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Los Angeles Department of Water & Power

CUSTOMERS FIRST

SB 100 WORKSHOP

CALIFORNIA ENERGY COMMISSION

February 24, 2020

LADWP Overview

Balancing Authority

Largest Publicly Owned Utility

1.5 Million Customers

$4.2 Billion Annual Budget

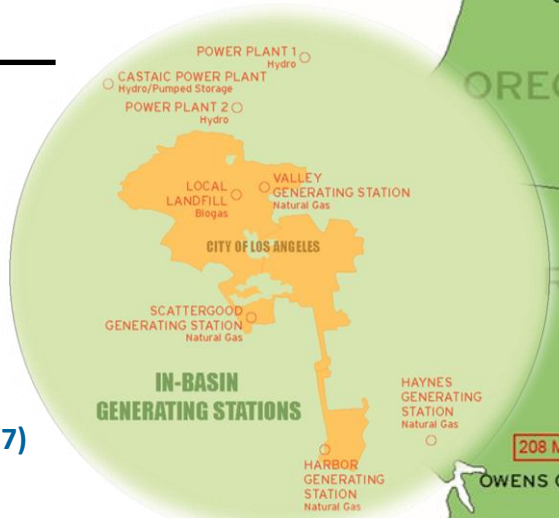
Peak Demand of 6,502 MW (8/31/17)

Distribution System

- 10,495 miles of OH lines & UG cables
- 181 stations
- 128,693 transformers

Transmission System

- 3,760 miles of OH & UG circuits
- 15,452 towers



Clean Energy Recent Successes

Achieved 1,000 MW of wind

Achieved 1,100 MW of large-scale solar

Achieved >400 MW customer local solar

Ranked No. 1 Solar City in U.S. in 2017 and 2018

Commissioned Beacon 250 MW solar + 20 MW lithium battery

Moved forward with eliminating IPP coal by 2025

Nearly 4,000 EV chargers installed in LA

Reduced GHG emissions to 47% below 1990 level

14 years ahead of State target

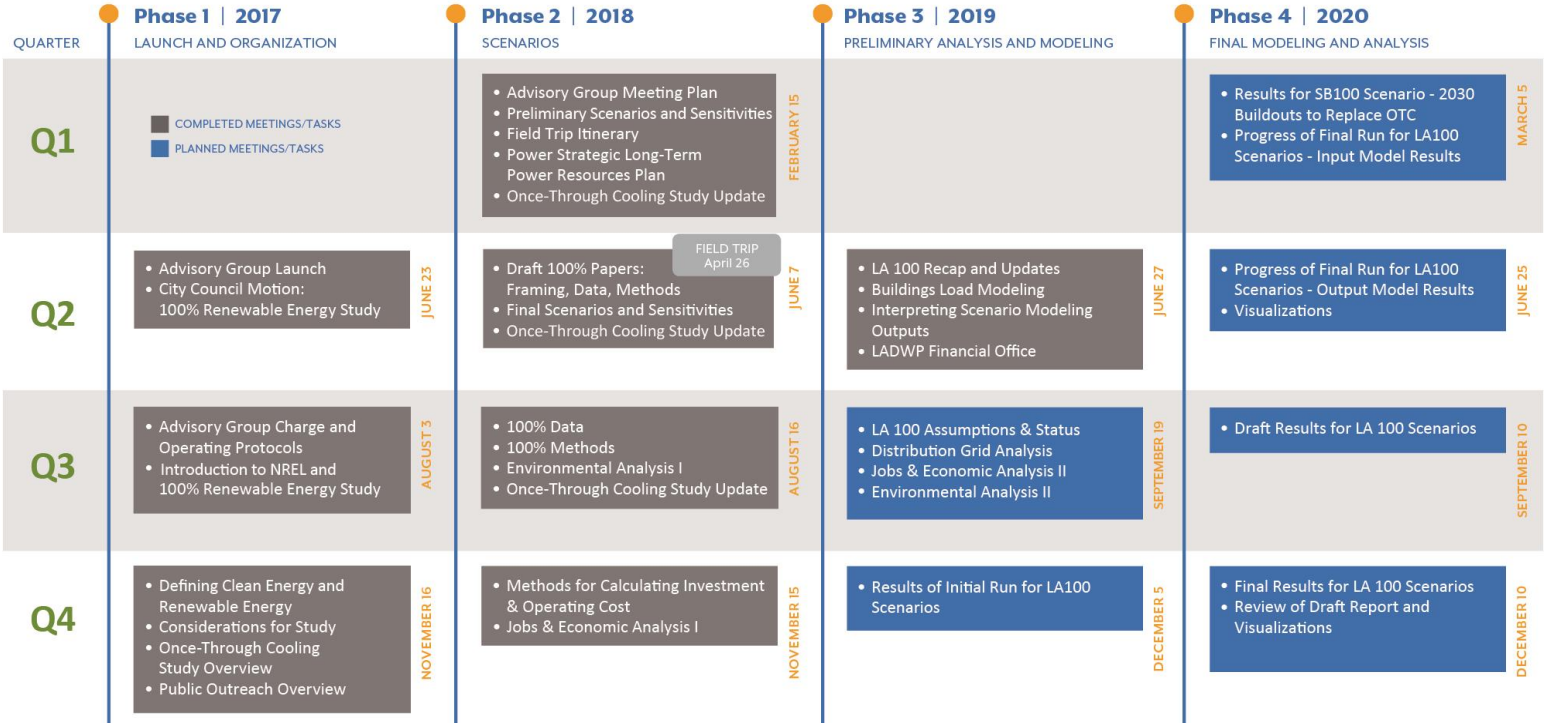
Achieved 35% renewables for CY 2019

LA 100 Inception

In June 2017 Los Angeles City Council directed LADWP:

- To develop a partnership with DOE renewable lab to conduct 100% Renewable Energy Study
- Establish stakeholder process

LA 100 Timeline



Transition to 100% Clean Energy Accelerated

February 2019: Announced decision to not repower ocean-cooled thermal units at Scattergood, Haynes & Harbor plants.

~1660MW of in-basin power generation must be replaced/offset by 2030

Our Paths to 100% Clean Energy

LA100
(100% Renewable Study)

Determine investments to achieve 100% Renewables

Clean Grid LA

Replace 1660 MW by 2030

Transition to 100% Renewables
Strategic Long-Term Resource Plan

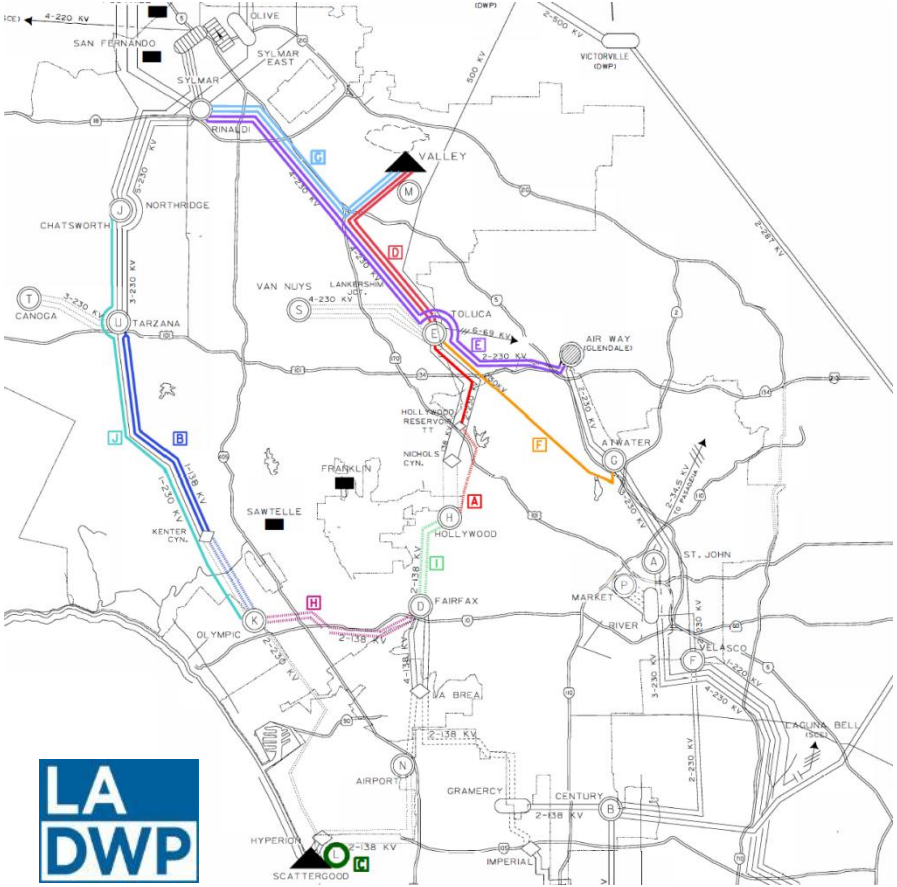
100% by 2045
Zero Carbon by 2050

Reimagining LA's Power Grid

Plan for Local Power Grid – Guiding Principles

- Ensure Reliability
- Environmentally Beneficial
- Allow Flexibility
- Sensitive to Rate Impacts

Unprecedented Level of Transmission Investment



Year*	Required Upgrade	Miles
2024	Tarzana – Olympic L1 conversion to 2-230kV Lines	12.11
2024	Toluca – Hollywood L1 UG Cable upgrade	1.78
2029	Northridge – Olympic Cable A and B and associated shunt reactors	20
2029	Scattergood Phase Shifter upgrade	N/A
2029	Fairfax – Olympic series reactors upgrade	N/A
2029	Hollywood – Fairfax series reactors upgrade	N/A
2029	Rinaldi – Airway Lines 1 and 2 upgrade	32.14
2029	Valley – Rinaldi Lines 1 and 2 upgrade	15.72
2029	Valley – Toluca Lines 1 and 2 upgrade	13.86
2029	Toluca – Atwater L1 upgrade	8.26

Growth in Distributed Energy Investment

Expanded Feed-in Tariff Program

Expanding Demand Response

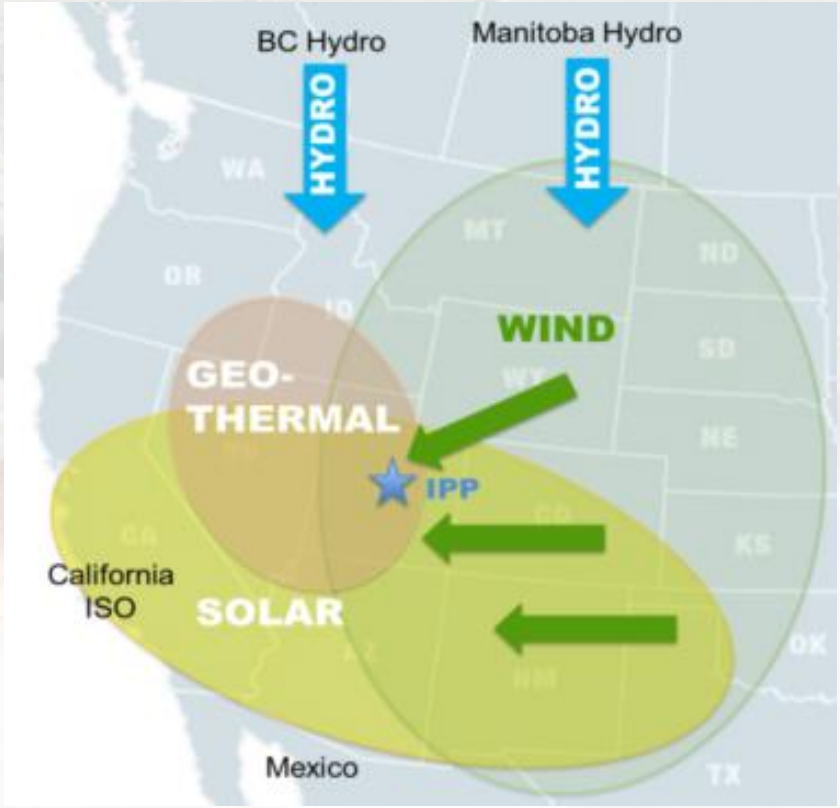
Building Electrification

Resiliency Projects

Distributed Energy Resource RFP

Green Hydrogen & Compressed Air Investments

- Intermountain Power Project sits in a confluence of renewable resources
- Currently 400 MW of wind and geothermal; over 2,300 MW in interconnection queue
- 30% hydrogen mixture capability upon beginning operation in 2025
- Proposed 160 MW Compressed Air Energy Storage (CAES) pilot project has a vision to run 100% hydrogen through its generation expansion process



Reliability

- More external transmission is needed to import external renewable resources
- More in-basin transmission and in-basin, dispatchable resources are needed as in-basin generation is retired

Saddle Ridge Fire

- October 11, 2019 peak load was 3331 MW
- Affected all three import paths into the LA basin
  - Pacific DC Intertie – complete loss
  - Victorville – LA – two of five lines
  - Barren Ridge – complete loss
- Import capability of 5939 MW reduced to 1442 MW
- 135 MW of in-basin generation remained available
- Sayre Fire, November 2008
  - 221 MW of load shed for 32 minutes
  - Impacted 115,000 customers

Summary

- **LADWP is a POU and BAA**
  - Recognition of unique challenges and goals
  - Flexibility in achieving SB 100
  - Equity and impact on rates
- **Reliability & Resiliency**
  - Reliability Must Run (RMR)
  - Transmission
  - Continued investment in infrastructure
- **Resource Mix**
  - Hydroelectric
  - Long duration storage
- **Major Contingencies**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