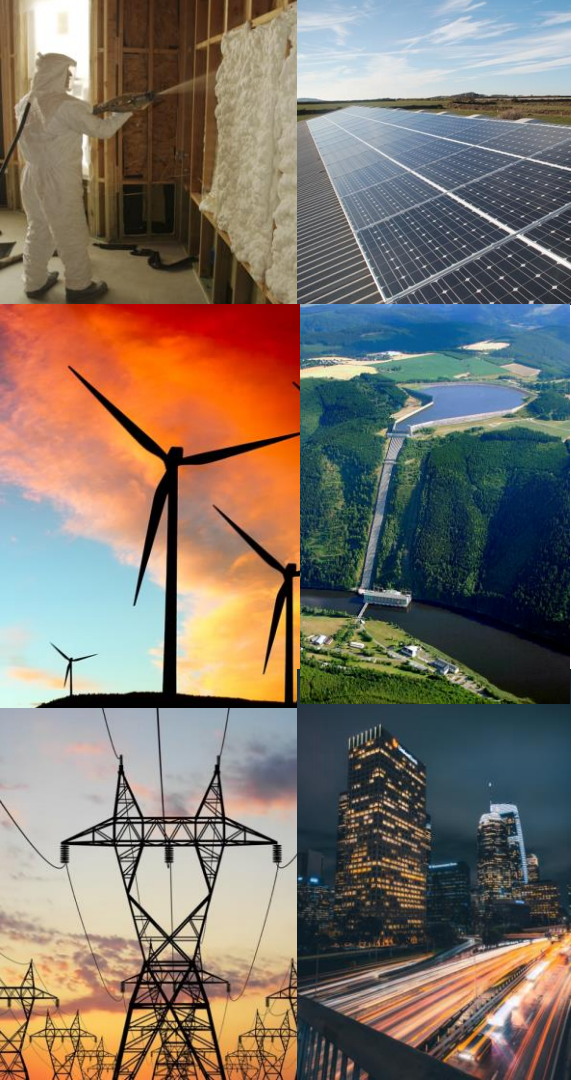
Clean Grid LA Plan Update

Aligning with LA100

Board of Water and Power Commissioners Update
May 11, 2021



LA100

The Los Angeles 100% Renewable Energy Study

LA City Council motions directed LADWP to evaluate:

- What are the **pathways and costs to achieve a 100% renewable electricity supply** while electrifying key end uses and maintaining the current high degree of reliability?
- What are the potential benefits to **the environment** and **health**?
- How might **local jobs** and the **economy** change?
- How can communities shape these changes to prioritize **environmental justice?**

Scenarios Based on Advisory Group Priorities

Each Scenario Evaluated Under Different Customer Demand Projections (different levels of energy efficiency, electrification, and demand response)

Moderate

High

Stress

SB100

Evaluated under Moderate, High, and Stress Load Electrification

- 100% clean energy by **2045**
- Only scenario with a target based on retail sales, not generation
- Only scenario that allows up to 10% of the target to be natural gas offset by renewable electricity credits
- Allows existing nuclear and upgrades to transmission

Early & No Biofuels

Evaluated under Moderate and High Load Electrification

- 100% clean energy by **2035**, 10 years sooner than other scenarios
- No natural gas generation or biofuels
- Allows existing nuclear and upgrades to transmission

Limited New Transmission

Evaluated under Moderate and High Load Electrification

- 100% clean energy by **2045**
- Only scenario that does not allow upgrades to transmission beyond currently planned projects
- No natural gas or nuclear generation

Transmission Focus

Evaluated under Moderate and High Load Electrification

- 100% clean energy by **2045**
- Only scenario that builds new transmission corridors
- No natural gas or nuclear generation

Across All LA100 Scenarios

Electrification
Efficiency
Flexible Load

Customer
Rooftop Solar

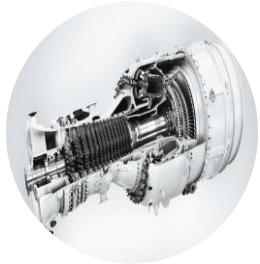
Renewable
Energy

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

Storage

+ >2,600 MW

Transmission,
Distribution



Renewably Fueled
Dispatchable
Turbines

+>2,600 MW
(in basin)

Much More

Natural gas → Biofuel/ hydrogen	
Today: Daily	**Future:** Infrequently

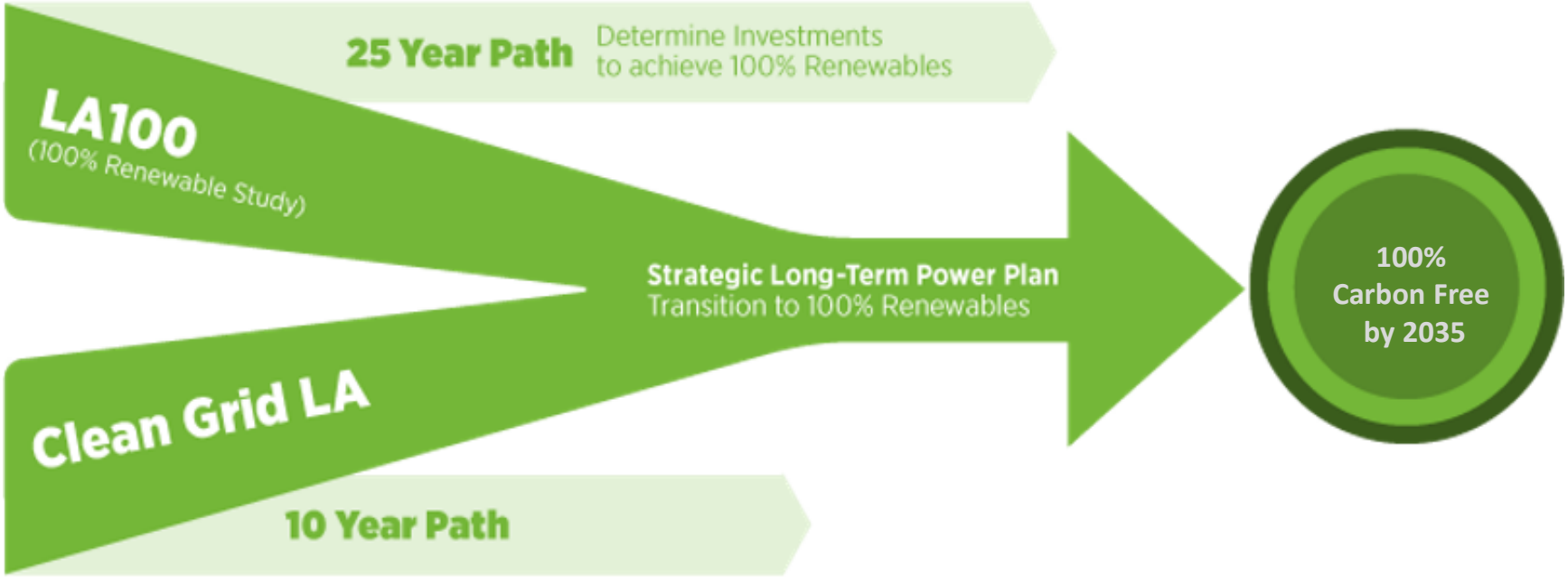
100% Carbon-Free by 2035

LA100 Study Complete and final report was released on March 24, 2021.

On April 19, 2021, in the State of the City address, Mayor Garcetti announced LADWP would adopt a goal to be **100% carbon-free by 2035** as well as:

- Provide energy mix that is 80% renewable and 97% carbon free by 2030
- Transition Scattergood to run on green hydrogen
- Decrease demand on Valley Generating Station
- New Mexico Wind Farm and Navajo Nation Solar and Storage partnership
- Green hydrogen at IPP

100% Carbon Free by 2035



- LA100 studied one 2035 scenario, the remaining scenarios targeted 2045
- LADWP will study paths to 2035 in the next Strategic Long-Term Resource Plan (SLTRP)
- However, we learned from LA100 there are investments we can make now under any scenario
- Those investments comprise the Clean Grid LA Plan

Clean Grid LA Plan: Guiding Principles

Environment. Reducing levels of GHGs and gas usage on a system level and in-basin.

Equity. Preventing over-reliance on Valley Generating Station, while reducing overall GHGs and gas usage, while increasing DERs equitably.

Resiliency. Ensuring LADWP's grid resilience during high-impact, low-frequency events such as wildfires.

Affordability. Minimizing costs to ratepayers while pursuing ambitious clean energy goals and ensuring a reliable and resilient power supply.

Progress Towards 100%. Providing the flexibility necessary for the rapid transmission buildout required to **support our progress towards 100%**.

Clean Grid LA Plan: Aligning with LA100

Accelerate to **80% Renewable 97% GHG-Free by 2030**	**Increase to 80% renewable energy by 2030** to achieve 97% GHG free by adding **3,000 MW of new renewables**.
Accelerate **Transmission**	Complete **10 critical transmission projects over 10 years** to maintain grid reliability and meet growing EV, building electrification, LAX, and Port of LA electricity demand
Transform **Local Generation**	**Green hydrogen Request for Information** (RFI) for all in-basin generating stations. Construct **hydrogen capacity at Scattergood**. Retrofit **Haynes to recycled water cooling**.
Accelerate **Energy Storage**	Build over **1,000 MW of energy storage by 2030** to support short-duration in-basin and out-of-basin capacity needs.
Accelerate **Distributed Energy Resources Equitably**	Deploy **1,000 MW of local solar, 500 MW of demand response**, doubling energy efficiency, and support 580,000 electric vehicles by 2030. Adopt goal of **50% of DER investment reaching disadvantaged communities**.

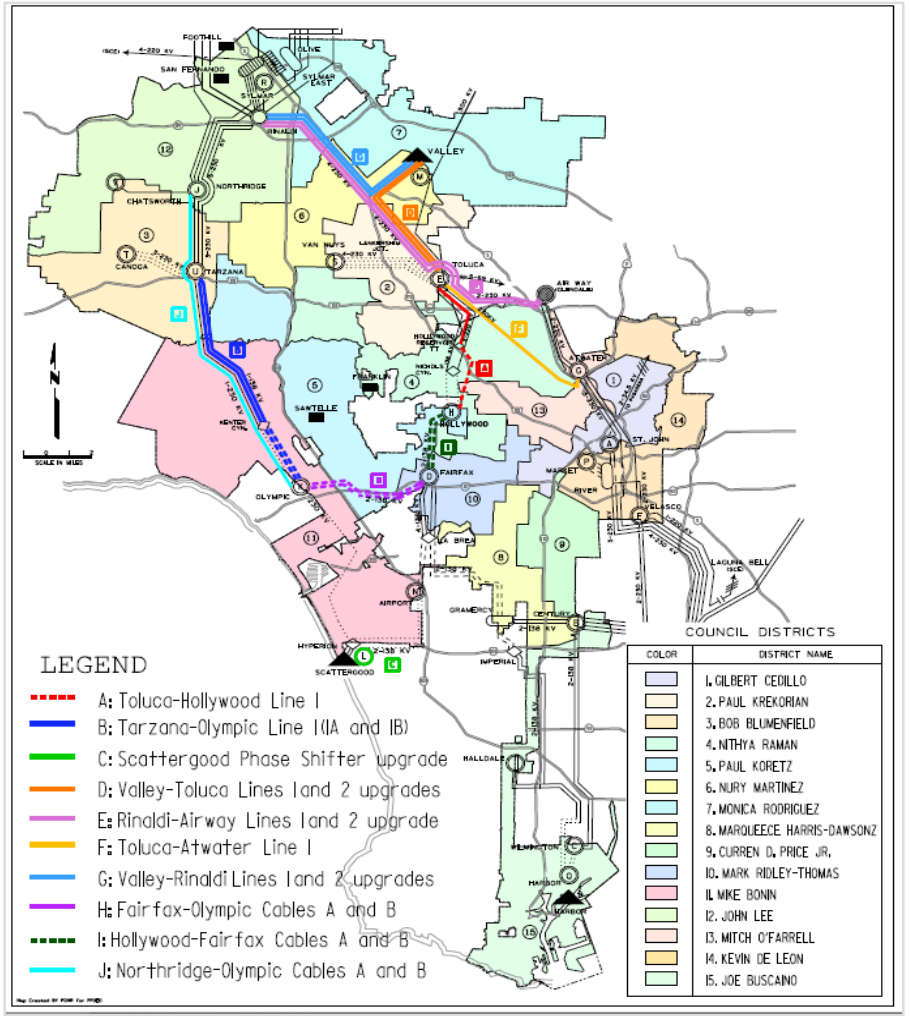
Accelerate to 80% Renewable and 97% Carbon Free by 2030

- Deploy 3,000 MW of new renewable projects
- Leverage significant existing external transmission
- Local transmission critical to delivering renewable power
- Local generation and transmission capacity critical to integrating renewables and resiliency

Clean Grid LA Plan Update
Aligning with LA100

Accelerate Local Transmission Projects

- 10 Transmission Projects over 10 years to bring renewable power where its needed within the City
- Unprecedented deployment of transmission infrastructure
- **Flexible generation capacity in-basin needed to complete transmission projects in time for 2035**



Transform Local Generation

- Green hydrogen Request for Information (RFI) for all in-basin generating stations
- Construct green hydrogen capacity at Scattergood
- Retrofit Haynes to recycled water cooling
- Dramatic reduction in gas across all fleet, particularly at Valley Generating Station

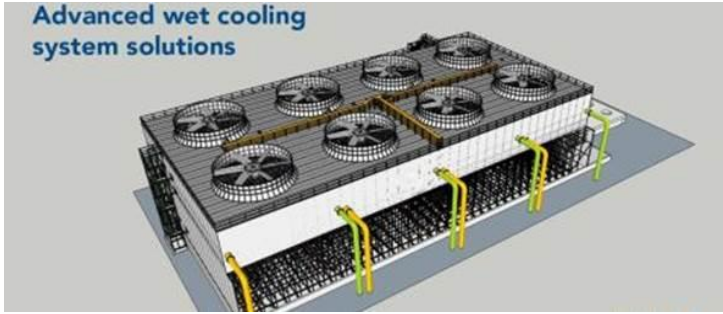
Hydrogen Capacity at Scattergood

- **Transforming local generation.** LA100 study shows need for renewable in-basin capacity at all generating stations, in all scenarios.
- **System reliability.** Capacity at Scattergood is our most immediate need.
- **Load growth.** Port & LAX electrification, Operation NEXT at Hyperion.
- **Challenges**. limited footprint and in-service prior to retirement of Units 1 & 2 to support transmission buildout.

- **OTC extension critical.** Scheduled for 2024, seek extension to 2029. Net reduction in water use with early elimination of water usage at Haynes.

Haynes Recycled Water Cooling

- **Newer efficient unit.** One of the most efficient units, constructed in 2005.
- **Significant cost savings and GHG reductions**. Utilization of efficient units means less gas utilization.
- **Reduces usage of Valley Generating Station.** Haynes is more efficient than Valley and would get dispatched instead of Valley.
- **Explore green H2 Usage.** Explore the possibility to utilizing green H2 through the RFI.
- **Early OTC Compliance Opportunity.** Recycled water cooling could be in place prior to 2029 OTC resulting in early cessation of ocean water usage.



Reduced Use of Valley Generating Station

- Clean Grid LA Plan dramatically reduces utilization of Valley generating station:
  - Today Valley is utilized 30% of the time
  - The combination of **80% renewables** by 2030, **Haynes recycled water cooling** and **Scattergood capacity** reduces Valley usage
  - Valley usage to be reduced from 30% to 5%

- Utilize significant space at Valley Generating Station for future clean energy projects

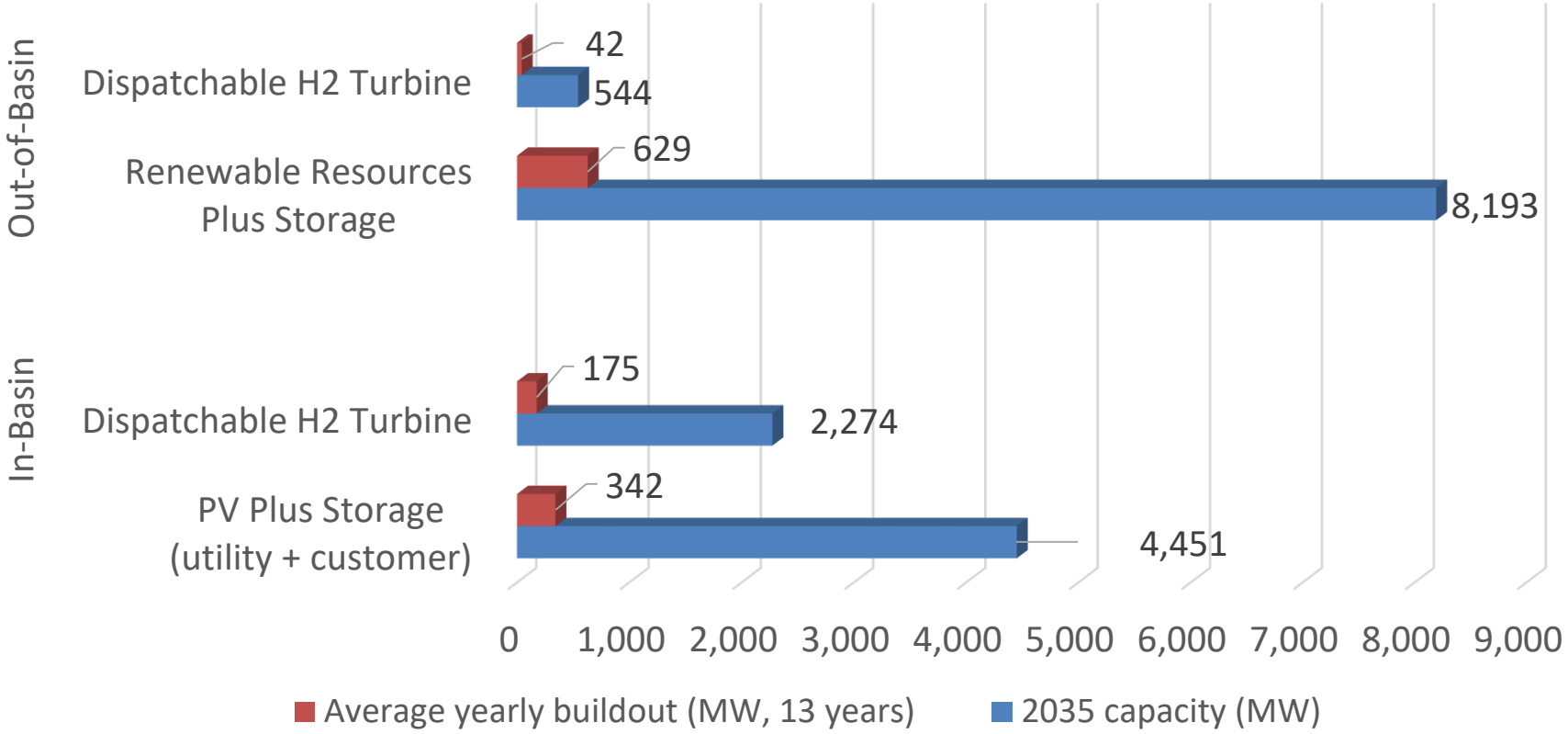
Accelerate Energy Storage

- Build over 1,000 MW of energy storage by 2030 in-basin and out-of-basin
- Large scale energy storage at or near all in-basin Generating Stations
- Negotiating expansion of Beacon Energy Storage by 50 MW
- Expand energy storage by co-locating storage at all future utility scale solar projects
- Advertised Energy Storage Rolling Request for Proposals in 2020
- Increased usage of Castaic pumped hydro to integrate increased renewables

Accelerate Distributed Resources Equitably

- Deploy 1,000 MW of local solar, 500 MW of demand response, doubling energy efficiency, and support 580,000 electric vehicles by 2030
- Adopt goal of 50% of DER investment to disadvantaged communities
- Continue recent significant efforts on DERs:
  - Expanded Feed-in Tariff from 150 MW capacity to 450 MW in 2020
  - Advertised DER RFP in 2020
  - Expanded Commercial DR program in 2020
  - Launched Power Savers program in 2020
  - Launched Feed-in Tariff+ pilot in 2021
  - Launched VNEM pilot in 2021
  - Expand Power Savers for summer 2021

LA100's 100% Carbon Free 2035 Scenario
Required Yearly Buildouts (MW)



Clean Grid LA - Next Steps

Urgency of Clean Grid LA Plan

- Unprecedented build-out of resources; cannot wait for 1-year SLTRP to adopt formal path towards 2035
- The next 10 years is critical to LADWP's success in reaching 100% by 2035
- Port & LAX electrification, increased demand from Hyperion, building and transportation electrification
- LADWP needs plan to support extension of Scattergood Units 1&2
- 2028 Olympics

LA 2028

LA100
The Los Angeles 100% Renewable Energy Study

Next Steps

- **Complete LA100 outreach** in May & seek feedback on Clean Grid LA Plan
- Continue engagement on **equity and environmental justice**
- **Advertise Green Hydrogen RFI**
- **Commence approval process for Haynes Recycled Water Cooling** (first CAO/Mayor review, then Board and Council consideration)
- **Begin CEQA process for Scattergood Green Hydrogen Capacity** (final determination presented for Board consideration in future)
- Later in 2021: Request LADWP Board Approval to begin process for **Scattergood 1&2 OTC Extension**