LA100

ACHIEVING 100% RENEWABLE ENERGY IN LOS ANGELES

LA DWP

Roadmap Towards 100% Carbon Free by 2035

September 19, 2024

LA DWP Los Angeles Department of Water & Power

Today's Agenda

10:00 – 10:05 am	**Welcome and Introductions**
10:05 – 10:10 am	**Meeting Purpose, Agenda Overview, Guide for Productive Meetings**
10:10 – 10:40 am	**SLTRP Case Update**
10:40 – 10:45 am	**Distribution System Overview**
10:45 – 11:10 am	**Distribution System Planning – Part One**
11:10 – 11:15 am	*Break (5min)*
11:15 – 11:40 am	**Distribution System Planning – Part Two**
11:40 am – 12:00 pm	**Next Steps and Q&A**
12:00 pm	**Closing**

Advisory Group Roles

Provide input and feedback based on the expertise, knowledge, and resources of the organizations, institutions, and constituent groups represented by the Advisory Group Members

- **Provide Perspectives.** Discuss major issues that LADWP will face in the next 10-20 years. Provide input and review of strategic scenarios that are used in the resource analysis and final recommendations for near-term actions.
- **Continue the Collaborative Dialogue.** Build upon the momentum from the LA100 Equity Strategies Study and 2022 SLTRP Process.
- **Conduct Outreach to Respective Constituent Groups.** Bring diverse input into the process and keep constituents informed of the SLTRP process.
- **Consider Broader Community Input.** During Advisory Group discussions think of the various communities and considerations throughout the City of Los Angeles.
- **Provide Technical Information & Perspectives.** Add value through your areas of expertise.

Advisory Group Roles

Provide input and feedback based on the expertise, knowledge, and resources of the organizations, institutions, and constituent groups represented by the Advisory Group Members

Continued…

- **Read Pre-Meeting Materials.** Prior to each meeting materials and agendas will be distributed and you are expected to be prepared for the meeting. This includes reading and reviewing the 2022 SLTRP and LA100 Equity Strategies Study Report.
- **Participate in All Meetings.** A total of six (6) meetings are anticipated between March and December 2024. Meetings are expected to alternate between in-person and virtual. Each meeting will be conduced in 2-3 hours segments.
- **Alternate Representatives.** If you cannot attend a meeting, then please send an alternate on your behalf.
- **Balancing Perspectives.** To maintain stakeholder balance – only one representative per member organization in meeting discussions.

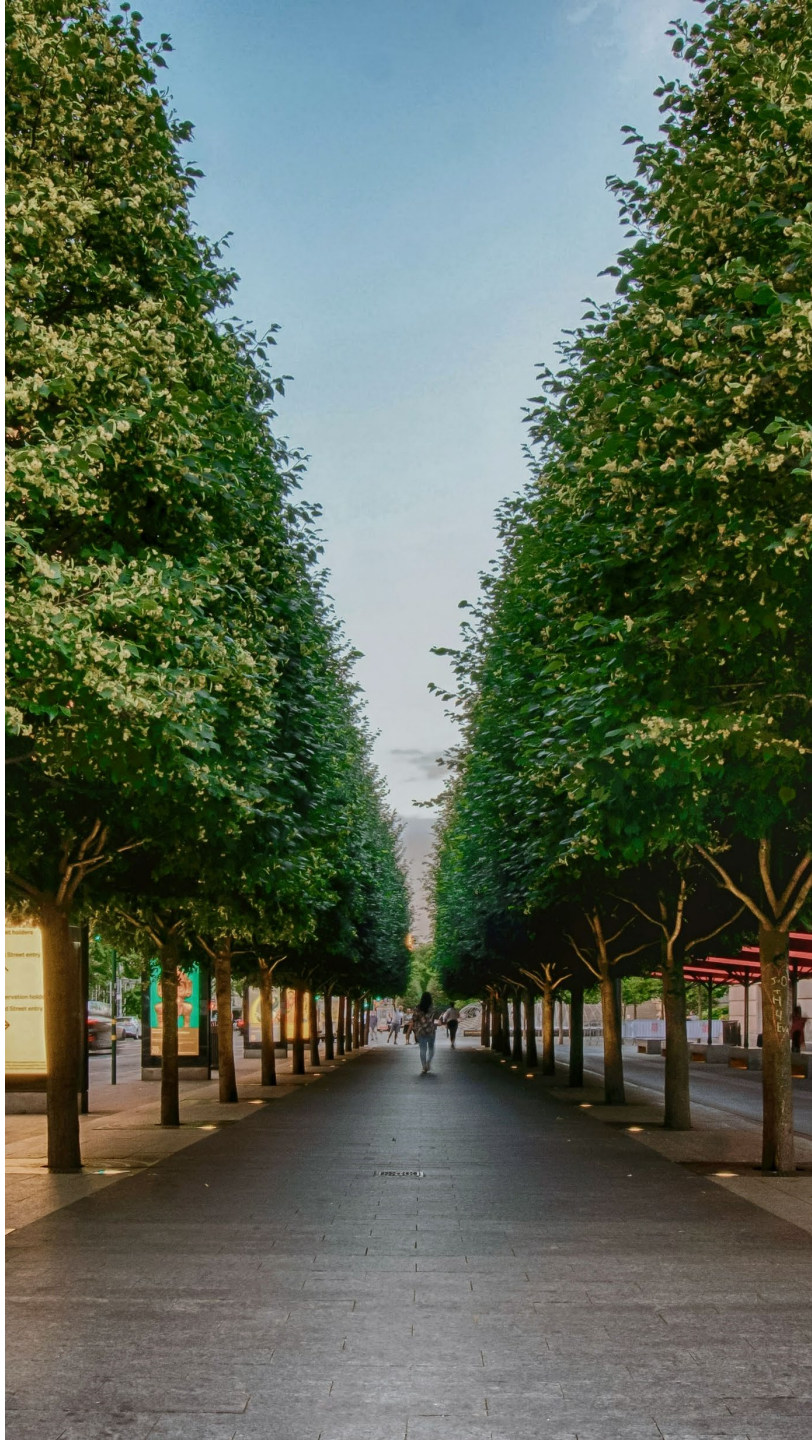
2024 Advisory Group Members

Stakeholder Category	Organization(s)	# of Representatives
Academia	CSUN, UCLA, USC	6
Business and Workforce	CEERT, Center for Sustainable Energy, Central City Assoc, IBEW – Local 18, LABC, LA Chamber, VICA, LABC	17
City Government	CLA, City Attorney, Council Districts, Rate Payer Advocate, Mayor's Office, Civil & Human Rights and Equity Dept., CEMO, Housing Authority, LA City Planning, LADOT	26
Neighborhood Council	DWP Advocacy Committee, DWP MOU Oversight Committee, Neighborhood Council Sustainability Alliance, SLAANC	5
Environmental Community	CBE, EDF, Food and Water Watch, NRDC, LAANE, Sierra Club, Climate Resolve, Community Build, Enterprise Community Partners, Esperanza Community Housing, LA Cleantech Incubator, Move LA, PACE, Pacoima Beautiful, RePower, SLATE-Z, So. Cal. Association of Non-Profit Housing; SCOPE	20
Premier Accounts and Key Customers	LAUSD, LAWA, Metro, POLA, Valero Wilmington Refinery	10
Utilities	Southern California Gas, SCPPA, Water and Power Associates	6
Total		**90**

Note: *LA100 Equity Strategies Steering Committee has been integrated into the SLTRP Advisory Group Roster*

Guidelines

1. Everyone commits to all members having equal time to contribute input and perspectives
2. Keep input concise so all members have time to participate
3. Actively listen to others, seek to understand perspectives
4. Offer ideas to address questions and concerns raised by others
5. Participate by using the Submitting Questions in Zoom Chat or Raise Hand in Zoom



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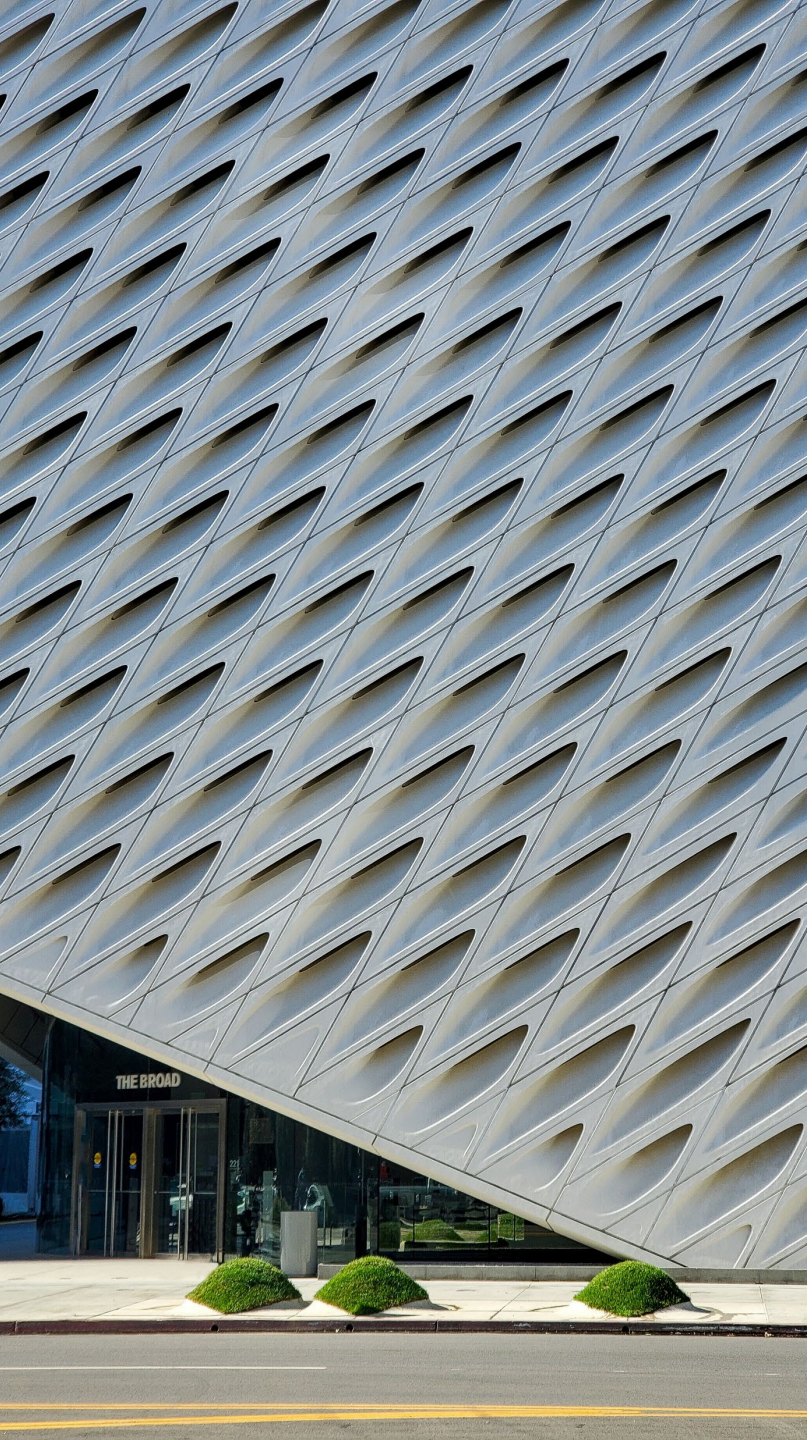
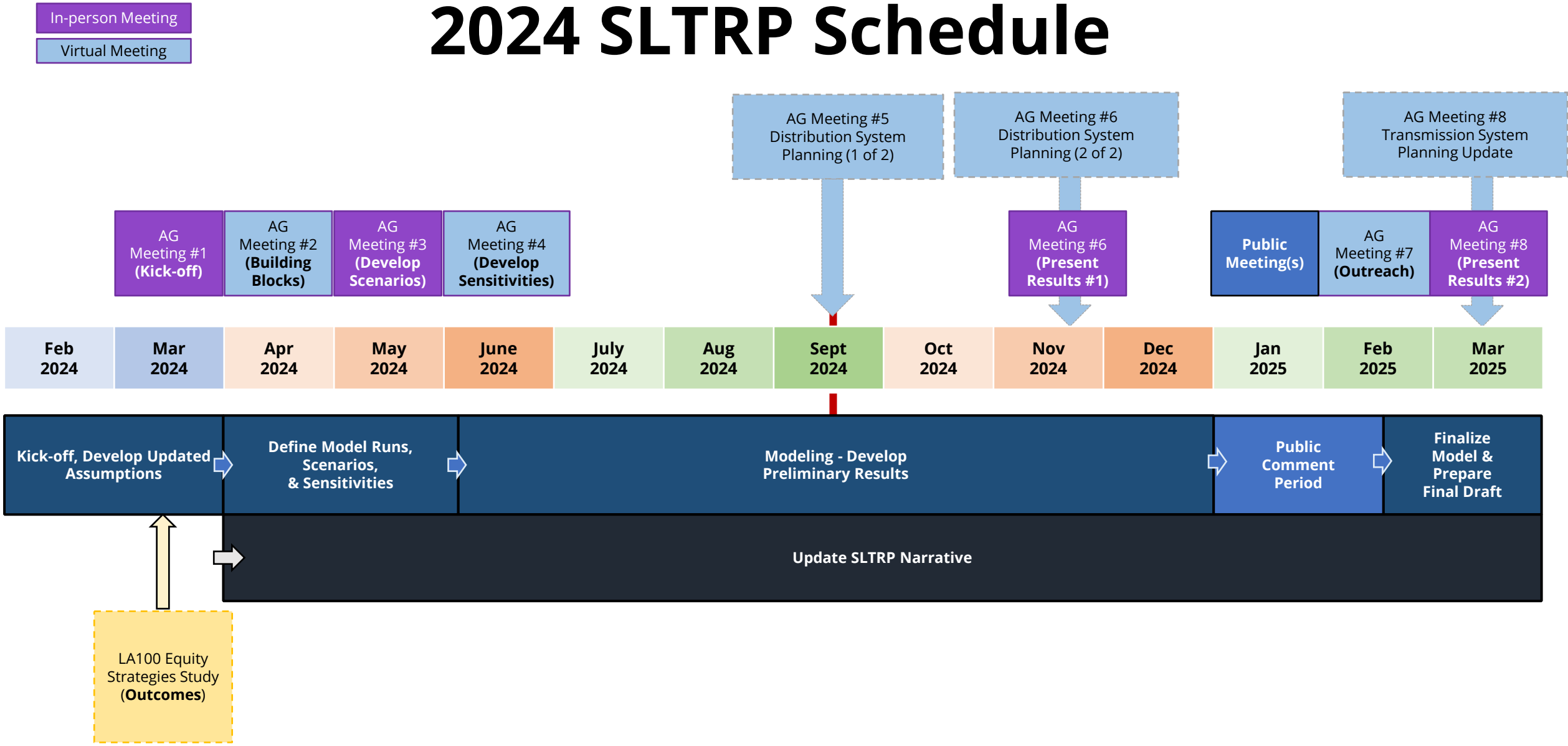


Agenda

1. 2024 SLTRP Schedule
2. Integrated Resource Planning Process
3. 2024 SLTRP Objectives and Modeling Updates
4. Next Steps
5. Q&A

2024 SLTRP Schedule

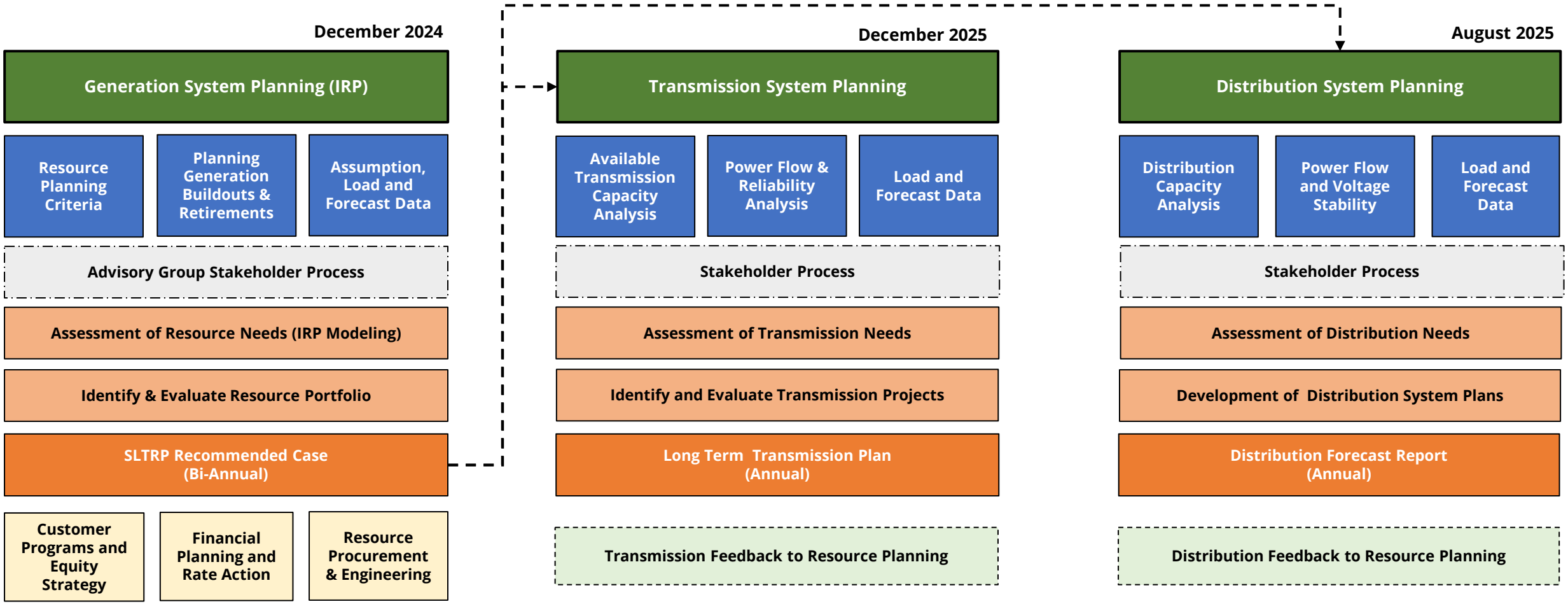


Note: Specific dates and meetings are subject to change.

Power Integrated System Planning

Draft

Regulatory Requirements & Public Policy Goals



2026 SLTRP & Assumptions Package

LA100 - City Goals

Achieve LA100 Goal in Reliable, Affordable, Sustainable, and Equitable Manner

- **100% Carbon-Free.** Case 1 meets the LA City Council Motion for 100% carbon-free energy by **2035** and builds upon assumptions from the LA100 Study.
- **80% RPS.** Case 1 achieves the 80% RPS by **2030,** a balance between the regional and local resources.

Case Breakdown	
RPS % by 2030	80%
Carbon-free % by 2035	100%
DERs	High
Electrification & Energy Efficiency	High
Transmission	Upgrade to Existing and Buildout of New Lines
Natural Gas Phase Out	2035
Energy Storage	Balance Between Daily and Seasonal Energy Mismatch

2024 SLTRP Objectives

100% Carbon Free by 2035

A

Continued Alignment with 2035 Goals

Update The Power System Roadmap and Investments Needed to Achieve 100% Carbon Free By 2035

B

Update Technical Assumptions

Low/Medium/High Load and Market Pricing Forecasts/Sensitivities, Regulatory Framework, Emergence and Readiness of Technologies, Enhance Distributed Energy Resources, Loans and Grants Opportunities, Peak Load Reduction Strategy, Etc.)

C

Assess Sensitivities

Include Risk Assessments (Sensitivities) and Opportunity Analysis (Scenarios) of Various Pathways (Hydrogen Fuel Supply and Technology Risks, Higher DER, No Combustion, Pricing Risks, Climate Risks, Etc.)

D

Technologies Evaluations

Evaluate Technology (Energy Storage, Pumped Hydro, Offshore Wind, Green Hydrogen, Etc.). Considerations for readiness, cost, feasibility, limitations, etc.

- Financial Forecasts
- Energy Burden
- Non-Energy Benefits
- Affordability
- Build & Adoption Rates
- Contingency Planning
- LCOE / Total Costs
- Reliability Scoring
- Technology Performance
- Loss of Load
- Peak Load Coverage
- GHG Emissions

2024 SLTRP Modeling

Reliable, Affordable, Sustainable, and Equitable Pathway to 100% Carbon Free Energy

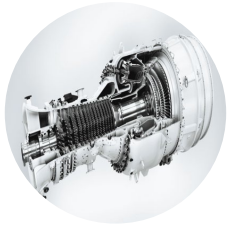
Electrification
Efficiency
Demand Response
>2,000 MW

Distributed
Energy
Resources
+>3000 MW

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

Storage
+>3,000 MW

Transmission &
Distribution
+>100s of projects



Dispatchable
Resource
+>2,600 MW

Local Policy – 100% Carbon Free by 2035 (Case 1 Update)

Optimization

SB100
Reference

High In-Basin
DER

No In-Basin
Combustion

No Hydrogen
Supply

Implementation Risk	Description	Applied 100% by 2035 Case
Technology Readiness	Evaluate Technology Readiness and Feasibility	Emerging Technology Readiness (TRL) and Implementation Feasibility
Demand Side Resources	Demand Response Local Solar and Storage Energy Efficiency	Reaching only half of LADWP's DER targets due to low customer adoption
Low Load	Transportation/Building Electrification	Reduces projected load due to slow adoption.
Resource Constraint	Shortfall of resources due to challenges	Unable to reach projected build rates and hire required human resources. Supply chain constraints.
Climate Change	Impacts of climate change on resources	High peak loads, lower generation output. Future temperature rise, escalated heat storms, prolonged and increases incidents of wildfire, prolonged drought.
Price Volatility	Renewables, Energy Storage, Hydrogen, Carbon	Low/Expected/High
Cost/Rates	Cost impact of each option/risk	Cost breakdown for each resource type, risk, and optimization.

2024 SLTRP MODELING PROGRESS

Balancing Future Demand with Future Resources

Model Buildout

- Assessment of existing, planned and potential renewables (solar, wind, geothermal)
- Technology performance characteristics and cost
- Transmission available corridors and capacities
- Climate change impacts to reliability

Production Cost Modeling

- System Reliability (LOLE)
- Operational performance and cost
- Buildout rates
- Emissions Reduction

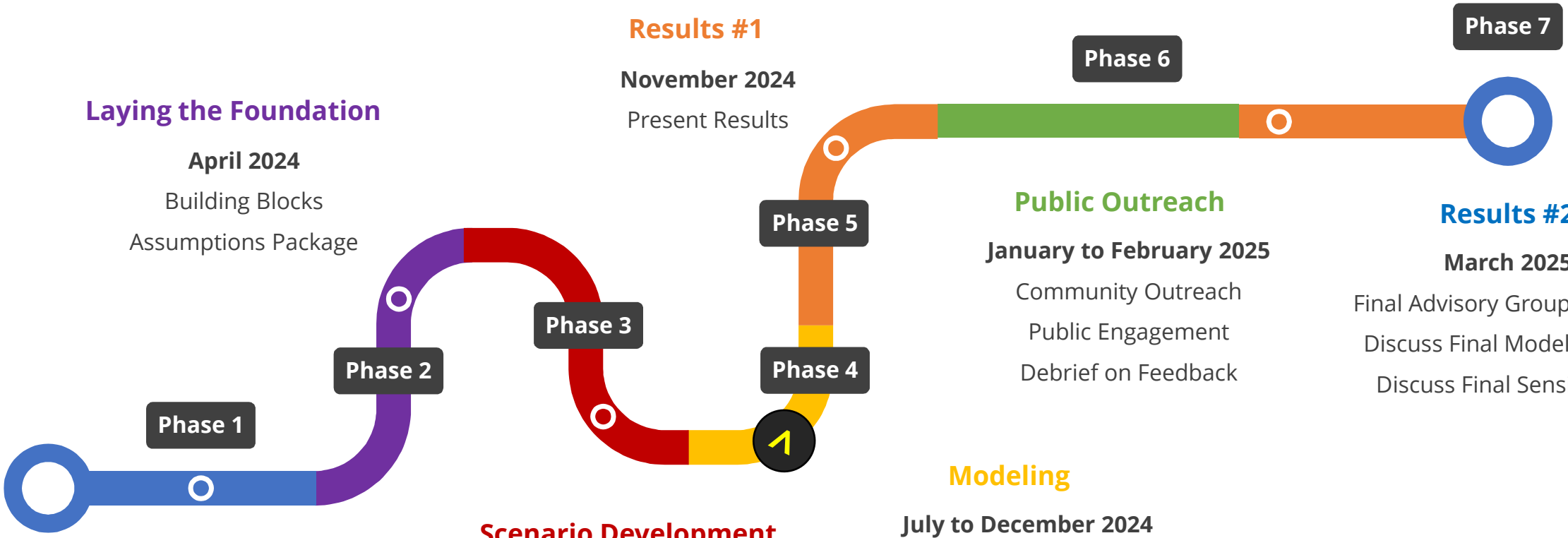
Assumptions

- Load Growth
- Energy Conservation Measures
- Pricing Projections
- Technology Considerations

Capacity Expansion

- Candidate resource (offshore and land wind, solar, batteries, flow energy storage, enhanced geothermal, etc.)
- RPS Goals
- Planning Reserves

NEXT STEPS – MEETING MAP



Launch

March 2024

Kickoff

Laying the Foundation

April 2024

Building Blocks

Assumptions Package

Scenario Development

May to June 2024

Developing Scenarios

Finalizing Sensitivities

Results #1

November 2024

Present Results

Modeling

July to December 2024

Modeling

Optional Distribution System Planning AG Meetings

Public Outreach

January to February 2025

Community Outreach

Public Engagement

Debrief on Feedback

Results #2

March 2025

Final Advisory Group Meeting

Discuss Final Model Results

Discuss Final Sensitivities

2024 SLTRP Advisory Group Draft Meeting Plan
Please note that dates are tentative and subject to change based on needs of the SLTRP process.

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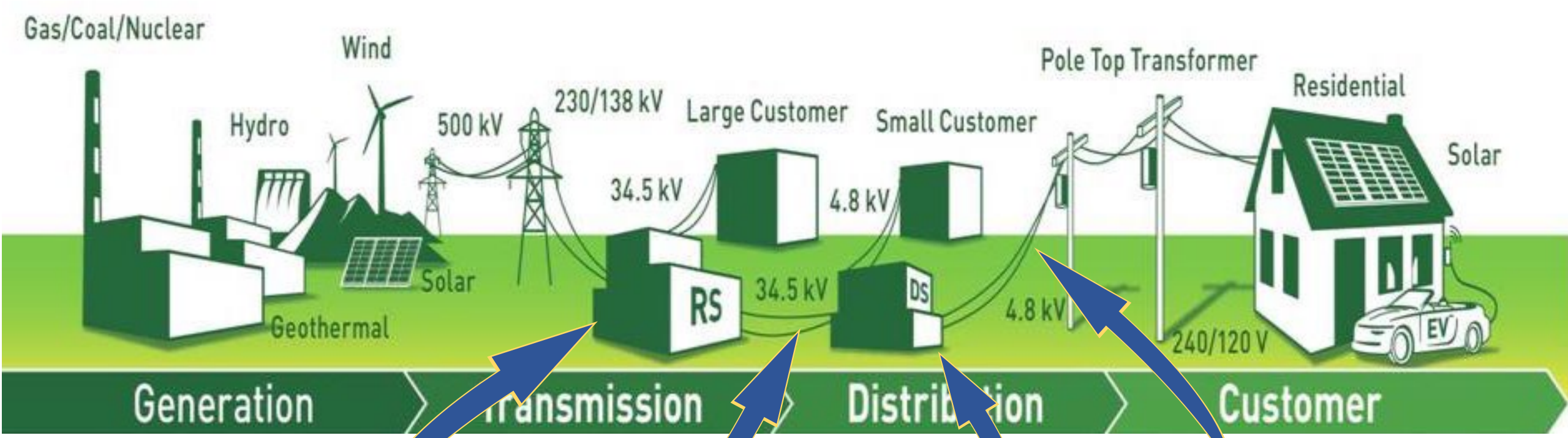
Q&A

2024 Distribution System Planning Advisory Group Meeting (1 of 2)

September 19, 2024

Power **S**ystem **P**lanning **D**ivision

How Power Gets to You



20

532

126

1617

Substations

Distribution Lines

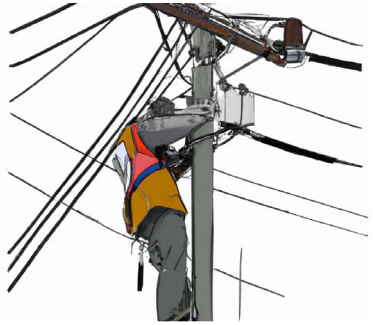
35,000 Volts. Equivalent of 4,000 AC Units

4,800 Volts. Equivalent of 600 AC Units

120 Volts. Equivalent of 5 AC Units

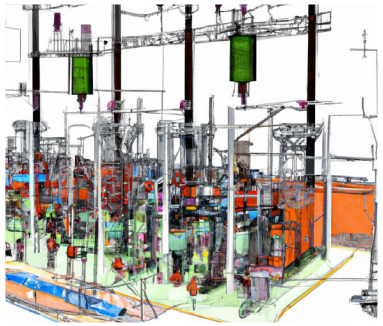
Power Distribution System Initiatives

Power System Reliability Program



- Replacement of distribution assets to ensure long term system longevity and reliability.

Distribution System Capacity



- Grid's capacity to accommodate existing load and load growth from electrification

Customer Interconnections

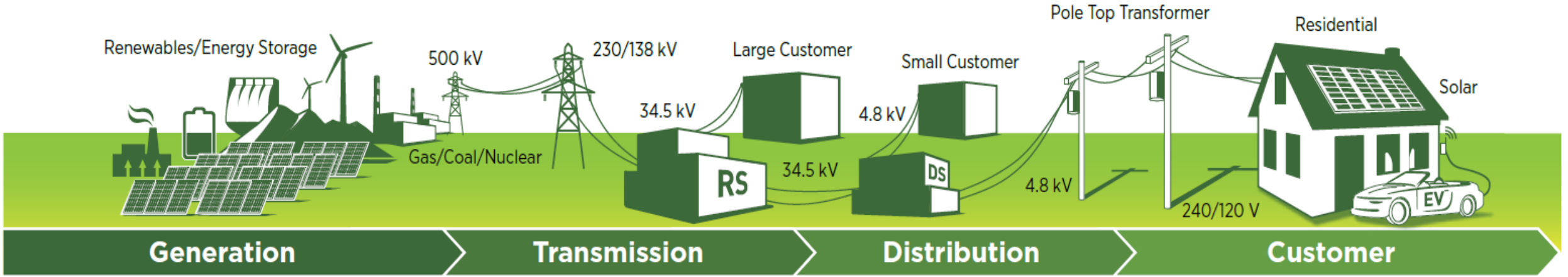
- Onboarding of new customers, load, and distributed energy resources.

Programs

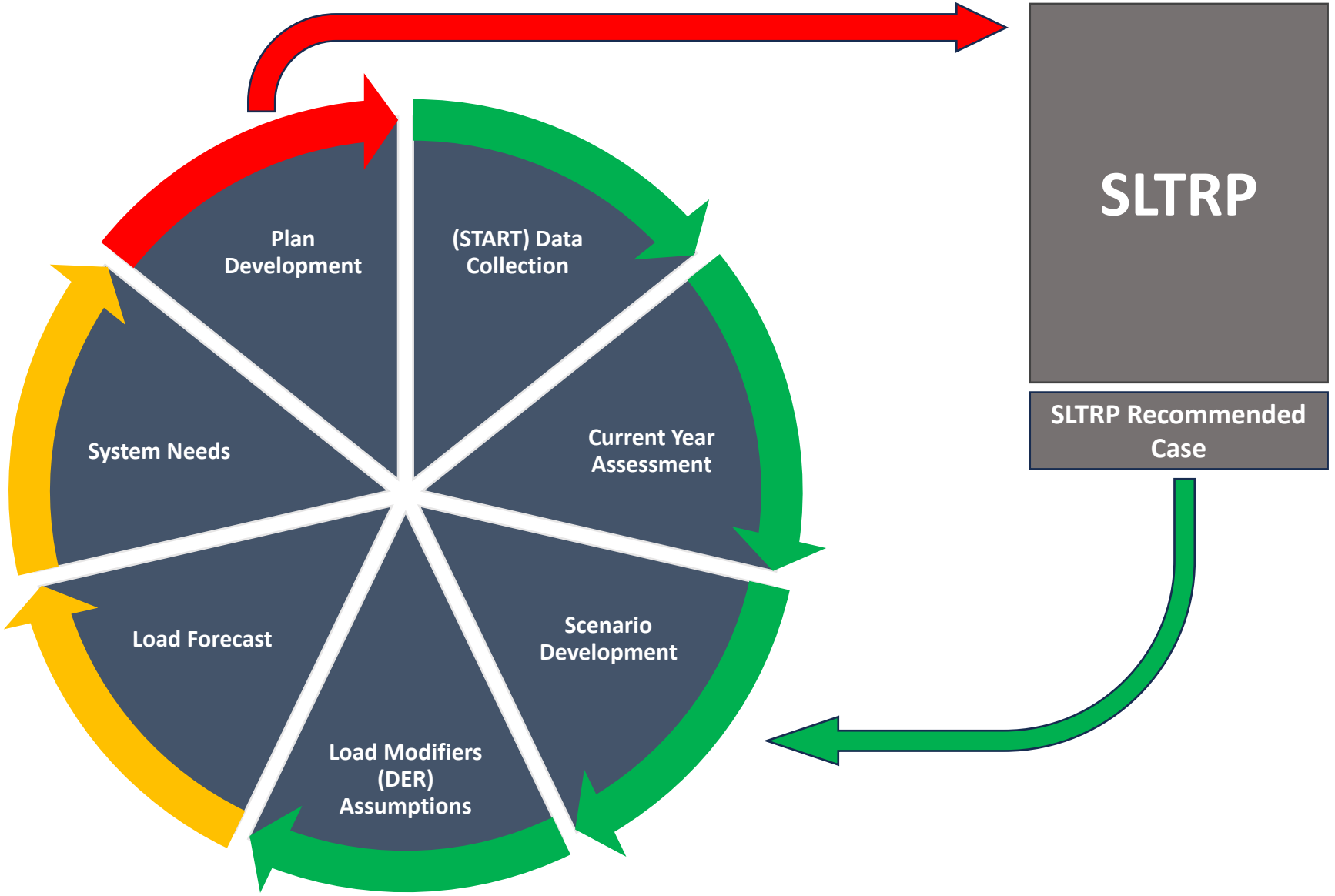
- Multitude of distributed customer programs offerings such as Solar, Electrical Vehicle Charging, Demand Response, Energy Efficiency, V2G and more.

Modernization

- Transitioning to a more data-centric, self -healing, resilient, carbon-free power distribution systems

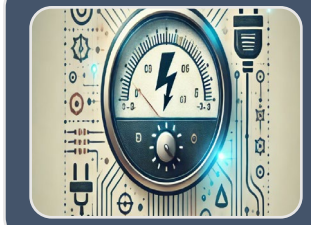


Distribution Planning Cycle



Distribution Planning Criteria

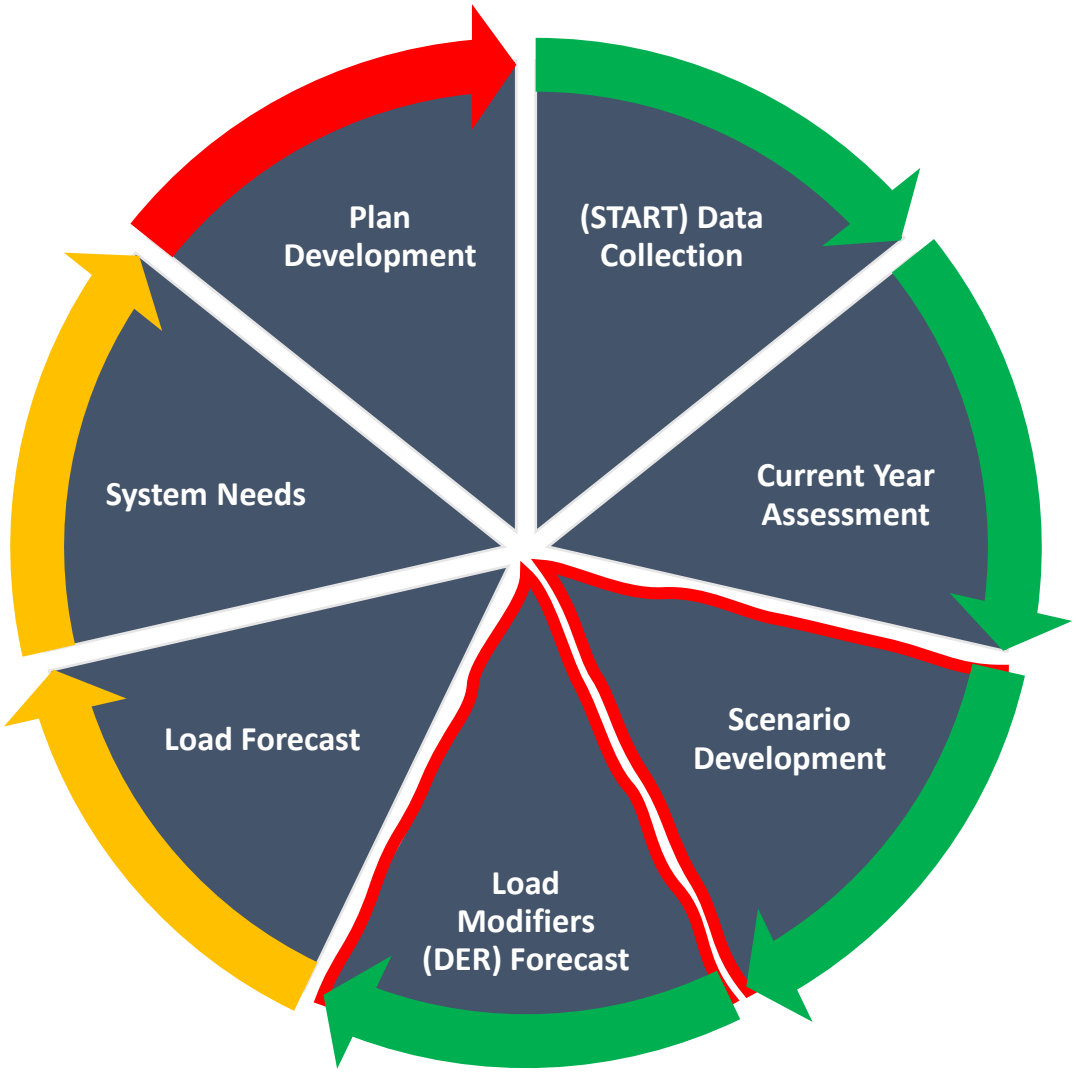
Capacity Rating



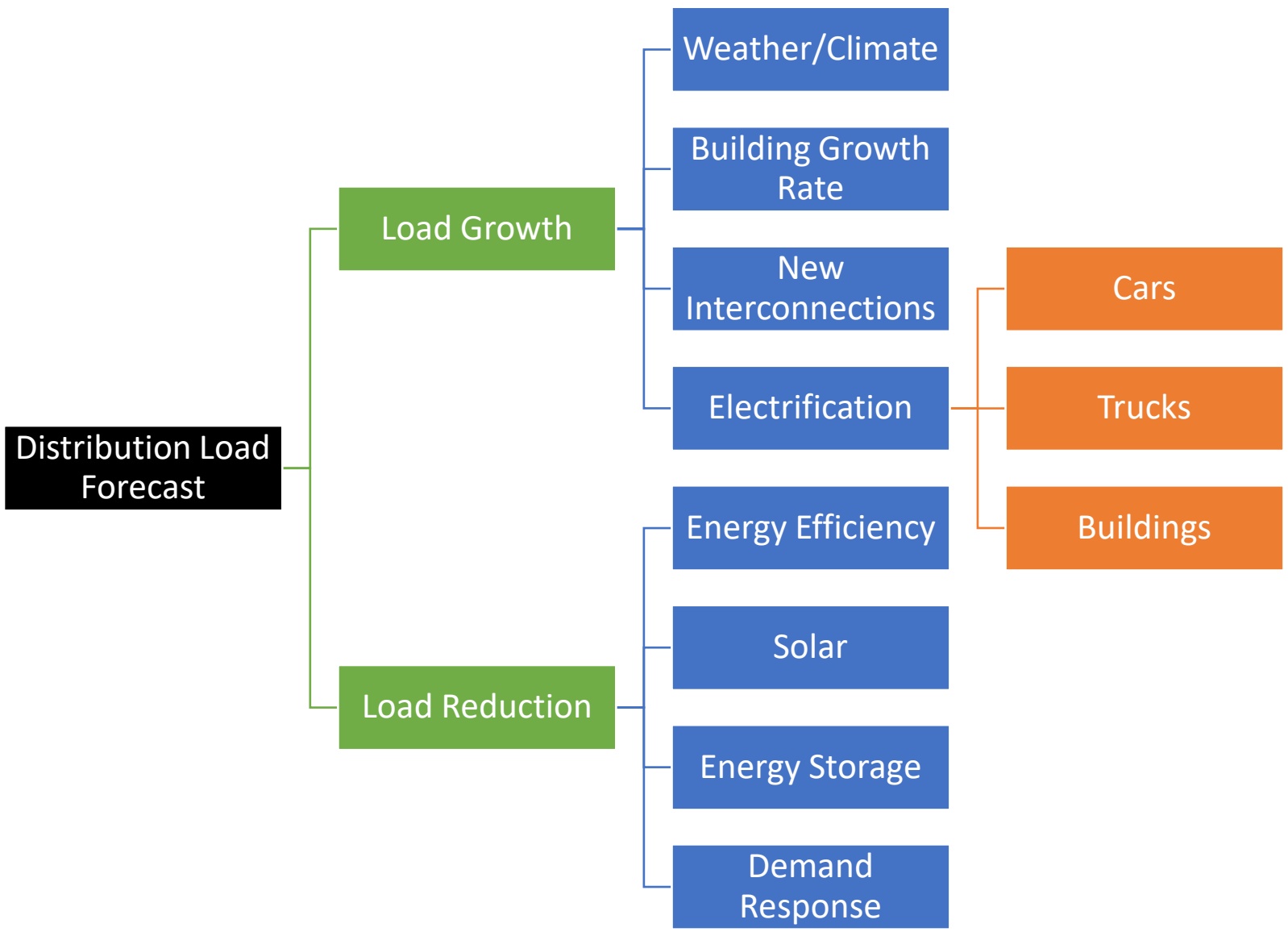
Power Quality (Voltage)

Reliability & Redundancy

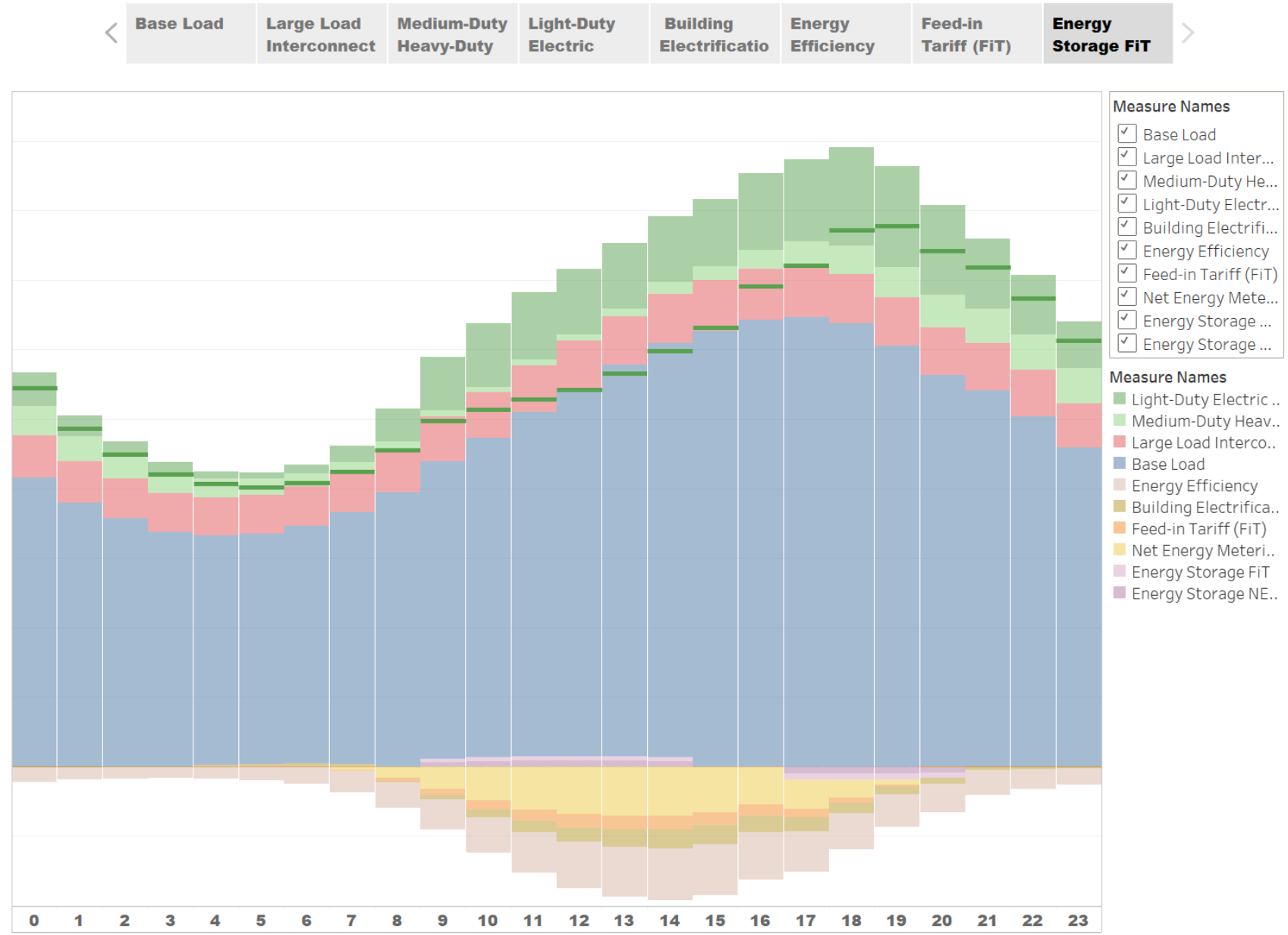
Focus of Discussion – Inputs and Assumptions



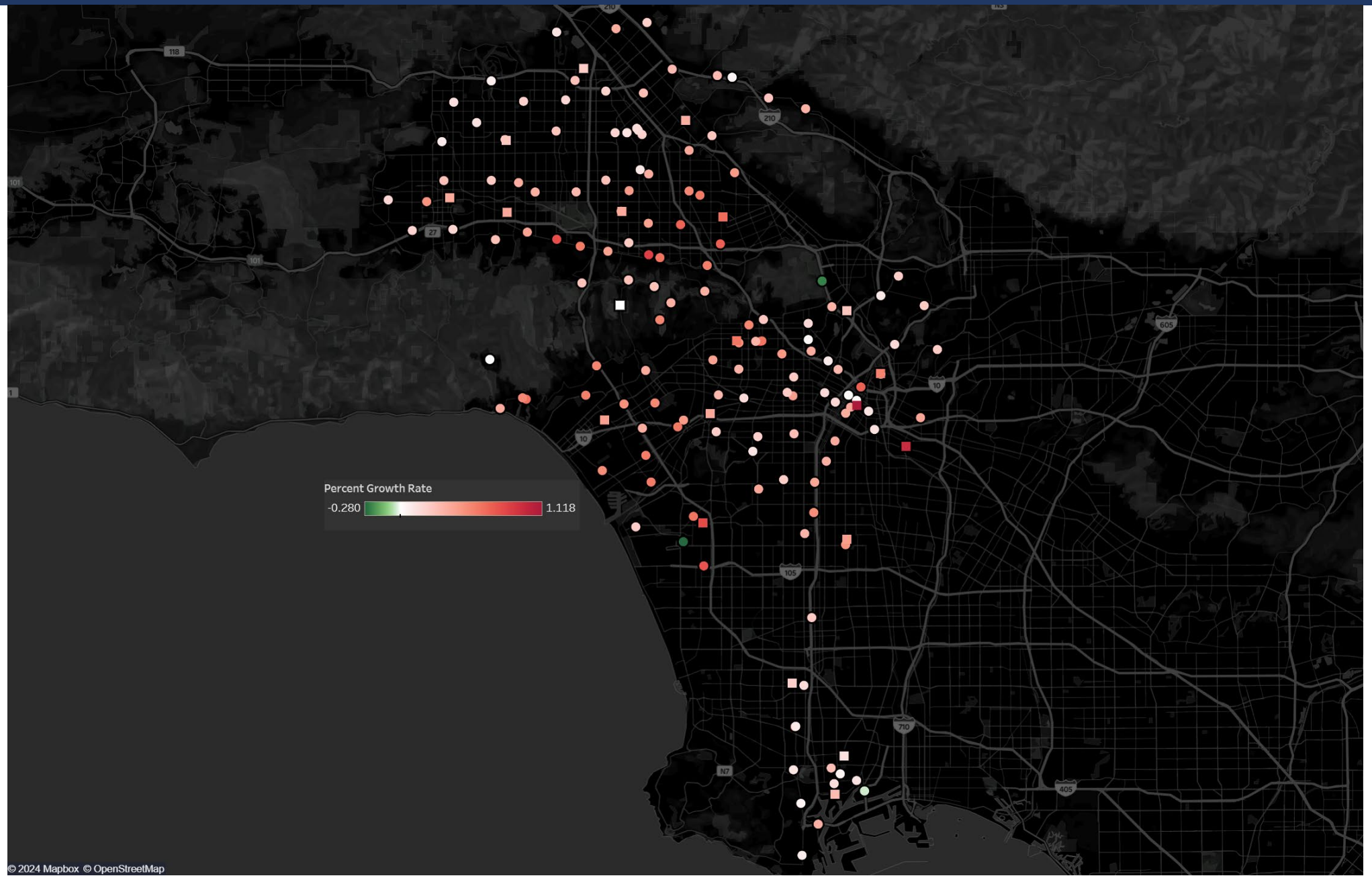
Load Modifiers



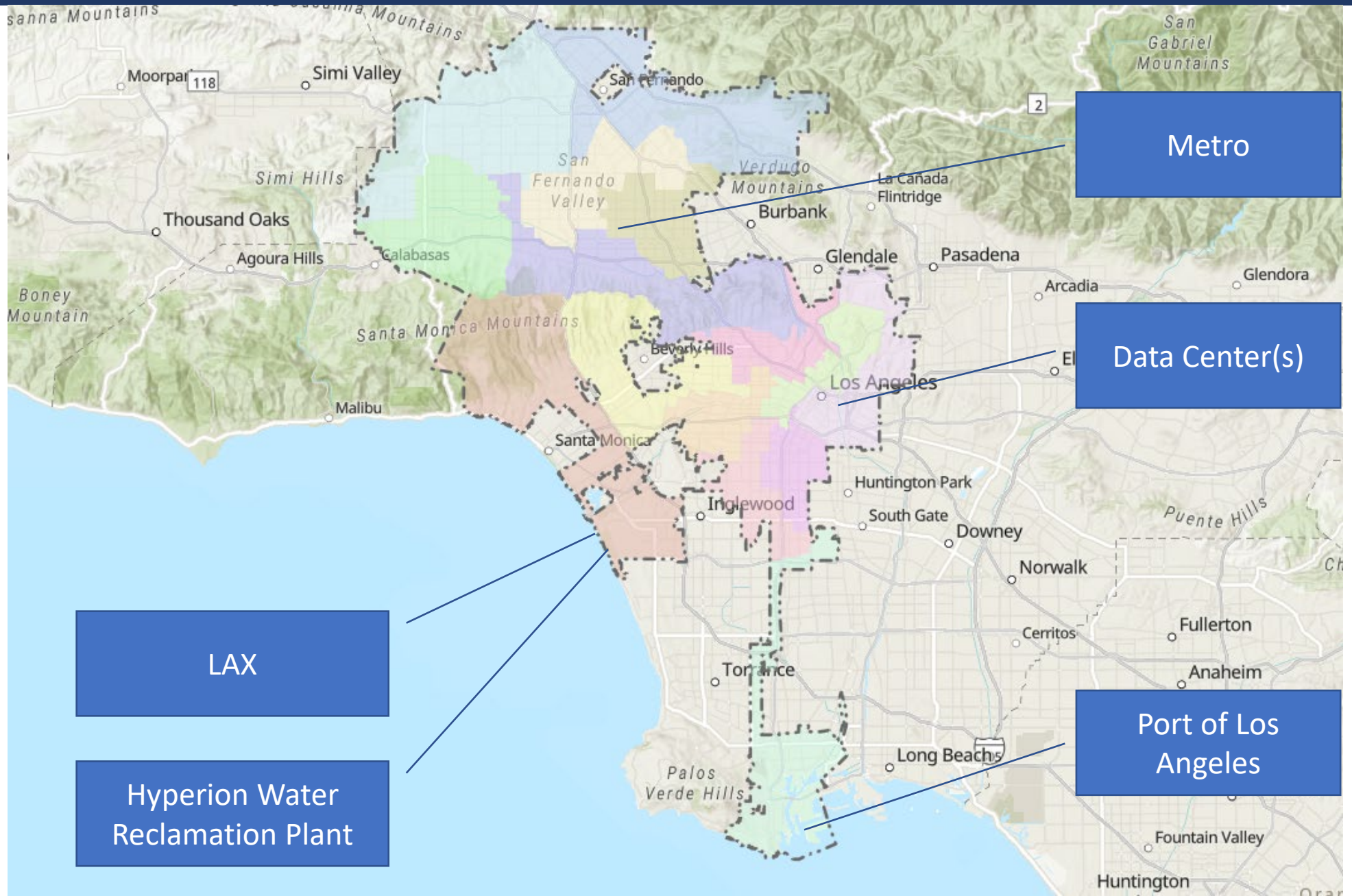
Load Modifiers (Live DEMO)



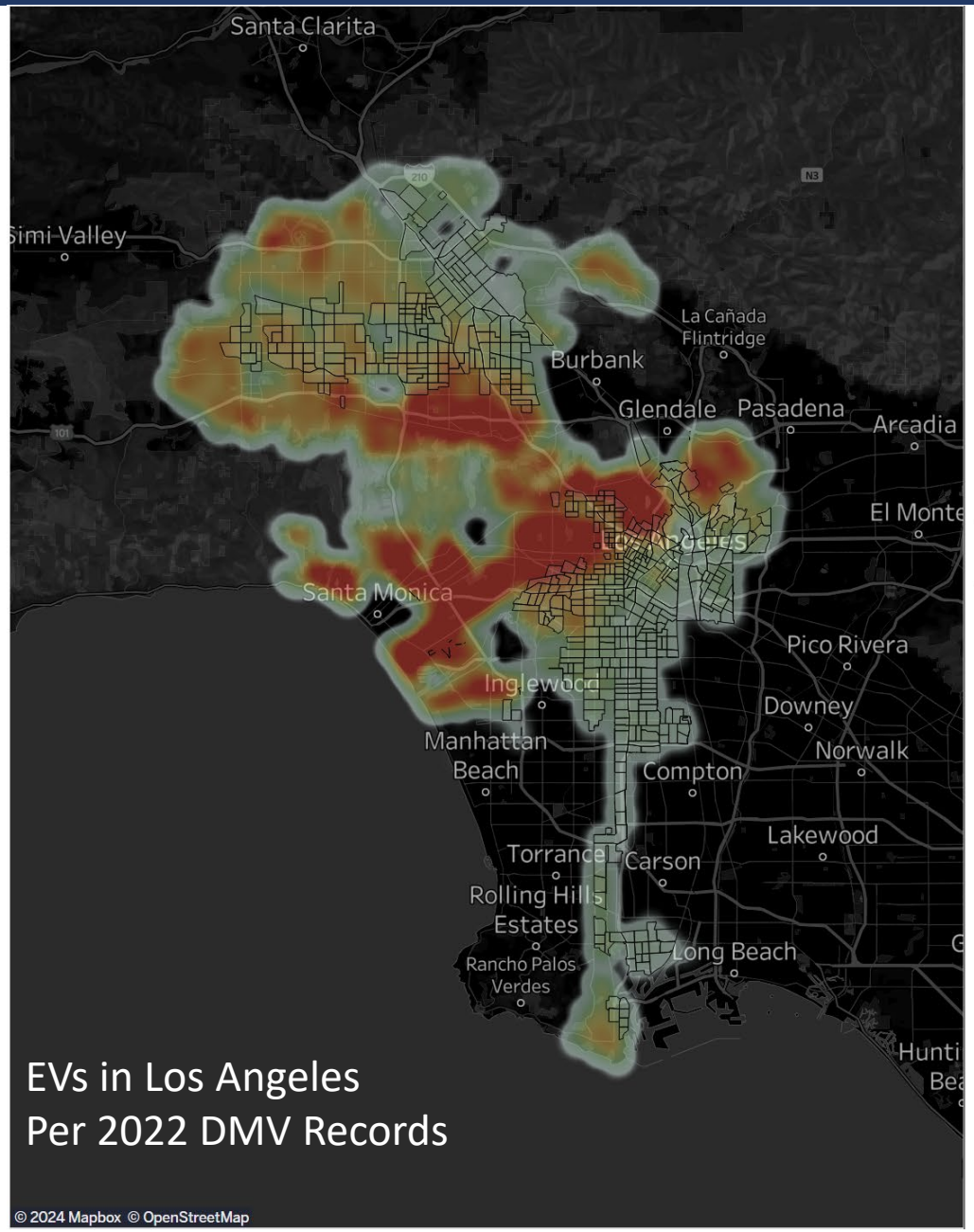
Building Growth Rate (Live DEMO)

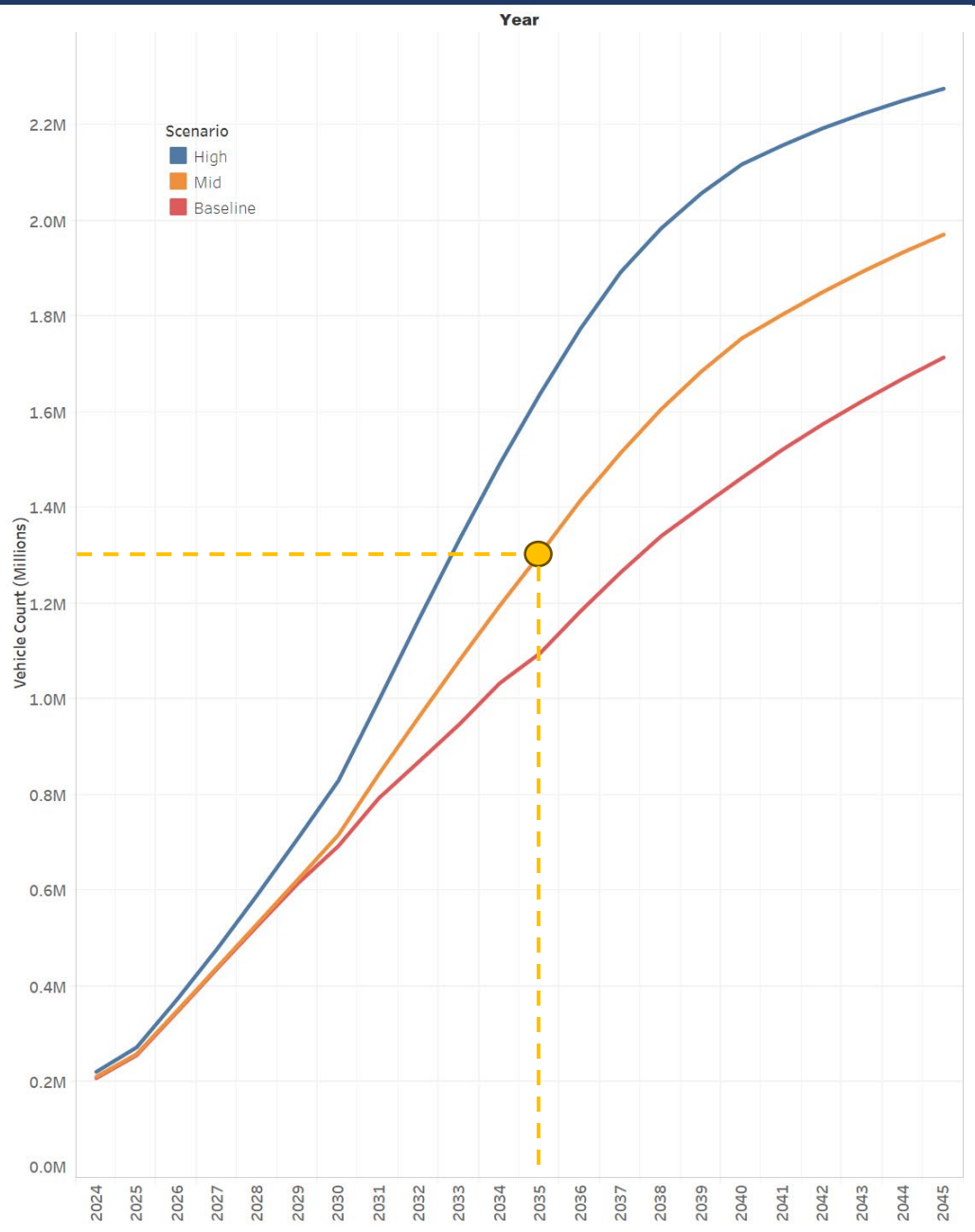


Additional Major Electrification Loads

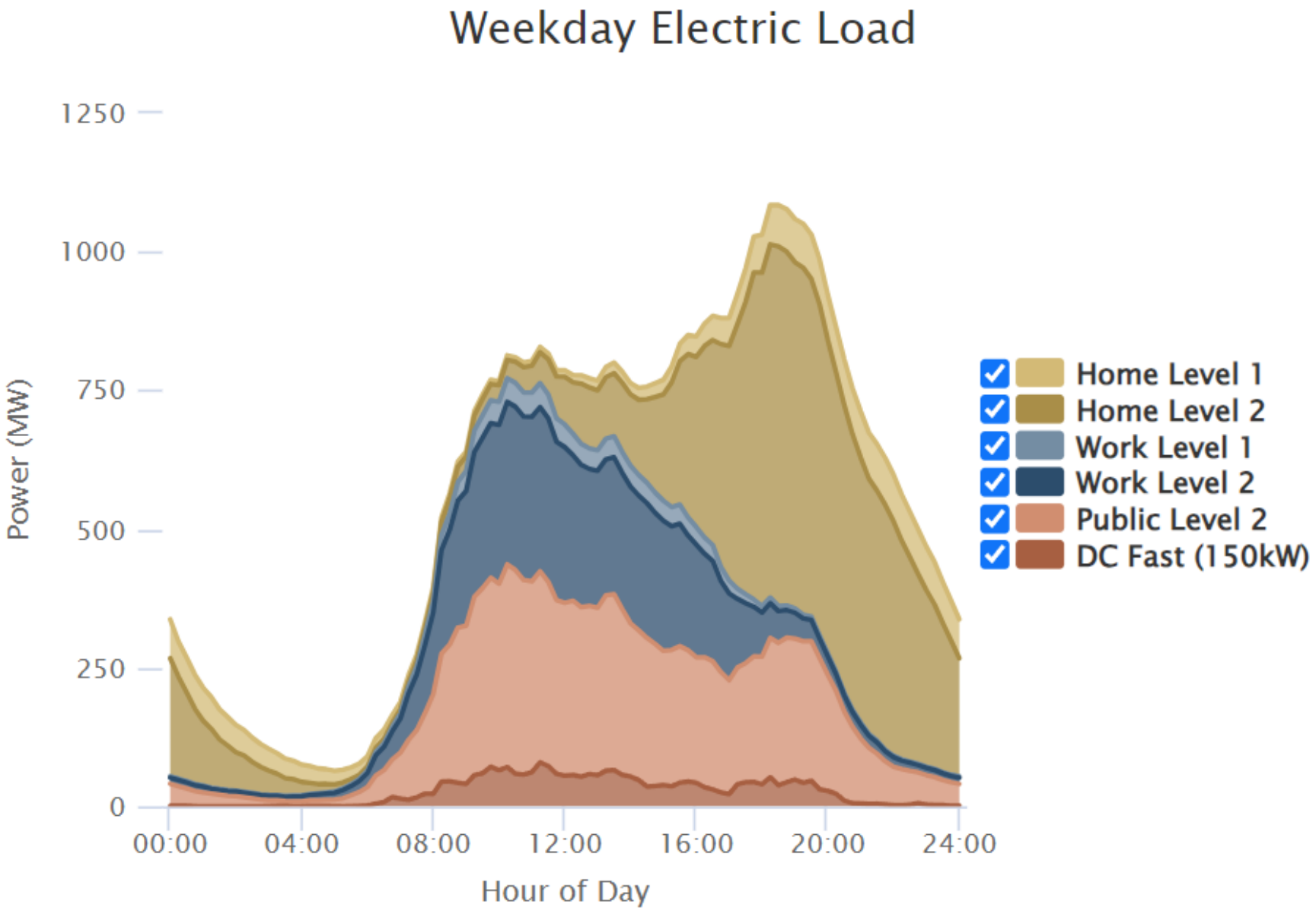


Electric Vehicle Forecast - Cars



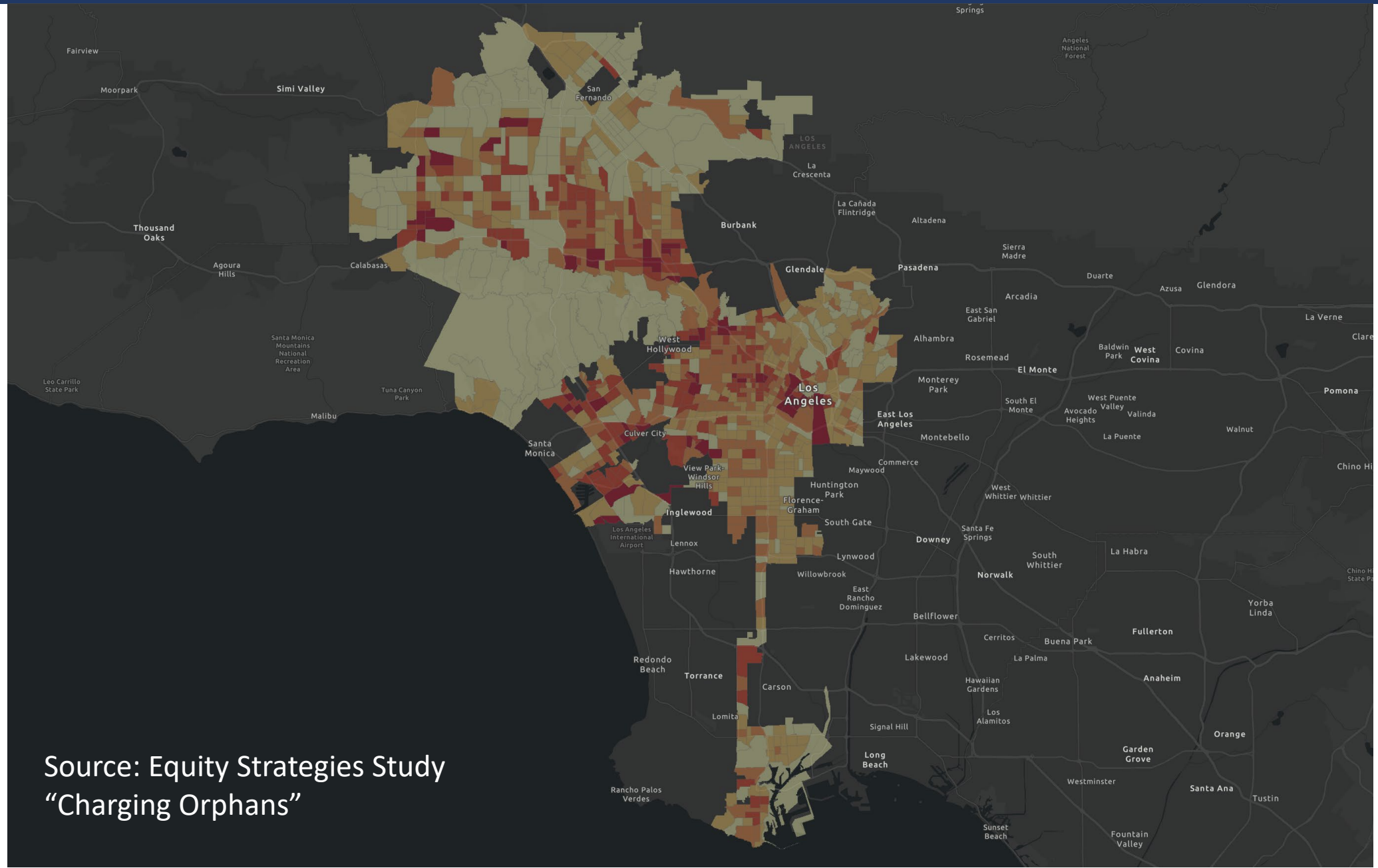


Electric Vehicle Load – Cars (Live DEMO)



https://afdc.energy.gov/evi-x-toolbox#/evi-pro-ports

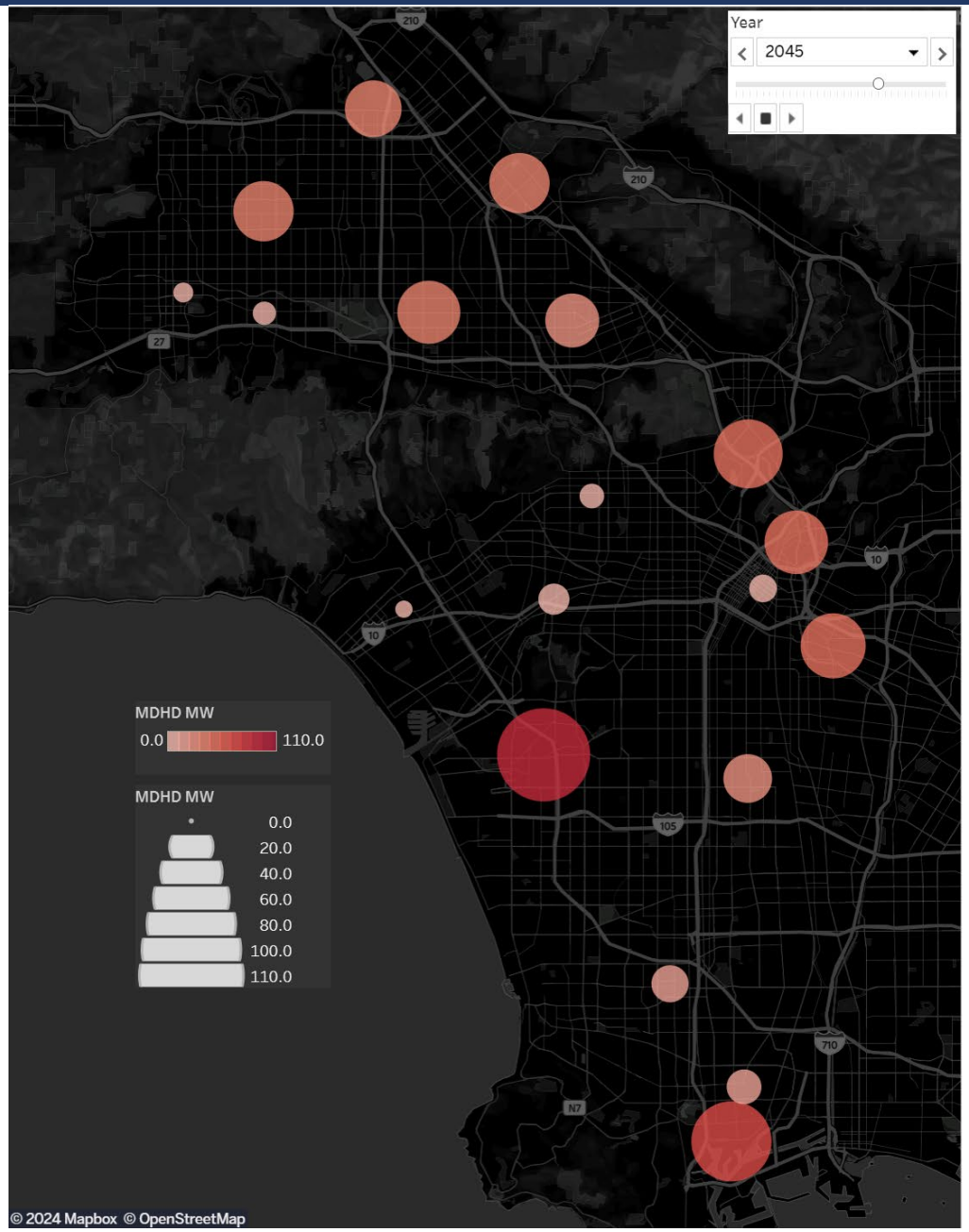
Need for Public Charging Infrastructure

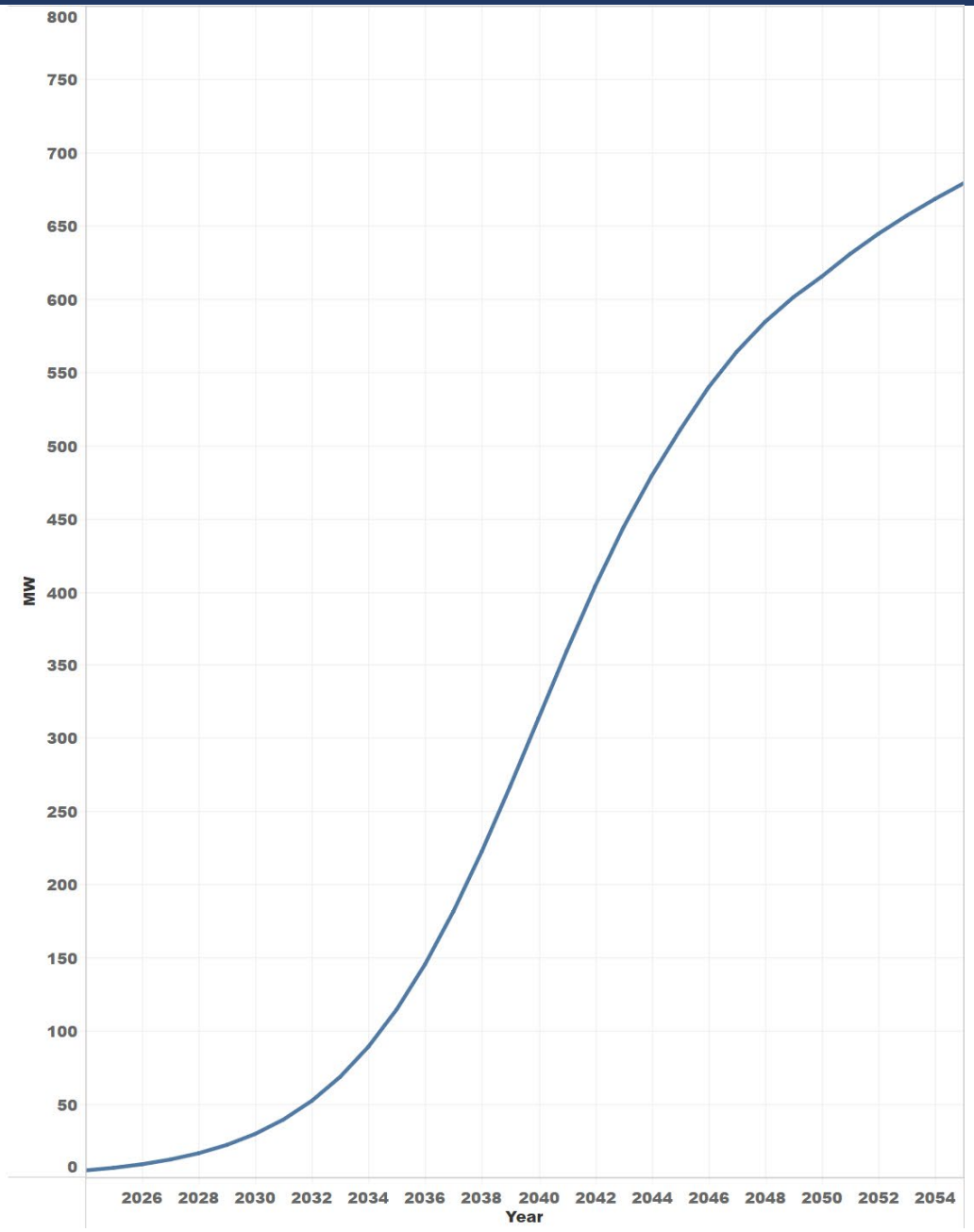


Source: Equity Strategies Study
“Charging Orphans”

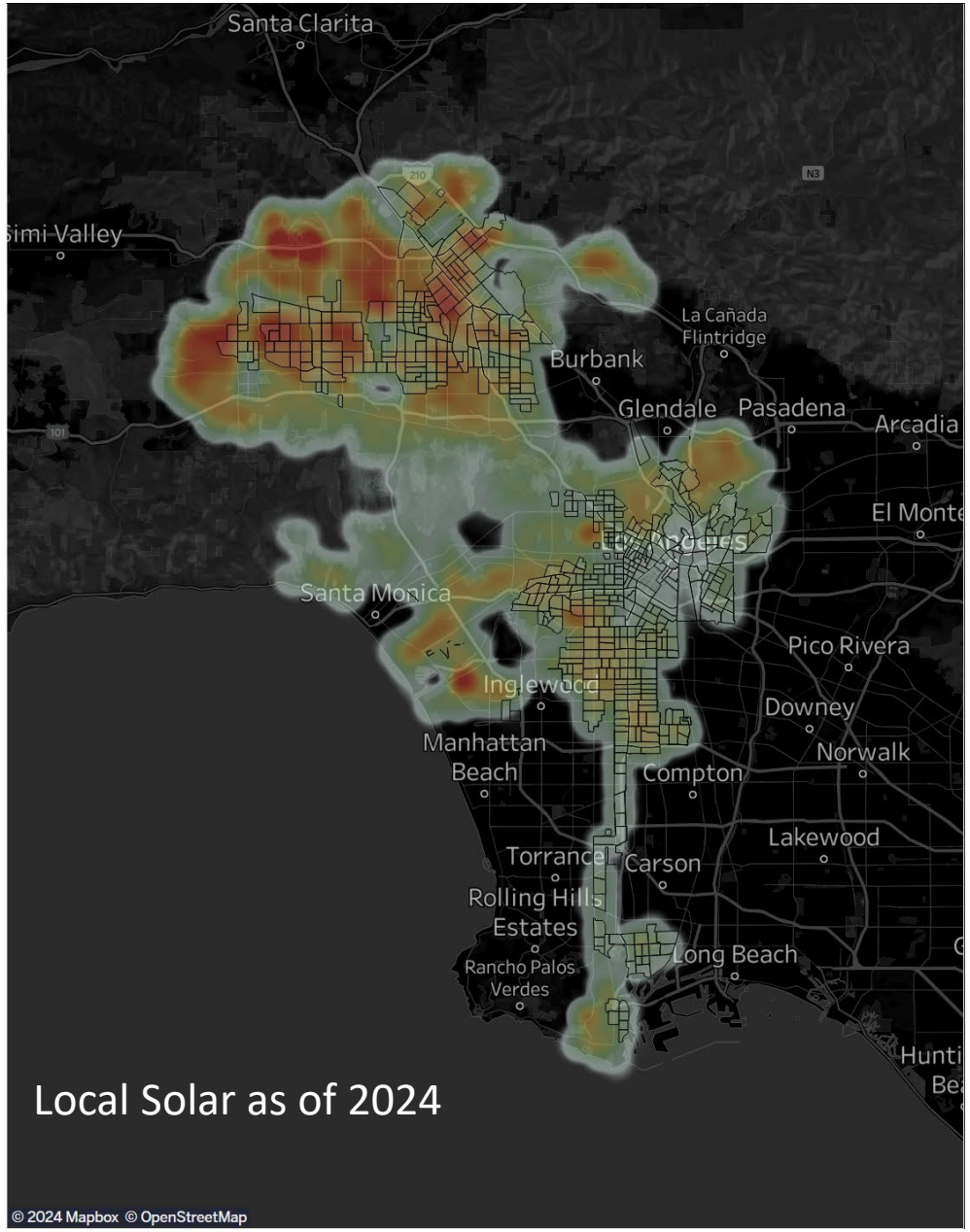
Break (5 min)

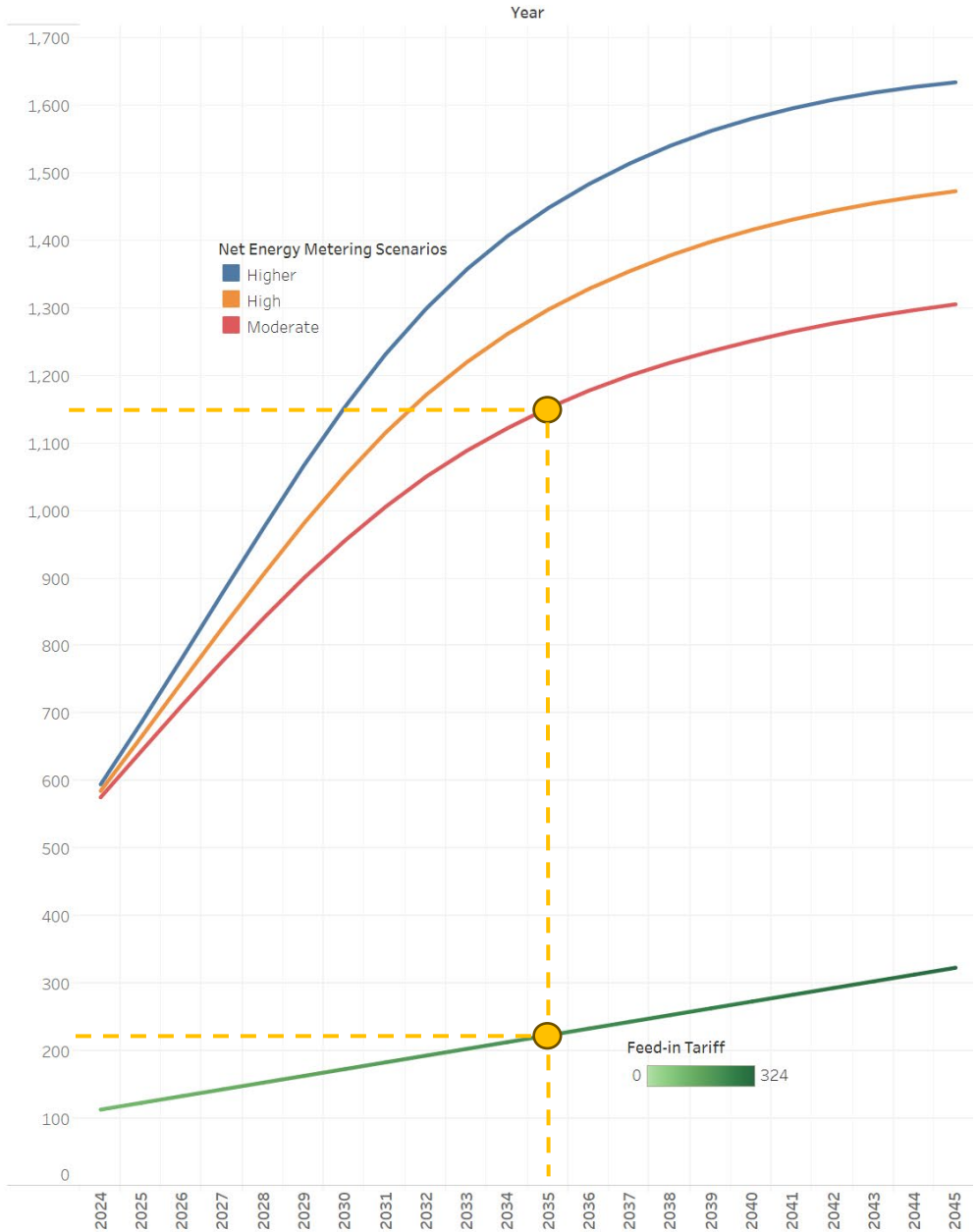
Electric Vehicle Forecast – Trucks (Live DEMO)





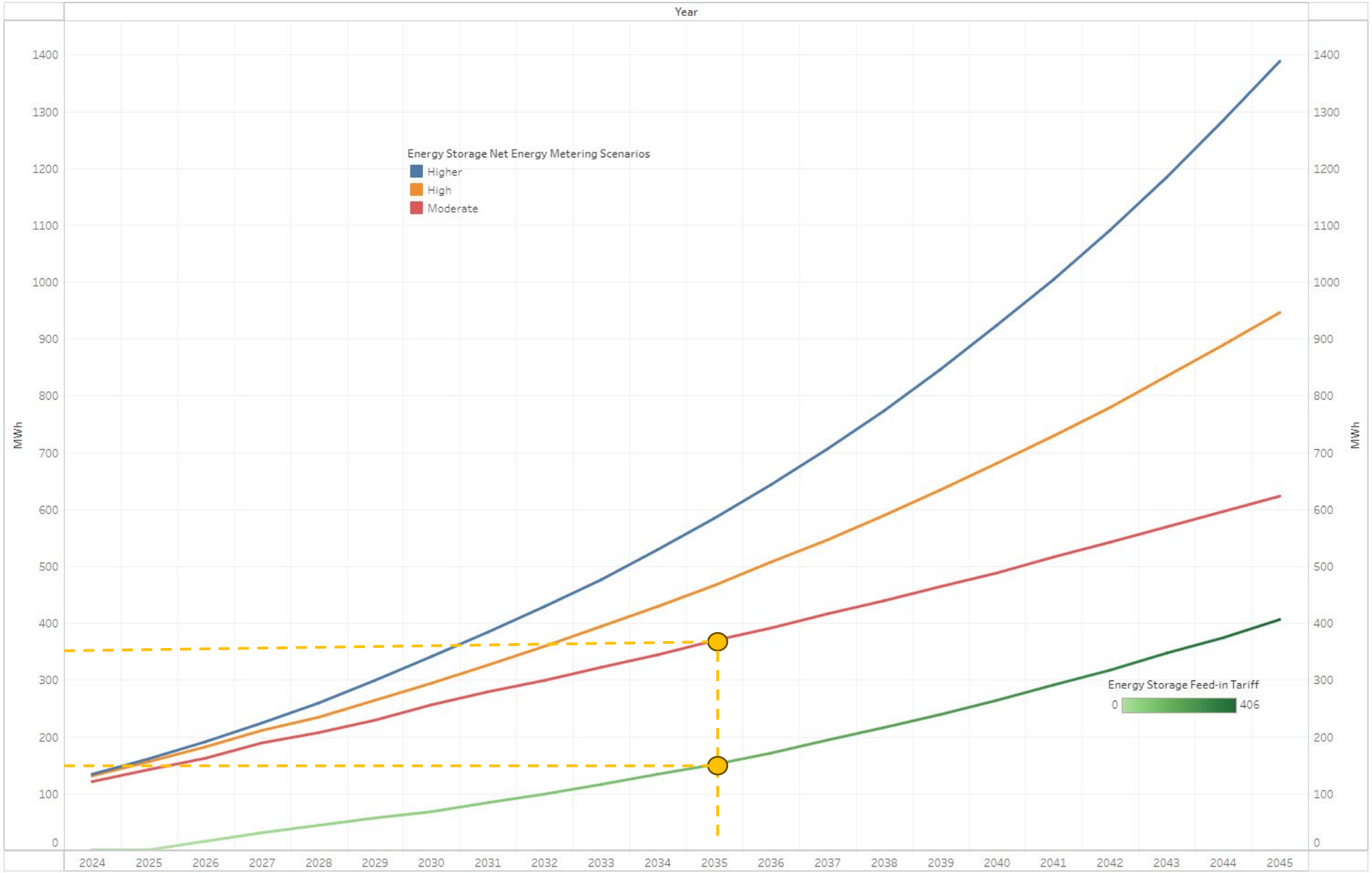
Solar PV – in City






ENERGY
STORAGE
BATTERY

Energy Storage – in City



Scenarios for Distribution Load Modeling

Moderate Moderate DERs	High High EV	High Managed High EV Managed	Low Low EV with High PV
LDEV CEC Mid Case	LDEV CEC High Case	LDEV CEC High Case (M)	LDEV CEC Baseline Case (M)
PV NEM Moderate Case (M)	PV NEM Moderate Case (M)	PV NEM Moderate Case (M)	PV NEM Higher Case (M)
ES NEM Moderate Case (M)	ES NEM Moderate Case (M)	ES NEM Moderate Case (M)	ES NEM Higher Case (M)
PV FiT (M)	PV FiT (M)	PV FiT (M)	PV FiT (M)
ES FiT Moderate Case (M)	ES FiT Moderate Case (M)	ES FiT Moderate Case (M)	ES FiT Moderate Case (M)
MDHD EV EPRI	MDHD EV EPRI	MDHD EV EPRI	MDHD EV EPRI
EE & BE Base Case	EE & BE Base Case	EE & BE Base Case	EE & BE Base Case

Next Steps in Distribution System Assessment

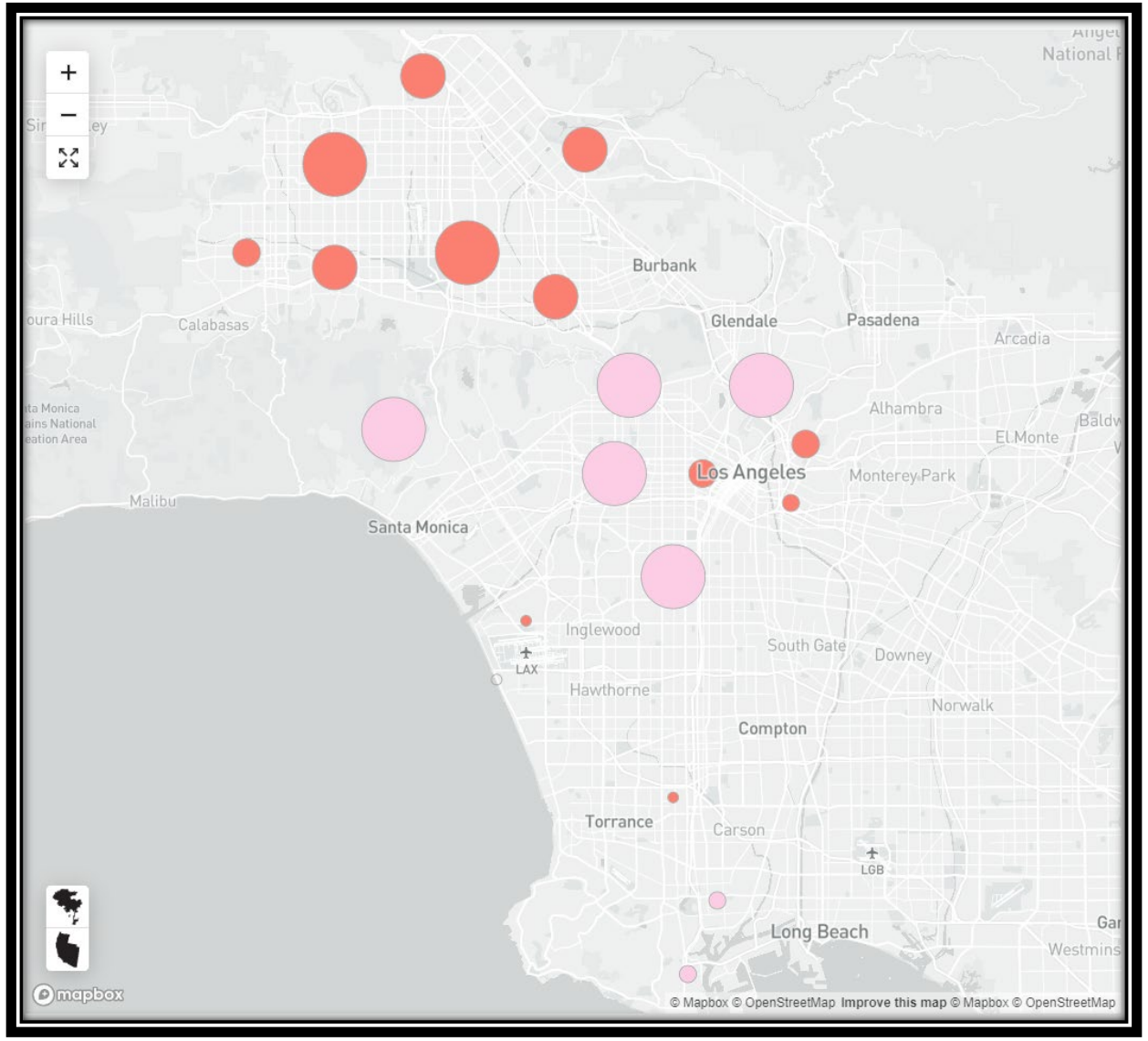
Next Meeting: Nov 21, 2024

System Assessment of 2023

System Assessment for the next 20 year

Types of Solutions

Illustrative: Results of Distribution System Assessment



DISTRIBUTION SYSTEM

Q&A


THANK YOU!