



Power System Strategic Vision

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Director of Power System Planning

March 21, 2024

AGENDA

01

RESOURCE
PLAN



02

TRANSMISSION
PLAN



03

DISTRIBUTION
PLAN



RESOURCE PLAN



SCATTERGOOD

KERN

LOS ANGELES

SAN BERNARDINO

RIVERSIDE

STRATEGIC LONG-TERM RESOURCE PLAN (SLTRP)

- SLTRP serves as a roadmap for achieving the energy transition
- 2024 SLTRP recommendations will further refine current energy transition strategies.
- **Commitments:**
- SB 100 (State Mandate):
 - 60% Renewables by 2030
 - 100% Clean Energy by 2045
- LA100/City Targets:
 - 80% Renewables by 2030
 - 100% Carbon-Free by 2035

Key Changes:

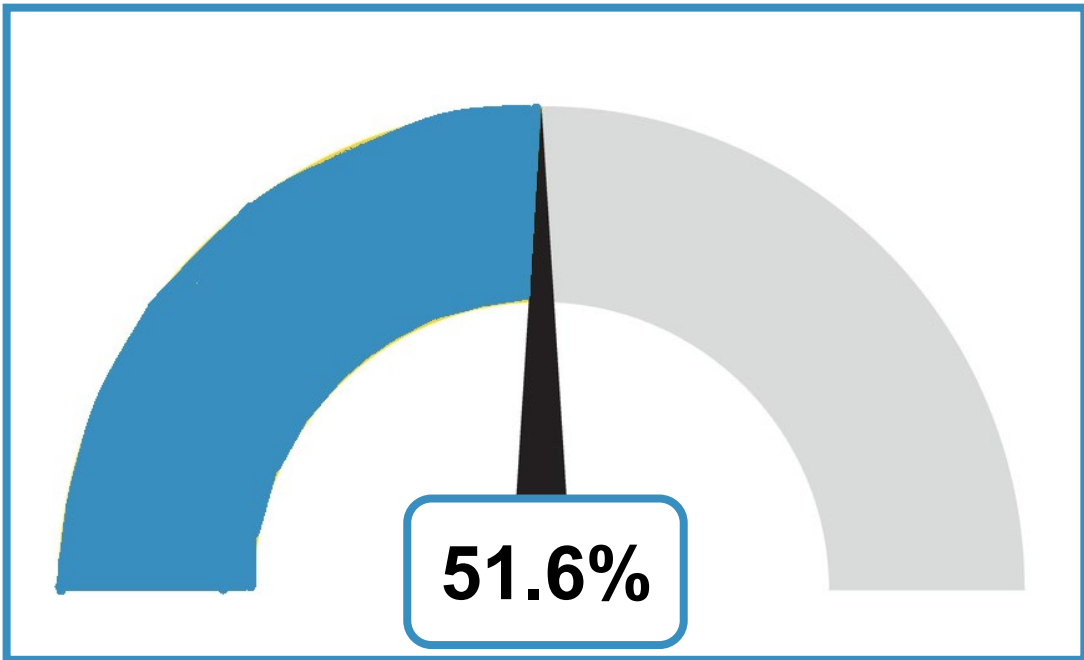
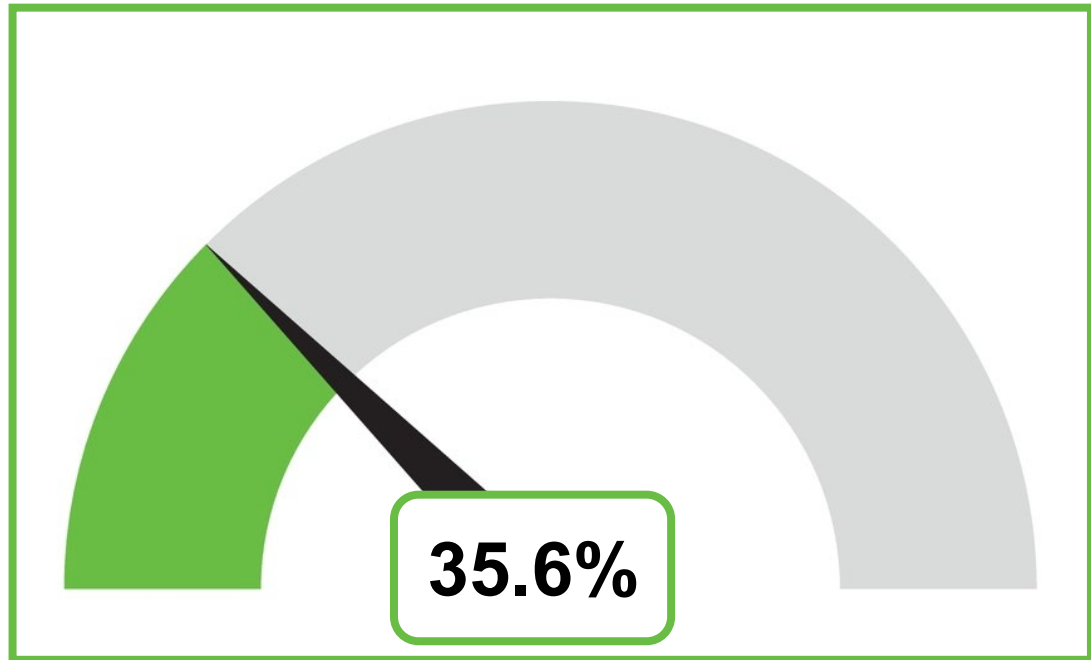
- Integration of Equity Strategies to 2024 SLTRP
- Inclusion of Equity Strategies Steering Committee members to the SLTRP process

ENACTED PUBLIC POLICIES (Cont'd)

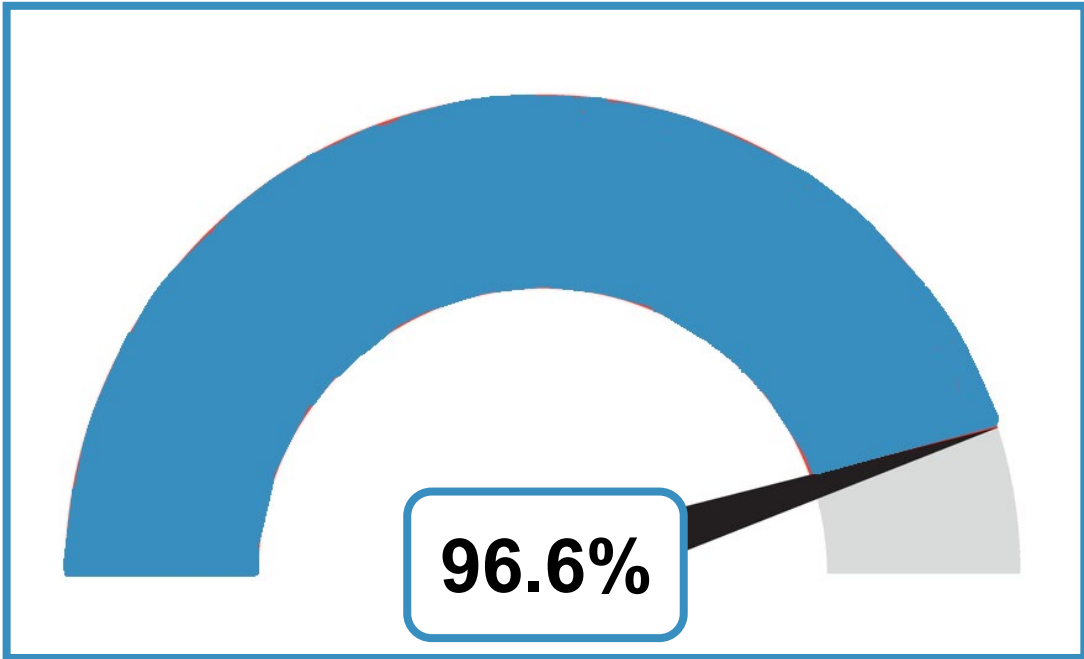
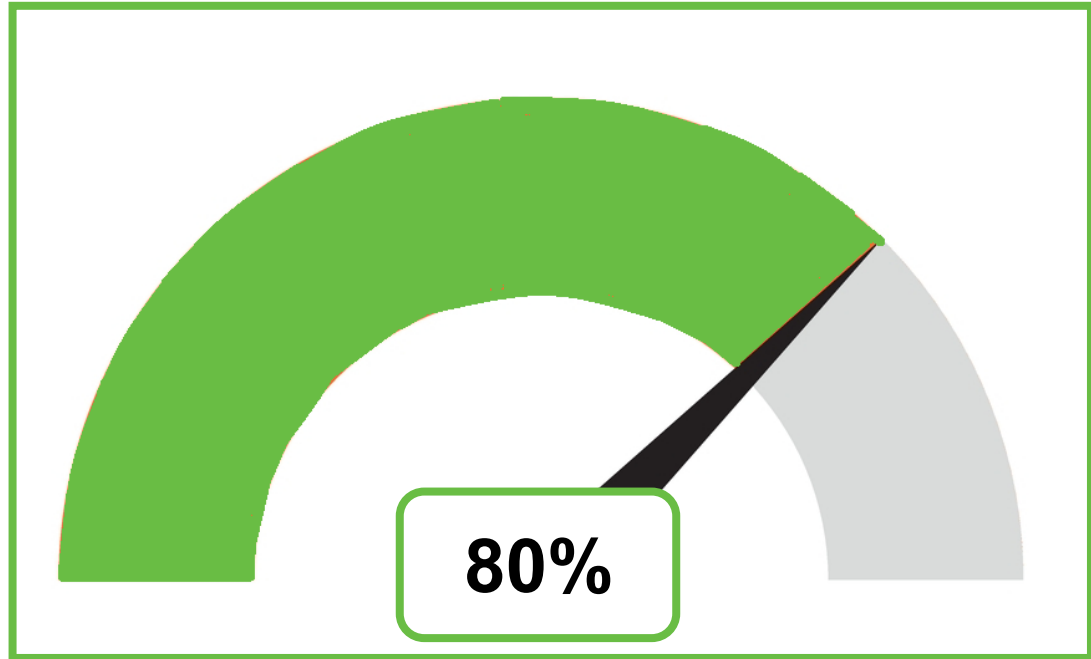
RPS

Carbon-Free Resources

2022



2030



CURRENT PLAN FOR EXISTING PLANTS

Scattergood Generating Station

- Pursue hydrogen enabled turbine
- Finalize all pending environmental studies

Haynes Generating Station

- Pursue Wet Cooling to meet regulatory requirements

Intermountain Power Project Renewal

- On schedule for completion in July 2025

RESOURCE PROCUREMENT ENHANCEMENT

To Successfully Achieve 100% Carbon-Free Resources by 2035, the Following Enhancements Will Be Implemented:

- Enhance the resource procurement process and evaluation to streamline and expedite the acquisition of resources.
- Reform the LADWP’s generator interconnection process to expedite resource delivery.
- Conduct regular workshops with resource developers to communicate resource needs in terms of types, quantities, and timelines.
- Incorporate feedback from resource developers into the SLTRP process to ensure alignment with resource procurement and operational considerations.
- Develop a screening mechanism within the SLTRP for resource procurement validation.

CURRENT PLAN FOR NEW RESOURCES

Local Solar

- Approximately 712 MW online
- Target of 926 MW by 2025, 1500 MW by 2030, and 2220 MW by 2035.

Demand Respond (DR)

- Currently developing an RFP to expand residential, commercial and industrial DR portfolio for up to 100 MW.

Distributed Energy Storage

- Currently 34.8 MW behind-the-meter (BTM)
- An additional 12.68 MW of BTM to be deployed by 2025
- 2,100 MW of BTM to be deployed by 2045.

TRANSMISSION PLAN

POWER SYSTEM STRATEGIC VISION – TRANSMISSION PLAN

LADWP TRANSMISSION SYSTEM

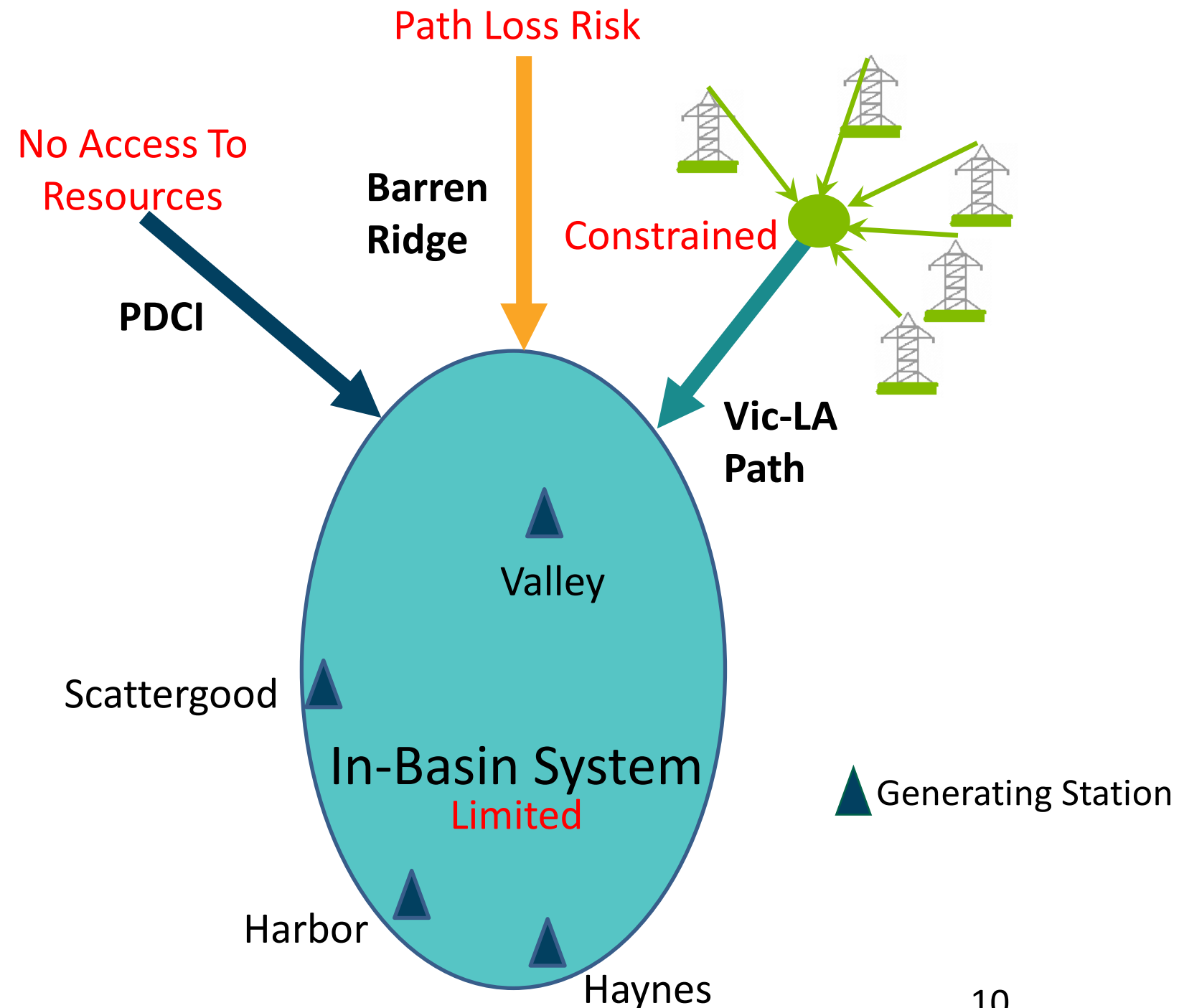
OVERVIEW

LOS ANGELES' POWER GENERATION AND TRANSMISSION

If stretched end to end, LADWP's 15,000 miles of power lines and cable are longer than the distance from Los Angeles to Australia and back.



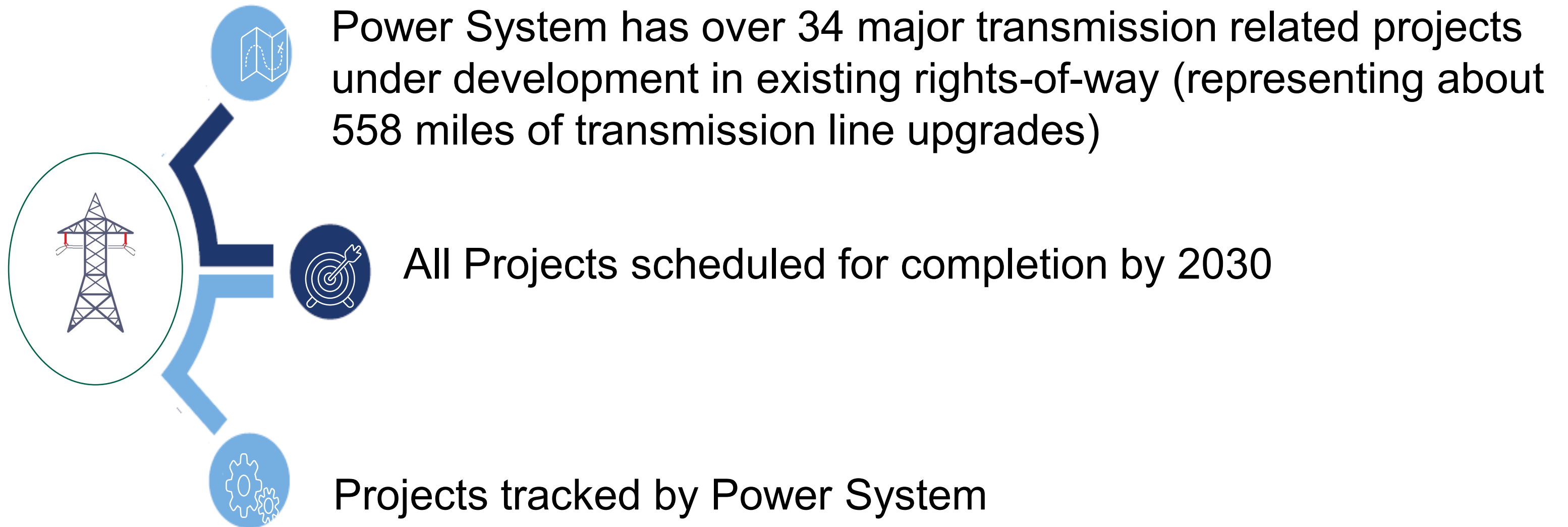
CONSTRAINTS



POWER SYSTEM STRATEGIC VISION – TRANSMISSION PLAN

MAJOR TRANSMISSION PROJECTS UPDATE

To Resolve In-Basin Transmission Constraints





POWER SYSTEM STRATEGIC VISION – TRANSMISSION PLAN

MAJOR TRANSMISSION PROJECTS UPDATE (Cont'd)

Overhead Transmission Lines

Electric Station Equipment

Underground Transmission Cables

* Previously referred to as “No Regret Transmission Projects”

Transmission and Electric Station Equipment Projects

	<i>Project Title</i>	<i>In-Service Date</i>
1	New Castaic - Haskell Line 230kV Line 3	November 1, 2022
2	New RS-B Shunt Capacitor 99MVAR (3x33 MVAR)	November 14, 2022
3	New Wilmington (RS-C) 138kV Shunt Capacitors Construction	February 1, 2023
4	New Hollywood (RS-H) 138kV Shunt Capacitors	February 28, 2023
5	Upgrade Rinaldi Circuit Breakers and disconnect switches	March 18, 2023
6	Upgrade RS-E (Toluca) 500kV Bank H	April 15, 2023
7	New Haskell-Sylmar Line 2	April 26, 2023
8	Upgrade Wave-traps and CVTs at Victorville from 287kV to 300kV	April 31, 2023
9	New RS-B Rack A and Bank A	June 1, 2023
10	New Barren Ridge STATCOM	August 22, 2023
11	Upgrade Victorville Bank K (Phase IV)	January 6, 2024
12	New Scattergood-Pershing 230kV Cable A	April 8, 2024
13	New Scattergood-Pershing 230kV Cable B	April 8, 2024
14	New Olympic-Pershing 230kV Cable A	April 8, 2024
15	New Olympic-Pershing 230kV Cable B	April 8, 2024
16	Upgrade Barren Ridge – Haskell Line 1	July 22, 2024
17	Upgrade Lugo-Victorville Line 1 & terminal equipment	November 8, 2024

Transmission and Electric Station Equipment Projects (Cont'd)

	<i>Project Title</i>	<i>In-Service Date</i>
18	Upgrade McCullough – Victorville Series Compensation	January 1, 2025
19	Upgrade Circuit Breakers at Victorville 500kV	January 1, 2025
20	Upgrade Rinaldi Tarzana Lines 1 & 2	April 15, 2025
21	* Upgrade Scattergood Auto and Phase Shifting Transformer	May 31, 2025
22	New Rosamond Switching Station	November 10, 2025
23	* New Valley - Toluca Line 3 & upgrade Valley -Toluca Lines 1/2	April 1, 2026
24	* Convert Tarzana-Olympic 1A and 1B to 2-230kV lines	April 15, 2026
25	Adelanto-Toluca Line 1 Clearance Mitigation Upgrade	December 31, 2026
26	* Upgrade Toluca-Hollywood Line 1 Underground Cable	March 30, 2027
27	* Upgrade Hollywood - Fairfax 138kV Series Reactor	September 30, 2027
28	* New Valley - Rinaldi Line 3 & upgrade Valley-Rinaldi Lines 1/ 2	April 1, 2028
29	Upgrade McCullough – Victorville Transmission Line	December 31, 2028
30	Upgrade Circuit Switcher for McCullough - Victorville Lines 1/2	December 31, 2028
31	* New Toluca - Atwater Line 2 & upgrade Toluca -Atwater Line 1	May 1, 2029
32	* Reconductor Rinaldi-Airway Lines 1 and 2	December 31, 2029
33	* New Northridge – Olympic 230kV Cables A/B & Shunt Reactor	December 31, 2029
34	* Upgrade Fairfax - Olympic 138kV Series Reactor	September 30, 2030

POWER SYSTEM STRATEGIC VISION – TRANSMISSION PLAN

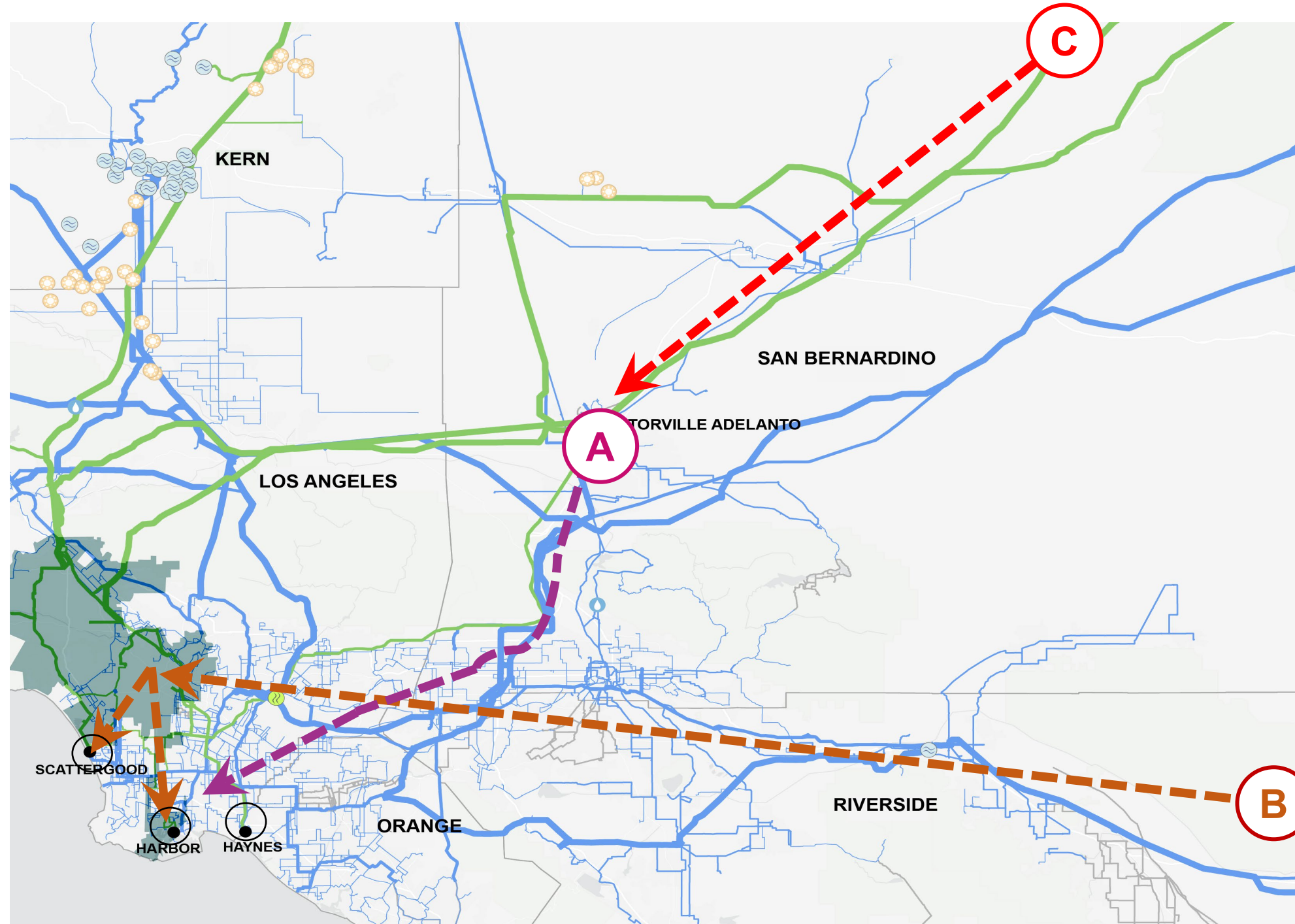
SUMMARY OF TRANSMISSION EXPANSION

To Resolve Out of Basin Transmission Constraints

A Upgrade 287-KV Corridor from LA Basin Victorville Area
 To mitigate existing transmission constraints and to import more renewable energy to LA Basin

B New Eastern Corridor Heading East
 To interconnect a portion of TWE and to access renewable energy in New Mexico, Arizona, and/or California

C Upgrade IPP Southern Transmission
 To import more renewable energy from IPP Renewable Energy Hub



COLLABORATION AND OPPORTUNITIES

Collaboration with Other Utilities and Third Parties

- In December 2023, LADWP released the Request for Proposals for Partnership Opportunity Participating in Transmission Projects
- Open RFP to continue to review applications for partnership
- This approach reduces both costs and risks

Funding Opportunities

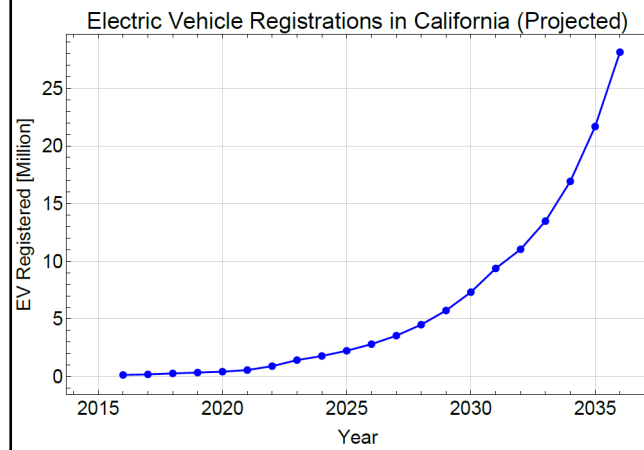
- Applied for funding opportunity under DOE Grid Resilience and Innovation Partnerships (GRIP) Program.

DISTRIBUTION PLAN

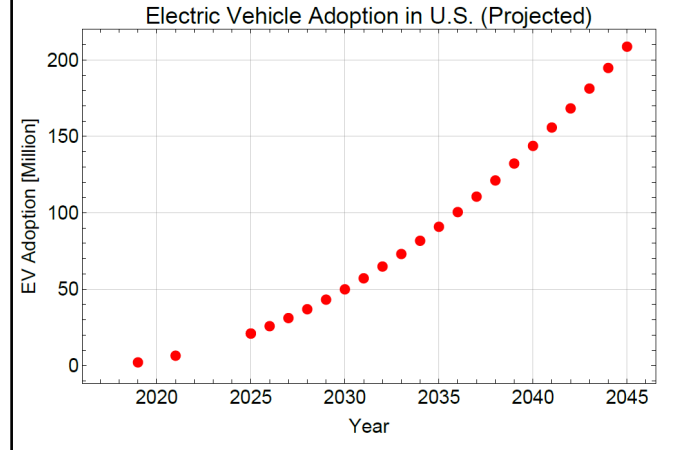
POWER SYSTEM STRATEGIC VISION – DISTRIBUTION PLAN

LOAD GROWTH

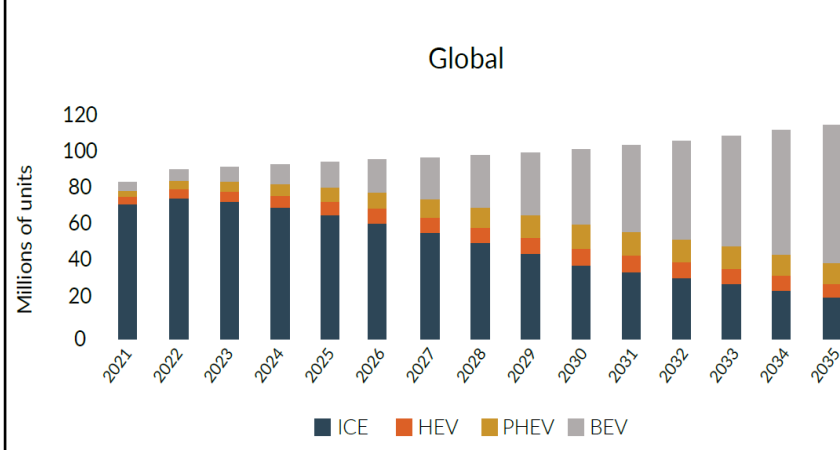
1. California EV Adoption Forecast



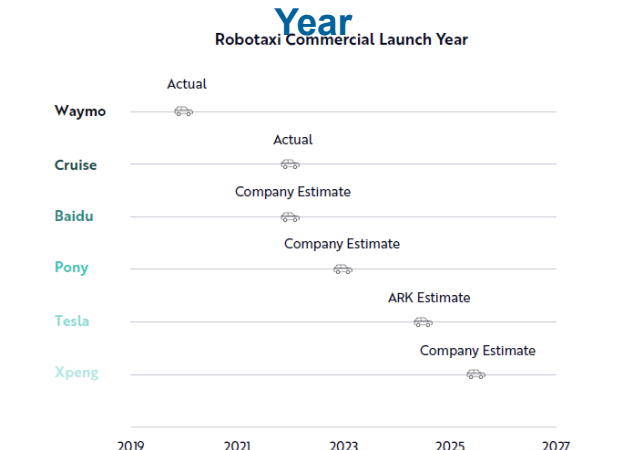
2. United States EV Adoption Forecast



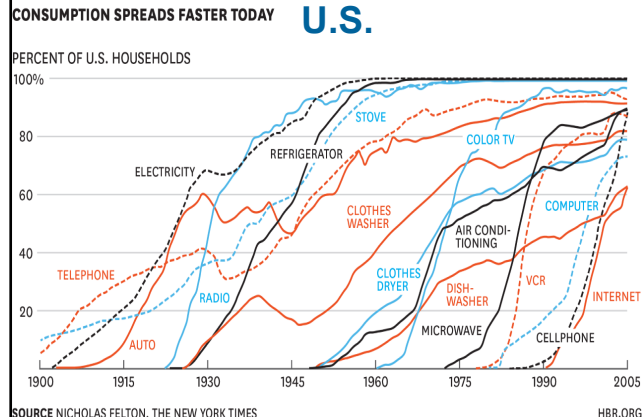
3. World Wide EV Adoption Forecast



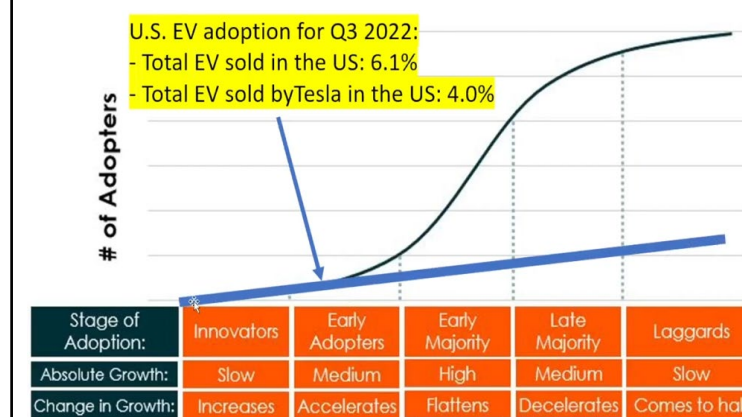
4. Robotaxi Commercial Launch



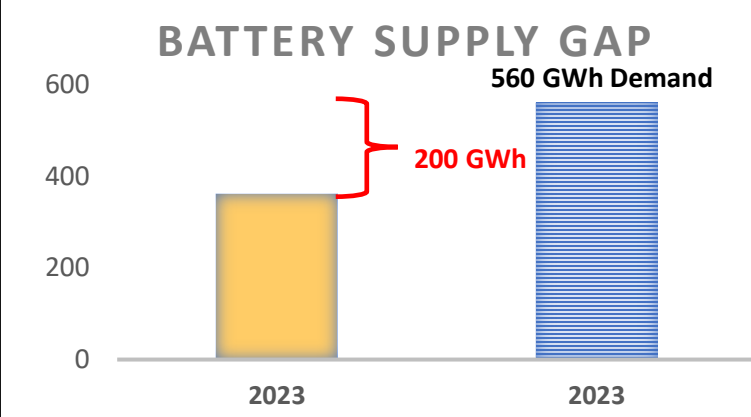
5. Technologies Adoption Trends in U.S.



6. S-Shape Technology Adoption Curve



7. Battery Capacity Gap

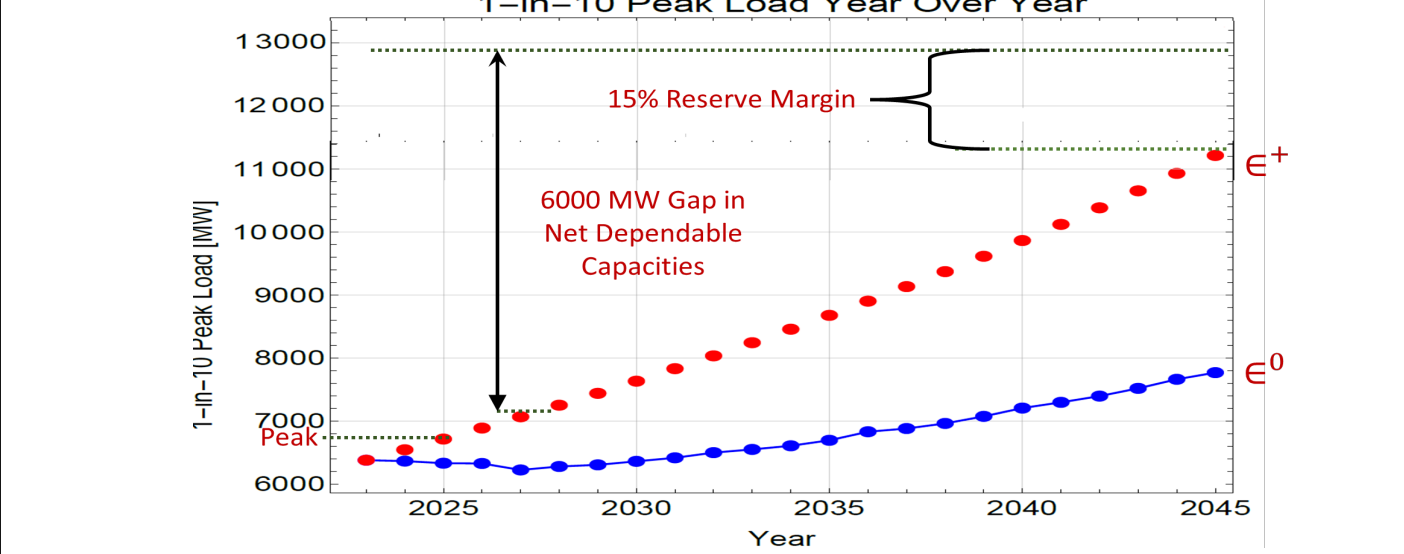


Cumulative Impact

8. Worlds Largest Known Reserve of Lithium: Imperial Valley, CA



9. LADWP Load Forecast



DISTRIBUTION SYSTEM IMPROVEMENTS

To Support Electrification of Building and Transportation Sectors:

- Expand 34.5 kV System to accommodate more EV chargers
- Shift Large Customer Loads from 4.8 kV to 34.5 kV System to relief burdened 4.8 kV feeders
- Reduce the Number of New Distribution Stations
- Upgrade distribution system to integrate Port of LA and associated trucking electrification needs
- Continue to support LAX with their electrification needs

POWER SYSTEM STRATEGIC VISION – DISTRIBUTION PLAN

BUSINESS MODEL: EV CHARGING HUBS

- Facilitate Access to EV Charging Hubs Throughout the City
- Provide a Unique Charging Experience to LADWP and Non-LADWP Customers
- Ensure Affordability of Charging
- Manage Overgeneration

POWER SYSTEM STRATEGIC VISION – DISTRIBUTION PLAN

BUSINESS MODEL: EV CHARGING HUB RENDERING 1



POWER SYSTEM STRATEGIC VISION – DISTRIBUTION PLAN

BUSINESS MODEL: EV CHARGING HUB RENDERING 2



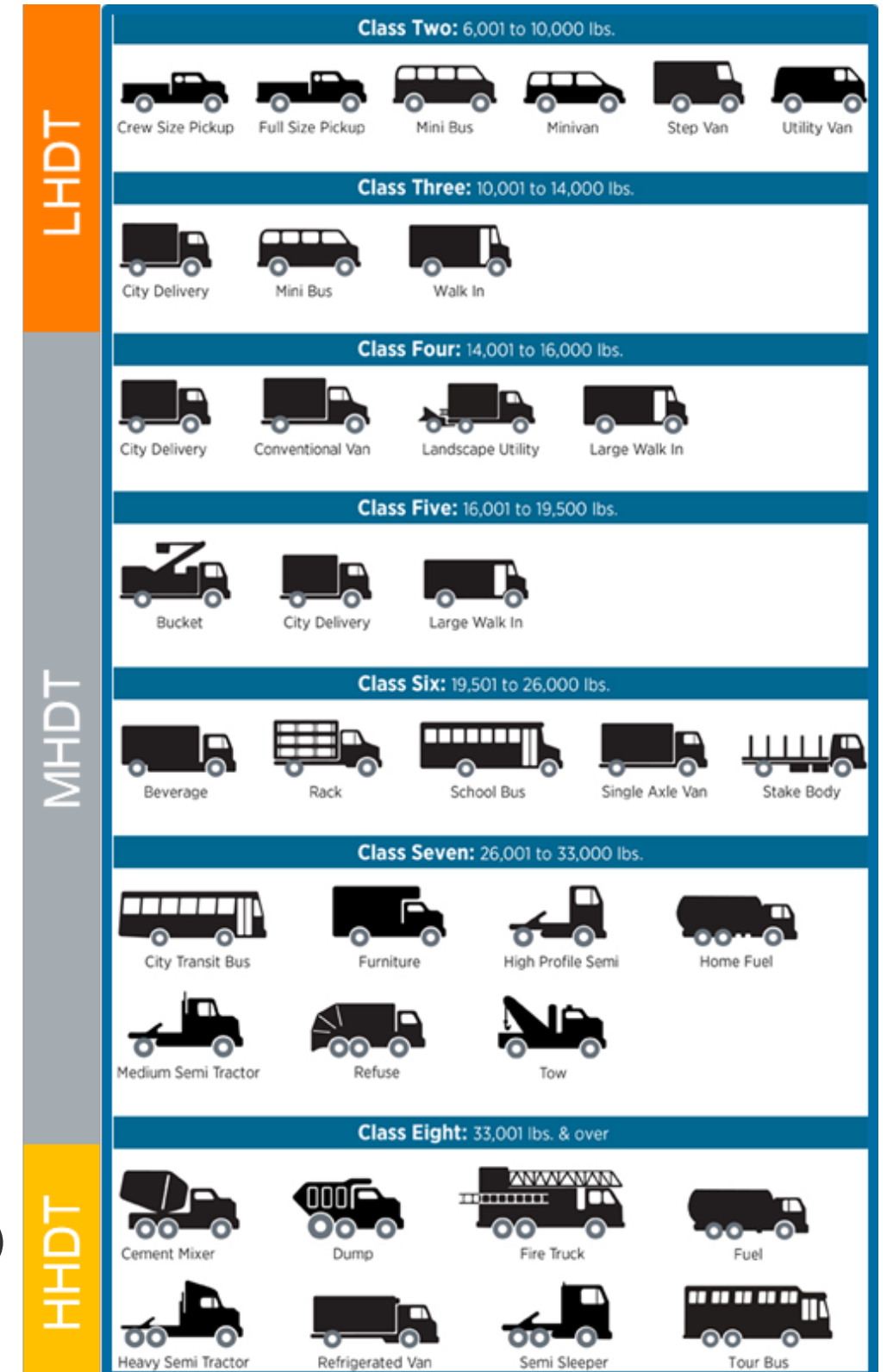
POWER SYSTEM STRATEGIC VISION – DISTRIBUTION PLAN

TRUCK ELECTRIFICATION

- **Heavy-duty trucks** in LA account for more than 51% of on-road transportation nitrogen oxides NO_x emissions, though they make up only 5% of vehicle population
- **Heavy-heavy-duty trucks** such as dump trucks and fire trucks, contribute more than 90% of truck-related NO₂ and 80% of truck-related particulate matter concentration in LA (**5x other heavy-duty trucks**).
- Disadvantaged Communities (DACs) have a disproportionately high representation among LA’s most traffic-affected neighborhoods

Heavy-duty truck categories
(Class 2b-8: 8,501 lbs. and over):

- Light heavy-duty truck (LHDT, Class 2b-3)
- Medium heavy-duty truck (MHDT, Class 4-7)
- Heavy heavy-duty truck (HHDT, Class 8)





POWER SYSTEM STRATEGIC VISION – EQUITY

LADWP POWERED-BY EQUITY INITIATIVES

Initiatives	Description	Community Benefits			
		Affordability	Access	Jobs	Air Quality
EV Hubs (Charging Plazas)	Provide EV charging access across the City of LA	✓	✓	✓	✓
Used EV Rebate	Provide \$4,000 rebate for used EVs	✓	✓	-	✓
EV Charger Rebate	Provide up to \$1,000 to purchase and install Level 2 chargers	✓	✓	✓	✓
Metro, LAWA, and POLA Electrification	Provide and support the electrification of Metro, LAWA, and POLA to significantly reduce GHG emissions throughout the City of LA	-	✓	✓	✓
Heavy Duty Truck Charging Infrastructure	Provide and support EV charging infrastructure for heavy duty trucks across the City of LA	-	✓	✓	✓
Solar Rooftop	Proliferate solar across the City of LA by leasing their rooftop to install solar in exchange of a direct monthly payment	✓	✓	✓	✓
Shared Solar	Provide access to solar energy for multi-family residents (mostly renters) with no individual rooftops	✓	✓	✓	✓
Cool LA	Provide air conditioner incentive to low income residents particularly to those vulnerable to heat waves	✓	✓	-	✓
Commercial Direct Install	Provide assessments and free efficiency upgrades to qualifying business customers.	✓	✓	✓	✓
Comprehensive Affordable Multifamily Retrofit (CAMR)	Assist low income buildings in retrofitting to reduce both energy and water usage	✓	✓	✓	✓
Project Powerhouse Affordable Housing	Accelerate the delivery of affordable housing projects at a reduced cost	✓	✓	✓	-
Home Energy Improvement Program (HEIP)	Provide a free home assessment to identify energy efficiency improvement areas. The program also performs necessary upgrades identified in the assessment.	✓	✓	✓	✓
EZ Save	Provide discount and explore higher discount to low income customers to reduce their electric bill	✓	✓	-	-
Senior Citizen/Disability Lifeline Rate	Provide discount to low income senior and disabled customers to reduce their electric bill	✓	✓	-	-
Level Pay	Provide option to pay higher seasonal bill across a 12-month period	✓	✓	-	-
Extended Payment Programs	Provide option to pay electric and water bill up to a period of 36 months for all customers and 48 months for low income customers	✓	✓	-	-

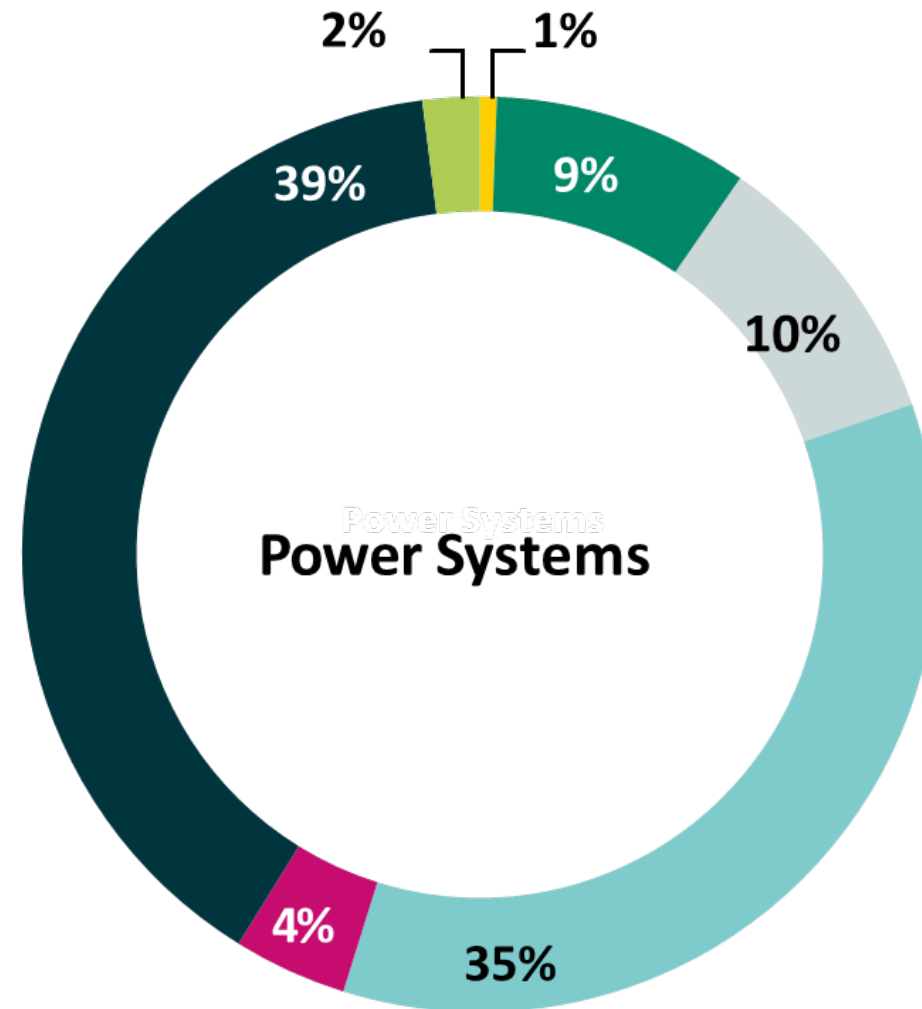
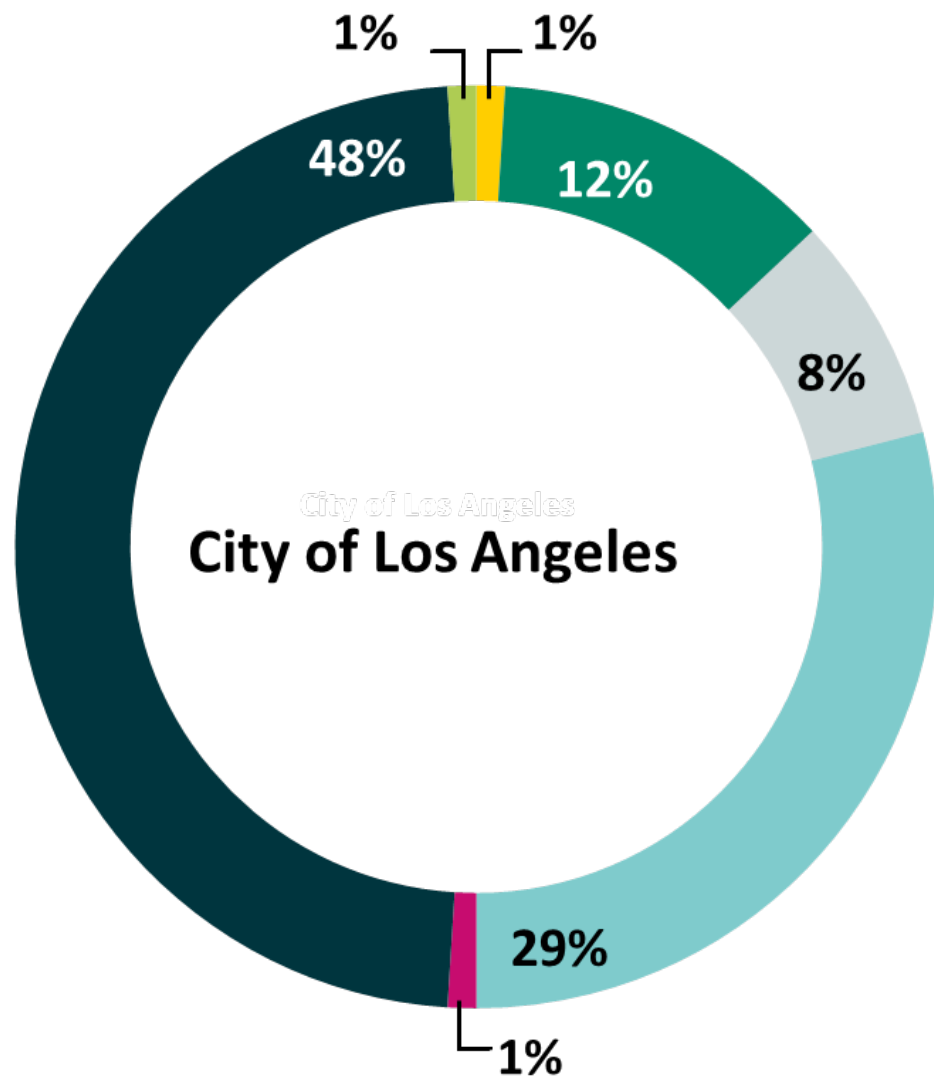
HUMAN RESOURCE PLAN

POWER SYSTEM STRATEGIC VISION – HUMAN RESOURCE PLAN

LADWP STAFFING LEVEL (as of January 2024)

- LADWP Funded Staffing Level FY 2023-24 = 11,848 FTEs
- Occupancy = 11,334 FTEs
- Vacancy Rate = 6%

Ethnicity Distribution



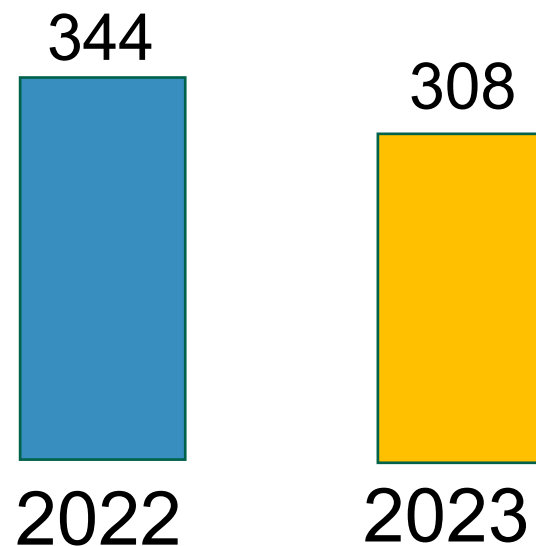
POWER SYSTEM STRATEGIC VISION – HUMAN RESOURCE PLAN

SCENARIO BASED HUMAN RESOURCE PLAN

New FTEs per Year (By Cumulative Scenario)

Scenario	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	Total
Scenario 1: System Intact	97	389	356	346	211	243	251	254	179	146	2473
Scenario 2: PSRP+	142	473	446	437	272	317	315	335	242	199	3179
Scenario 3: Load Growth	212	568	540	502	348	393	402	425	345	290	4024
Scenario 4: SLTRP + STP	217	601	565	509	356	411	413	448	363	296	4178

Recent Hiring Levels (FTEs)



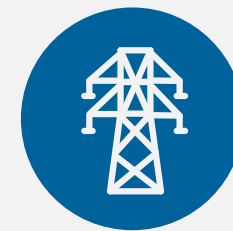
Power System Is On Target for Meeting Its Human Resource Needs.

POWER SYSTEM STRATEGIC VISION

SUMMARY



The electric vehicle revolution is here.



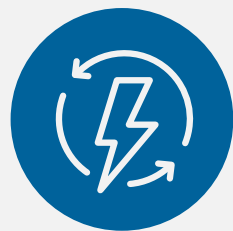
Transmission investments will be needed for the delivery of renewable resources to the LA Basin



LADWP load is expected to increase rapidly.



Need to expand the 34.5-kv system to support load growth from electrification



Need to procure significant renewable energy to meet demand and 100% carbon free by 2035.



Need to develop EV-Hubs across the City to provide equal access to EV charger stations



Need to invest in the in-basin thermal plants to continue provide system reliability .



Human resource is needed to implement all these clean energy initiatives.

Thank You



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