Los Angeles Department of Water & Power

2027 LA100 Plan

Advisory Group | Informational Session

Generation, Transmission, & Distribution

October 15, 2026







Note: Q&A opportunities will be available after each section

Agenda	
09:00 – 09:10 AM	Welcome & Opening Remarks
09:10 – 10:20 AM	Generation Planning
10:20 – 10:30 AM	Break
10:30 – 11:40 AM	Transmission Planning
11:40 – 11:50 AM	Break
11:50 – 12:50 AM	Distribution Planning
12:50 – 1:00 PM	Closing Remarks & Next Steps

SAFETY MINUTE



Meetings Guidelines



Raise Hand to join the conversation



Help to make sure everyone gets **equal time** to give input



Keep input **concise** so others have time to participate



Actively listen to others, seek to **understand perspectives**



Offer ideas to address questions and concerns raised by others



🔍 Vision for 1on1s

Creating a brighter future starts with **listening** to the people who will live with the decisions we make.

The decisions we make today will shape lives for decades, so the people affected need a **meaningful opportunity** to help shape them.

🎯 Value of Information

Purpose of Informational Sessions

To give meaningful feedback about our energy future, people need a **basic understanding** of how electricity reaches them: generation makes the electricity, transmission moves it over long distances, and distribution delivers it to homes and businesses. All three must work together to keep the lights on.

Connecting Ideas to Action

Extensive stakeholder engagement helps us understand community needs, identify concerns early, and make better choices about affordability, reliability, and clean energy. Expanding Advisory Group engagement is a fundamental component and a feedback mechanism are actively increasing.



LA100 Guiding Principles

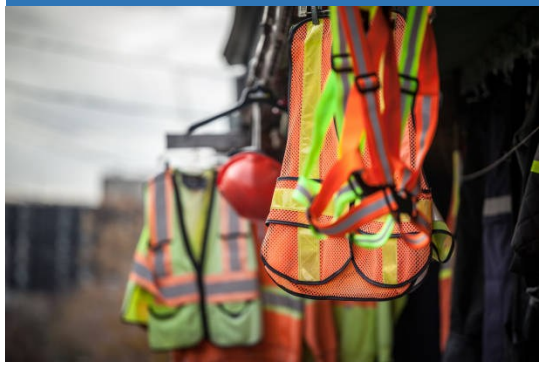
Reliability & Resilience



Affordability & Rate Impacts



Environmental Benefits



Equity & Community Outcomes



INPUT ASSUMPTIONS



Electric load, distribution demand, and electrification



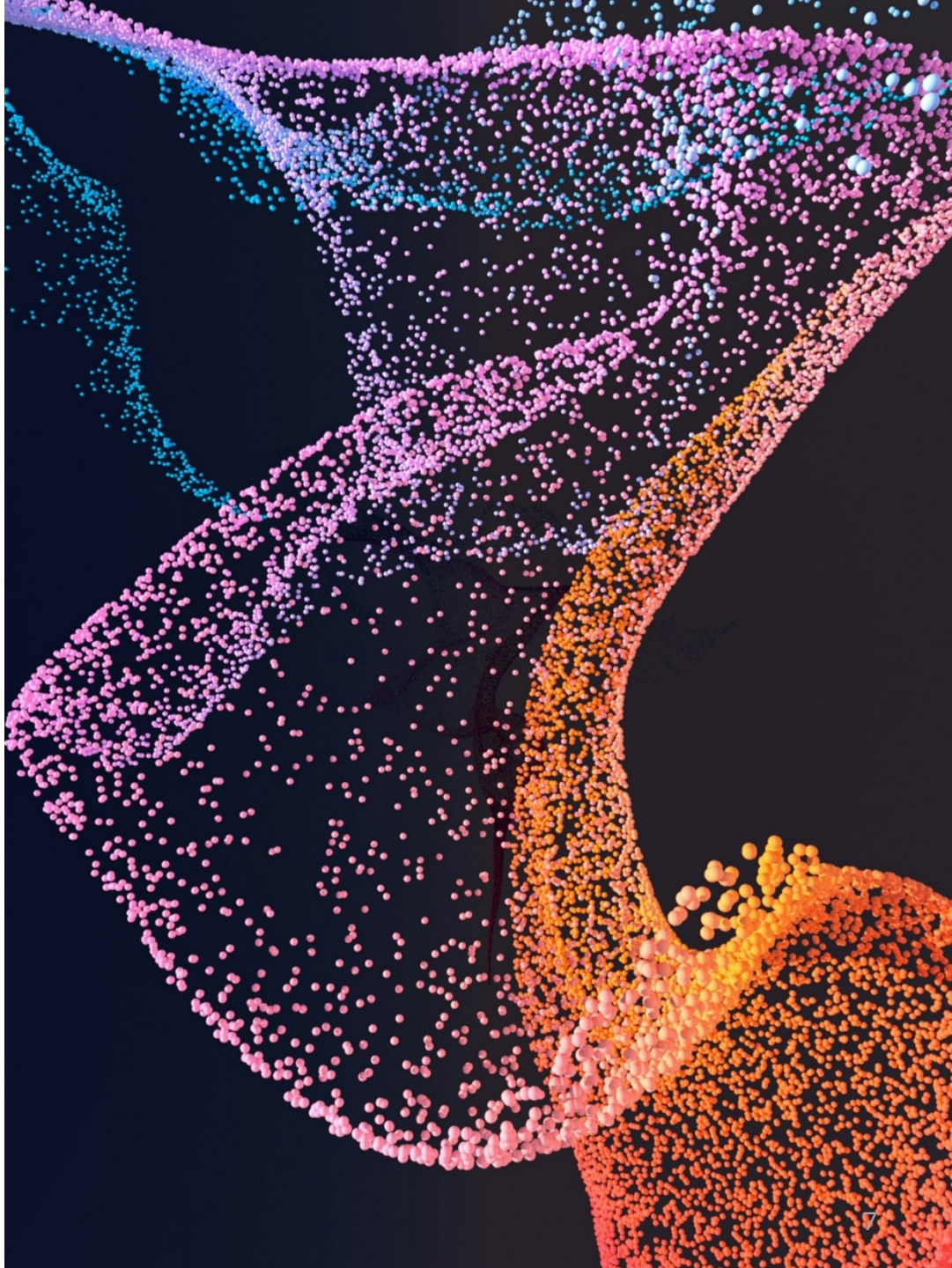
Technology maturity, costs, fuel prices, and emissions



Policy and regulatory constraints



Transmission pathways and import capabilities



Los Angeles Department of Water & Power

CUSTOMERS FIRST

2026 LA100 Advisory Group Meetings:

Generation

Planning & Innovation

October 15, 2026

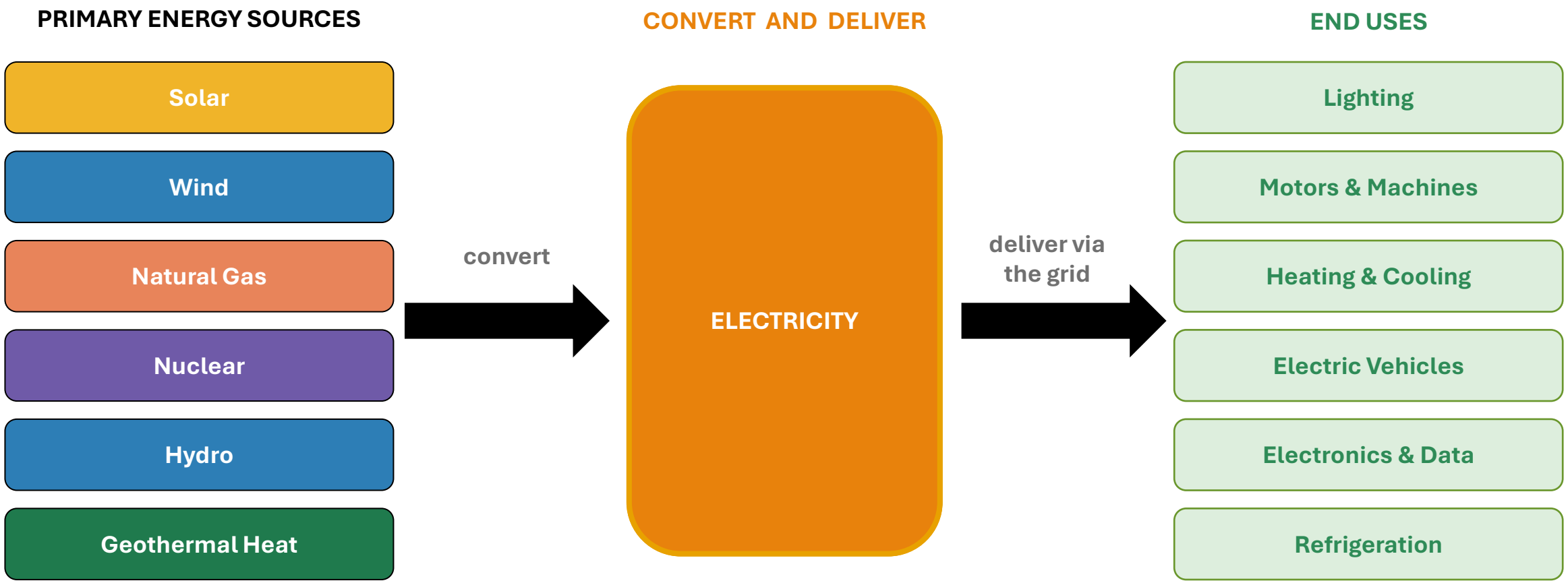
What We'll Cover

1. What is Electricity?
2. How is Electricity Generated?
3. LADWP's Generation Portfolio
4. Clean, Firm, Dispatchable
5. Challenges & What We Do

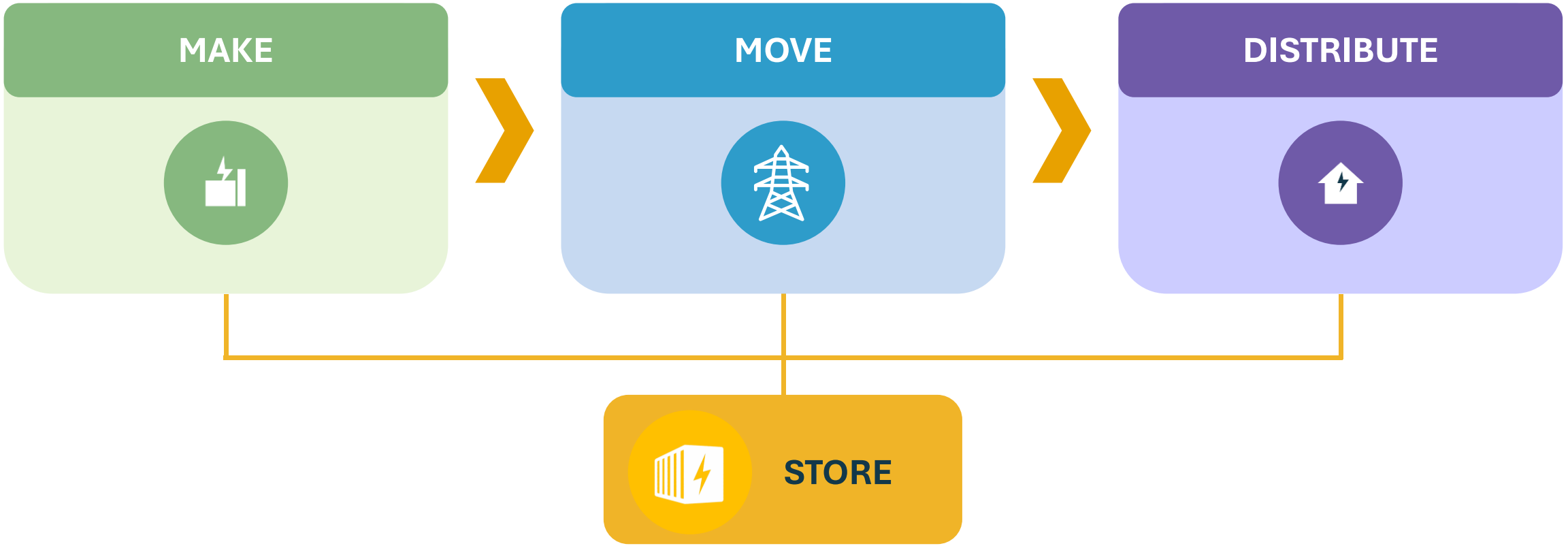


What is electricity ?

Electricity is an Energy Carrier —
Generation is how we Convert Energy of Different Forms into Electricity



Make → Move → Distribute — and Store along the way



Move — electricity often not used **where** it's made

Store — electricity often not used **when** it's made

Electricity is going to do far more of the work.

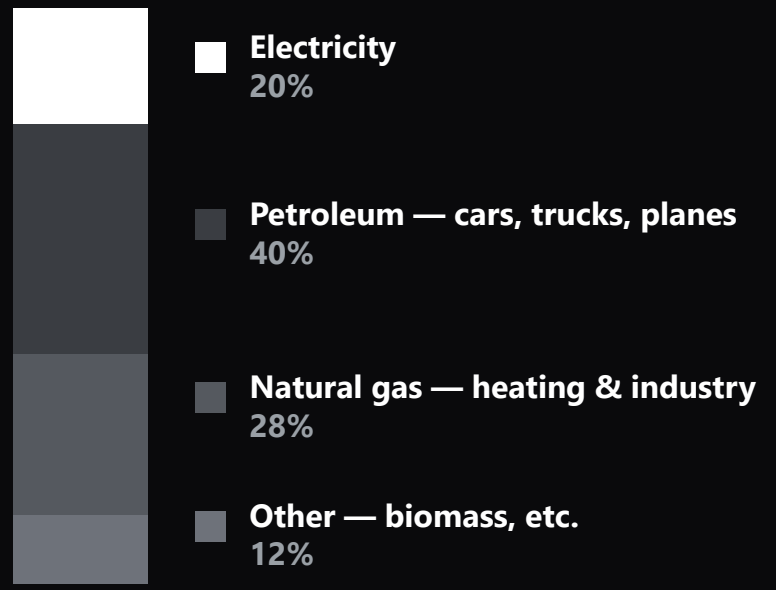
SHARE OF FINAL ENERGY USE

~20% → **50%+**

Today — By 2050

Roughly half of society's energy will flow through the electric grid.

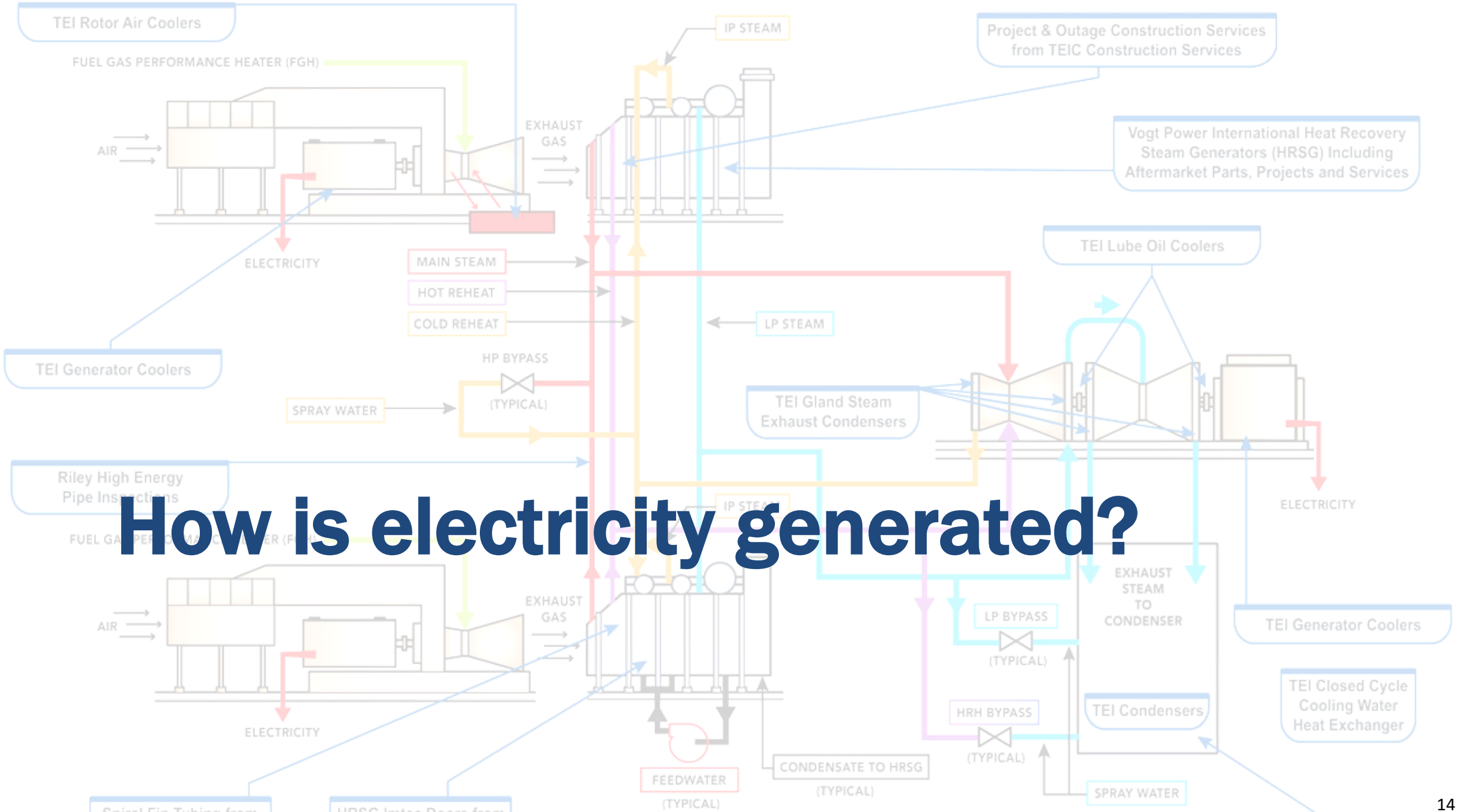
FINAL ENERGY USE TODAY



Most energy today is still burned directly — not electricity.

As we electrify transport, buildings & industry, the grid must carry more — so clean, reliable power matters more than ever.

Source: EPRI Net-Zero Meta-Analysis. Illustrative U.S. final energy shares; ~20% electricity today → 50%+ by 2050 in deep-decarbonization pathways. Varies by study (NREL, IEA, Princeton Net-Zero America).



How is electricity generated?

Energy Source → Spin a Turbine → Generator → Electricity



Most Electricity Generation Today Use Turbine-Generators

primary energy	working fluid	convert rotation into electricity	electricity to customers

Natural Gas (Fossil Gas)

~~Coal~~

Nuclear

Geothermal

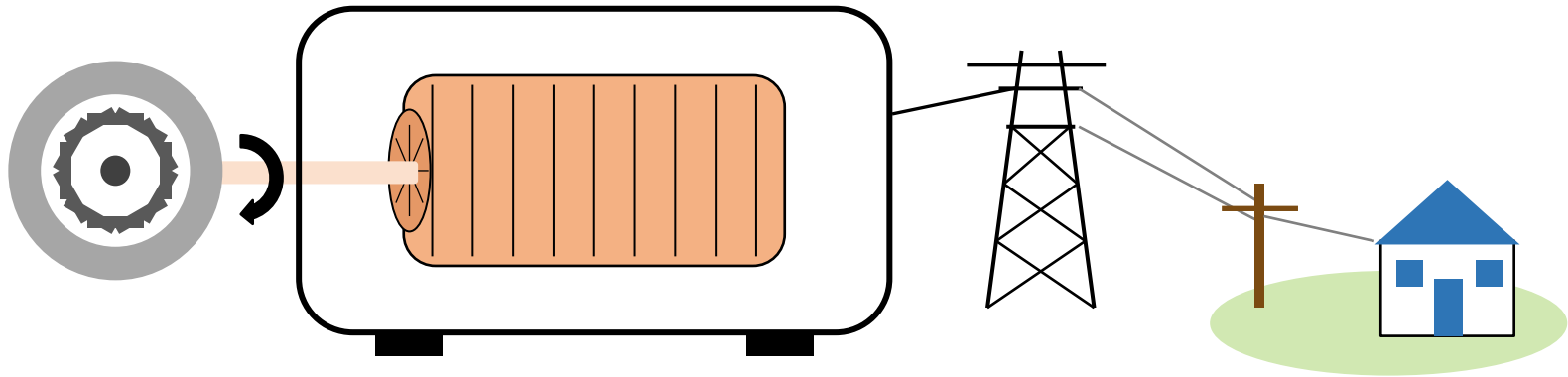
Steam

Hot, Compressed Air

or

Water

Wind



turbine generator

LADWP's Generation Portfolio

LADWP Power Generation History

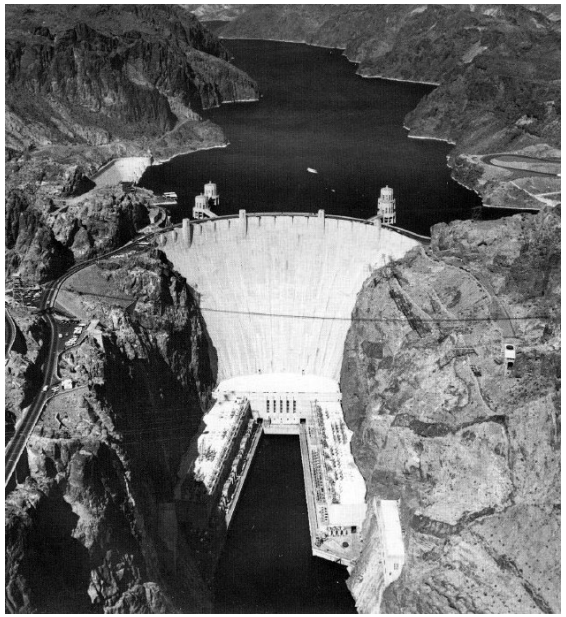
From early hydro and coal to today's blend of gas, renewables, and storage — investments that helped shape the city we know today.

1900–1930
Small Hydro



1908 Cottonwood
1917 **Power Plant 1**
1921 Franklin
1925 Big Pine
1927 Haiwee

1930–1960s
Growth and Expansion



1936 **Hoover Dam**
1949 Harbor GS
1953 Valley GS
1958 Scattergood GS
1962 Haynes GS

1970–1990s
Castaic, Nuclear & Coal



1969 **Castaic Pumped Hydro**
1976 Navajo Coal
1986 Palo Verde Nuclear
1987 IPP Coal
1995 Harbor Repowering

2000s–Present
Gas Turbines → Renewables

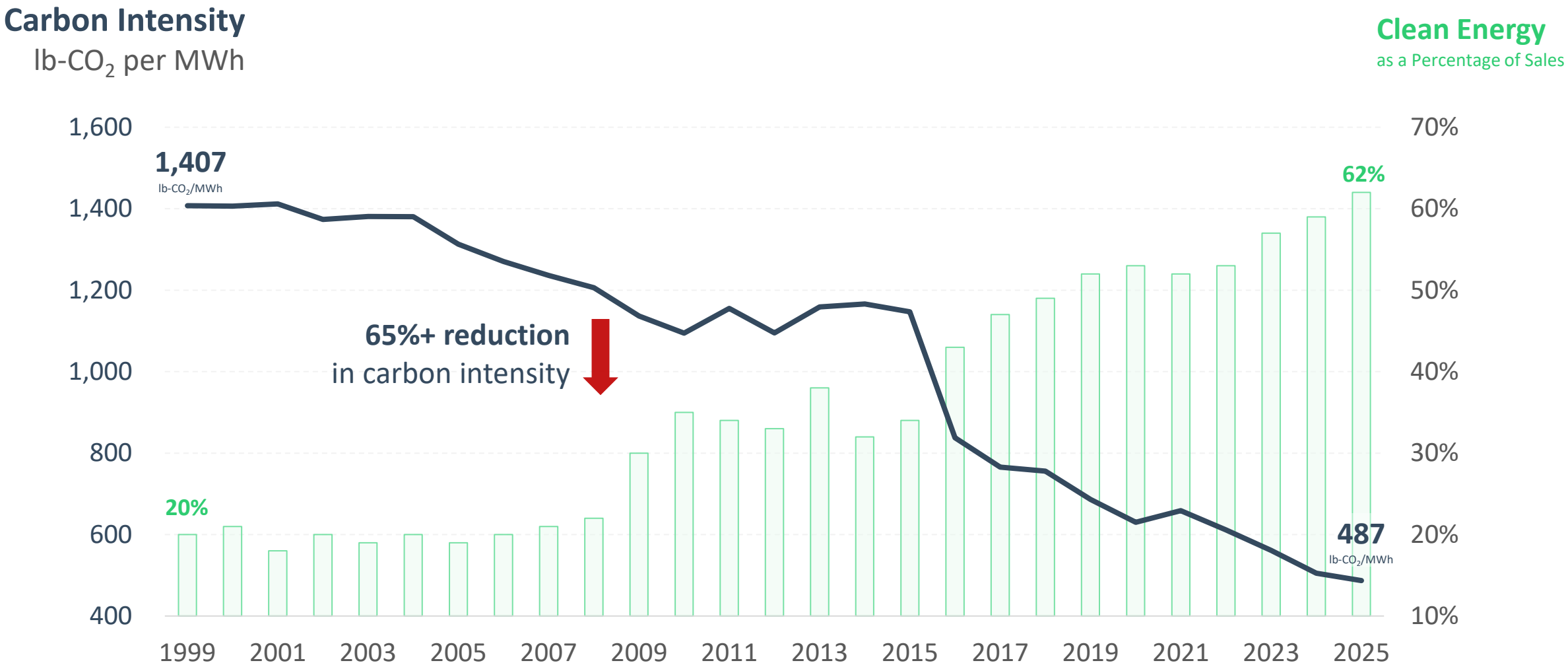


2003 Valley Repowering (and Haynes in 2005)
2009 Pine Tree Wind + Solar
2014 Apex GS Acquired
2015 Adelanto Solar · Scattergood Repower
2017 Beacon Solar
2024 **Eland Solar + Storage**
2025 IPP Renewed

$7+ Billion Invested in Clean Energy Over Last Two Years is Reshaping LADWP's Grid

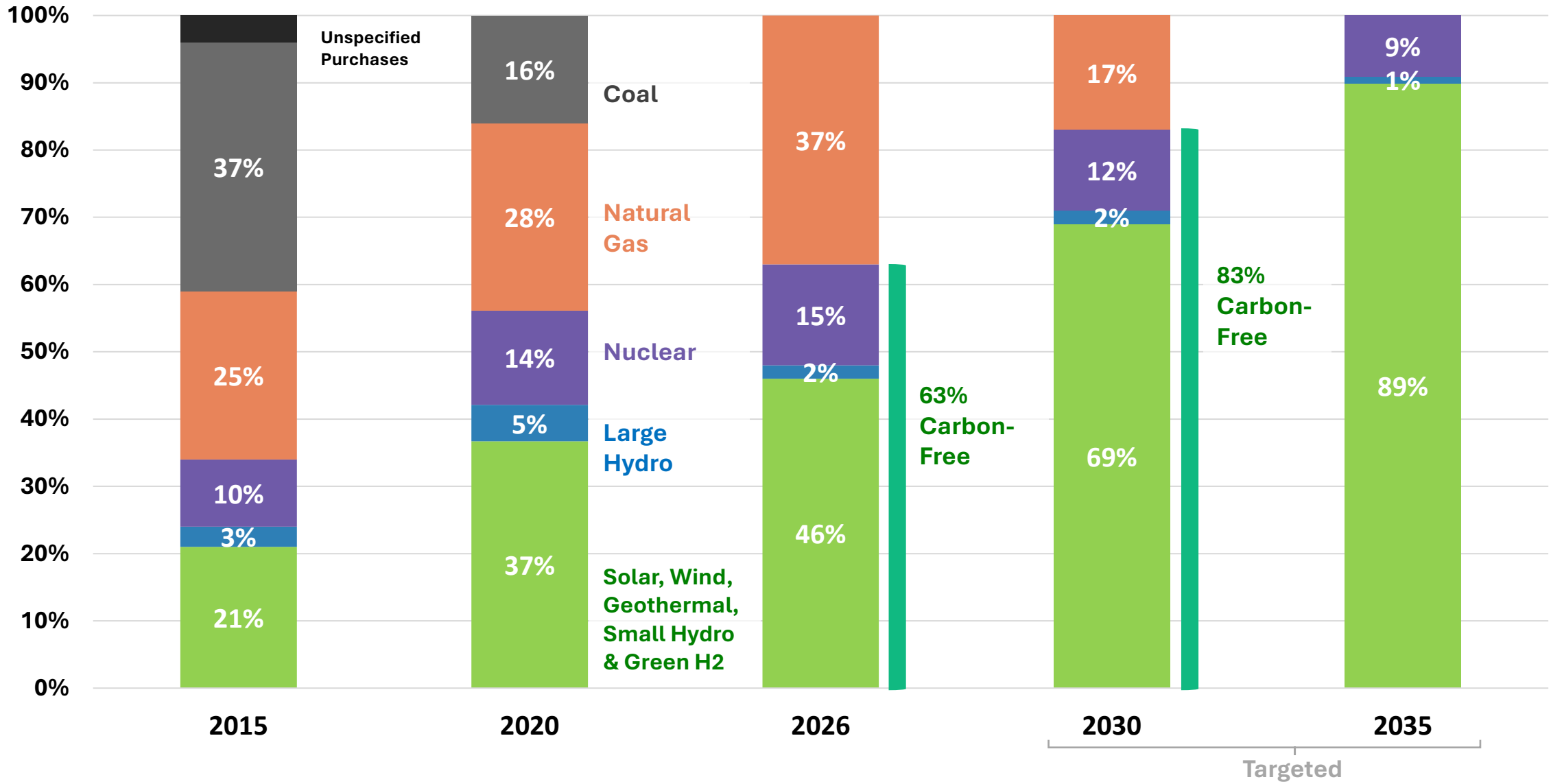
Resource Investment	Capacity (MW)	Max. Storage (MWh)	Contract Terms	Commercial Operation Date
Eland 1 & 2 – Solar + Storage	375	1,125	Eland 1 – $696 million / 25-yr Eland 2 – $881 million / 25-yr	Eland 1 – Nov 2024 Eland 2 – Jul 2025
IPP Renewed (2× 1+1's + Seasonal Storage)	840	300,000	$2 billion	Unit 3 – Oct 2025 Unit 4 – Dec 2025
Heber Geothermal Extension	41	N/A	$783 million / 25-yr extension	Extended Q2 2025 (Orig. COD Feb 2016)
Milford Solar Phase II	235	N/A	$663 million / 30-yr term	Sep 2027
Utah Solar	300	N/A	$1.1 billion / 30-yr term	Jun 2027
Notch Peak Solar	299	N/A	$1.3 billion / 30-yr term	Sep 2028
Total	**2,090 MW**	**301,125 MWh**	**$7.5 billion**	

Significant Emissions Reductions Achieved Without Compromising System Reliability



LADWP's Power System is Charging Toward a Carbon-Free Future

Higher renewable penetration, reduced dependence on fossil fuels, and fully divested from coal in 2026



Today's Resources are Cleaner and More Diverse

Total Portfolio
11,147 MW
net capacity

40+
Utility-Scale Resources

8
Western States
CA·NV·UT·AZ·OR·WA·WY·NM

#1
Largest Municipal Utility

Natural Gas
4,583 MW
6 facilities

Hydro
1,962 MW
2 large hydro facilities + small hydro

Solar
2,428 MW
13 utility + distributed

Wind
1,220 MW
7 projects

Nuclear
387 MW
1 facility

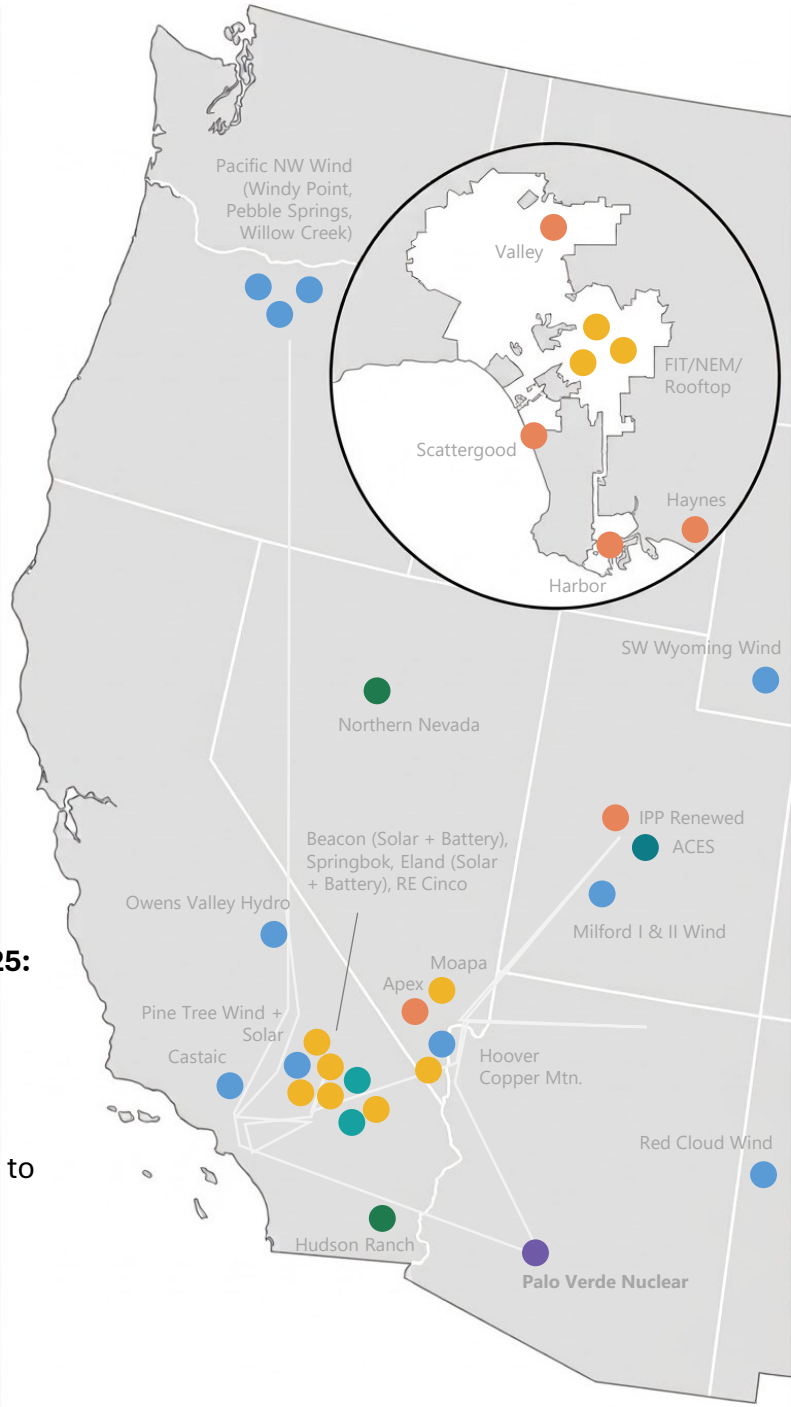
Geothermal
266 MW
10 projects

Battery Energy Storage
301 MW
3 projects

Long-Duration Energy Storage
220 MW
ACES electrolyzers

As of Fiscal Year (FY) 24-25:

- **6,502 MW** record instantaneous peak demand
- Supplied **22,974 GWh** to over **1.6M customers**
- **$5.5 billion** power revenue



Note: All capacities shown are net maximum ratings and represent DWP's ownership share.

A Key Distinction: Firm & Dispatchable vs. Variable & Intermittent

FIRM & DISPATCHABLE



Output you can control

- Ramps to match demand
- Provides reliable capacity
- Stabilizes the grid instantly

EXAMPLES

- Gas
- Nuclear
- Hydro
- Geo
- Batteries (limited)

vs.

VARIABLE & INTERMITTENT



Output depends on weather

- Runs only when available
- Clean & low-cost
- Cannot be dialed up (absent energy storage)

EXAMPLES

- Solar
- Wind

The modern electric grid blends both — plus storage — to stay clean, reliable, and affordable.

LA DWP

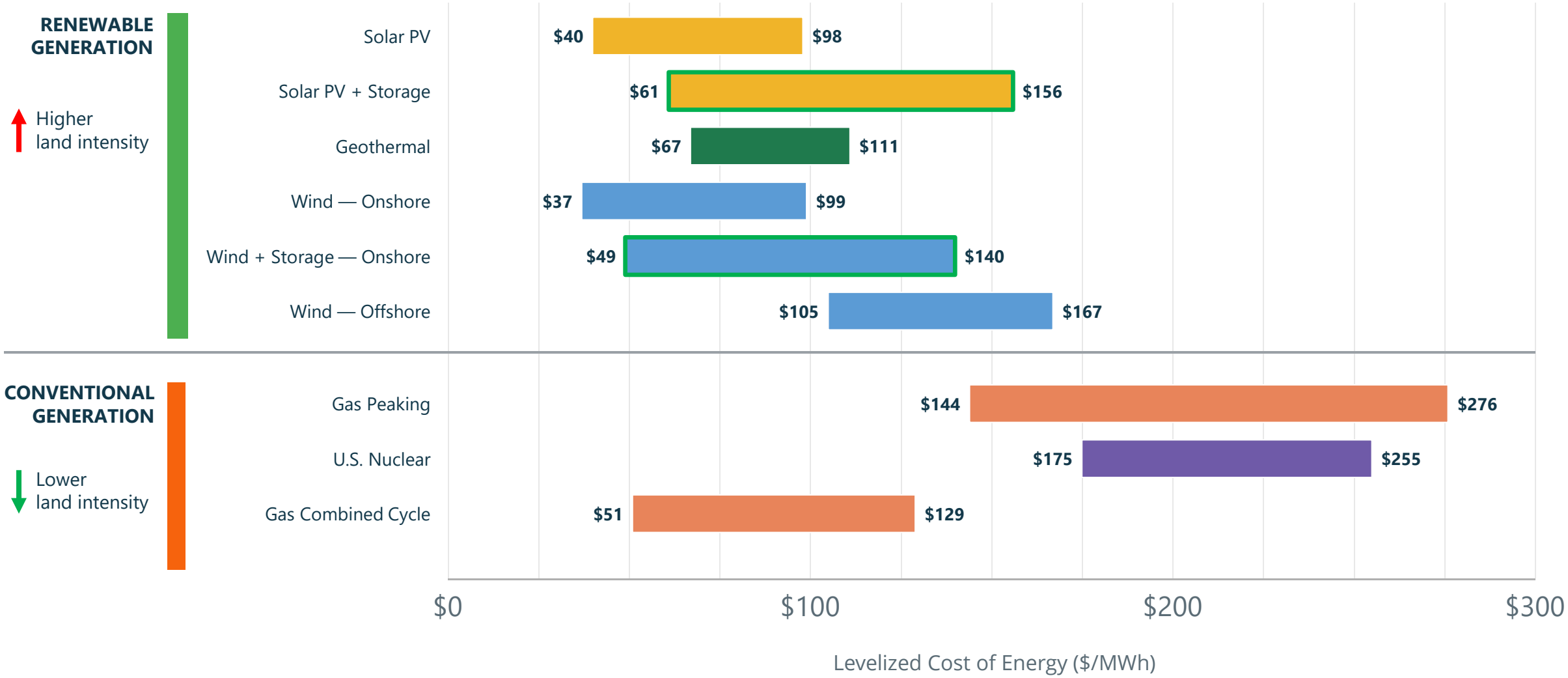
Qualitative General Comparison of Major Generation Technologies:

Technology	Cost	Emissions	Land & Siting	Availability
Natural Gas	Medium	Moderate	Small & flexible	Firm
~~Coal~~	~~Medium~~	~~High~~	~~Hard to permit~~	~~Firm~~
Nuclear	High	None	Site-constrained	Firm
Hydro	Medium	None	Needs large land	Firm
Wind	Low	None	Needs large land	Variable
Solar	Low	None	Needs large land	Variable
Geothermal	Medium	Very low	Site-constrained	Firm
Batteries	Medium	None	Small & flexible	Balancer

No single technology does it all — a diverse, balanced mix delivers clean, reliable, and affordable power.

Ratings adapted from EPRI Energy Supply Reference Card (2024). Cost reflects a simplified levelized cost (upfront construction plus ongoing fuel and operating costs); actual costs vary by project design specifics.

Levelized Cost of Electricity Across Generation Types

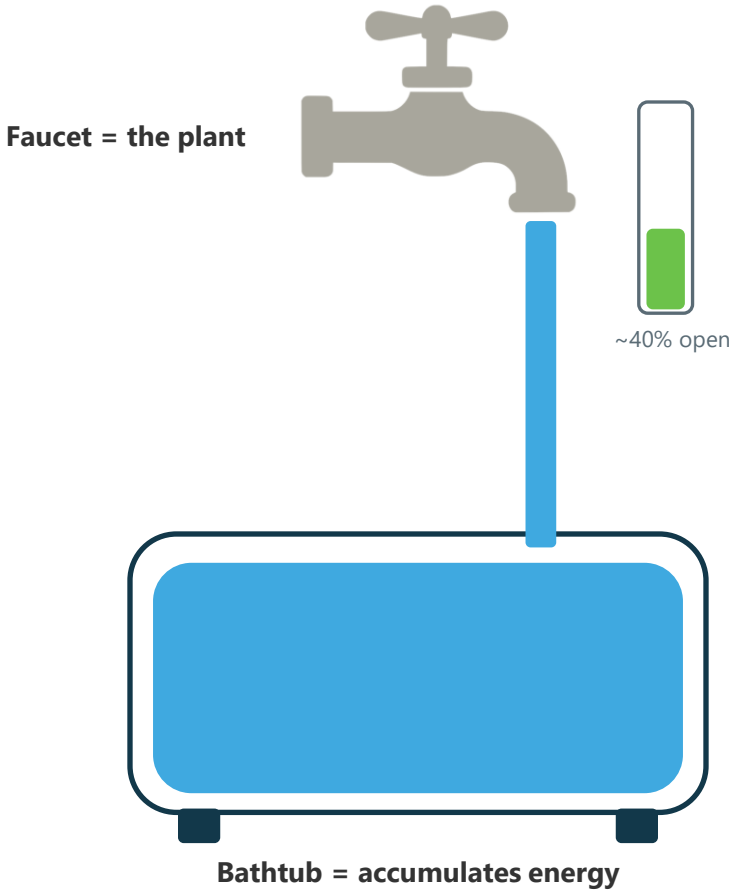


Source: Lazard's Levelized Cost of Energy Analysis. Ranges are unsubsidized and vary by project, geography, and fuel price. Values shown as reported by Lazard (Version 19 – July 2026).



Firm, Clean Capacity

Capacity, Capacity Factor, and Energy: Low Utilization Does Not Mean Low Importance



CAPACITY
The faucet's maximum flow — how fast water CAN come out. (MW)

FIRM CAPACITY
The flow you can RELIABLY get whenever you open the tap. (MW)

CAPACITY FACTOR
How open the tap runs on average = average flow ÷ max flow. (%)

ENERGY
Total water collected in the tub over time — your electricity bill. (MWh)

Capacity Factor is like a utilization rate
Nuclear ~90% · Wind ~35% · Solar ~25–30% · Gas peaker ~5–15% · Gas CC ~50–80%
A low capacity factor doesn't mean low value — in-basin gas units run ~20% in aggregate, but their firm capacity is essential.

Firm, Dispatchable Capacity in the LA Basin is Needed When Things Go Wrong

Wildfires



1 When renewables **cannot be imported** into the LA Basin

Local Transmission Outages



2 When renewables **cannot be moved** to the right areas within the LA Basin

Insufficient Renewables

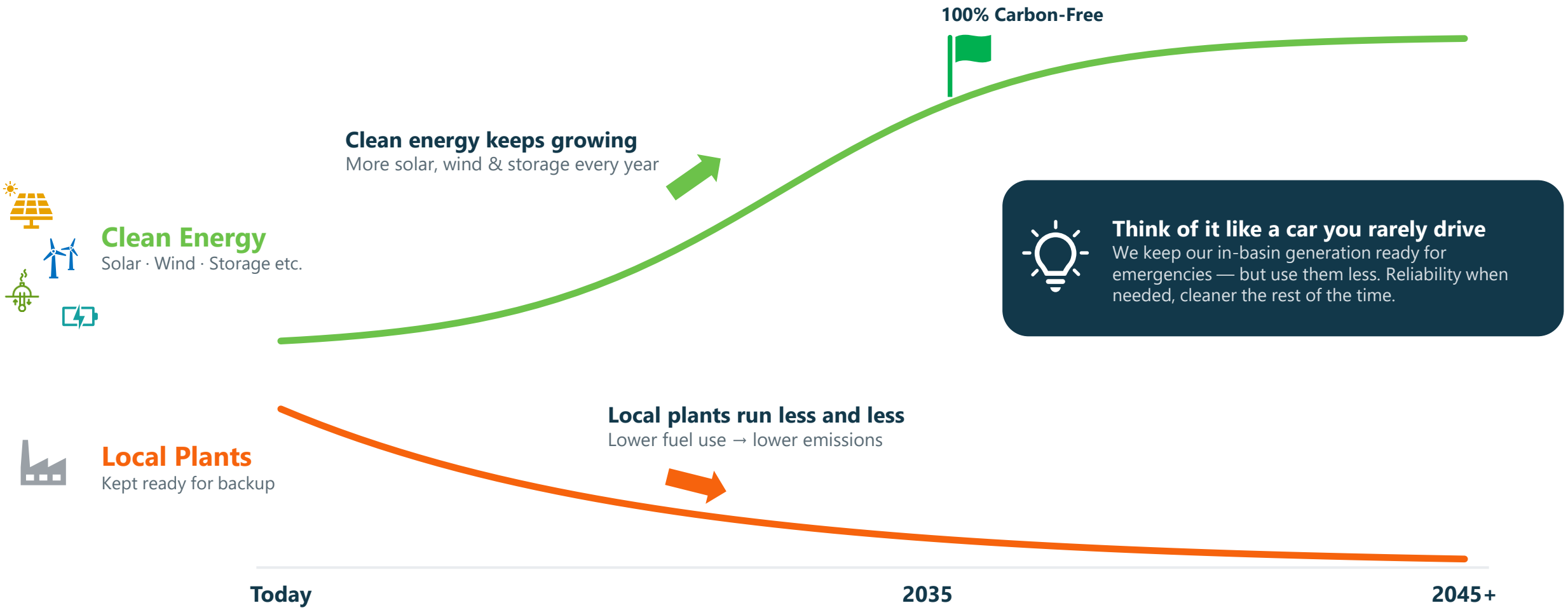


3 When renewable generation **falls short** of customer demand

*NREL: "Firm capacity met through **natural gas, biofuel, or hydrogen** turbines depending on the scenario"*

Firm Capacity Essential for Economy-Wide Emissions Reductions

Expected utilization of in-basin generation declines substantially due to LADWP's continued deployment of renewables, with firm capacity needed for reliability during periods of grid stress in a 100% carbon-free future.



Note: This information is notional and informational only.

California Agrees: Firm Zero-Carbon Resources Are Essential for Meeting SB100 Goals

> **California's path to a 100 percent clean electricity system will require a diverse portfolio of firm zero-carbon resources to ensure reliability.**
>
> — California Energy Commission, SB 423 Report (2026)

Meta-analysis of other CA utilities' for clean, firm capacity:

Southern California Edison	geothermal, nuclear (SMRs), gas with carbon capture
SDGE	clean hydrogen & RNG in existing pipelines
PG&E	hydrogen/RNG, nuclear, long-duration storage
SMUD	long-duration storage, local bioenergy, carbon capture

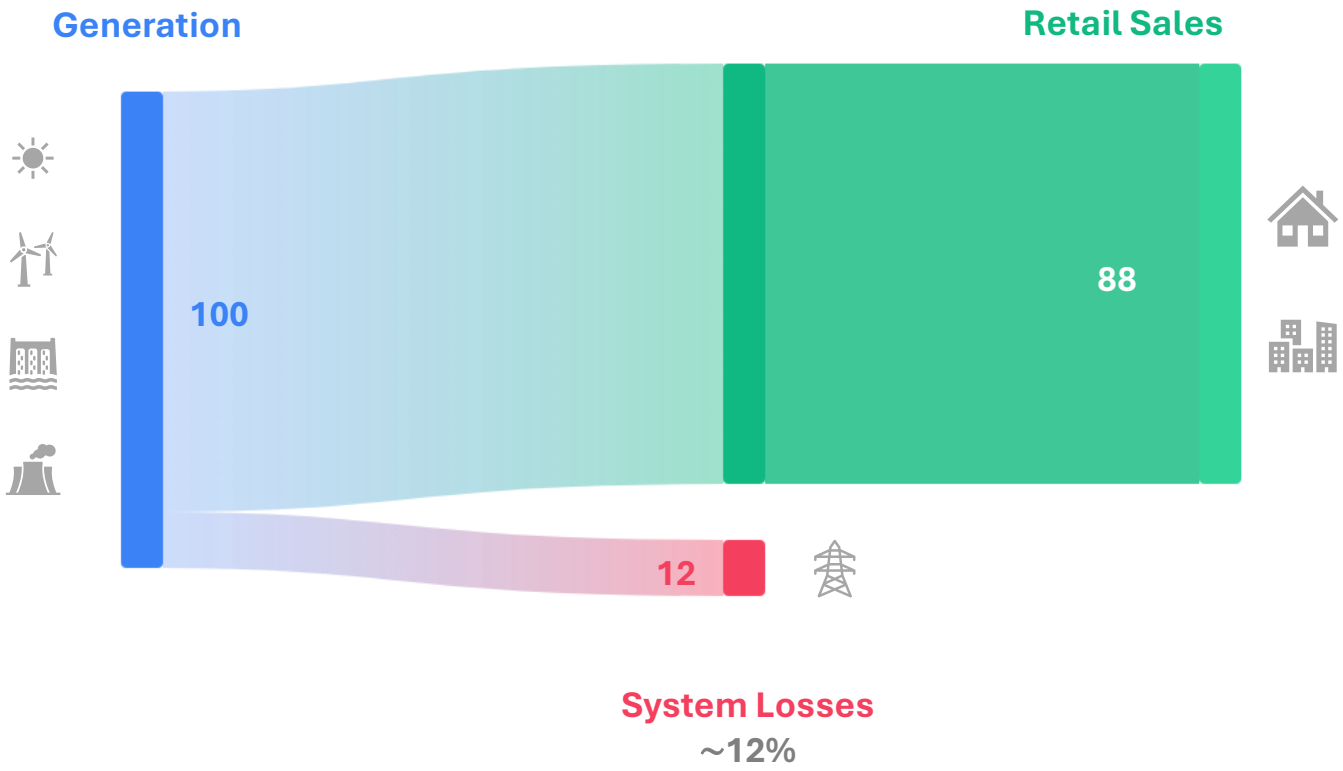
All retain a firm fleet for reliability.

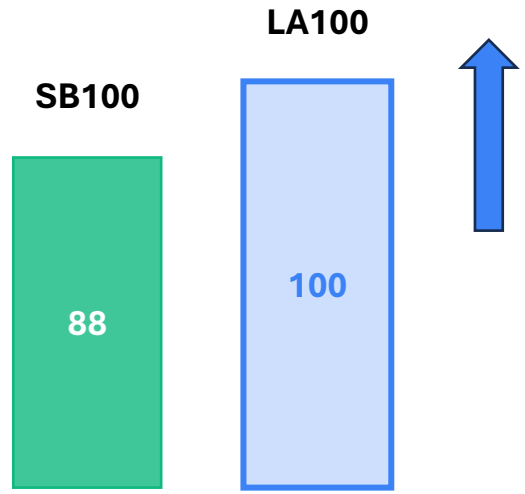
- Long-Duration Energy Storage
- Hydropower
- Geothermal
- Renewable Natural Gas
- Hydrogen
- Carbon Capture
- Nuclear Fission
- Fusion

SB100 vs LA100

SB100 requires 100% of **Retail Sales** be served by renewables and zero-carbon resources

LA100 requires 100% of **Generation Capacity** to be served by carbon free resources





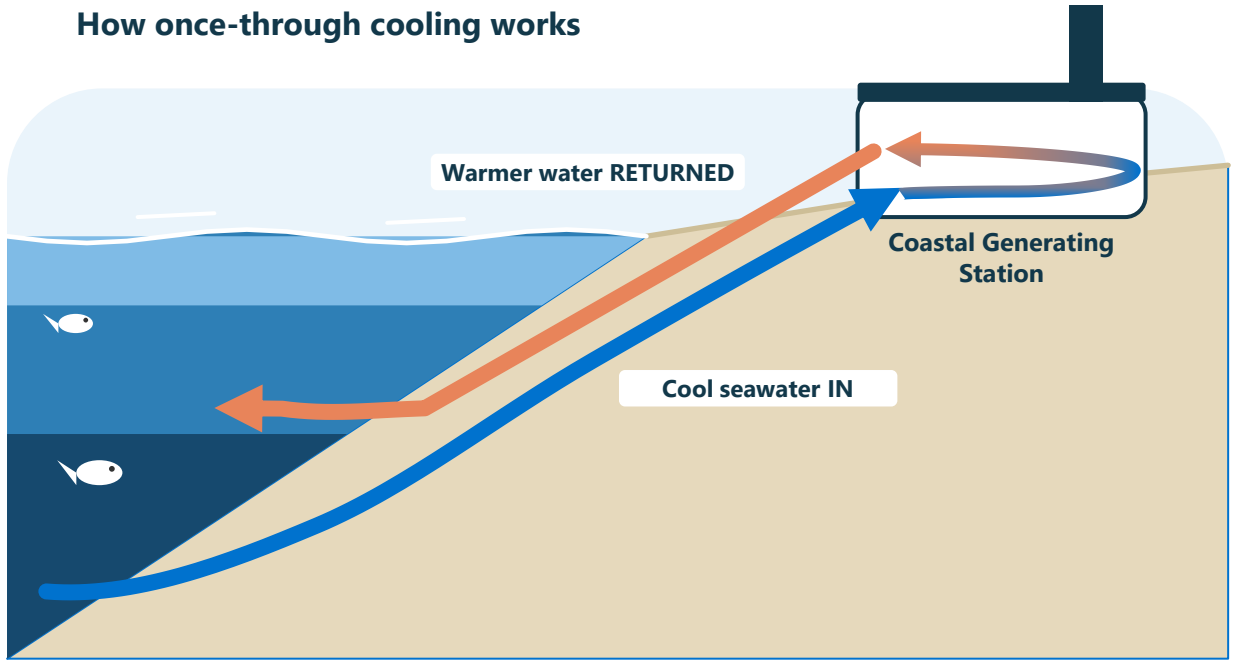
LA100 requires more carbon free generation capacity compared to SB100



Challenges Ahead

Once-Through Cooling: A Compliance Challenge

Several older in-basin units use ocean water for cooling. State policy requires phasing this out.



1,486 MW

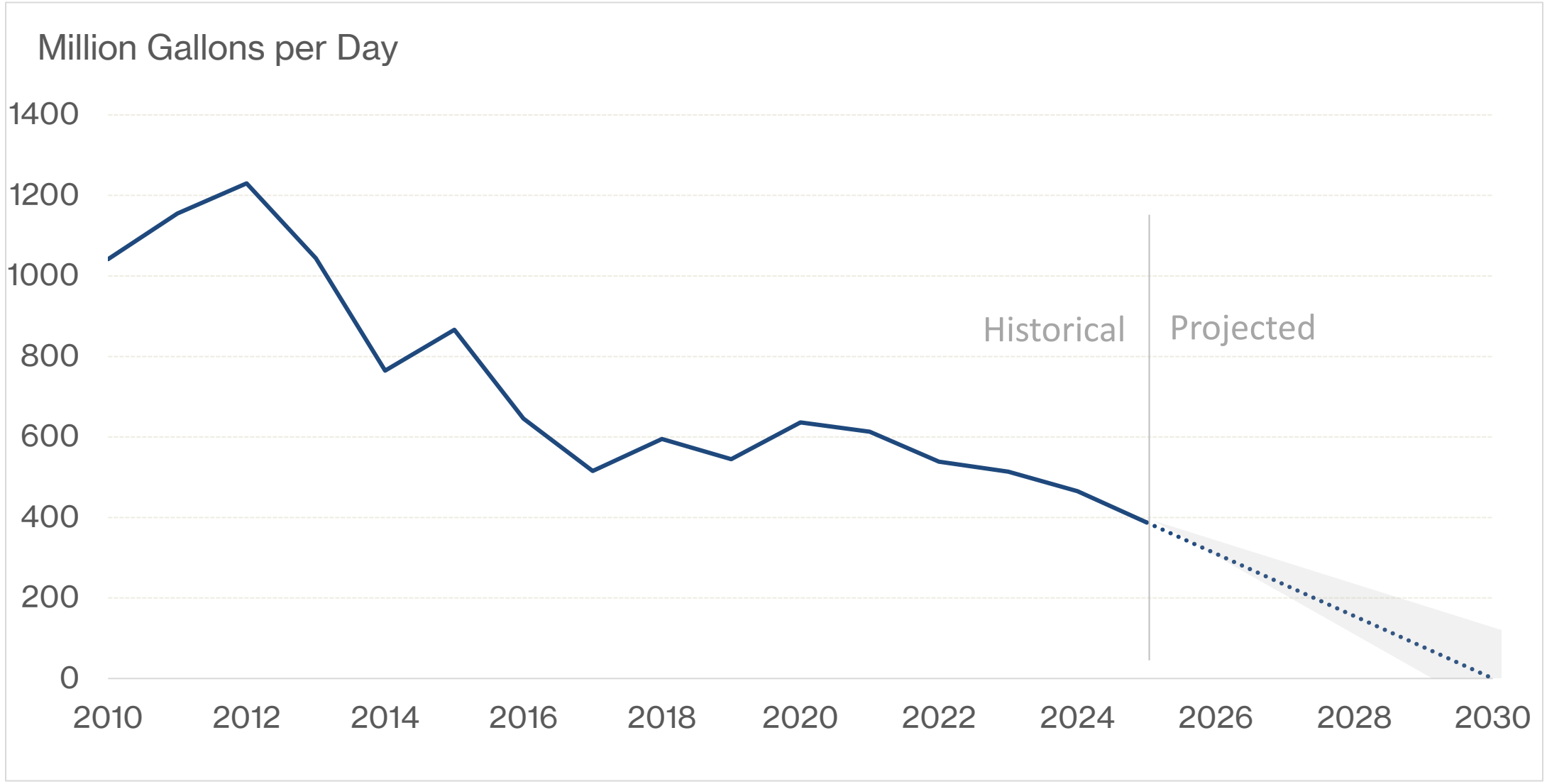
of in-basin capacity must comply

Scattergood Units 1–2	**261 MW**
Haynes Units 1, 2, 8-9-10	**1,019 MW**
Harbor Units 1-2-5	**206 MW**

Compliance deadline: **December 31, 2029** for all affected units



Ocean Water Once-Through Cooling at LADWP Stations Annually: Historical and Projected

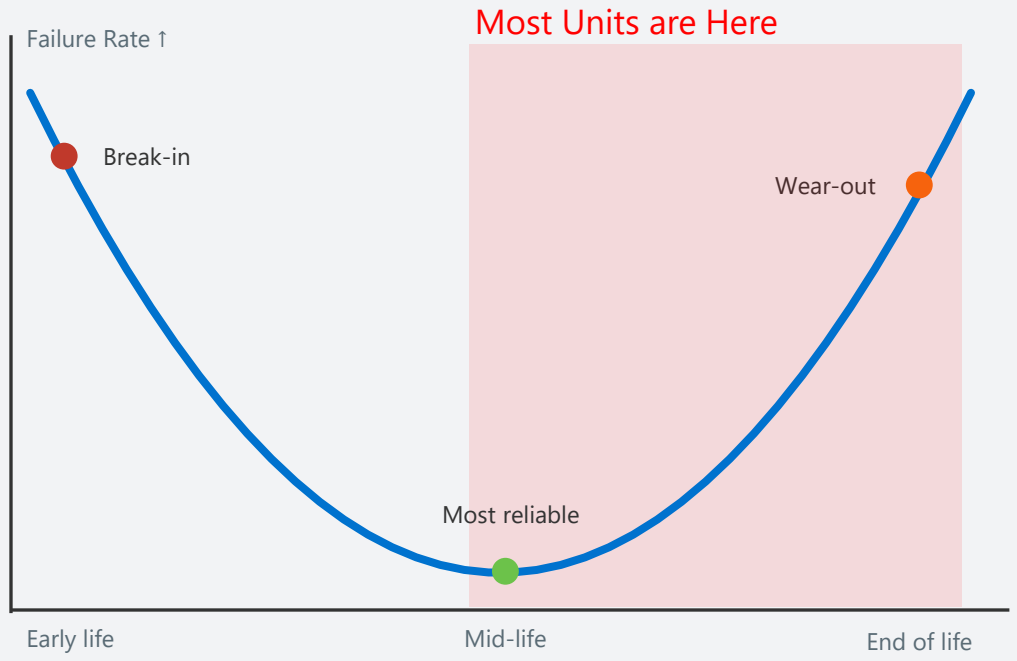


Reference: SACCWIS Report (2026)

Aging Infrastructure: Older Units, Lower Reliability

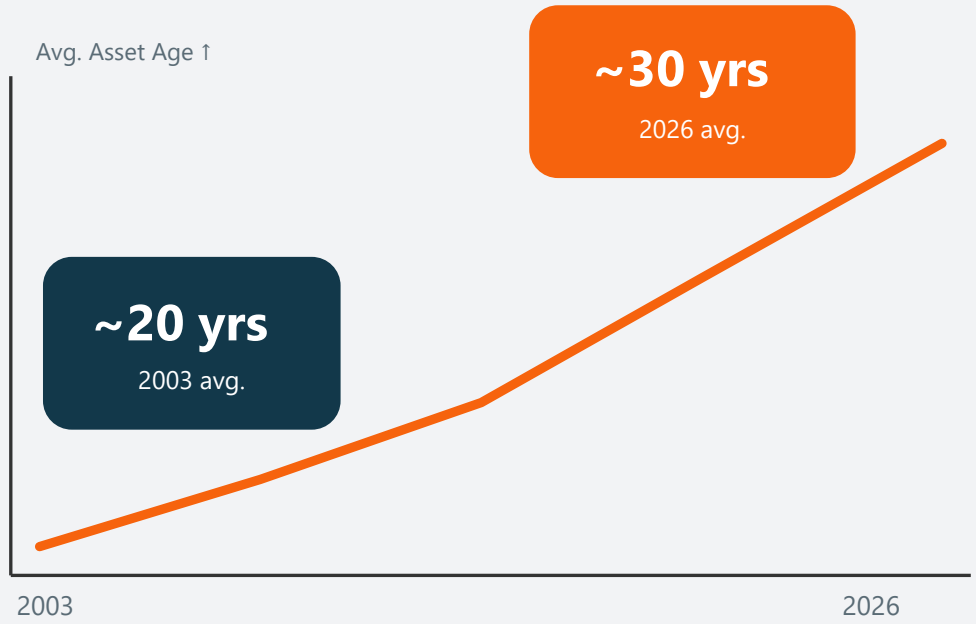
Like any machine, generating units become less reliable as they age — and our in-basin fleet keeps getting older.

Reliability Over a Unit's Lifespan



Least reliable at the start and end of life — the 'bathtub curve'.

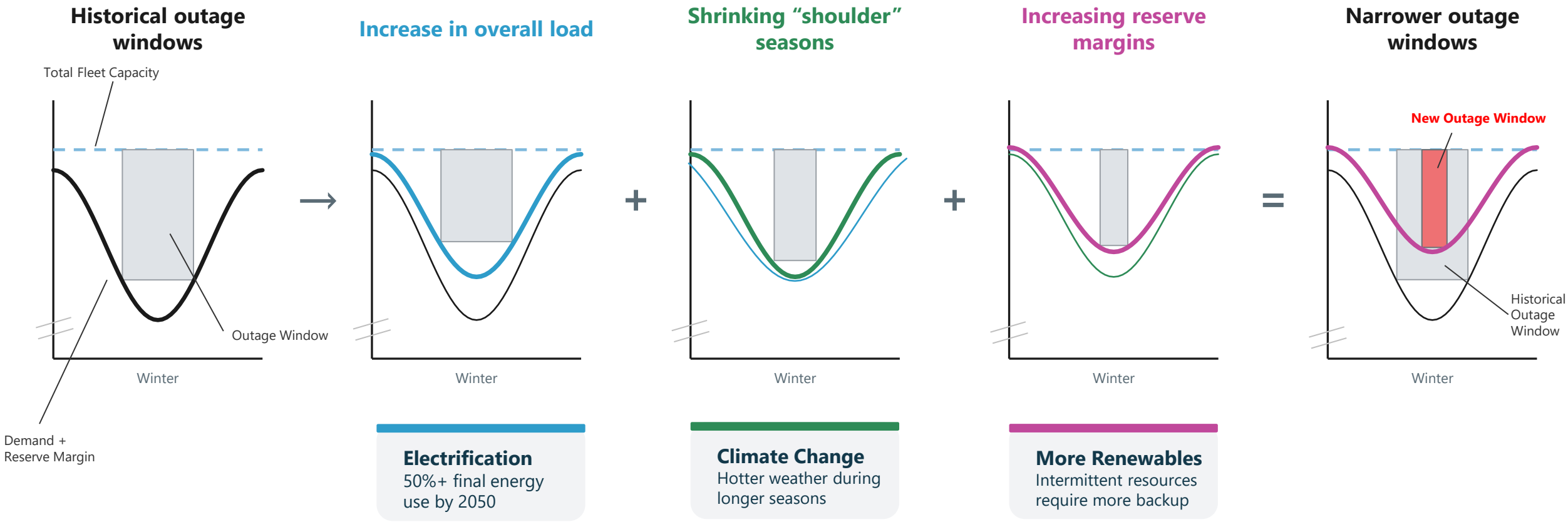
Average Age of In-Basin Units Is Rising



As units age and cycle more to balance renewables, forced outages and costs rise.

An older, harder-working fleet means more forced outages and higher costs — driving the need to plan accordingly for reduced firm resources.

Outage Windows Are Compressing, Making it More Challenging to Maintain Generation Fleet

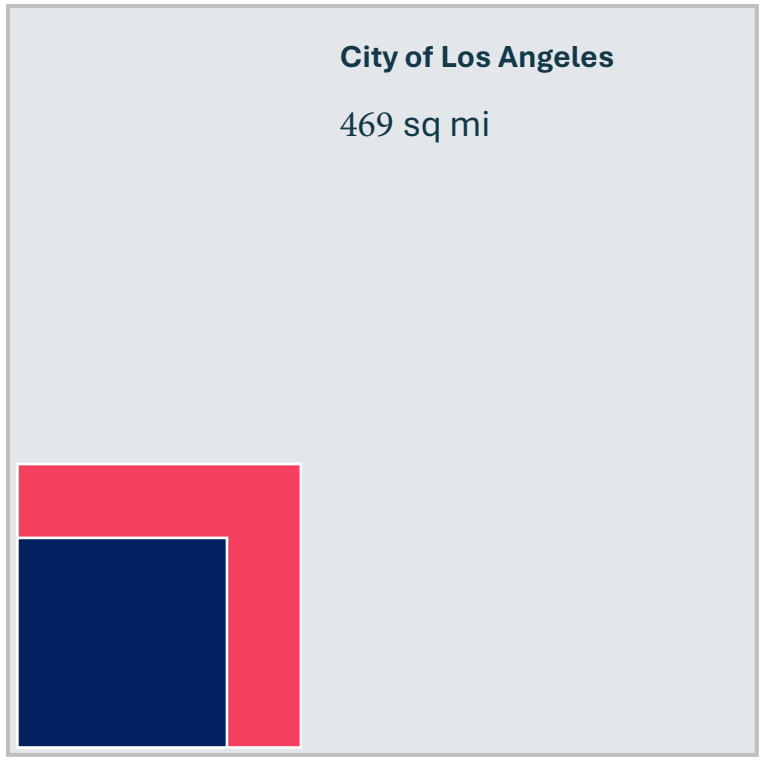


Rising demand, shorter mild seasons, and larger reserve needs all squeeze the allowable window to take units offline for maintenance.

Note: The graphs are notional and informational.

Land Requirements

Clean Replacement for Firm Capacity Requires an Order of Magnitude More Space



BESS = Battery Energy Storage System

4-Hour BESS Replacement

58.9 sq mi · 12.5 % of the City of LA

≈ 535 SoFi Stadiums · 10 Downtown LAs · 65 Scattergoods

8-Hour BESS Replacement

32.2 sq mi · 6.9 % of the City of LA

≈ 292 SoFi Stadiums · 6 Downtown LAs · 36 Scattergoods

Why this matters

Today's in-basin gas fleet delivers ~3,400 MW of firm capacity from just a handful of compact, fenced sites near load.

Batteries provide energy, not unlimited firm capacity — and the land equivalent to replace that firm role runs into tens of square miles.

In the LA Basin, space is the binding constraint — not ambition.



None of These Are Unsolvable:

What We've Accomplished


IPP Coal
IPP Renewed





375 tons
Lift capacity per crane

2x cranes
Working in tandem via strongback

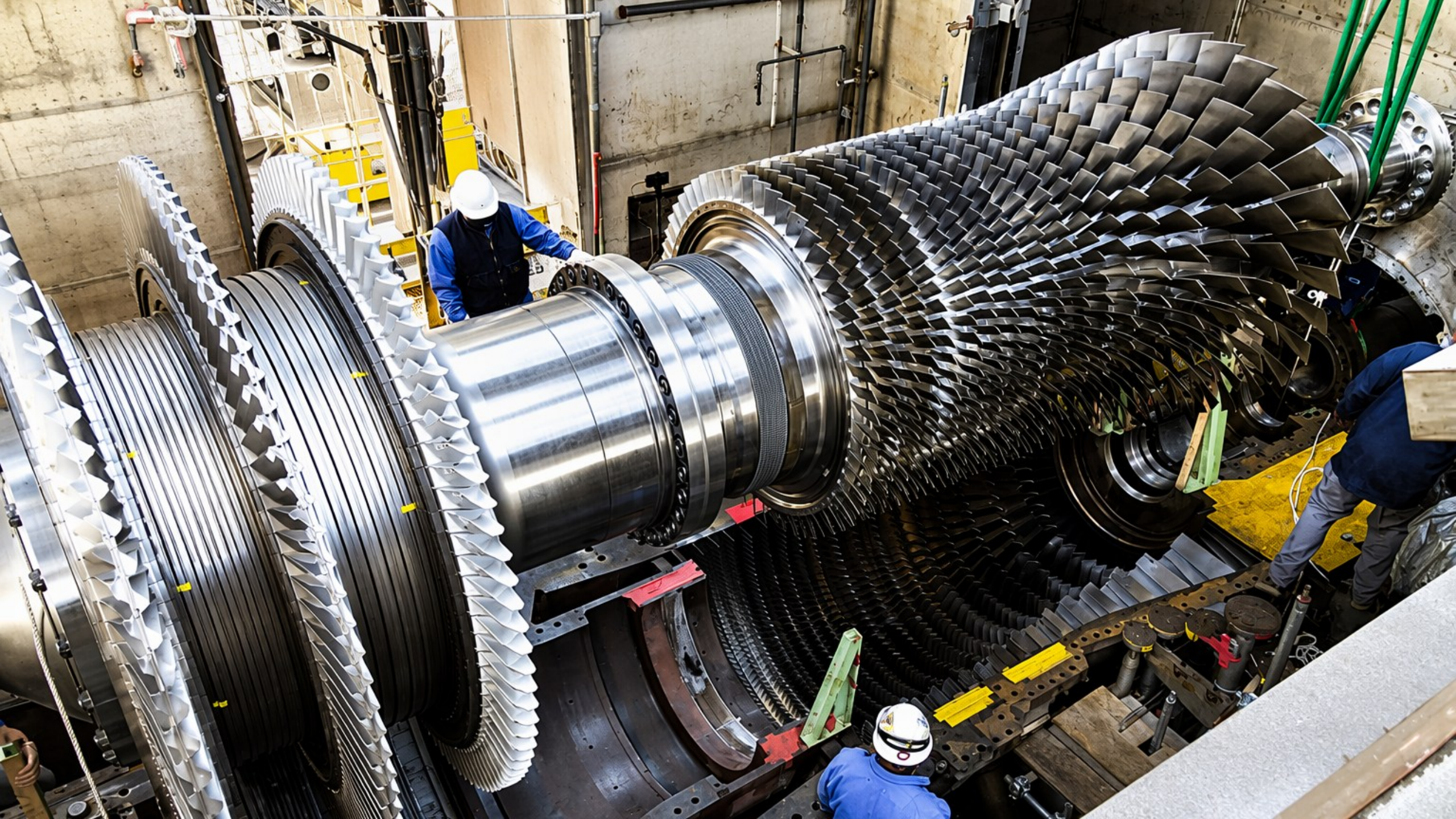
500 tons
Weight of a single rotor








68 TON
RELIABLE






FLEXIFLOAT
HAYNES GEN. STA.



Key Takeaways

1

We've cut carbon ~65% without compromising reliability

Carbon intensity fell from ~1,400 to ~480 lb-CO2/MWh (1999–2025) and clean energy rose from 20% to 62% of sales - all while keeping the lights on. Fully divested from coal in 2026.

2

Firm capacity is still essential for the hard days

In-basin generation runs less and less, but its firm capacity is critical during grid stress - wildfires, transmission outages, or when renewables fall short. Low utilization does not mean low value.

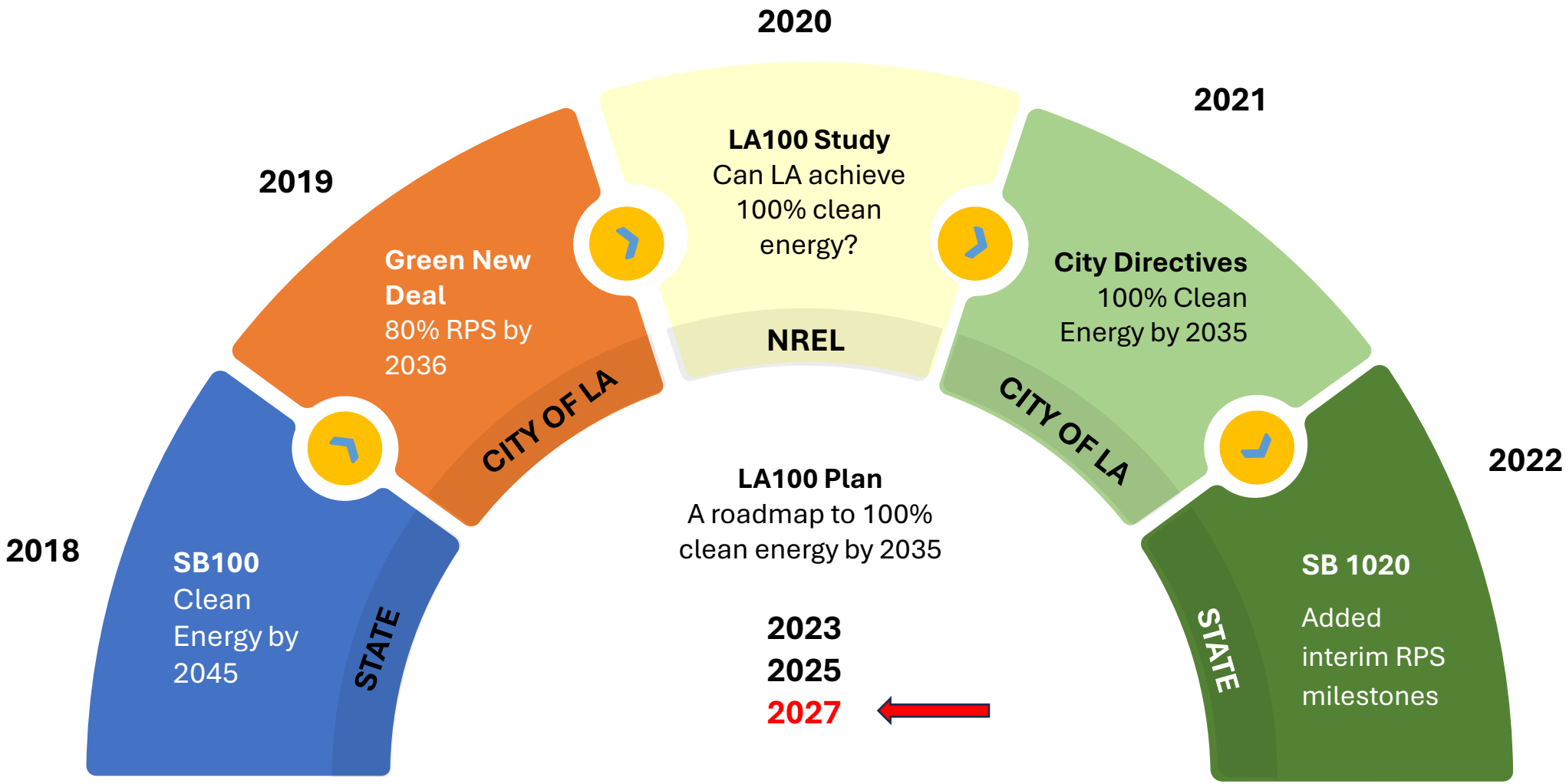
3

The transition is real — but constrained by practical constraints

Progress is genuine, yet bounded by hard realities: the 2029 once-through-cooling deadline, limited in-basin space, and an aging fleet that is costlier and harder to maintain.

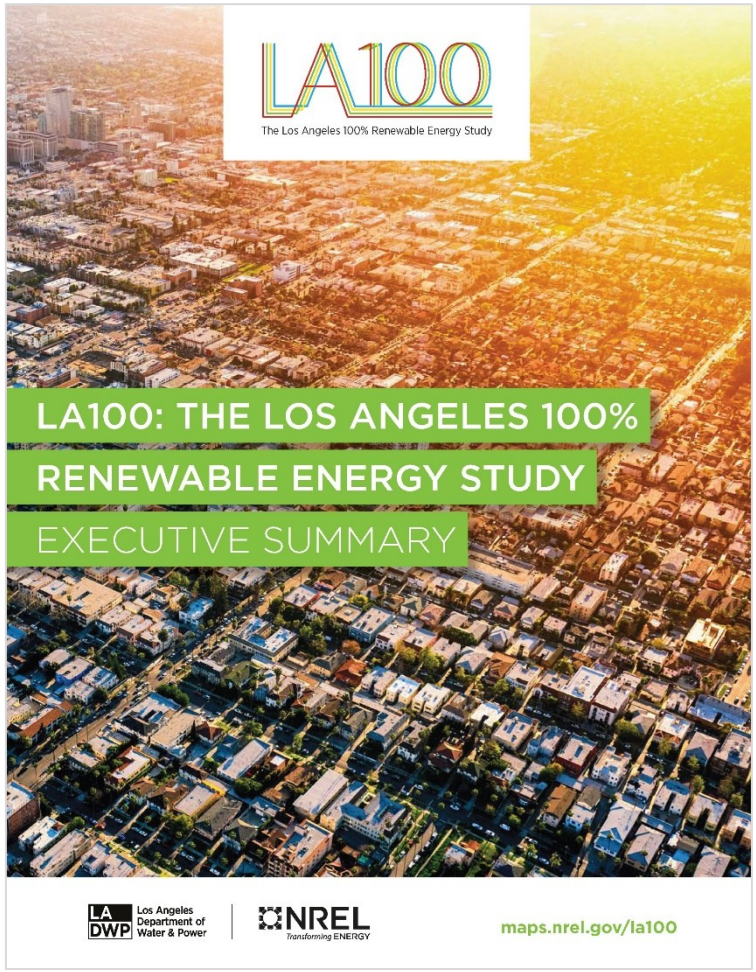
LA DWP

Policy Driving the LA100 Plan



Long-Term Need for Firm Capacity

NREL concluded that LADWP will need firm capacity in the Los Angeles Basin



> New in-basin, renewable **firm capacity**—resources that use renewably produced and storable fuels, can come online within minutes, and **can run for hours to days**—will become a key element of maintaining reliability.

—National Renewable Energy Laboratory
The Los Angeles 100% Renewable Energy Study

- NREL identified significant reliability concerns in a *no-combustion* scenario
- NREL found challenges with "supplying the in-basin resources required to serve load during times of system stress"

No Hydrogen Pathway

- **The LA100 Study found that an equivalent "No Hydrogen Pathway"**
  - Increased out-of-basin combustion by nearly 1,600 MW
  - Increased in-basin utility scale solar requiring 9,000 acres (14 square miles) or ~1,600 MW
  - Increased in-basin transmission needs to 5 new lines
- **Subsequent LA100 Plans modeled a No Combustion / Fuel Cell scenario**
  - Significant increase in costs (both capital & O&M) on comparison to turbines
  - Existing real estate constraints limited comparable output capabilities



Q&A



Los Angeles Department of Water & Power

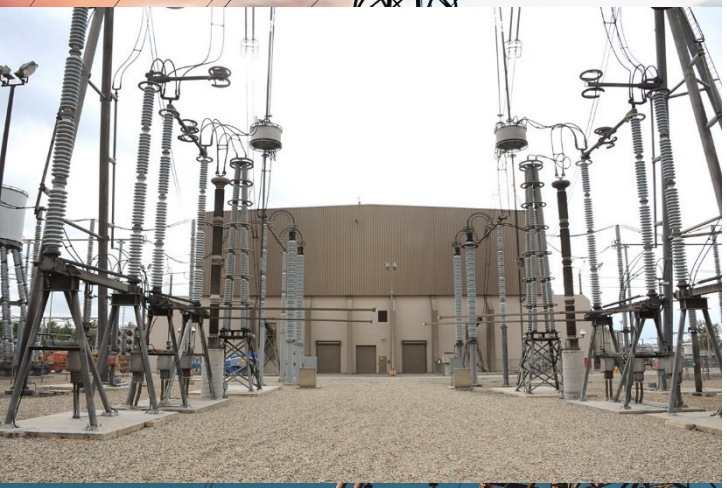
2027 LA100 Plan

Advisory Group | Transmission System Fundamentals

Planning & Innovation Division

October 15, 2026







Note: Q&A opportunities will be available after each section

Agenda

Introduction

What is an Electrical Transmission System

LADWP Transmission System Overview

Contingencies

Type of Projects

Upcoming Projects


Kahoot!

Electrical Transmission System

Alternating Current (AC) Lines



Receiving Stations



Direct Current (DC) Lines



Converter Stations



Subtransmission System



LADWP Transmission System Facts

- **4,081 miles** of Overhead Transmission Circuits (AC and DC)
- **136 miles** of Underground Transmission Circuits
- **23** Receiving Stations





Alternating Current (AC) Lines

Freeways

- Bulk Transportation
- Free Flowing
- Large Towers
- 500kV, 345kV, 230kV, 138kV
- Receiving Stations / Switching Stations
- Easier Connections

Receiving Stations

ON/OFF Ramps

- Connection between Transmission and Subtransmission
- 500kV/345kV/230kV/138kV (Transmission) to 34.5kV (Subtransmission)
- Large Facilities (>5 acres)
- Station Cost: **$50M-$150M**



Direct Current (DC) Lines

Highspeed Rail

- Bulk Transportation
- Controlled Flows/Schedules
- Large Towers
- Converter Stations
- Specialized Connections



Converter Stations

Train Stations

- Connection between DC Transmission and AC Transmission
- 500kV (DC Transmission) to 500kV/345kV/230kV/220kV (AC Transmission)
- Larger Facilities (>40 acres)
- Terminal Cost: **$350M-$800M**



Subtransmission

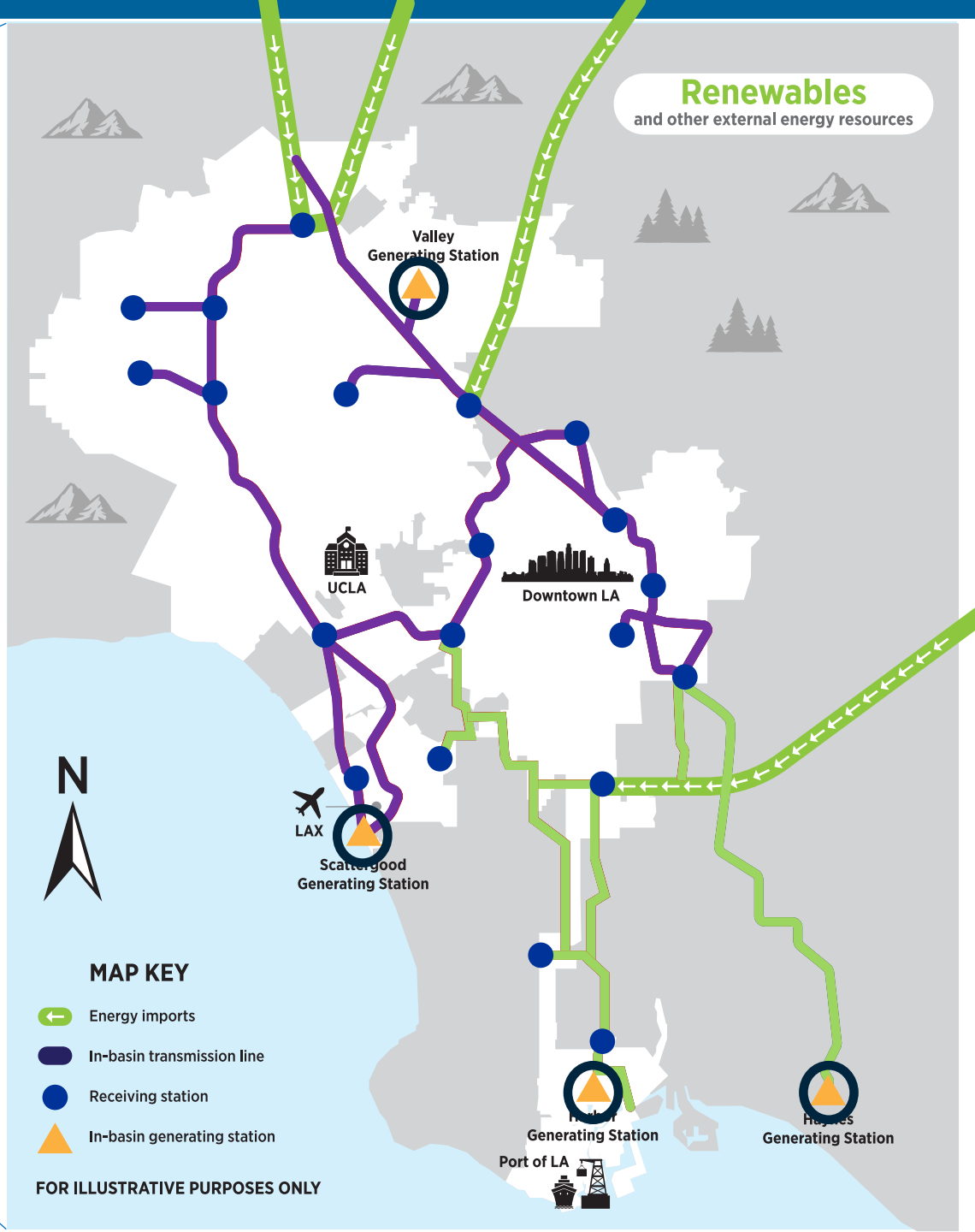
Arterial Roads

- 34.5kV System
- Poles (65’-100’)
- Power Delivery from Receiving Stations to Distribution Stations



Transmission System Overview





Contingencies

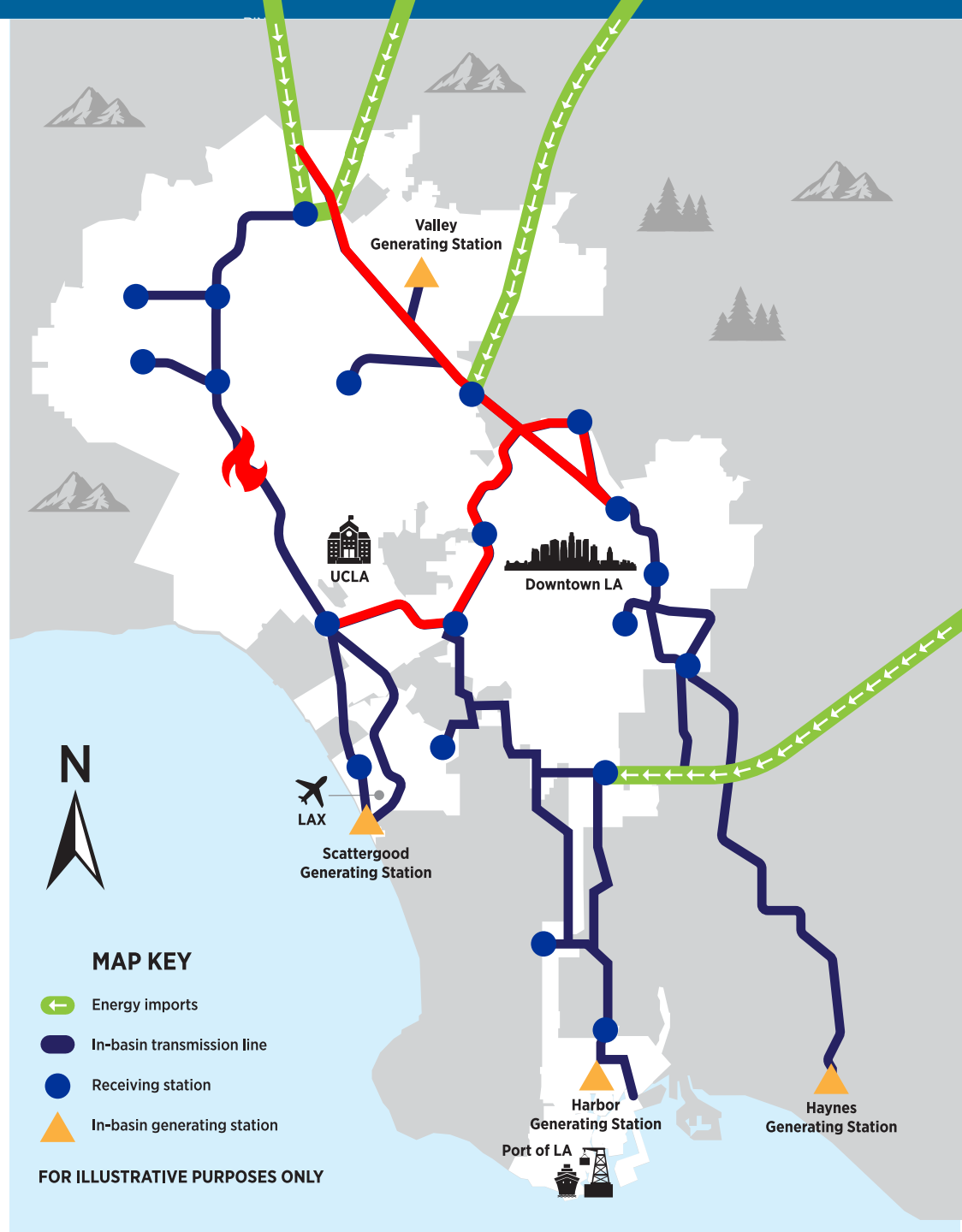
Vehicle Accidents

- Loss of a single lane
- Loss of multiple lanes
- Loss of an entire corridor

- *Lane Closure*
- *Highway Shutdown*
- *Multiple Highways Shutdown*



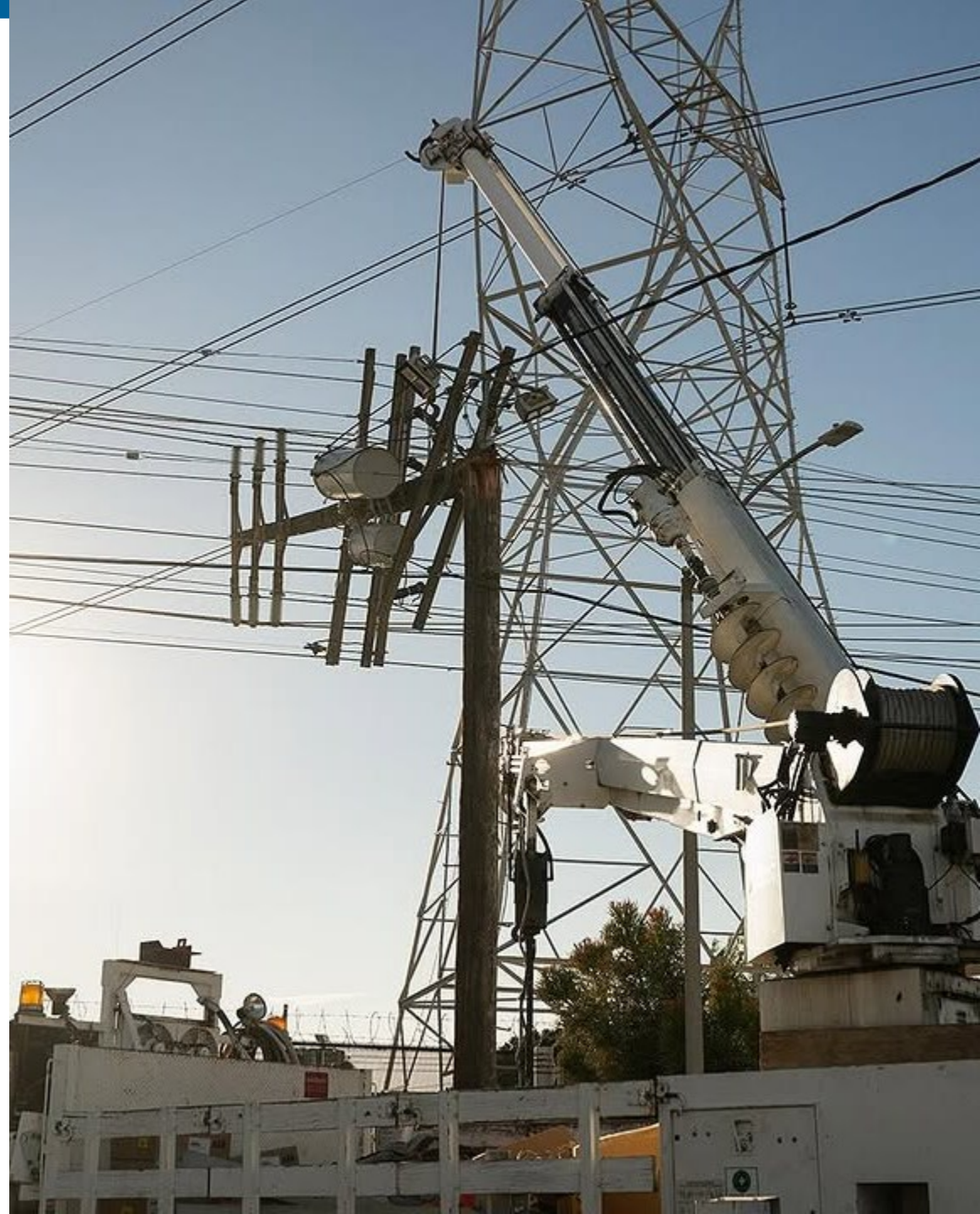
Contingency & Reliability



Transmission Line Upgrade Options

Planned Work

- Reconductoring
- New Lines
- Conversion from AC to DC
- Adding Lanes
- Building New Highways
- Changing Highways Into Trains Lines



Kahoot!

Transmission Line Projects (1/3)

Project Location	Project Description	Timeline
Tarzana - Olympic 1A and 1B - Conversion to 2-230kV lines	Convert 138KV circuit to Two 230 kV circuits to increase reliability of the LADWP basin for load growth and OTC generation requirements.	5/1/2029
Adelanto - Rinaldi Line 1 Clearance Mitigation	Undergoing efforts to replace terminating equipment to higher rated facilities as well as mitigate any clearance issues with the overhead conductor to increase the overall facility rating for the line	3/1/2028
Adelanto - Toluca Line 1 Clearance Mitigation	Undergoing efforts to replace terminating equipment to higher rated facilities as well as mitigate any clearance issues with the overhead conductor to increase the overall facility rating for the line	12/1/2031
Victorville - Rinaldi Line 1 Clearance Mitigation	Undergoing efforts to replace terminating equipment to higher rated facilities as well as mitigate any clearance issues with the overhead conductor to increase the overall facility rating for the line	7/1/2027
Lugo - Victorville Line 1 Upgrade	Mitigate the overhead to ground clearance to increase facility rating of the 500 KV tie line between SCE and LADWP. This project was developed to increase transfer capability on the tie as approved in the WECC path 61 study.	3/31/2027
Toluca-Hollywood Line 1 Underground Cable	Upgrade 230kV underground cable from oil filled to synthetic cable with higher capacity for reliability of the LADWP basin transmission system due to Load Growth and Once Through Cooling generation retirements.	6/15/2028
McCullough – Victorville Series Compensation	Upgrade series capacitors on two 500 kV lines to higher ratings and increase compensation level. This project is part of the West of River (WOR) Path 46 upgrade jointly developed with SCE to increase the WOR path transfer capability.	12/31/2028
McCullough – Victorville Transmission Line	Perform work to allow proper clearance requires in order to upgrade current and voltage ratings on the circuits of the two 500 kV lines in conjunction with the increased compensation level project listed above. This project is part of the WOR Path 46 upgrade jointly developed with SCE increase on WECC path transfer capability.	12/7/2028
Wavetraps and CVTs at Victorville 287kV to 300kV	Replace 287 kV CVT's and wave traps to maintain reliability in light loading conditions.	5/31/2029
Wavetraps and CVTs at Century (RS-B) 287kV to 300kV	Replace 287 kV CVT's and wave traps to maintain reliability in light loading conditions.	5/31/2029
Wavetraps and CVTs at Mead 287kV to 300kV	Replace 287 kV CVT's and wave traps to maintain reliability in light loading conditions.	TBD
Wilmington (RS-C) 138kV Shunt Capacitors Construction	Installation of new 66 MVAR shunt capacitor at Wilmington Receiving Station in an effort to increase imports and maintain reliability on internal LADWP VICLA path	Q3 2026
Rosamond Switching Station	New 230 kV switching station required for interconnecting new renewable generation requests.	7/16/2027

Transmission Line Projects (2/3)

Project Location	Project Description	Timeline
Toluca - Atwater Line 2 and upgrade Toluca -Atwater Line 1	Upgrade 230 kV line to higher capacity and add third circuit to the to higher capacity for reliability of the LADWP basin transmission system.	5/1/2034
Valley - Rinaldi Line 3 and upgrade Valley -Rinaldi Lines 1 and 2	Upgrade two -230 kV lines to higher capacity and add third circuit for reliability of the LADWP basin transmission system.	5/1/2035
Valley - Toluca Line 3 and upgrade Valley -Toluca Lines 1 and 2	Upgrade two -230 kV lines to higher capacity and add third circuit for reliability of the LADWP basin transmission system.	5/1/2033
Rinaldi - Airway Lines 1 and 2	Upgrade two -230 kV lines to higher capacity for reliability of the LADWP basin transmission system.	5/1/2032
Circuit Breakers at Victorville 500kV	Replace circuit breakers with higher capacity to prepare for increased series compensation on the WOR path. This project is part of the WOR projects Path 46 Upgrade jointly developed with SCE for increase on the WOR path transfer capability.	12/1/2028
Circuit Switcher for McCullough - Victorville Lines 1 and 2	Circuit switchers for the Reactors on the McCullough- Victorville Line 1 and 2 will be replaced like for like due to age and degradation of equipment.	12/31/2030
Lugo-Victorville Line 1 Terminal Equipment	Replace CB's and Disconnects with higher rated equipment to increase facility rating of the 500 KV tie line between SCE and LADWP. This project was developed to increase transfer capability on the tie as approved in the WECC path 61 study.	3/31/2027
RS-E Bank G 500/230kV (Adelanto - Toluca L1) replacement	Replace existing transformer for system reliability and resiliency.	12/15/2032
Rinaldi Banks G1 & G2 500/230kV (Victorville - Rinaldi L1) replacement	Replace existing transformer for system reliability and resiliency.	12/16/2031
Valley (RS-M) Rack A	New load bank on the 230kV side of Valley to serve future load growth	6/30/2028
Scattergood Auto and Phase Shifting Transformer	Install new Phase shifting transformer at Scattergood 138kV to replace aging transformer with higher rating and extended phase angle range. This project is to maintain reliability on the west side transmission due to load growth as well as to serve as part of the spare equipment strategy as the existing phase shifting transformer will be maintained as a spare.	6/30/2029
RS-N Rack E Expansion	Installation of a new bay with 138kV breakers for the new transformer Bank A replacement and existing Bank B to increase the overall reliability of the station and expected load growth	12/31/2030
RS-B Rack A and Bank A	Installation of a new bay for a new transformer Bank A to increase the overall reliability of the station and expected load growth	8/7/2026

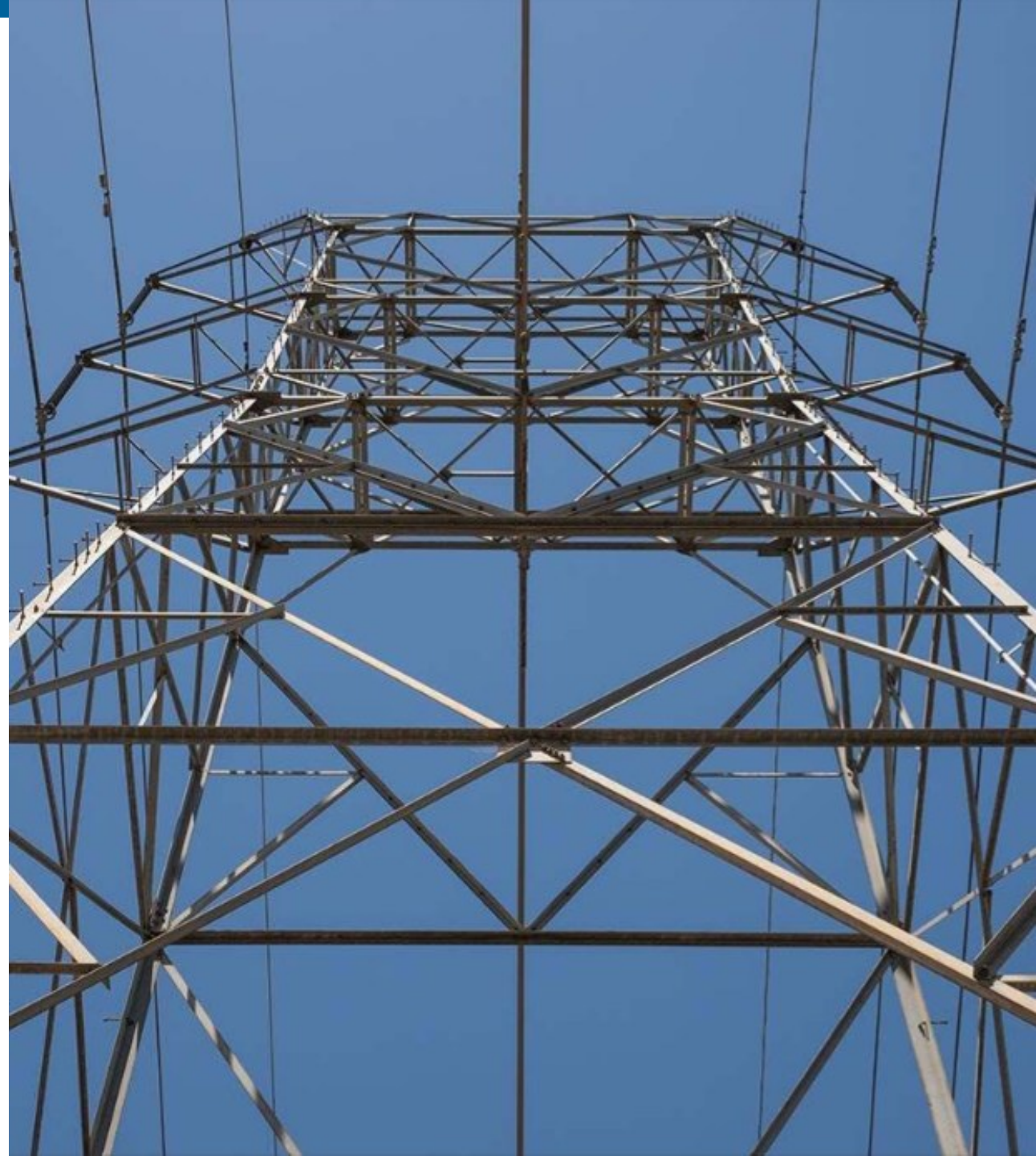
Transmission Line Projects (3/3)

Project Location	Project Description	Timeline
Spare Mead Bank M	As part of the spare equipment strategy existing bank is being replaced with a like for like transformer. The existing transformer will be maintained as a spare for reliability concerns of having a failure on long lead time on critical equipment.	TBD
Sylmar - Pardee Lines 1 and 2	Southern California Edison (SCE) requested LADWP to perform the necessary work to increase the line rating on both the Sylmar - Pardee Lines 1 and 2. This includes upgrading the circuit breakers and disconnect switches	1/22/2029
Hollywood - Fairfax 138kV Series Reactor	Replace existing series reactors on the Hollywood-Fairfax lines with higher rated equipment. This project was developed to maintain reliability due to Once Through Cooling generation retirements.	4/30/2031
Fairfax - Olympic 138kV Series Reactor	Replace existing series reactors on the Fairfax-Olympic lines A and B with higher rated equipment. This project was developed to maintain reliability due Once Through Cooling generation retirements.	4/30/2032
Sylmar Bank E	Replace existing transformer due to failure and maintain system reliability.	5/1/2029
Sylmar Bank F	Replace existing transformer for system reliability and resilency.	11/14/2029
Sylmar Bank G	Replace existing transformer for system reliability and resilency.	TBD
Adelanto AC Switchyard extension	Adelanto Switchyard is being expanded as part of the Intermountain renewal project to provide additional space for replacement HVDC converter equipment and to maintain the reliability of the aging HVDC system as well as part of a large project to retire coal generation as part of state mandates.	5/28/2028
Converter Station at IPP and Adelanto	Replacement HVDC equipment is being installed in new station positions to allow removal of aged equipment while minimizing outages. The project is part of larger project to retire coal generation and meet state mandates.	4/30/2028
New IPP Synchronous Condensers	Install new synchronous condensers to maintain specific system requirement to operate the Intermountain HVDC after retirement of the coal generators. The project is required to maintain reliability and meet state mandates.	8/31/2028
Adelanto STATCOM	Install STATCOM as part of the Intermountain renewal project to minimize switching operation of harmonic or shunt banks, as well as minimize dynamic voltage variations to enhance overall system operations of the IPP HVDC system.	4/30/2028

LA DWP

Transmission Line Projects

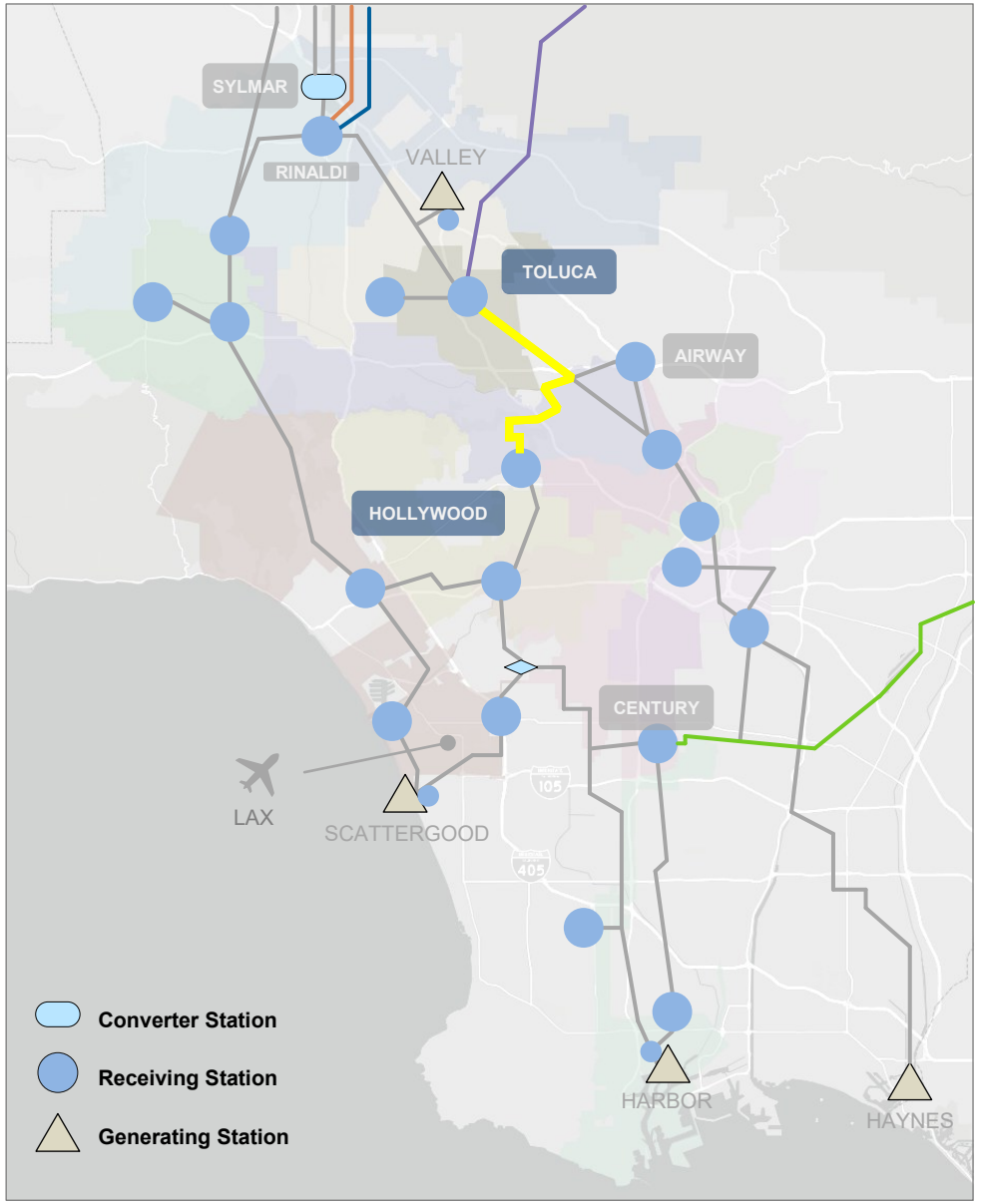
- Toluca – Hollywood 1 Upgrade
- Tarzana – Olympic 1 Conversion
- Valley – Toluca 3 and Valley-Toluca 1&2 Upgrade
- Rinaldi – Airway 1&2 Upgrade
- Toluca – Atwater 2 and Toluca – Atwater 1 Upgrade



Toluca-Hollywood Line 1 Upgrade

Purpose/Objective:	Enhancing reliability, and increasing capacity to transfer renewables energy being imported to the San Fernando Valley to LA Basin
In Service:	6/15/2028
Advantages:	• Replacing aged underground cable • Reduced maintenance and outage times • Reduced local generation run-time
Challenges	• Outage coordination with other high priority projects, and unavailability of the line for duration of construction • Restricted work hours in densely populated area leads to risk of longer outage durations

ILLUSTRATIVE ONLY



OH = Overhead; UG = Underground

Tarzana-Olympic Line 1 Upgrade

Purpose/Objective:	To meet reliability requirement for load growth in the West Los Angeles Basin and bring reliable imports of renewables delivered to the San Fernando Valley across the Santa Monica Mountains
In Service:	5/1/2029
Advantages:	• Reduces local generation run-time, and provides West LA transmission resiliency • CEQA Exempt (Fire Recovery)
Challenges	• Outage coordination with other high priority projects • Constrained urban workspace

ILLUSTRATIVE ONLY



OH = Overhead; UG = Underground

Valley Transmission Projects

Purpose/Objective: Enhancing reliability to meet load growth and increasing capacity to bring renewable energy to southern Los Angeles

Project:	Rinaldi–Airway	Valley–Toluca	Toluca–Atwater	Valley–Rinaldi
Service:	5/1/2032	5/1/2033	5/1/2034	5/1/2035

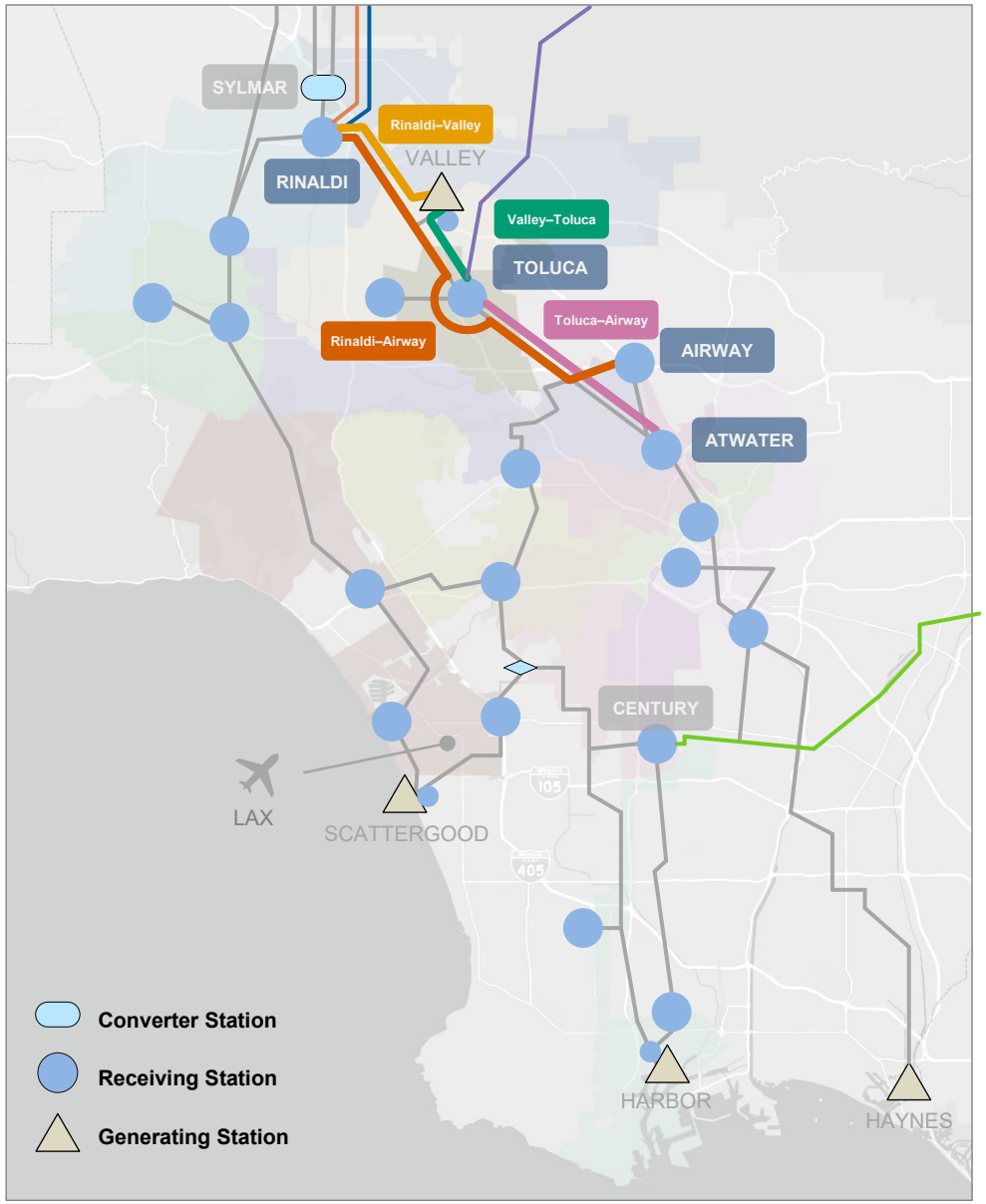
Advantages:

- Reduced local generation run- time, and provides East side transmission resiliency
- Utilizing existing Right-of-Way (ROW)

Challenges

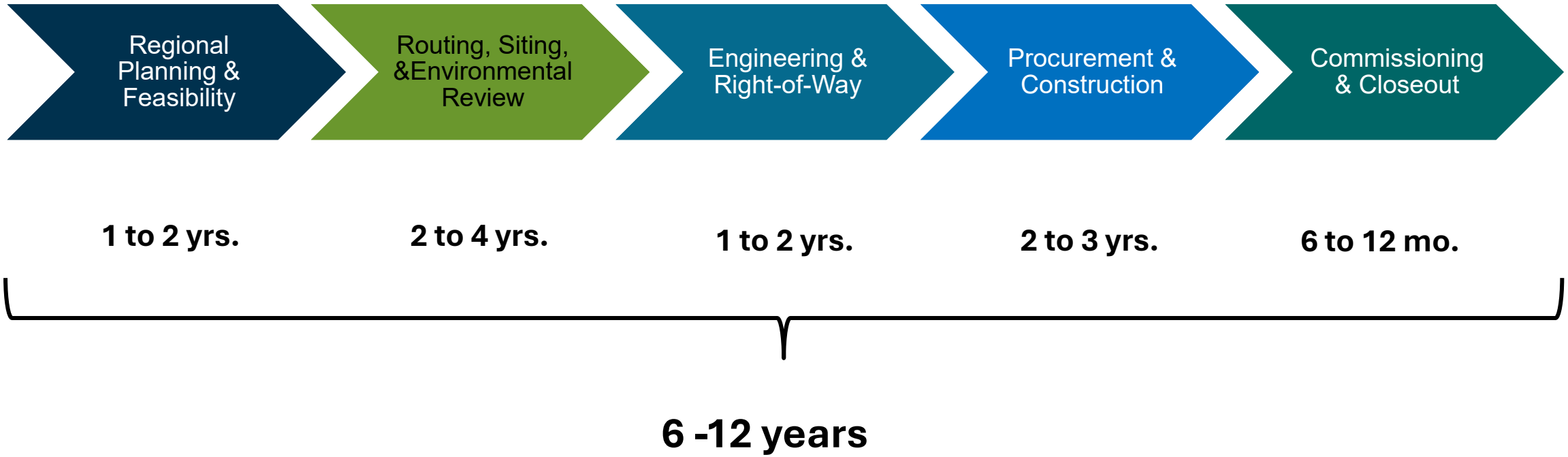
- Complex outage coordination required
- Clearance & sequence of work
- Corridor interdependency with other upgrades
- Adding a new line with constraint of existing ROW

ILLUSTRATIVE ONLY



OH = Overhead; UG = Underground

New Transmission Line Timeline



Transmission Topology

Renewables are primarily imported, balanced by 3,400 MW+ of local firm capacity

In-basin Generation

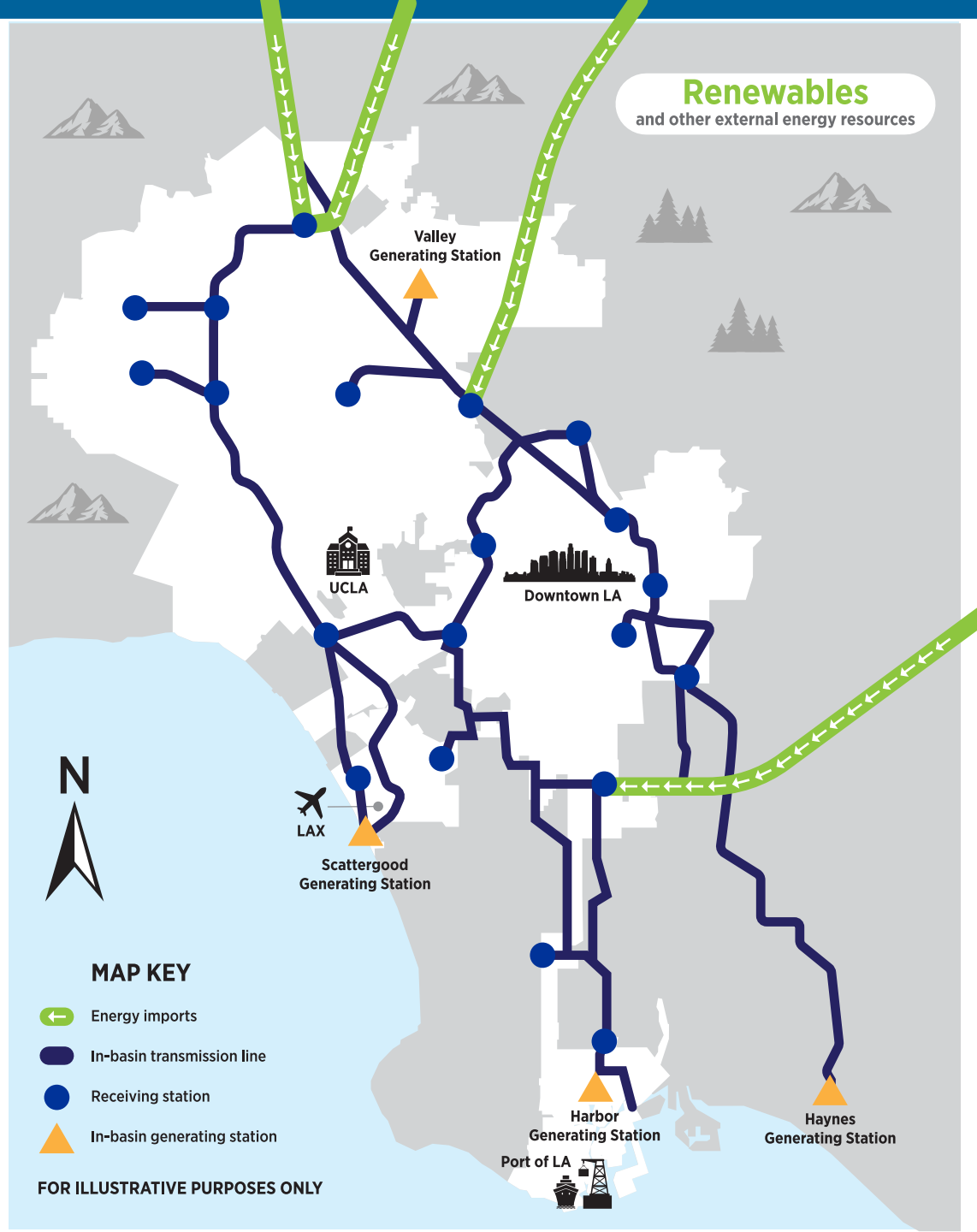
LADWP transmission network was designed in part around in-basin generation, located mostly in the **south**.

Importing Renewables

Renewables are primarily imported from the **north**.

Locally Sited Generators

Transmission limitations and inadequate renewable supply are currently addressed by running locally sited generators.




LIVE
AIR7
DOWNTOWN L.A.
BREAKING NEWS
CHP HAS CLOSED 101 FWY
BOTH DIRECTIONS CLOSED AT TEMPLE ST
abc7.com


Venice Blvd 1¼
Washington Blvd 1¾
Culver Blvd

Blackouts

Preventing Disruption and Protecting Lives
Reliable electricity is more than a convenience - it supports public safety, health, and daily life.

Q&A



Los Angeles Department of Water & Power

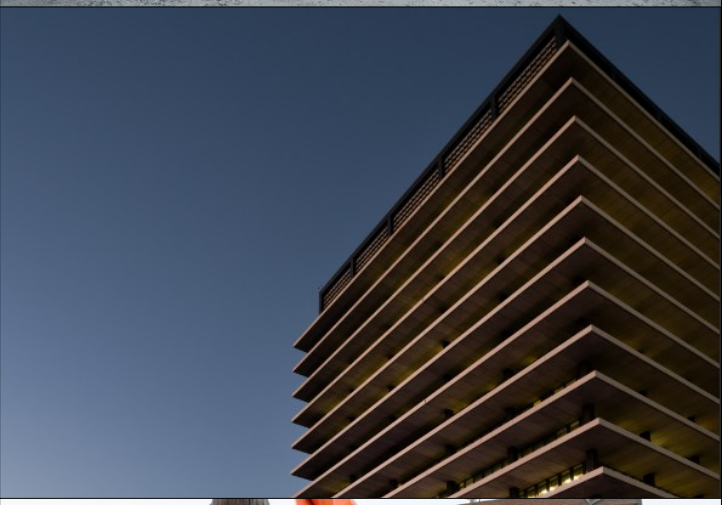
2026 Distribution System Planning

Advisory Group Meeting

Planning & Innovation Division

October 15, 2026







Note: Q&A opportunities will be available after each section

Agenda

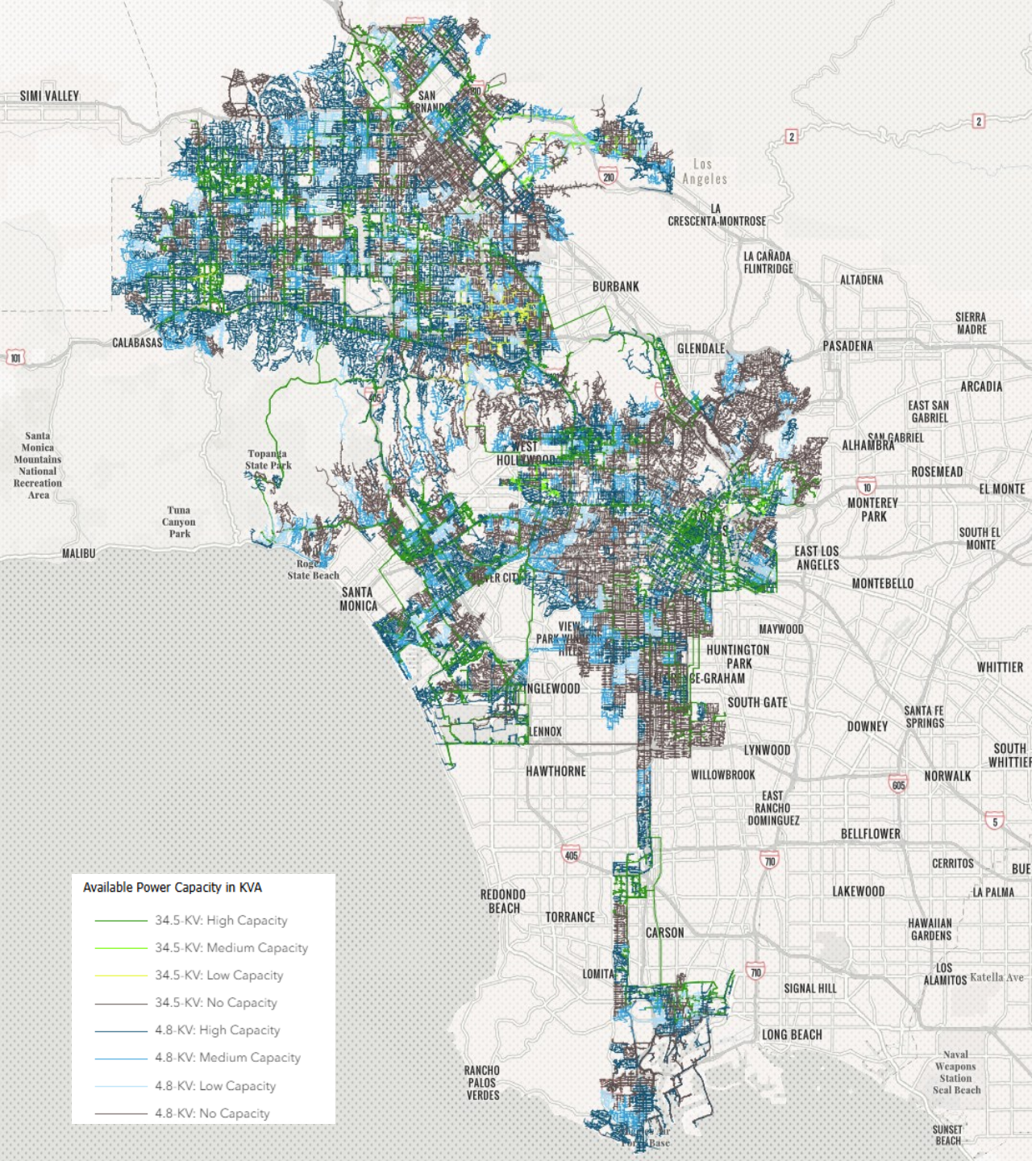
Assumptions

Key Findings

Recommendations

Plans and Next Steps

Q&A



Distribution Upgrades and Investments

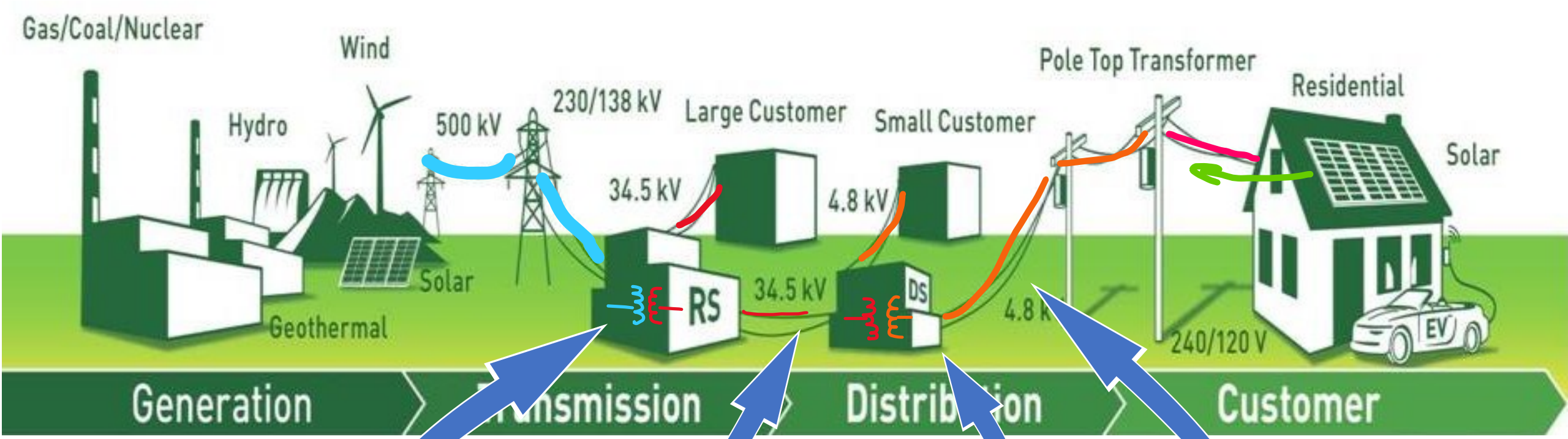
Power System Reliability Program

- $1 billion program
- Prioritizing distribution upgrades and replacements

Programmatic EIR for DS's

- New DS's at identified locations where there are overloads and/or antiquated DS's

How Power Gets To You



21

545

127

1628

Substations







Distribution Lines

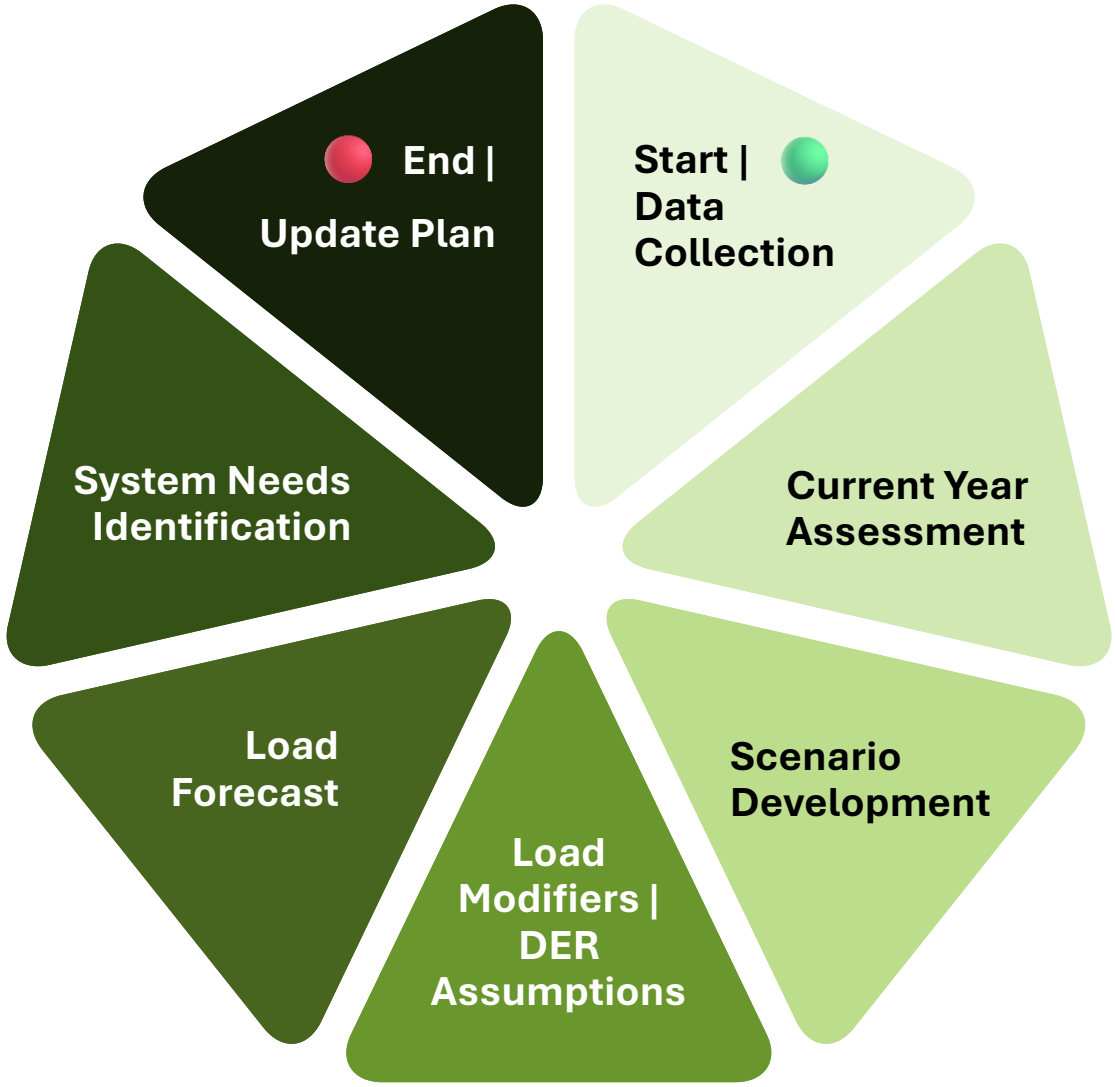
35,000 Volts.
Equivalent of 4,000 AC Units

4,800 Volts.
Equivalent of 600 AC Units

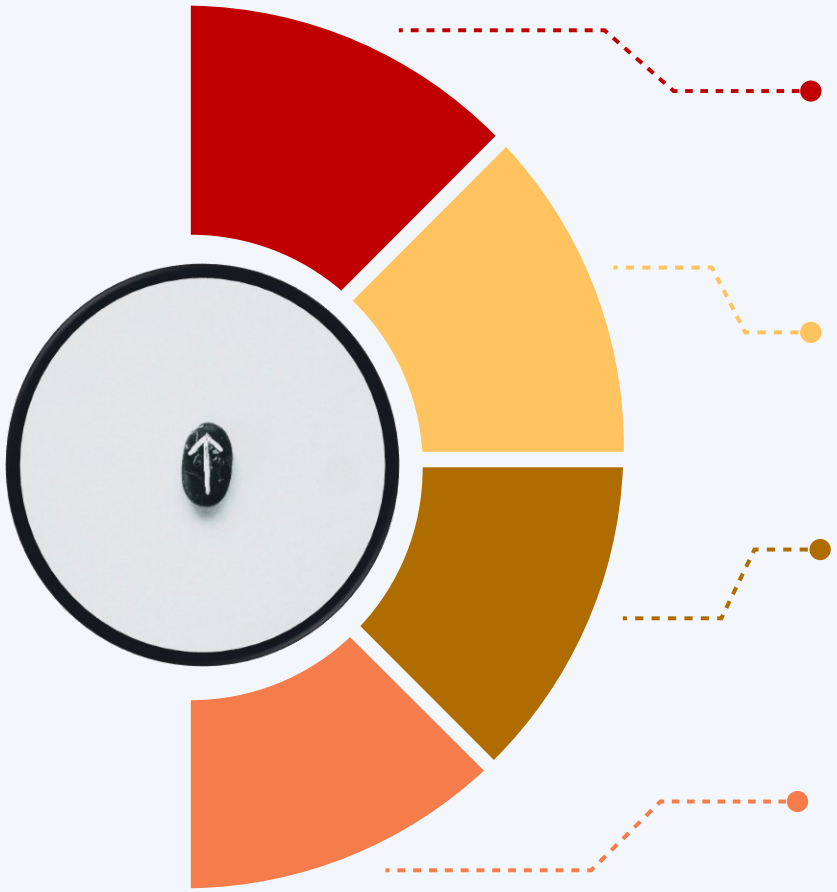
120 Volts.
Equivalent of 5 AC Units



Focus of Discussion – Inputs & Assumptions

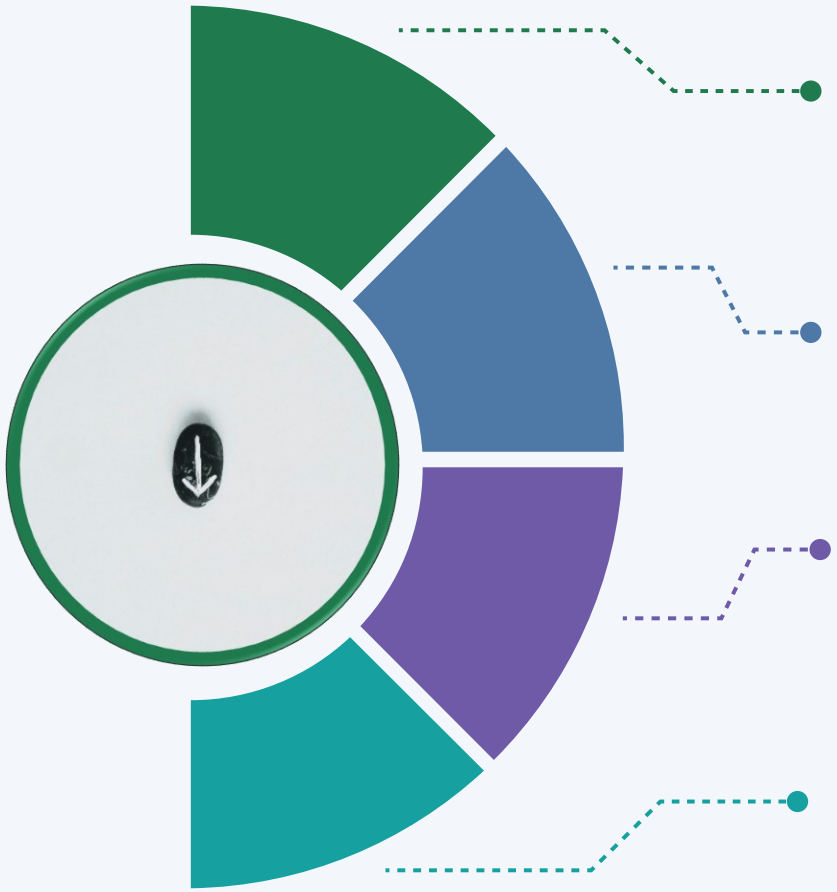


Distribution Load Forecast (Load Growth)



- Weather & Climate
- Building Growth Rate
- New Interconnections
- Electrification | Cars, Trucks, & Buildings

Distribution Load Forecast (Load Reducer)



Energy Efficiency

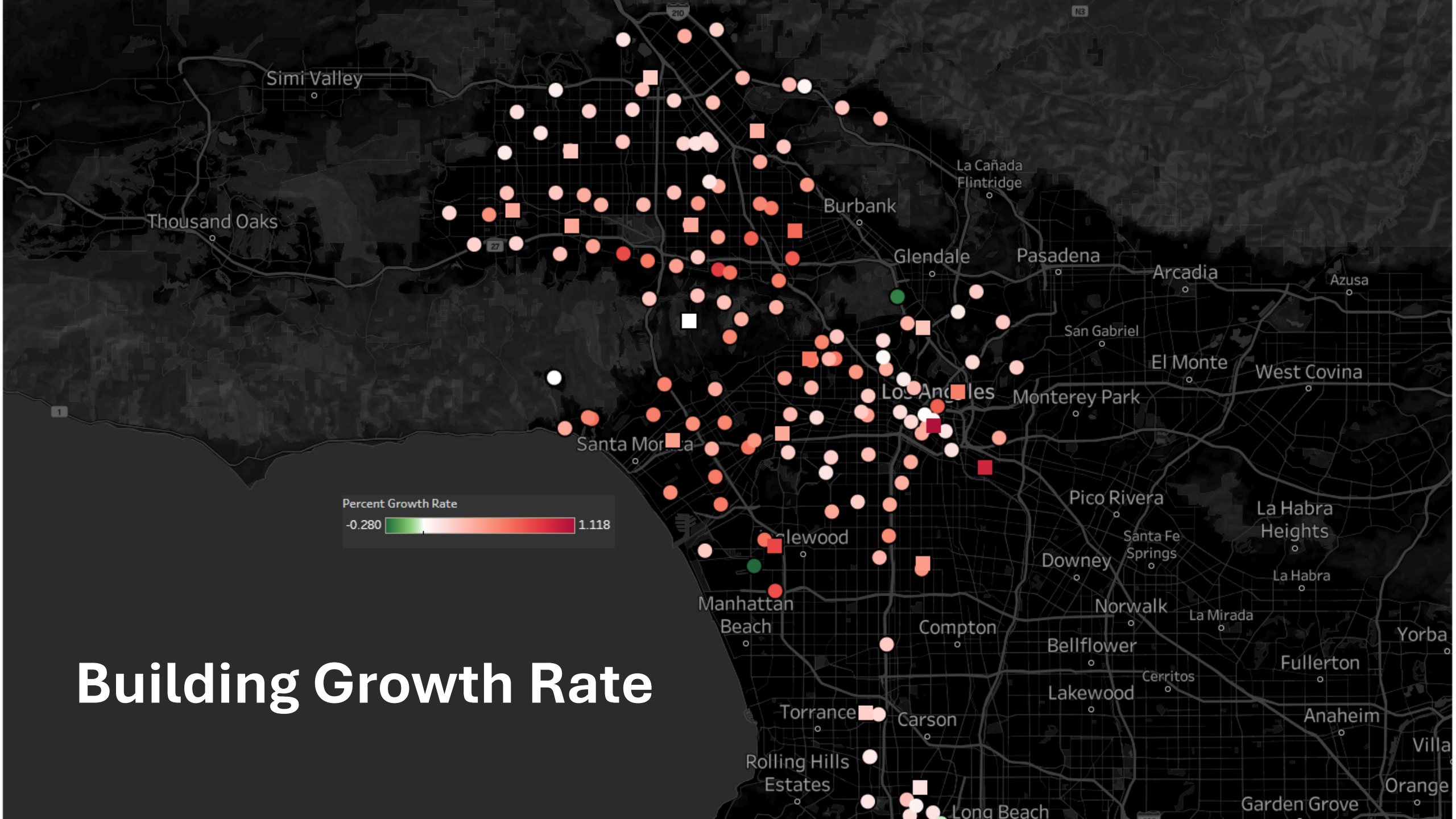
Solar

Energy Storage

Demand Response

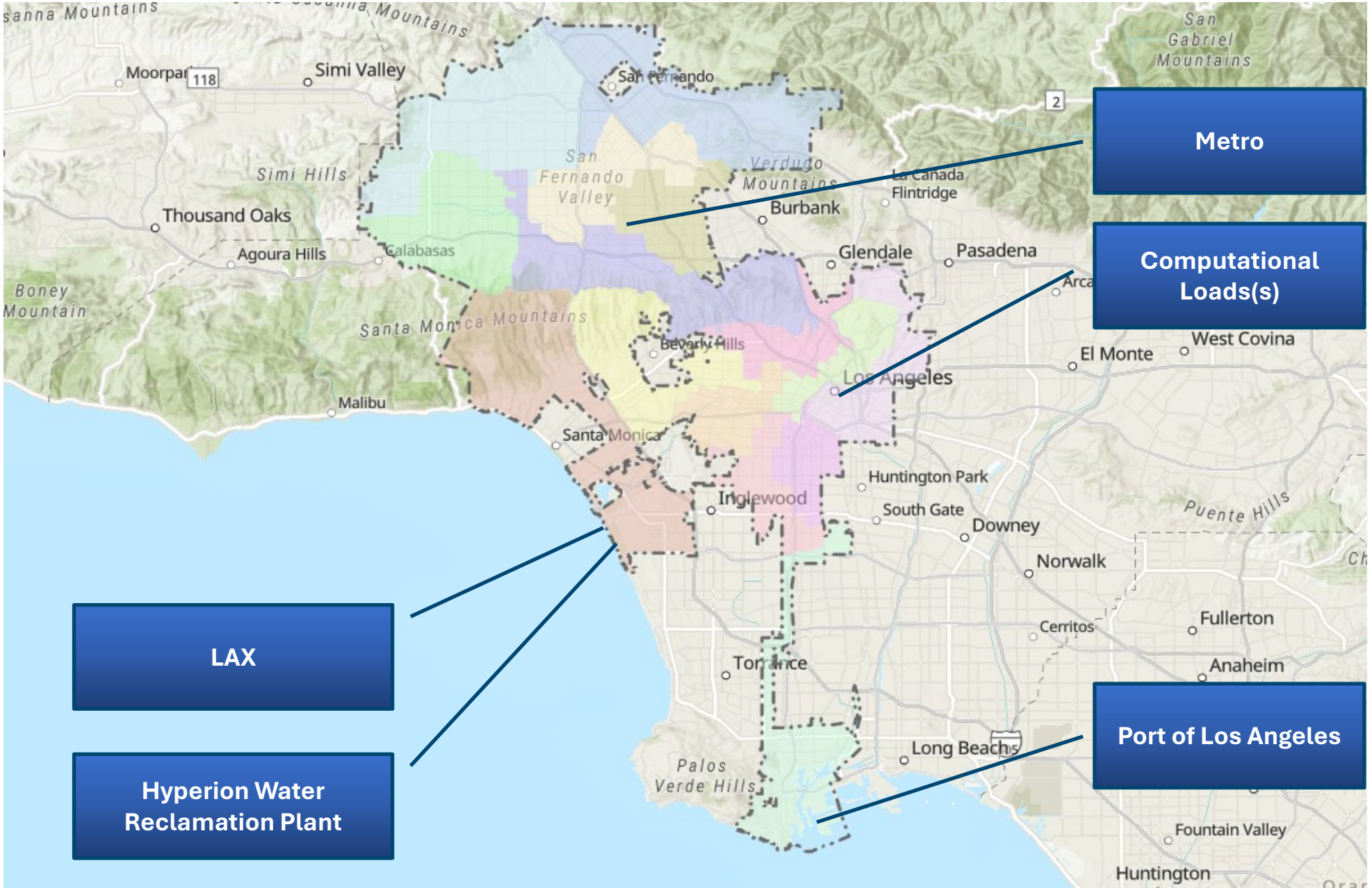
Building Growth





Building Growth Rate

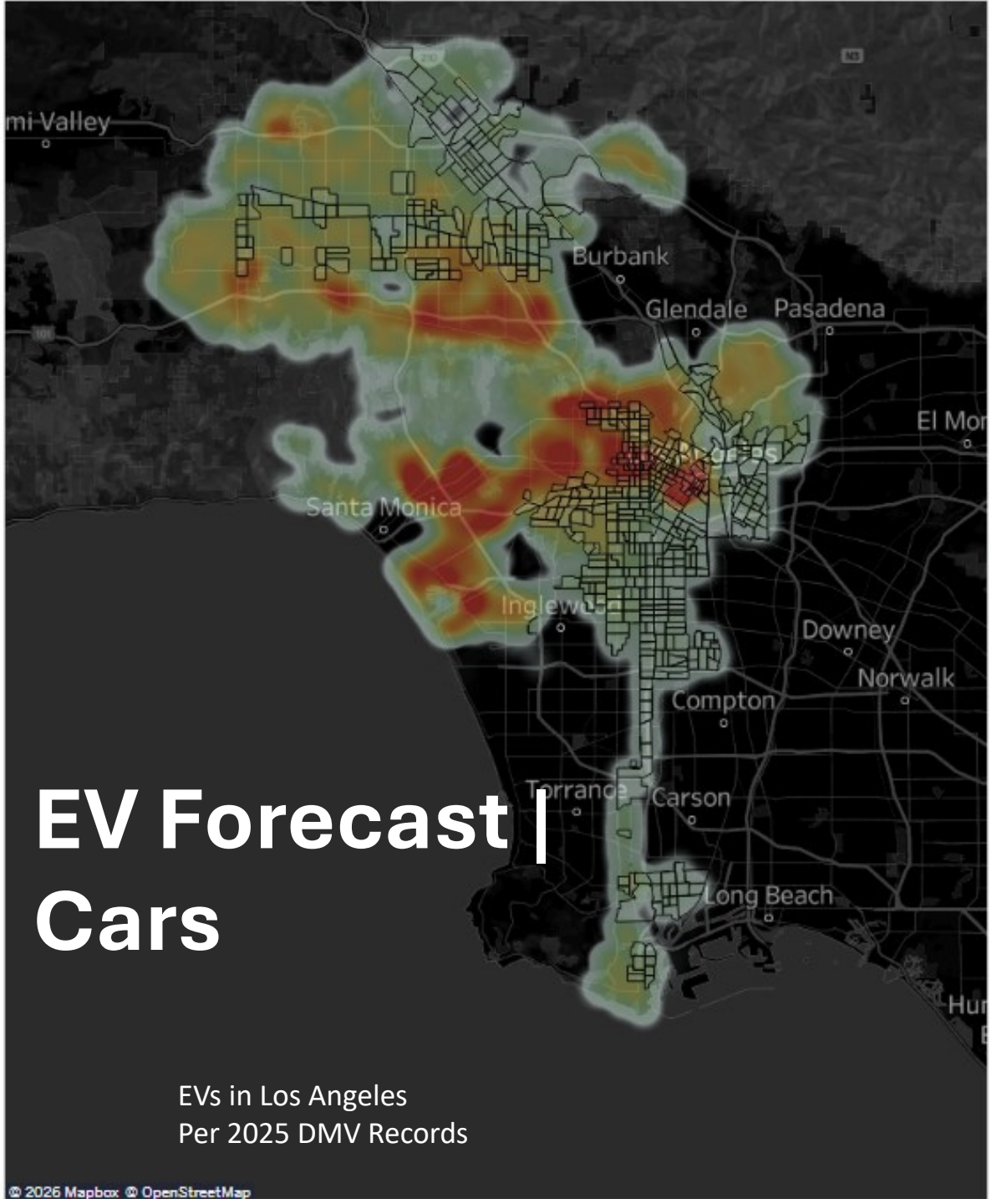
Large Load Interconnections



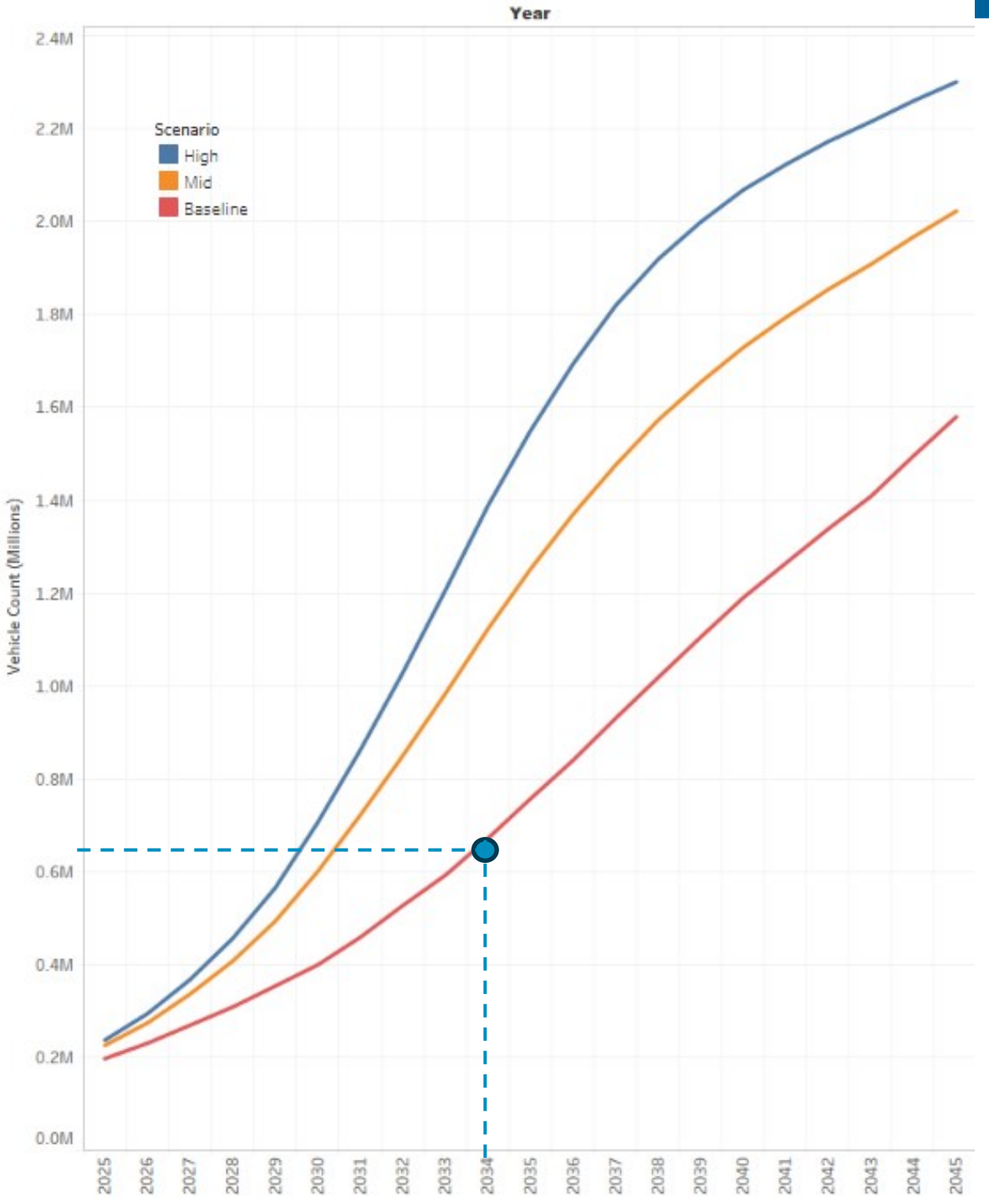
Electric Vehicle - Cars



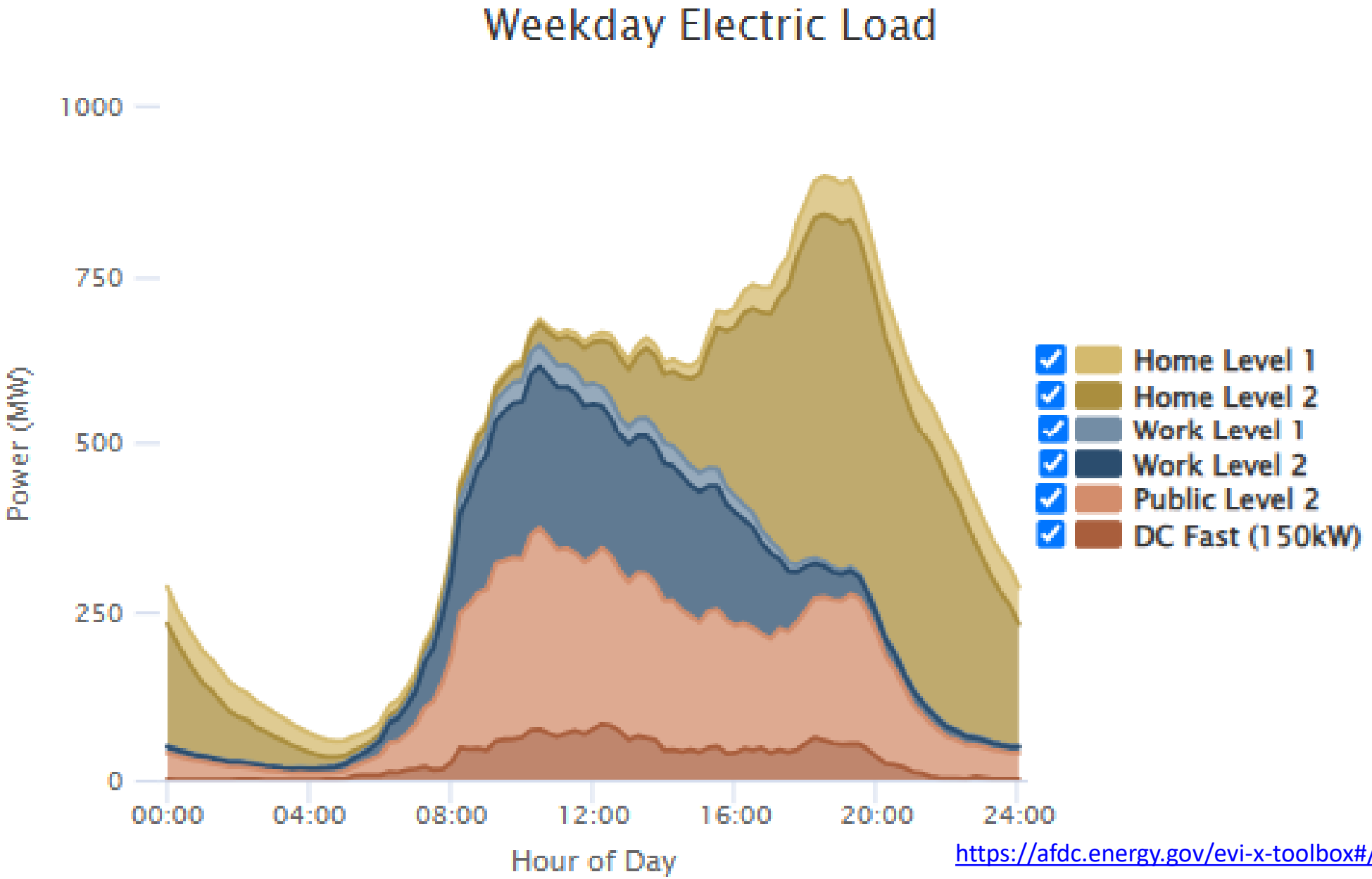
EV Forecast | Cars



EVs in Los Angeles
Per 2025 DMV Records



Electric Vehicle Forecast – Cars



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

EV Rebates



Commercial



Residential



DAC Adder



Funding Sources



Residential EV Rebate Programs





Program	Rebate Amount	Total Rebate	Equity Adder	Total Rebate (with Equity Adder)
Used EV Rebate	$1,500	$1,500	+$2,500 for EZ-SAVE or Lifeline	$4,000
Residential L2 Charging Station	$1,000 for installed L2 charger + $250 dedicated meter	$1,250	+$500 for EZ-SAVE or Lifeline	$1,750

Commercial EV Rebate Programs

Level 2 Chargers

- $4,000 per charger ($5,000 in disadvantaged communities)
- **Increases access to charging at workplaces, MUDs, and public destinations**

DC Fast Chargers

- Up to $125,000 per charger (depending on power output).
- **Improves access to fast charging and alleviates range anxiety**

Chargers for Medium- and Heavy- Duty Vehicles

- Up to $125,000 per charger (depending on power output).
- **One of the largest source of transportation emissions**

Electric Transportation Program's Funding

Cap-and-Invest (AB32)

- O&M: Commercial Rebates

Low Carbon Fuel Standard (LCFS)

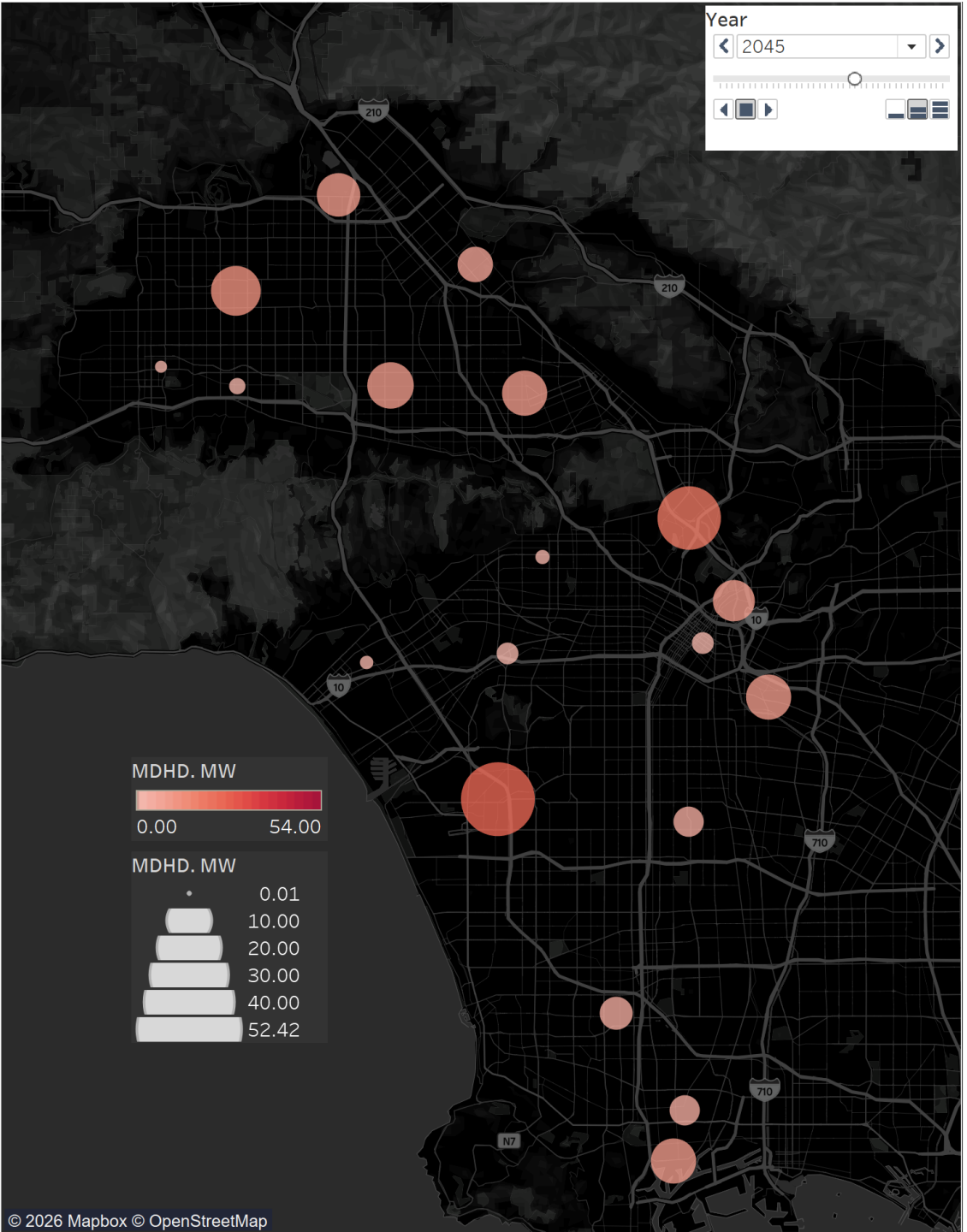
- O&M: Residential & Used EV Rebates, and MOUs

Power Revenue Fund

- O&M: General Program Expenses
- O&M: Rebate Program Administrative Labor

Electric Vehicle - Trucks




Year
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MDHD. MW
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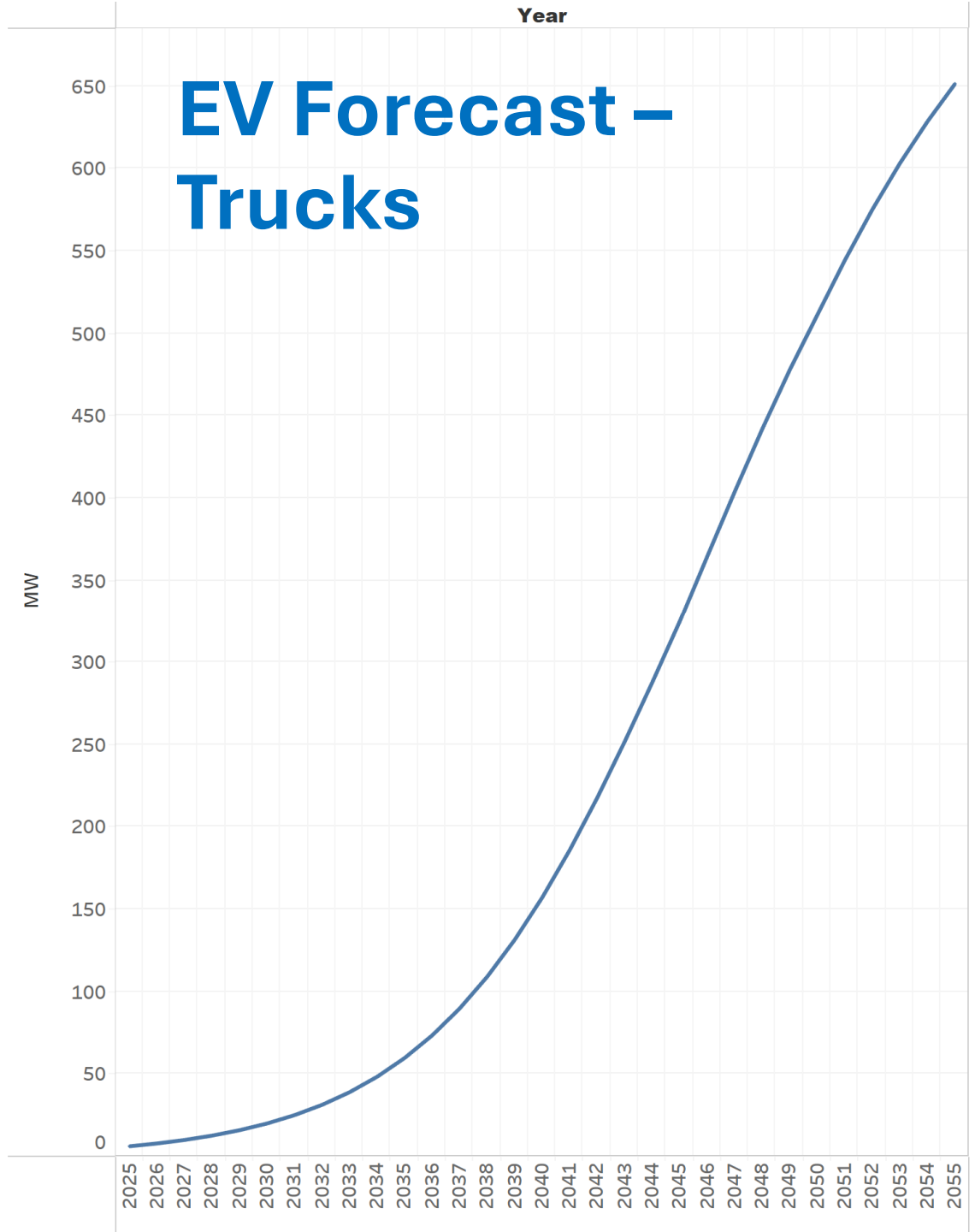
54.00
MDHD. MW
0.01
10.00
20.00
30.00
40.00
52.42
© 2026 Mapbox © OpenStreetMap


Year
EV Forecast – Trucks
MW
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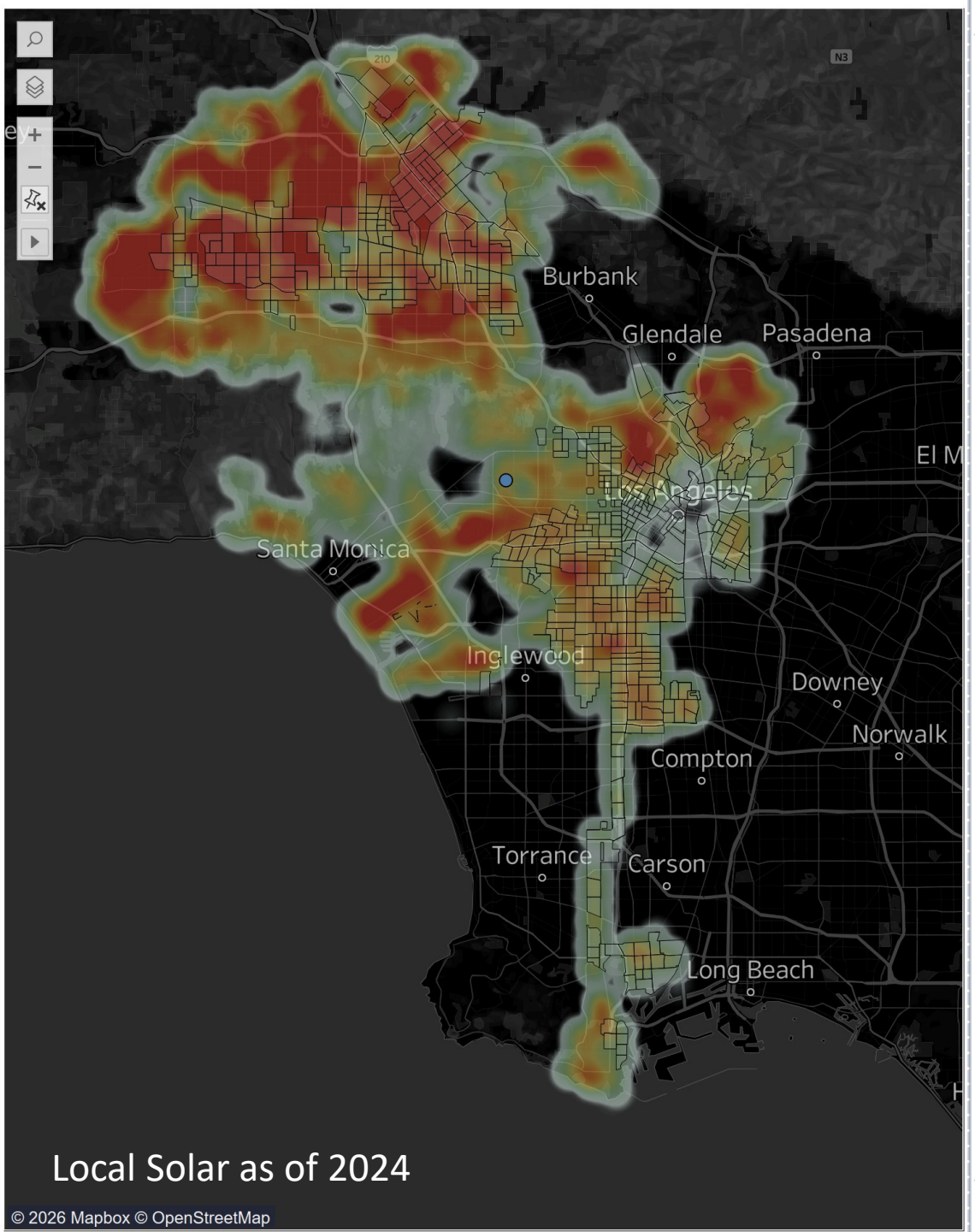
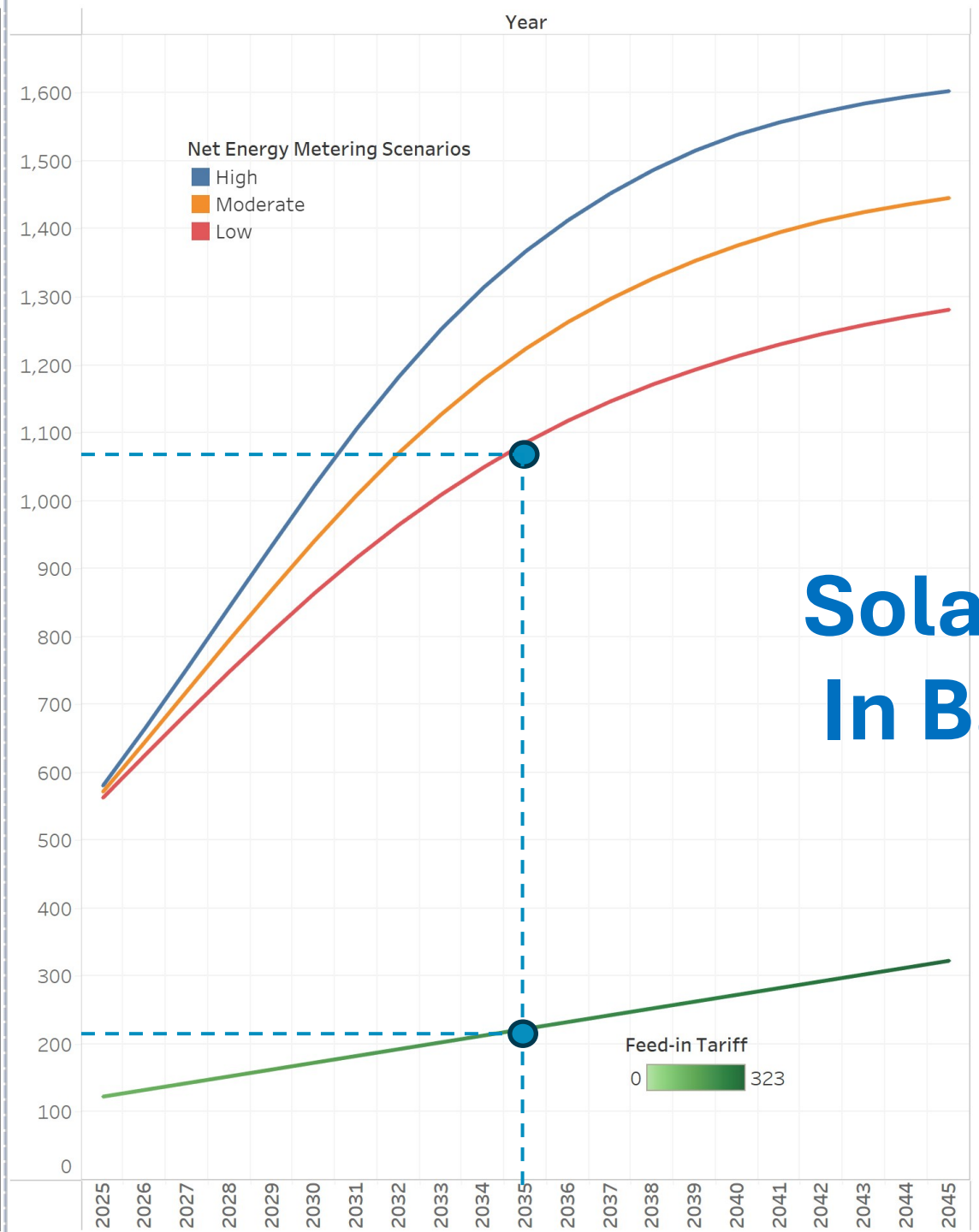
Solar PV





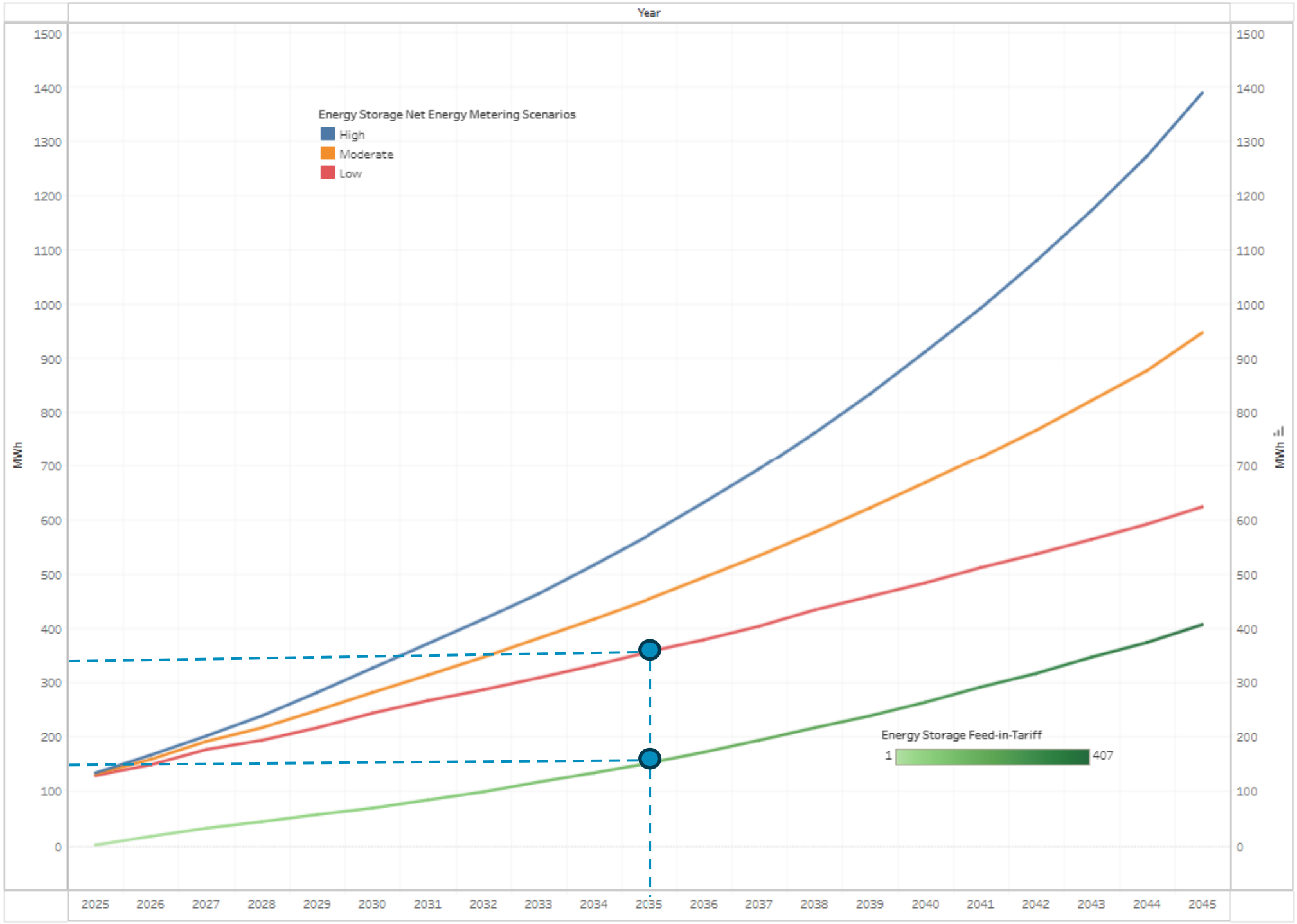


Solar PV In Basin

Energy Storage

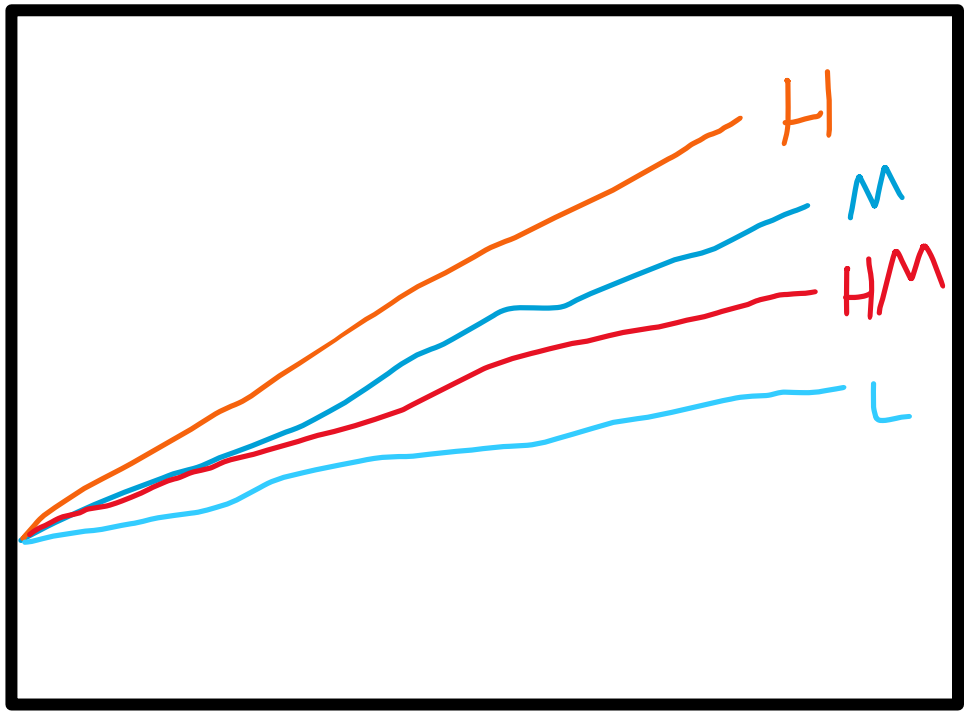


Energy Storage – In Basin



Scenarios for Distribution Load Modeling

Moderate Baseline EV	High High EV	High Managed High EV Managed	Low Baseline EV with High PV
LDEV CEC Baseline Case	LDEV CEC High Case	LDEV CEC High Case (M)	LDEV CEC Baseline Case (M)
PV NEM Low Case (M)	PV NEM Low Case (M)	PV NEM Low Case (M)	PV NEM High Case (M)
ES NEM Low Case (M)	ES NEM Low Case (M)	ES NEM Low Case (M)	ES NEM High 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

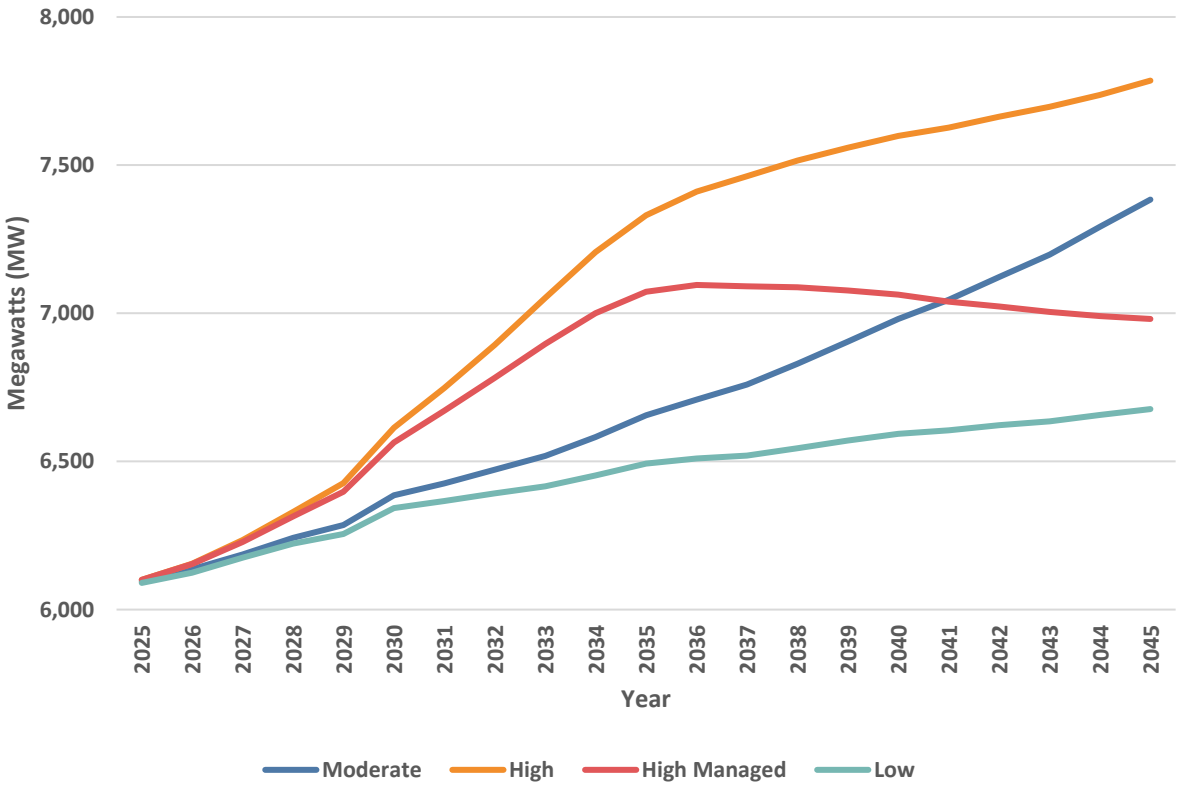


Key Findings



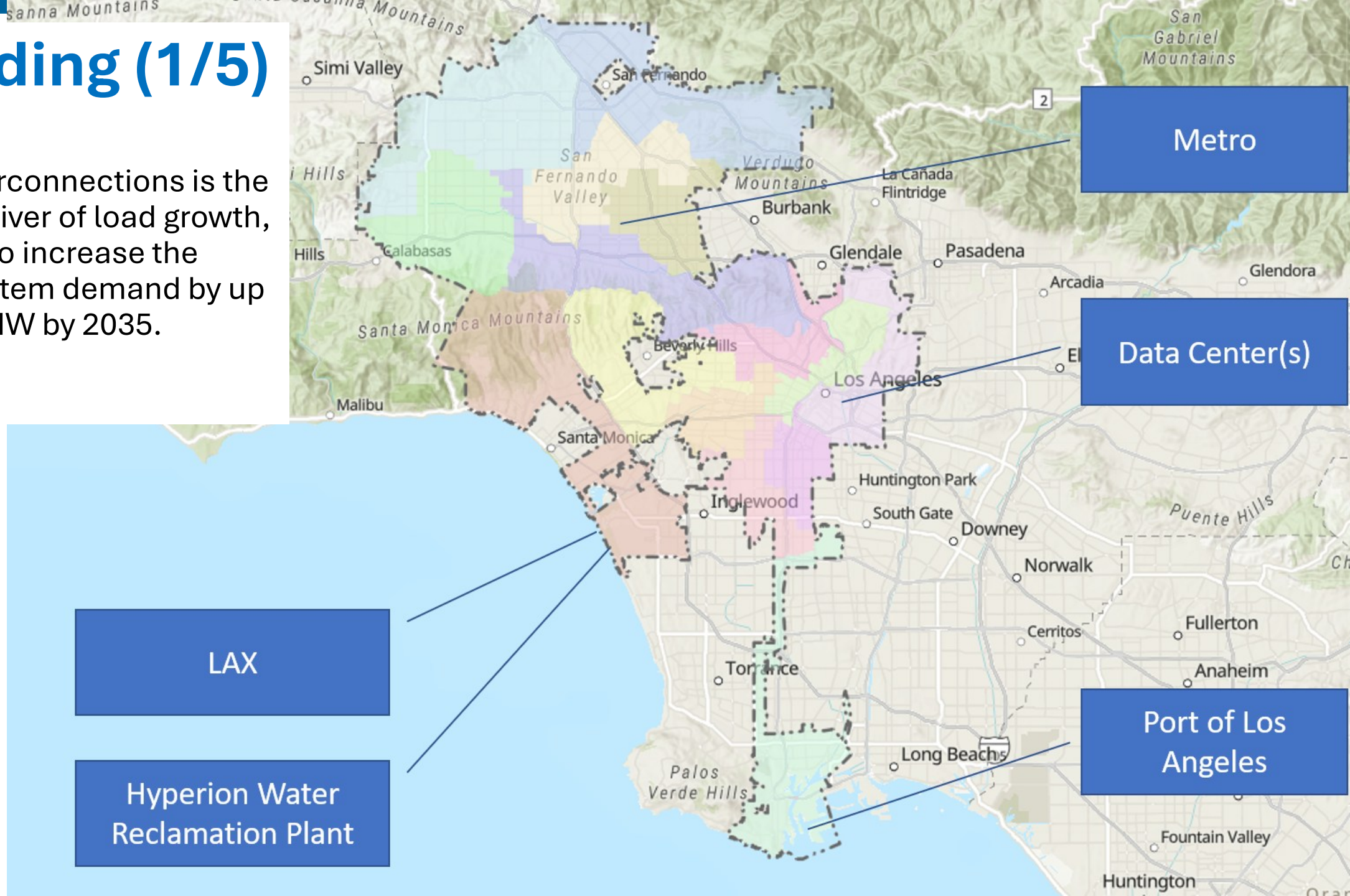
Scenarios for Distribution Load Modeling

Moderate Baseline EV	High High EV	High Managed High EV Managed	Low Baseline EV with High PV
LDEV CEC Baseline Case	LDEV CEC High Case	LDEV CEC High Case (M)	LDEV CEC Baseline Case (M)
PV NEM Low Case (M)	PV NEM Low Case (M)	PV NEM Low Case (M)	PV NEM High Case (M)
ES NEM Low Case (M)	ES NEM Low Case (M)	ES NEM Low Case (M)	ES NEM High 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



Key Finding (1/5)

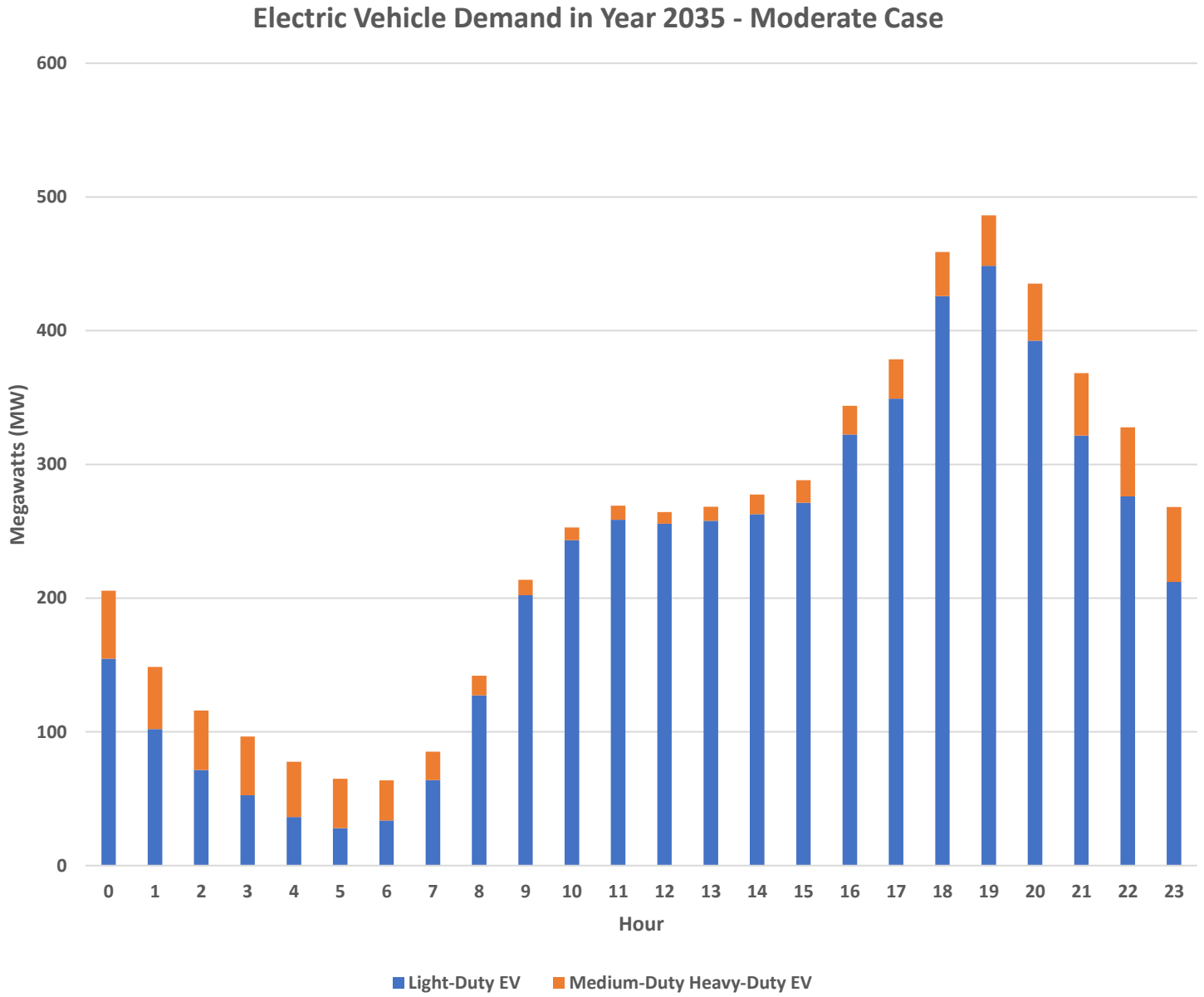
Large Load Interconnections is the single largest driver of load growth, expected to increase the distribution system demand by up to 689 MW by 2035.



Key Finding (2/5)

Electric Transportation is the second largest driver of load growth, expected to increase the distribution system demand by up to 480 MW by 2035.

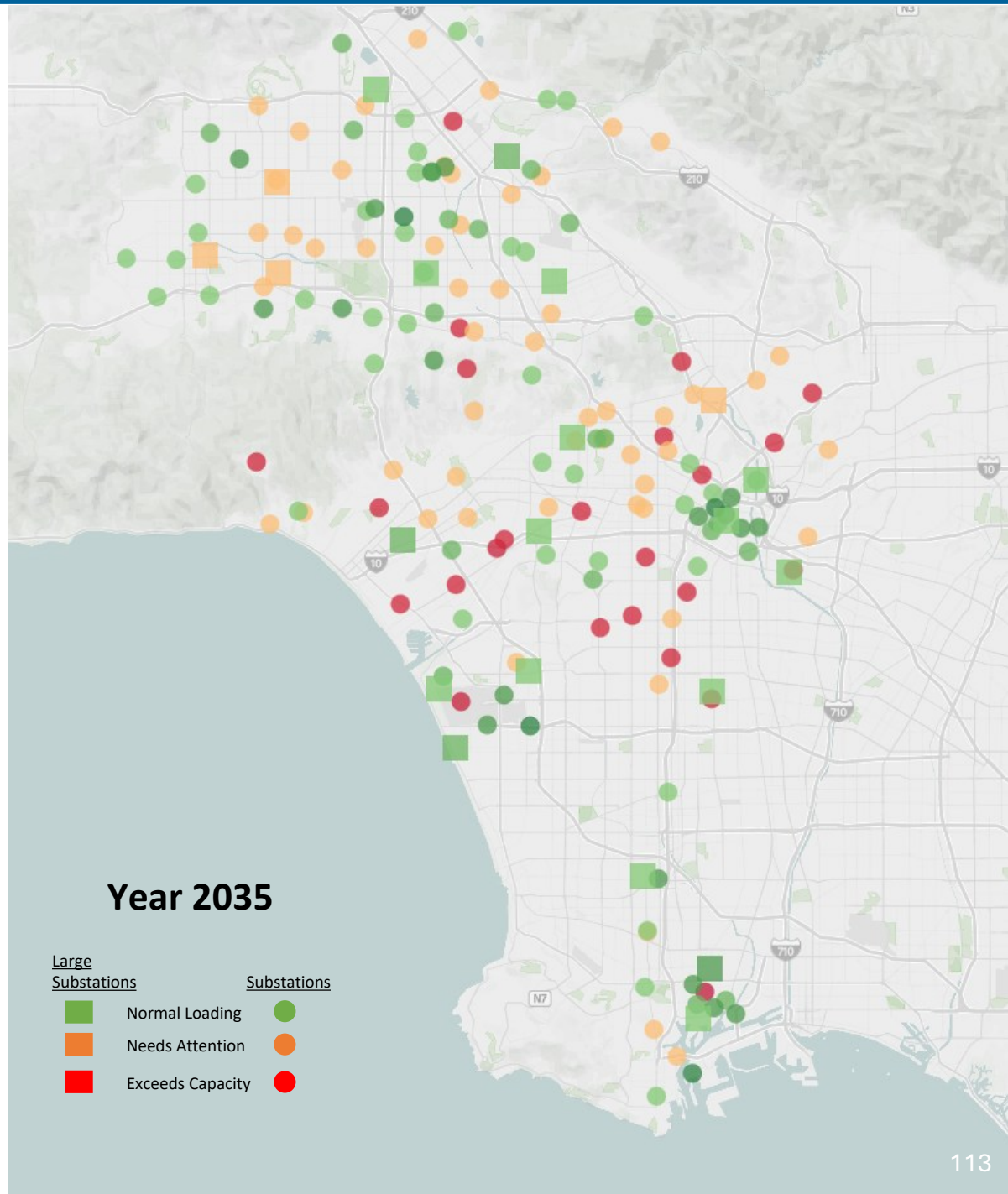




Key Finding (3/5)

Tens of substations and hundreds of distribution circuits will need additional capacity to support electrification.





Substations



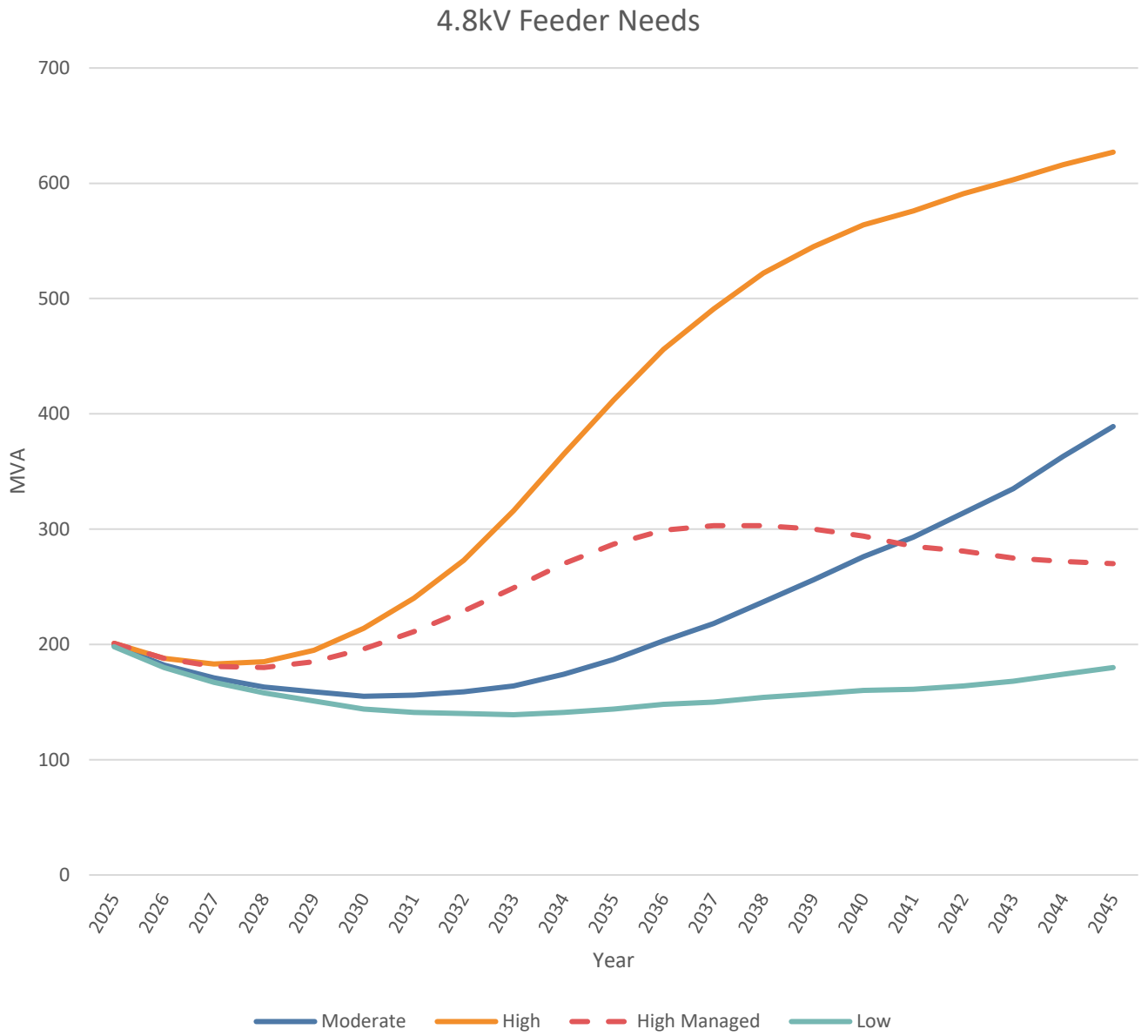




Key Finding (4/5)

- **Managing** residential EV charging has a significant effect on reducing the demand on the 4.8kV distribution system.

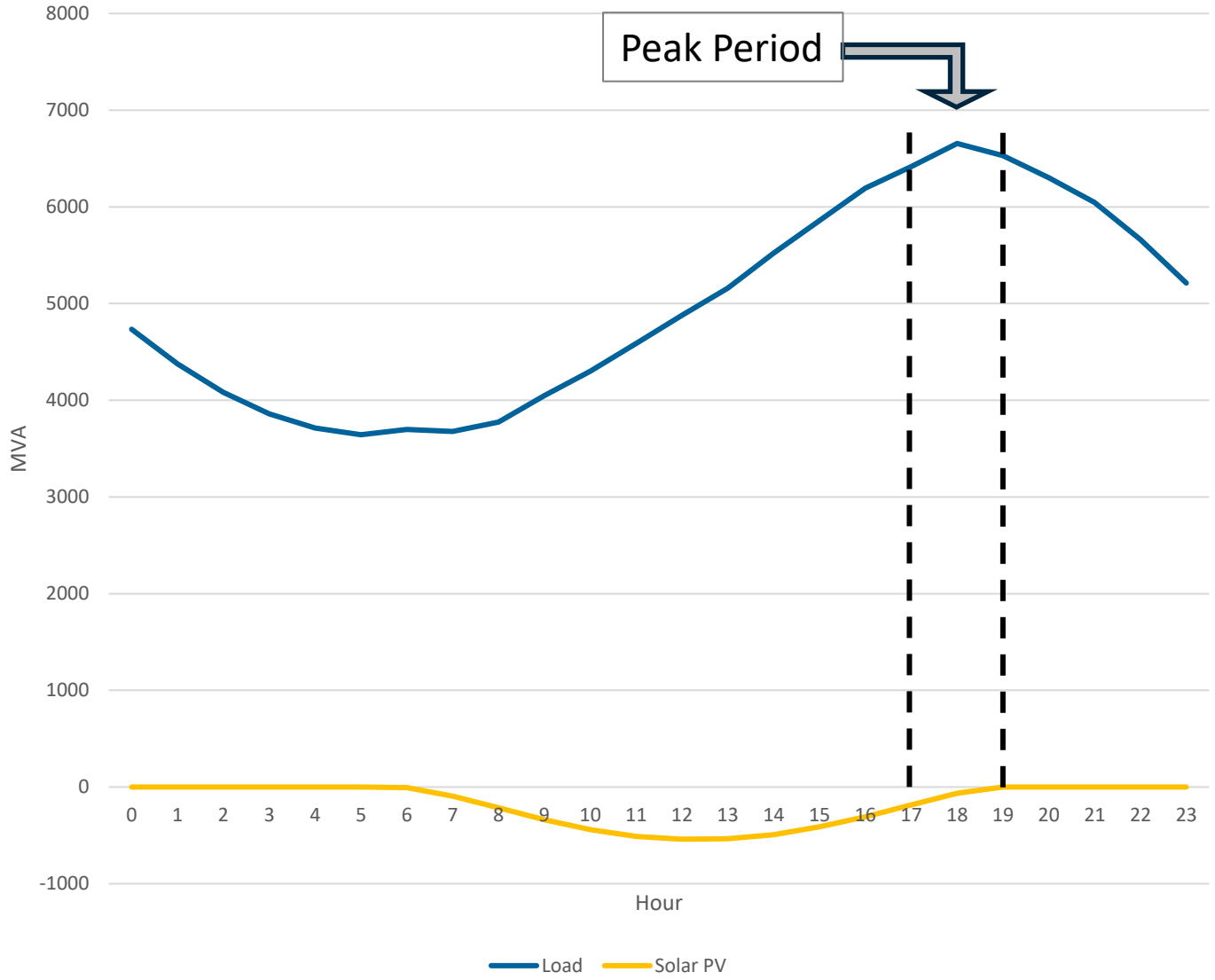
- **Shifting** residential charging times away from peak hours reduces the capacity shortfall of Distributing Stations and 4.8kV Feeders by 45% and 30%, respectively, by 2035



Key Finding (5/5)

Local Solar is misaligned with actual peak demand.

- Peak demand will shift from 5pm to 7pm, mainly due to residential EV charging.
- Solar + Storage can align peak demand with local solar.



Recommendations

Recommendations

1. **Prioritize Distribution Investments.** Equitably prioritize and address distribution system needs to maintain reliability while supporting future electrification demands.
2. **Manage EV Charging.** Optimize residential EV charging through strategic rate design and tailored charging programs.
3. **Increase DER Penetrations.** Modernize and automate the grid to accommodate higher penetration of Distributed Energy Resources (DERs).
4. **Expand Storage.** Pair solar and storage to better align with the shifting distribution system peak.
5. **Expand DER Programs.** Expand customer programs to address location-specific distribution system challenges effectively.



LA DWP



ED19 Improvements

19 initiatives to improve the new business customer experience including:

1. Line Extension Cost
2. Single Circuit Interconnection
3. Flexible Service Connection
4. New Customer Portal
5. Customer Concierge team expansion
6. Staging Area Optimization

For Additional Information

Executive Directive 19 | Los Angeles Department of Water and Power

DER & DR Customer Facing Programs

- **NEM**
  - 795.4 MW
  - SIP: 280 MW
- **Feed-in Tariff (FiT)**
  - 128.6 MW in-service
  - FiT+ Pilot 35 MW Goal
- **VNEM Pilot**
  - 5 MW Goal
- **Solar Rooftops Program**
  - 1MW Goal
- **Shared Solar Program**
  - ~3540 Participants 10 MW Goal
- **CES2G Pilot Program**
  - 20 MW Goal
- **C&I DR**
  - 39 MW Across 78 Participants
- **SGIP**
  - 9.5MW PV 6.3MWH BESS
- **CEC DSGS Opt 3 & Opt 4**
  - Opt 3 ~ 8.6MW Opt 4 ~13000 Customers
- **Power Savers**
  - 60 MW AVG Across 63K Smart Therm.



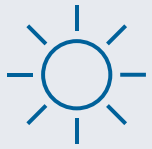






Self Generation Incentive Program (SGIP)

- Provides financial incentives for the installation of new qualifying technologies that meet all or a portion of the electric energy needs of a facility
- Aims to reduce GHGs

PROGRAM IS FULLY SUBSCRIBED!!	
9.465 MW PV	6.272MWH BESS
	

$36.4M transferred to LADWP in Sept 2024	
90% for incentives **$32.4M**	5% for Admin costs 5% for Marketing Education & Outreach + Measurement & Evaluation.
Funds are available to draw from until June 30, 2028.	

Eligibility: Income Qualified Single and Multifamily Customers

LA DWP

Expansion of Demand Response Portfolio



***New* Demand Response Management System**

Commercial & Industrial DR Program

39 MW (2026)

220 MW (2030)

***New* Commercial & Industrial EV Managed Charging**

5 MW (2030)

***New* IoT Smart Devices Demand Response**

5 MW (2030)

Power Savers Program (PSP)

60 MW (2026)

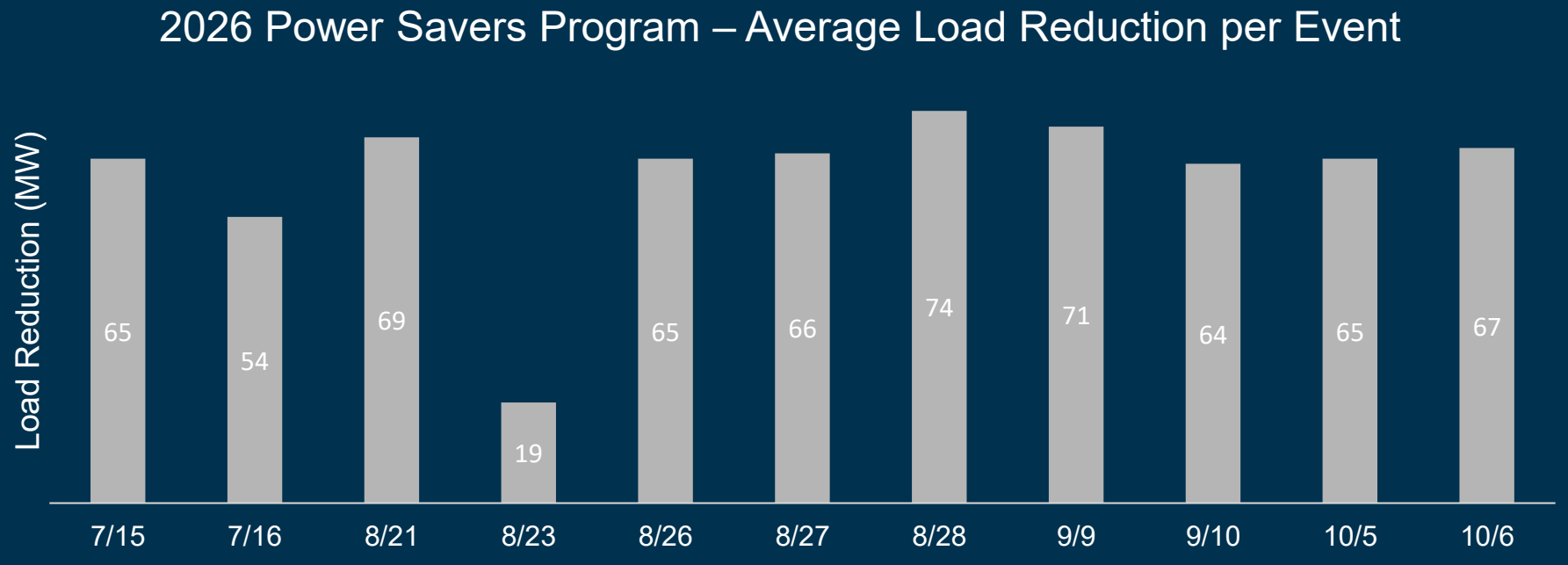
100 MW (2030)

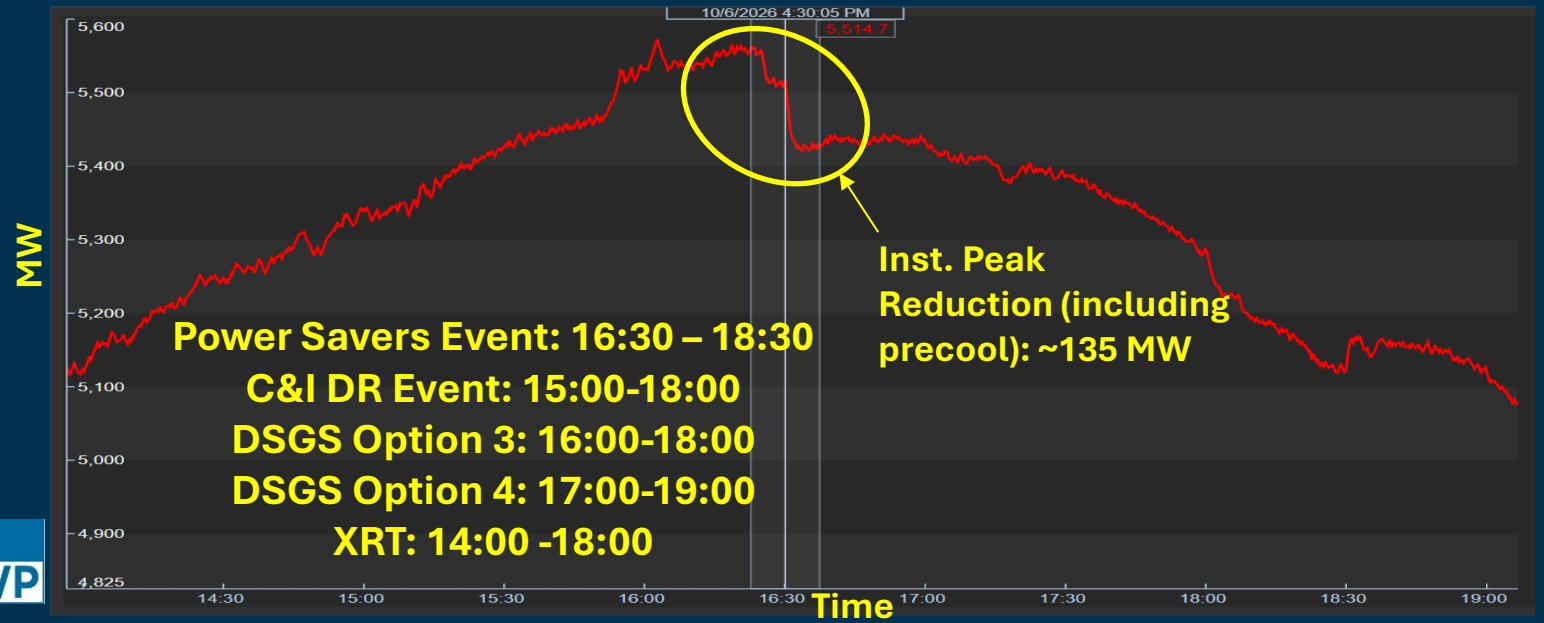
New DSGS Option 4

***New* Residential EV Managed Charging**

10 MW (2030)

Impact of DR Programs





Net Power for Load from 10/6/2026

LADWP Leaderboard

The City of Los Angeles has one of the most robust portfolios of non-wires alternative solutions & distributed energy resources



Managing Demand

LADWP cannot alter its rate design on its own and changes are needed to better manage energy burden impacts and to optimize energy usage

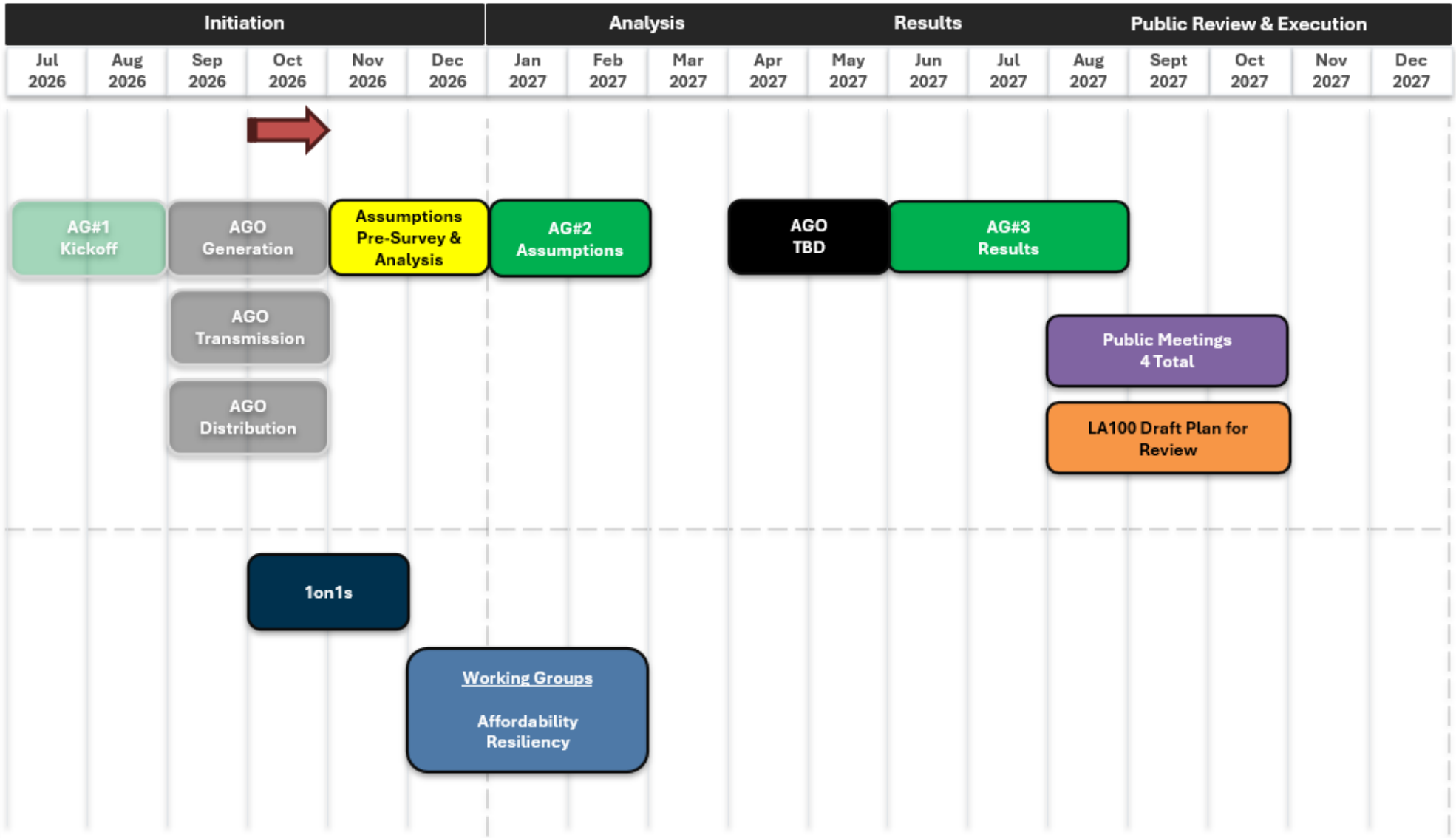

Q&A

2027 LA100 Plan Timeline

Note: LA100 Plan schedule are estimates and are subject to change.

Stakeholder Engagement

- AG — Advisory Group Meetings
- AGO — Advisory Group Meeting (Optional)
- PM — Public Meetings
- MD — Major Deliverables



2027 LA100 Plan Timeline



Complete Information Session

Kickoff 1on1s

2027 LA100 Plan Timeline



Complete 1on1s

2027 LA100 Plan Timeline

Complete Survey

Kickoff Affordability Working Group

Kickoff Reliability Working Group



2027 LA100 Plan Timeline

Finalize Working Group Results

Finalize Assumptions

Publish AG Results




Sign up for
our new
1on1