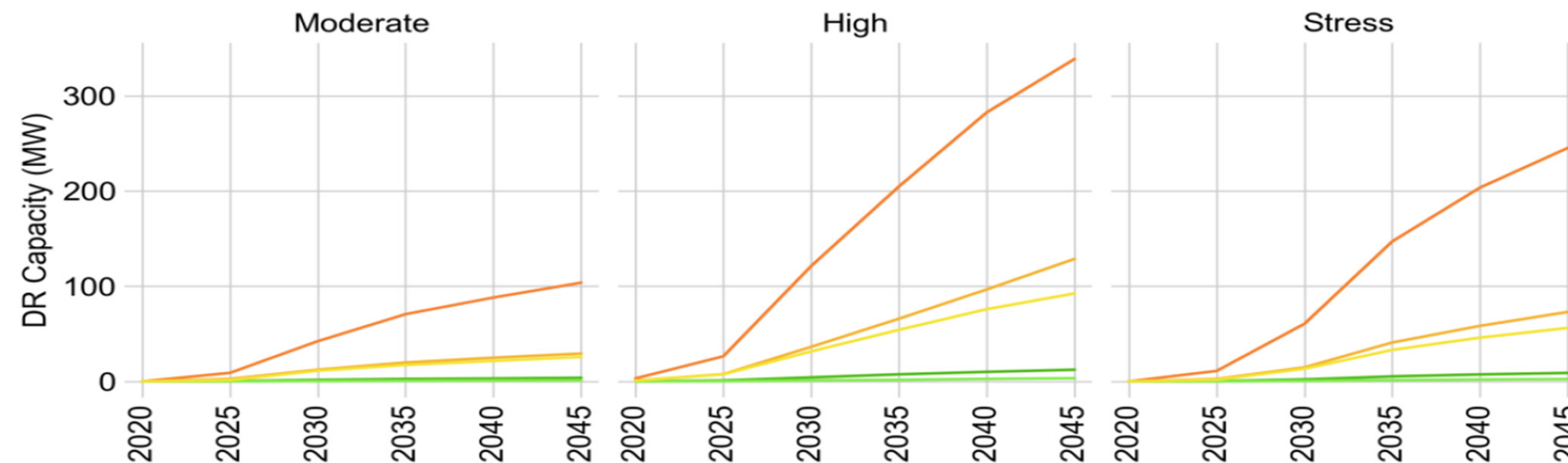


EV Demand Response Capacity

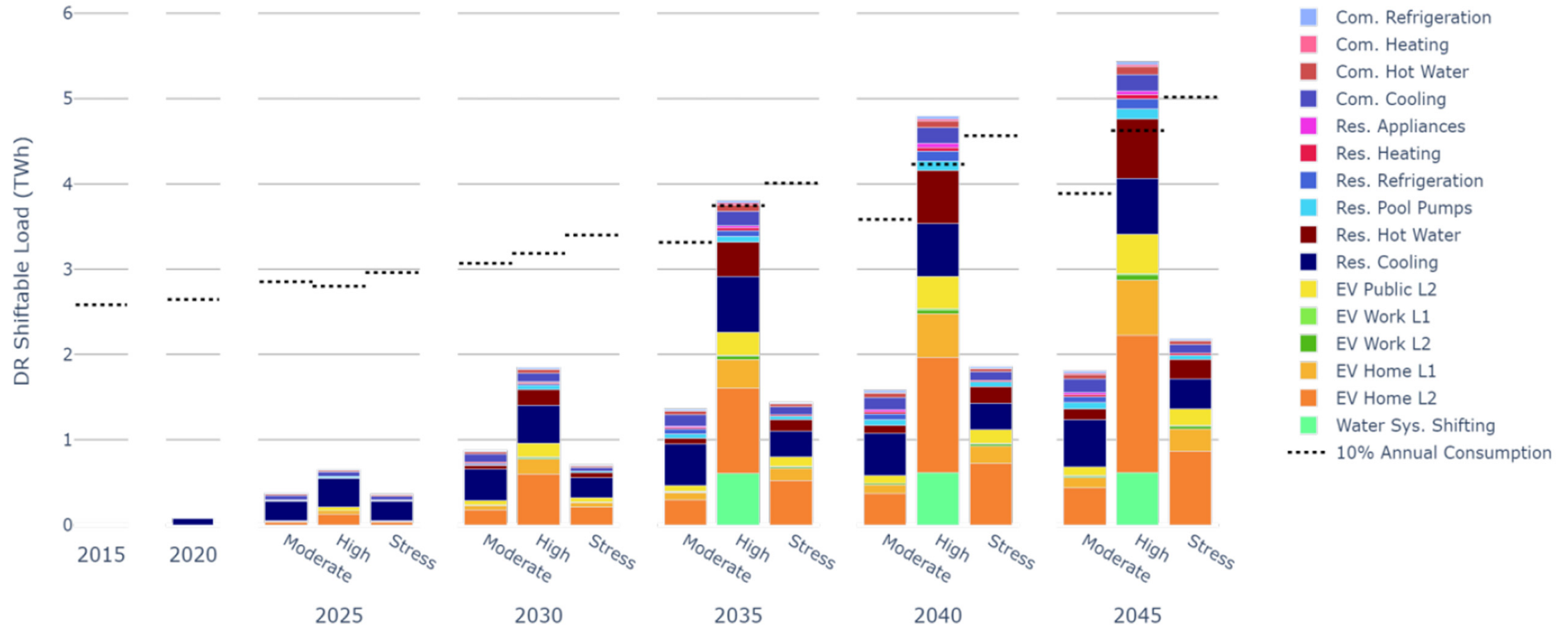
Coincident end-use peak demand of all EV charger types eligible for scheduling



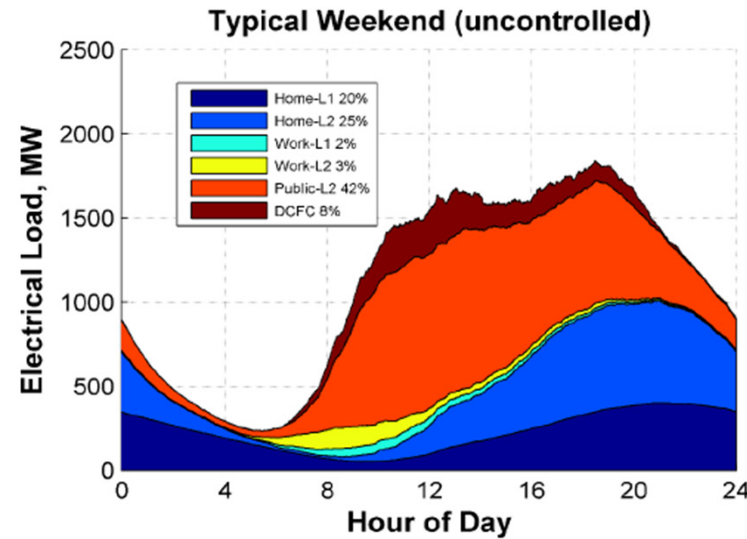
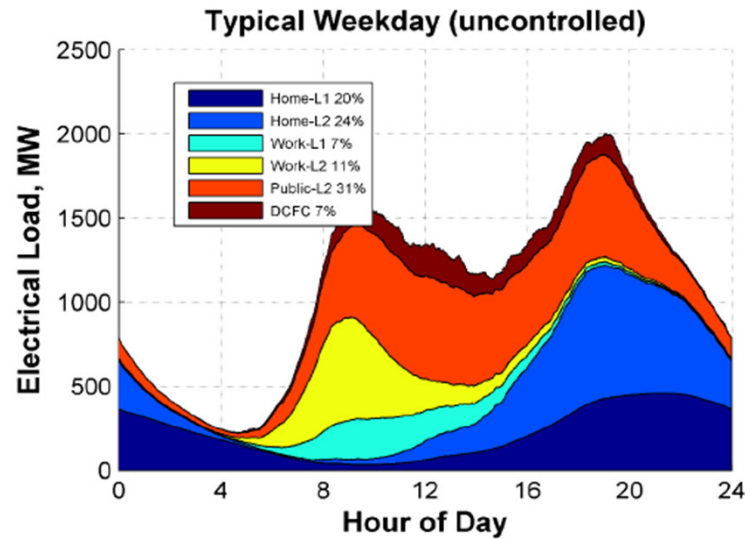
Electric vehicle charging demand response capacity



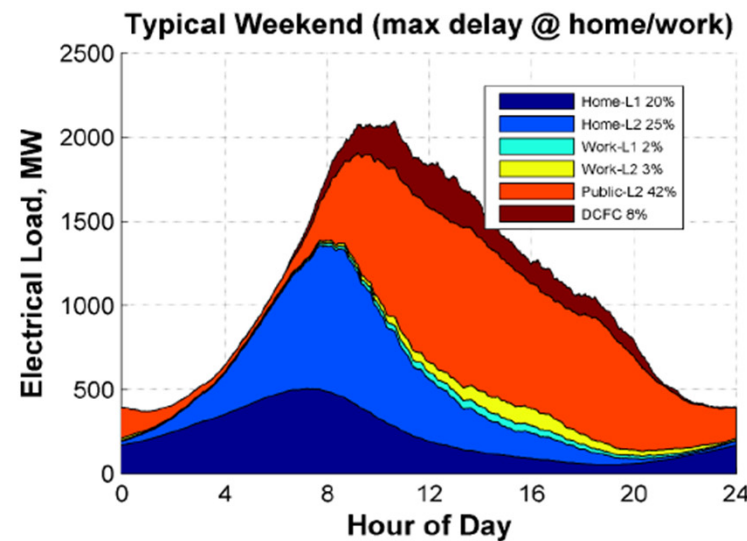
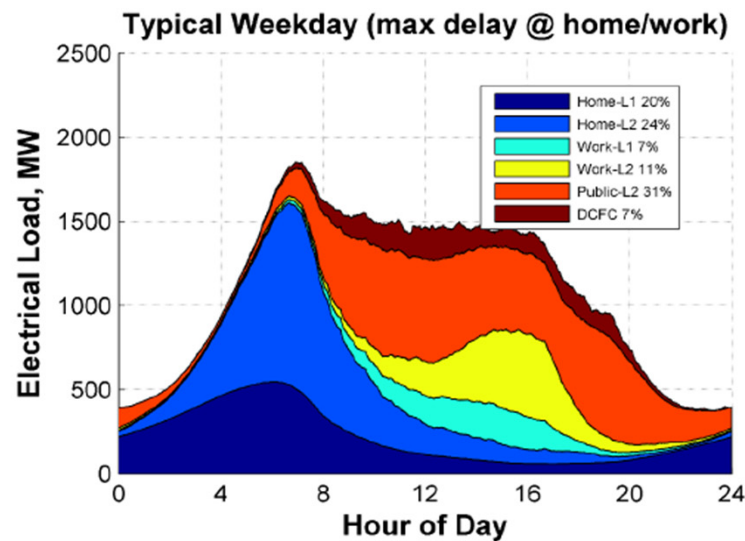
Summary of DR-participating, shiftable demand



LA100- Light-duty EV charging profiles-High projection, 2045



Vehicles charge immediately upon arrival and charge until fully charged or another trip initiated.



Vehicles shift charging to earlier parts of the day and still achieve the same total energy charge as top row.

