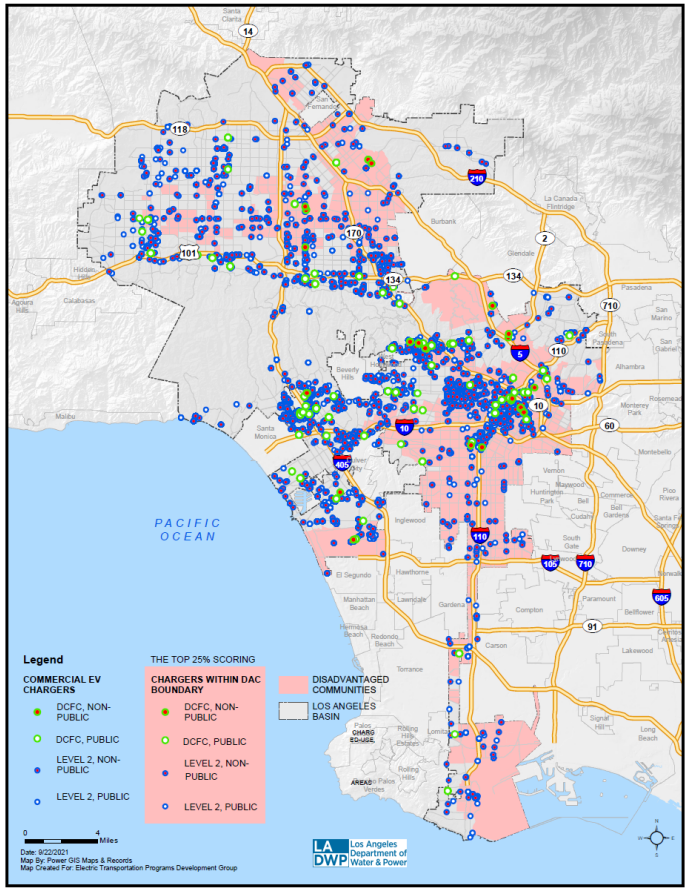
Electricity Distribution System Loads For EV Charging

NASEM EV Workshop

October 27, 2021

LA's Charging Station Map



	Public	Non-Public	Total
DWP Charging Stations (L2)	90	912	1,002
City-Owned (Non-DWP) L2 Charging Stations	713	694	1,407
DC Fast Charging Stations	255	82	337
Private-Owned Charging Stations (L2)	1,605	9,553	11,158
Total	**2,663**	**11,238**	**13,904**

LA100 Assumptions

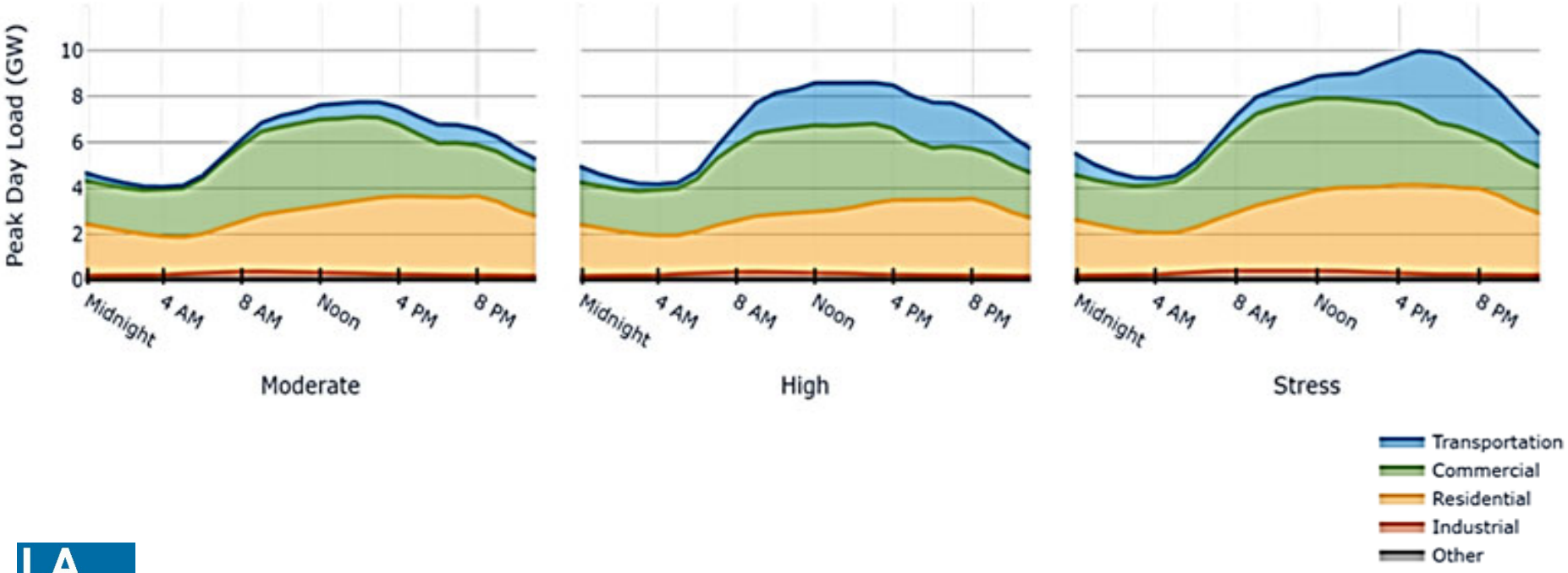
The LA100 Study identified three scenarios that LADWP is preparing for customer electricity demand by **2045**.

30% light-duty are EVs
75% residential charging
25% workplace charging

80% light-duty are EVs
60% residential charging
50% workplace charging

80% light-duty are EVs
90% residential charging
15% workplace charging

Load Profile (2045)



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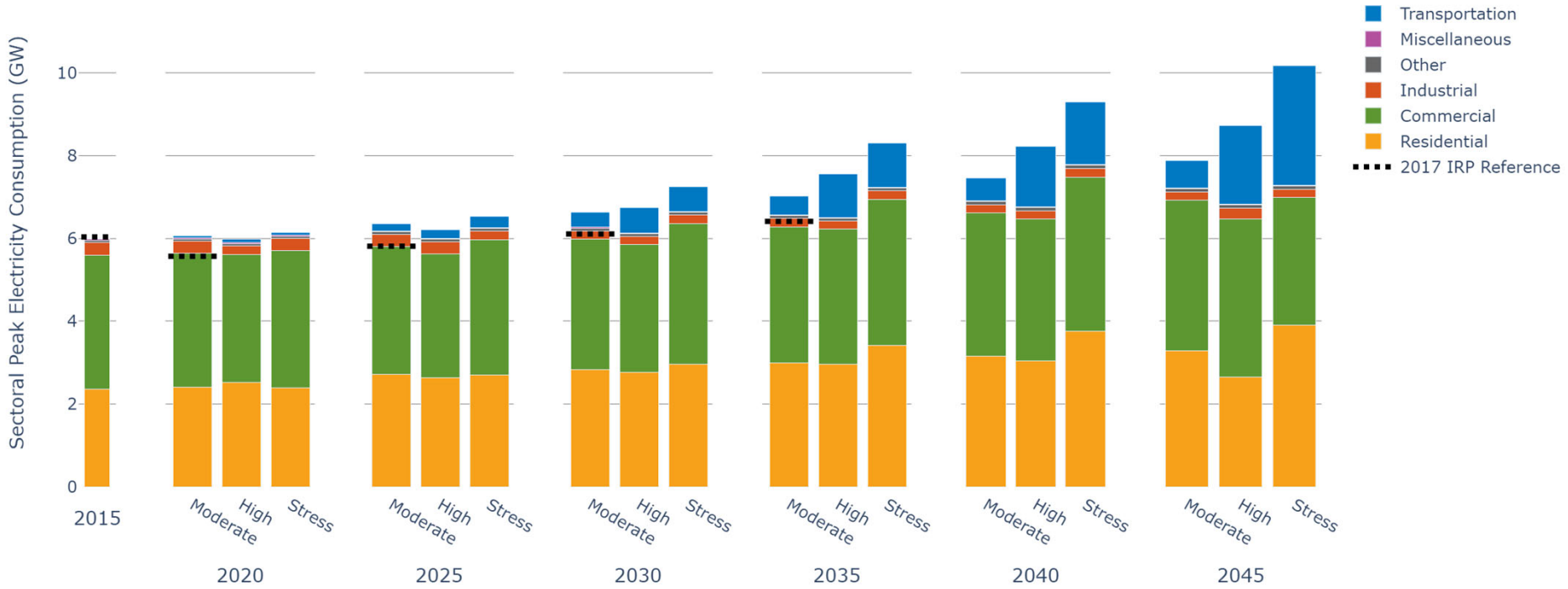
Electric Transportation Sector Demand



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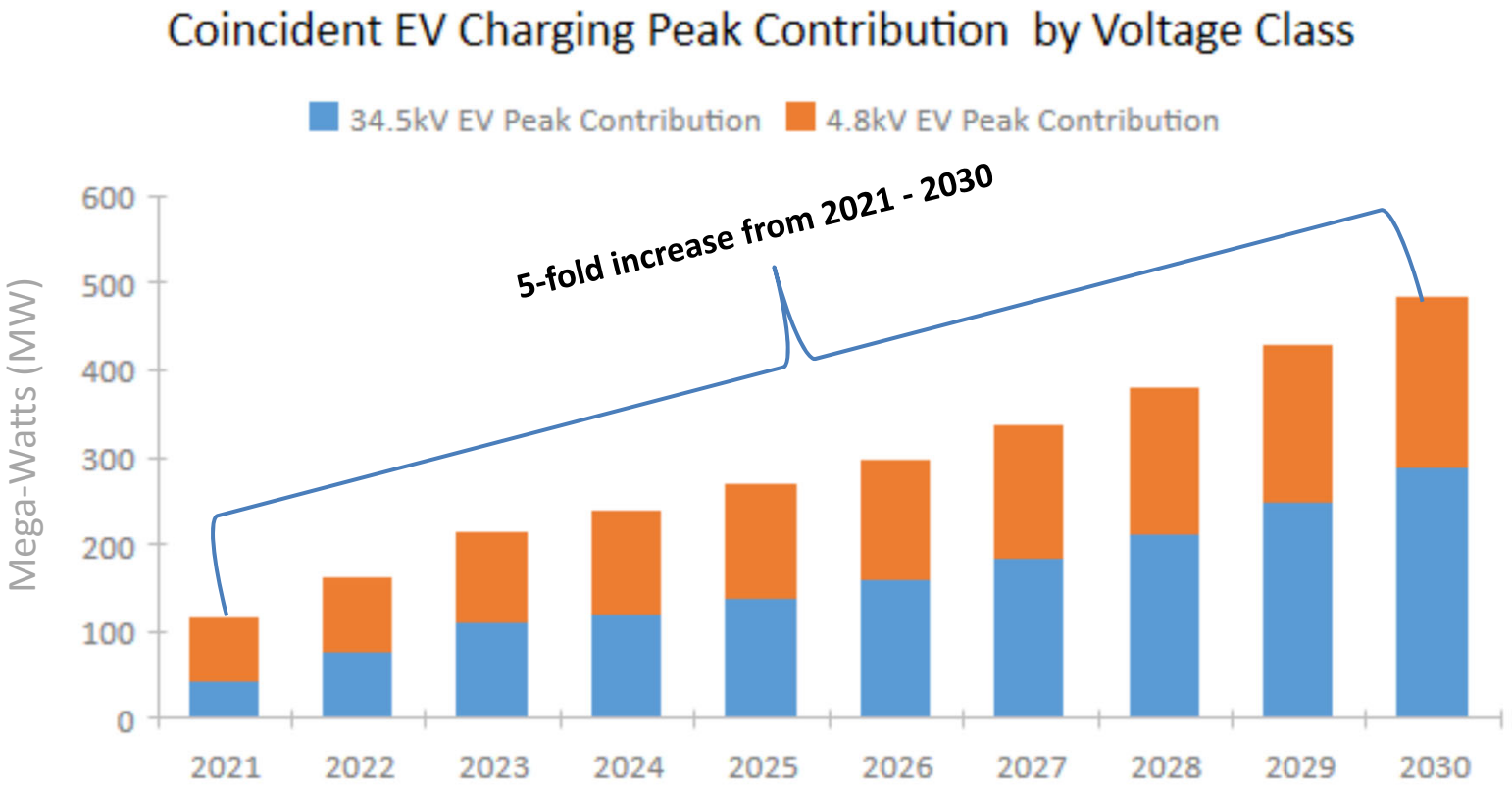
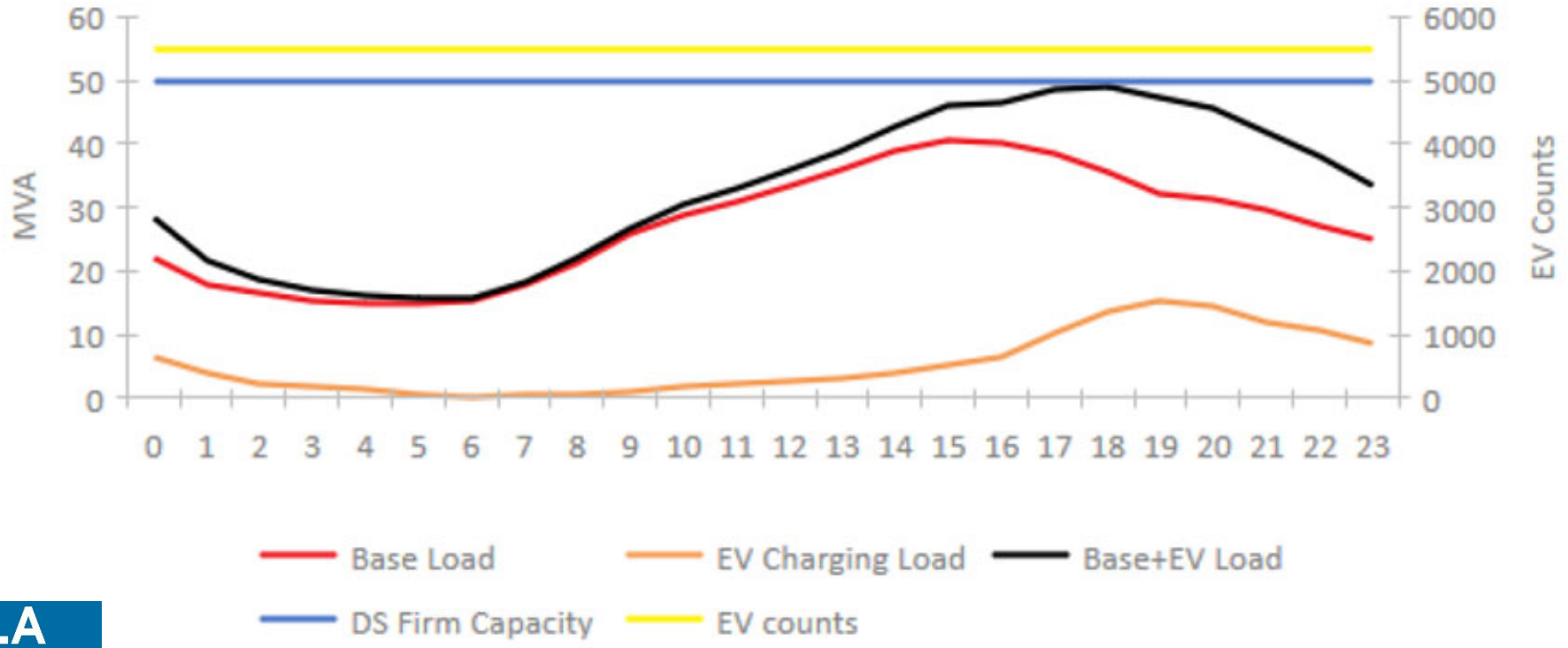
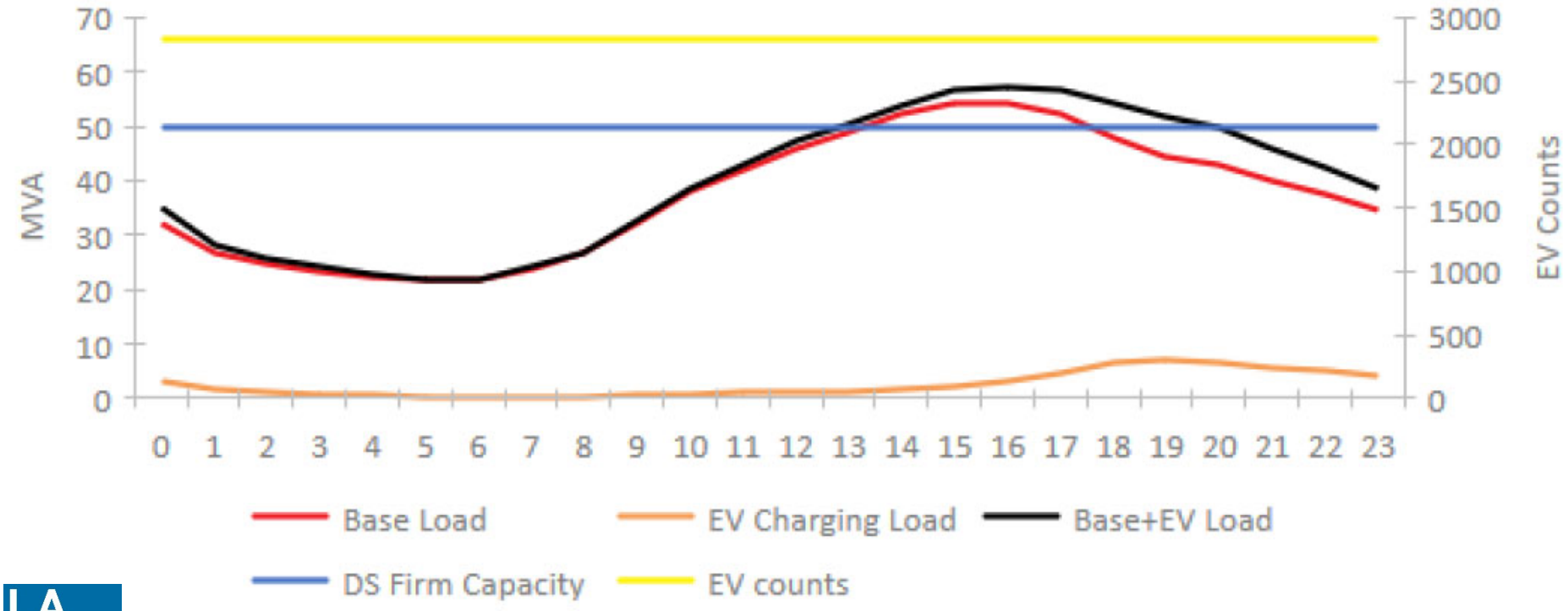
Preparing our Distribution System for EV Loads



Distributing Station 66 Load Profile in 2030



Distributing Station 10 Load Profile in 2030



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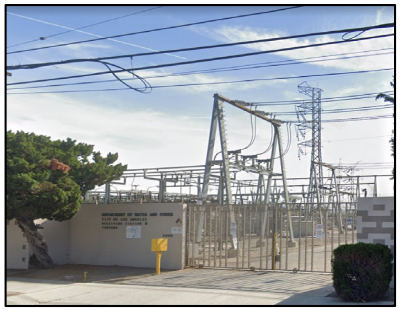
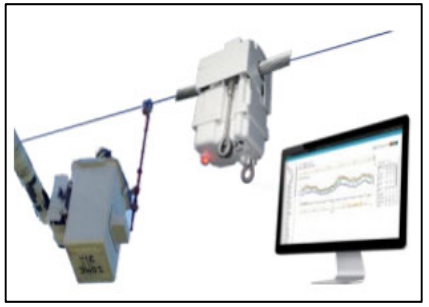
Distribution System Upgrades

Upgrade
4.8 kV Feeder



New
Distributing Stations



Implement
Distribution Automation

Upgrade
34.5 kV Lines

New
Distribution **Voltage**
Conversion

Substation Upgrades Needed by 2035

Receiving Station

4 Receiving Stations exceed firm capacity

7 New RS Racks required

$20M estimated per rack

Distribution Station

60 Distributing Stations exceed firm capacity

10 New DSs required

$40M estimated per station

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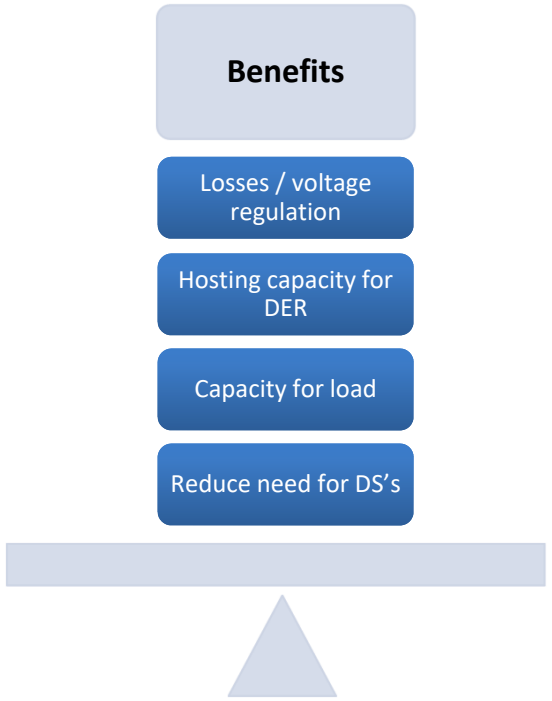
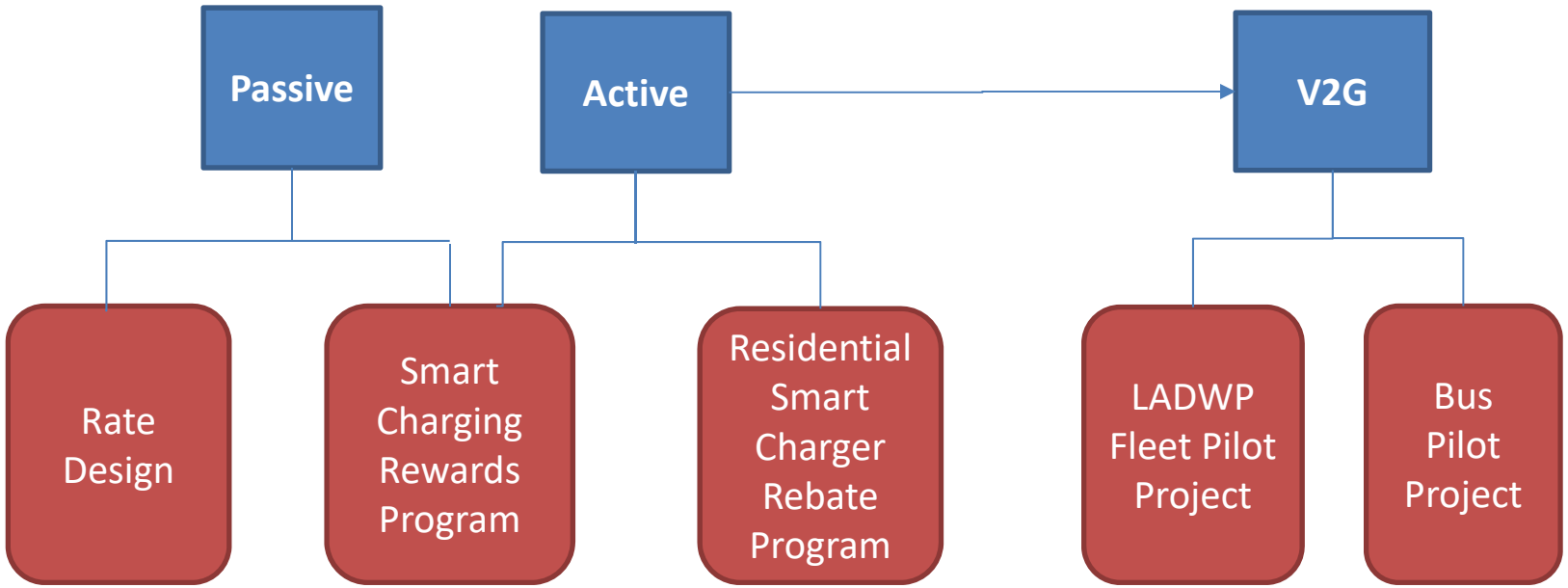
Distribution Voltage Conversion

As part of our grid modernization efforts, LADWP is also looking at converting portions of the 4.8 kV distribution to a higher voltage.

- Important for EV charging as higher voltage distribution system can accommodate more load at a single location.
- A 12 kV system can accommodate ~2.5X the amount of load that the 4.8 kV can using equipment that is much smaller in footprint.



Load Management



Thank You

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