CEC WORKSHOP: ELECTRICITY INFRASTRUCTURE ISSUES IN CALIFORNIA

JUNE 22, 2012

LADWP Status Report on AB 1318 Project on Capacity Requirements/Emission Implications

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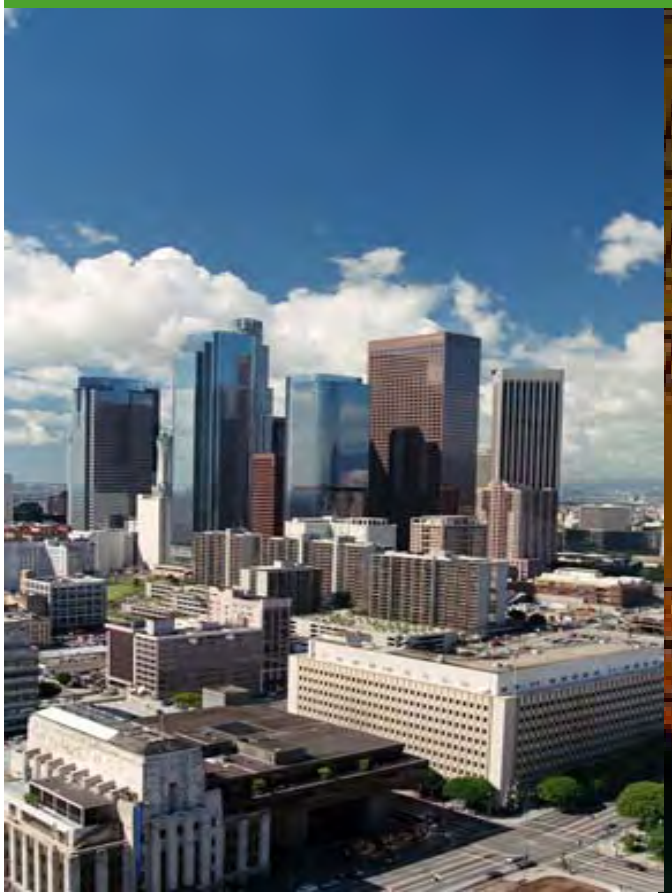
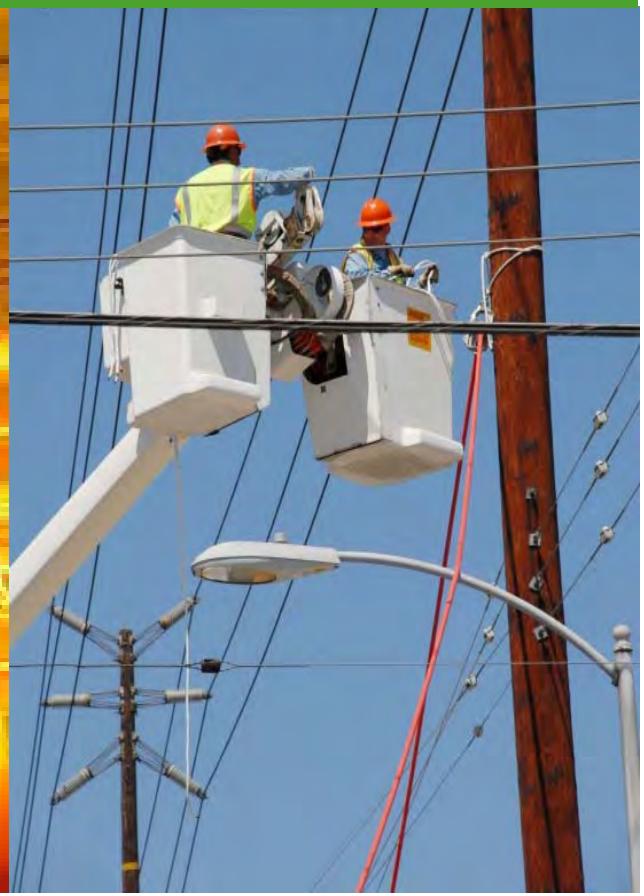
LADWP Power System - Overview





Service Area

- 465 square miles
- 25 GWh annual sales
- 1.46 million metered customers
- 4 million people served

Transmission

- 3,432 miles of overhead
- 124 miles of underground
- 28% of California's transmission

Distribution

- 10,340 miles of overhead and underground lines
- 123 standard distributing stations
- 34 pole-top distributing stations
- 20 receiving stations

Power System Overview

Vertically-Integrated Utility

LADWP owns & operates its generation, transmission & distribution

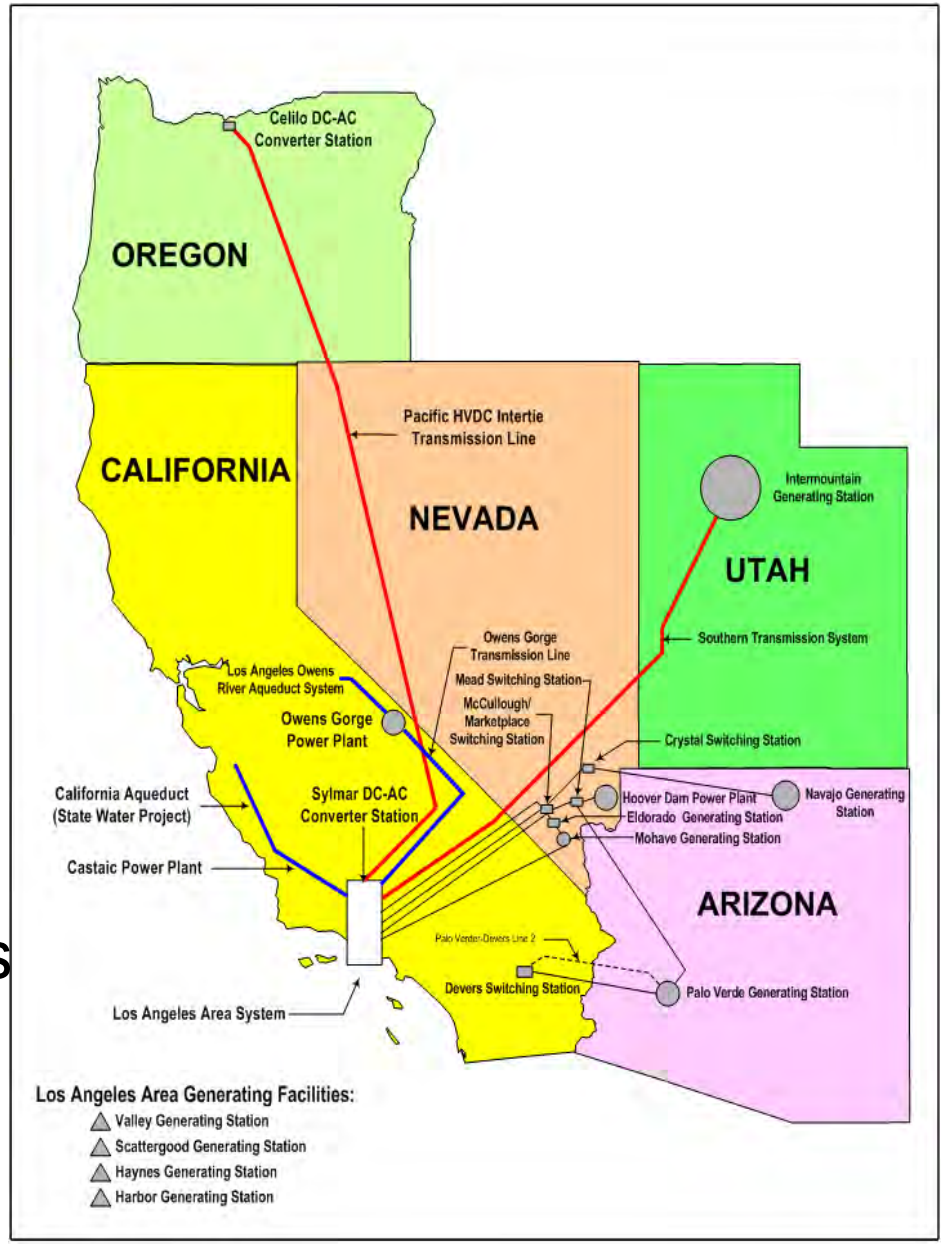
LA Basin Generation

4 Large thermal generating stations

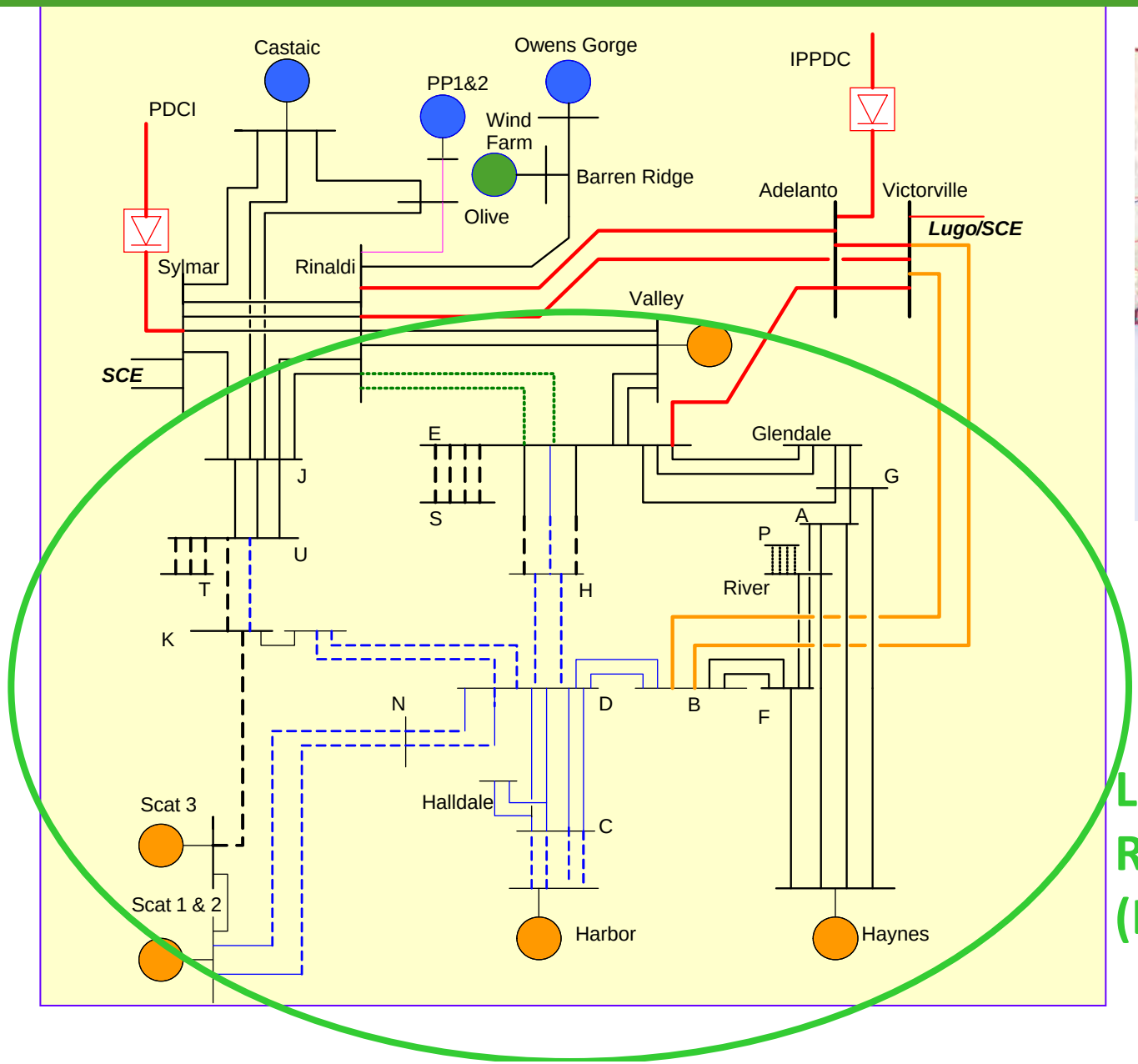
3 Coastal GS's, including 9 units, use Once-Through-Cooling (OTC)

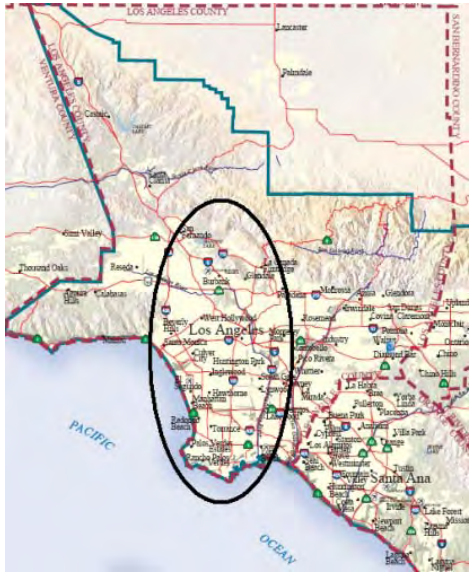
LADWP's in-basin transmission is built to deliver power from the coastal plants to Downtown and the Valley

Interconnections to the WECC grid is outside LADWP Local Capacity Requirement (LCR) Area



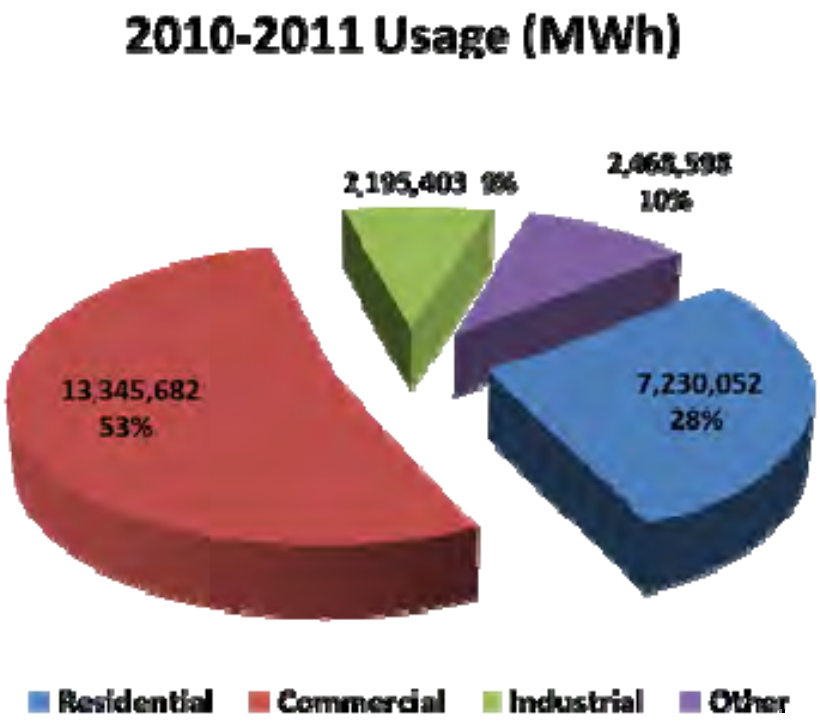
LADWP Internal System

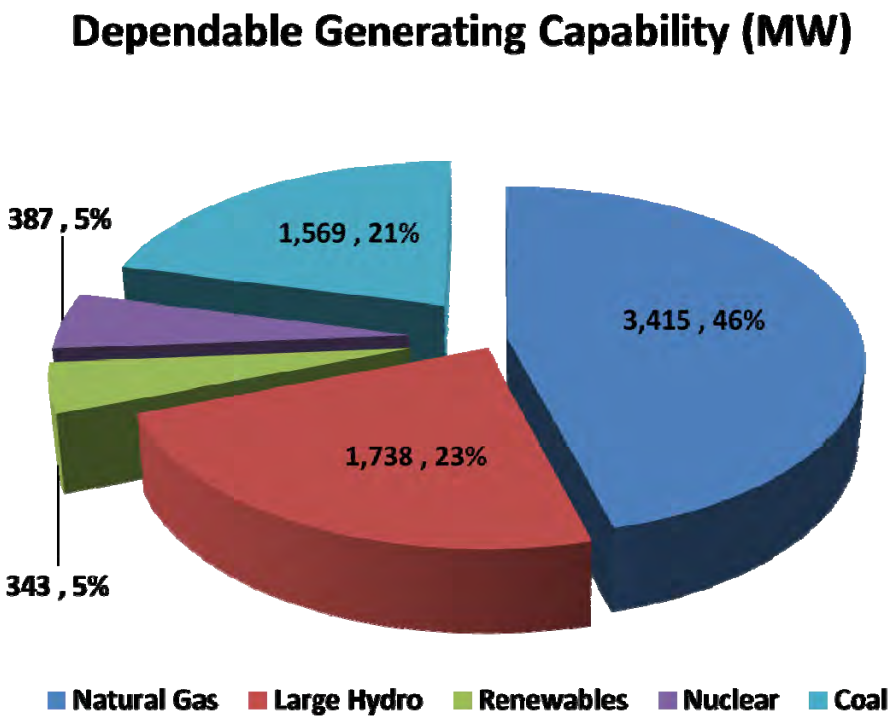




Local Capacity Requirement (LCR) Area

Power Usage and Dependable Capability





California Power Supply Mandates

Mandates Require Changing 70% of LADWP's Power System

Once through Cooling

- 3 of 4 local LADWP power plants use ocean water
- State Water Quality Control Board

SCAQMD Repowering

- Haynes 5&6 = 2013
- Scattergood 3 = 2015

33% renewable energy by 2020

- SBX12

Elimination of coal

- SB1368

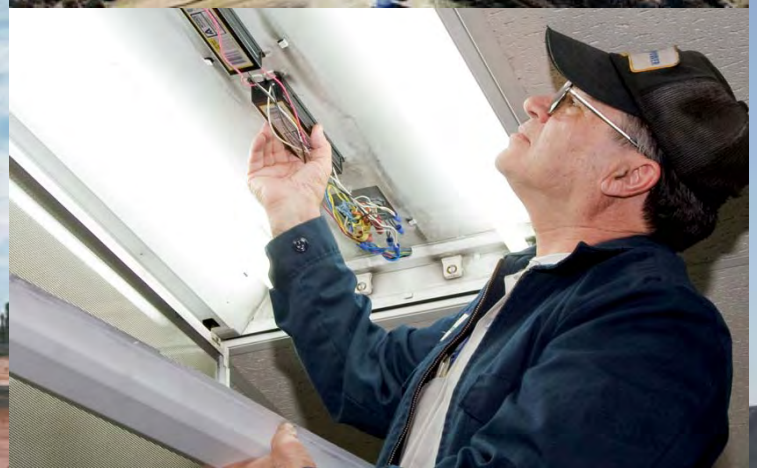
Local solar power

- Solar Incentives SB1
- Feed in Tariff SB32

Reduce greenhouse gas emissions

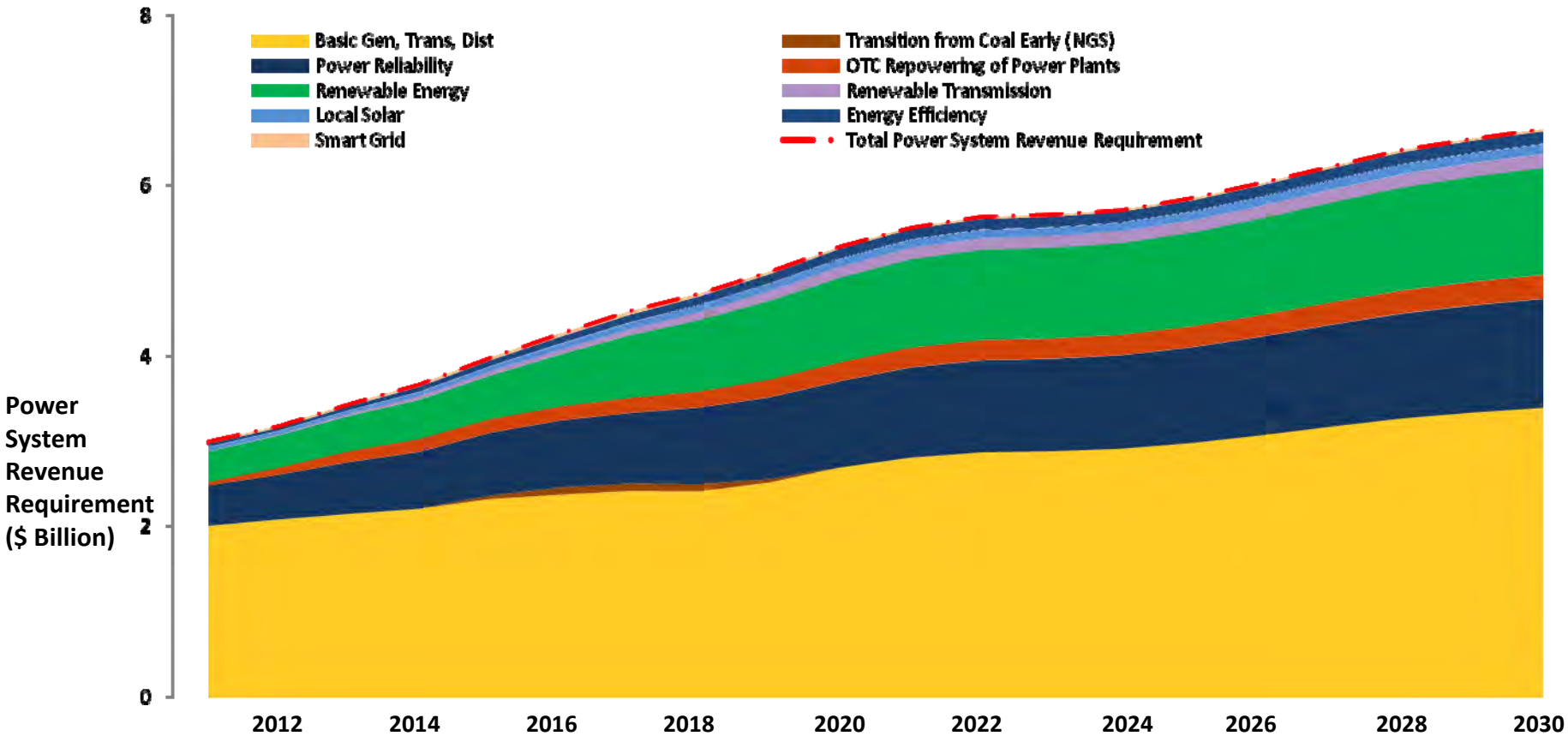
- AB32

Meeting Power Supply Mandates Requires Integrated Planning and Timing

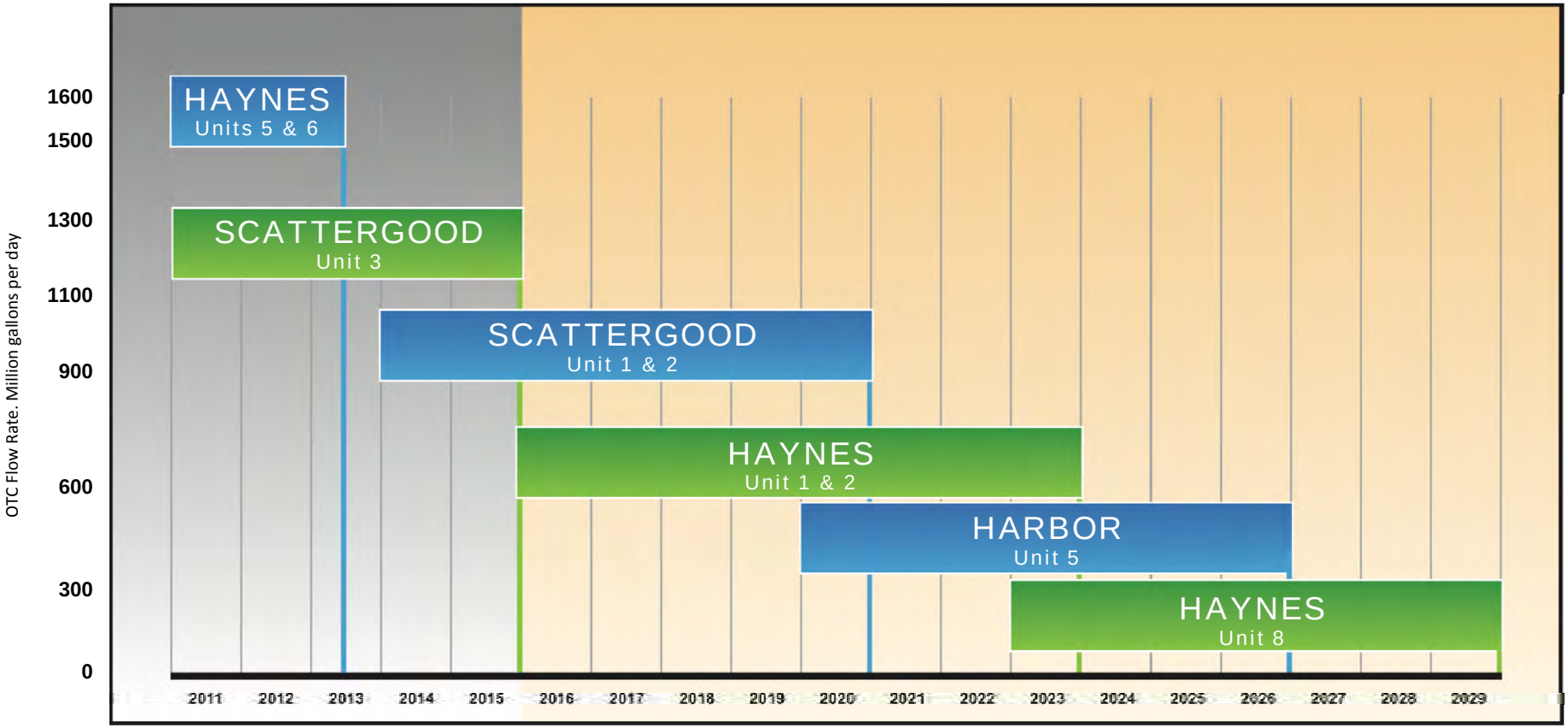


LADWP's Integrated Resource Plan calls for replacing coal with Renewable Energy, Energy Efficiency and efficient Natural Gas from In-Basin Plants now being rebuilt to meet OTC & AQMD requirements and integrate variable renewables like wind power.

2011 Integrated Resource Plan provides the blueprint for meeting power supply mandates



OTC Flow Reductions and Compliance Schedule of In-Basin Units



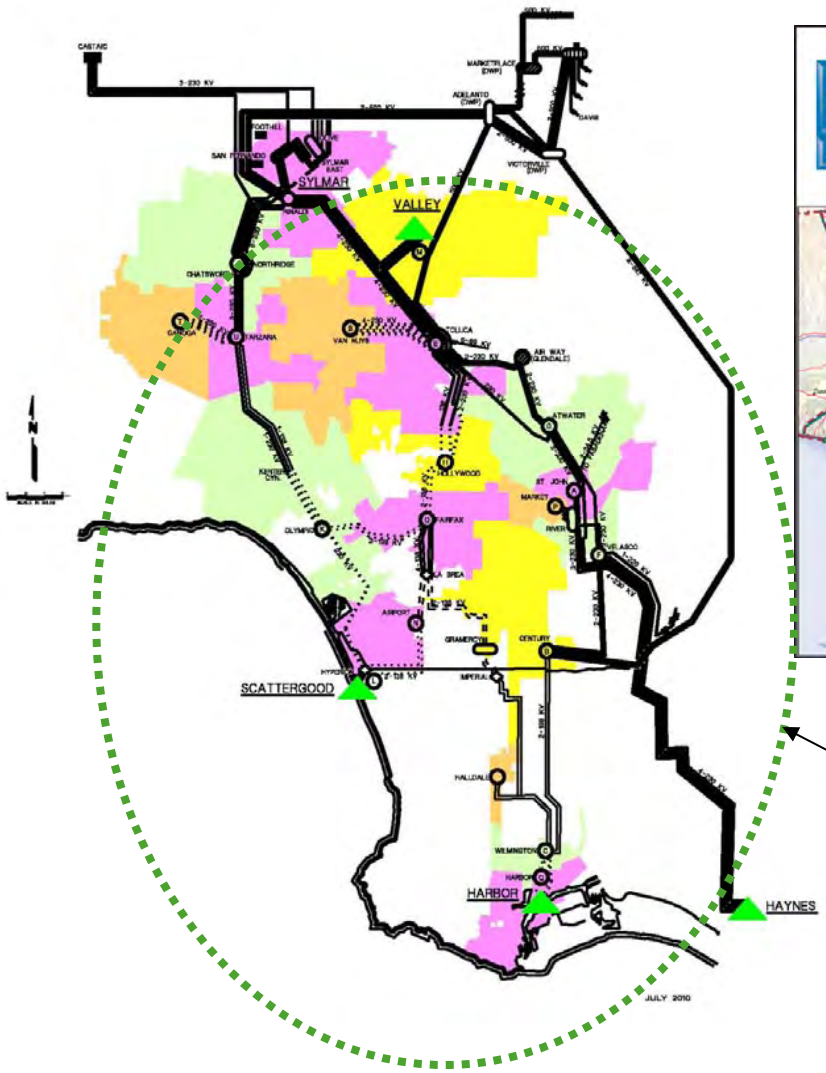
56% overall OTC reduction by 2015

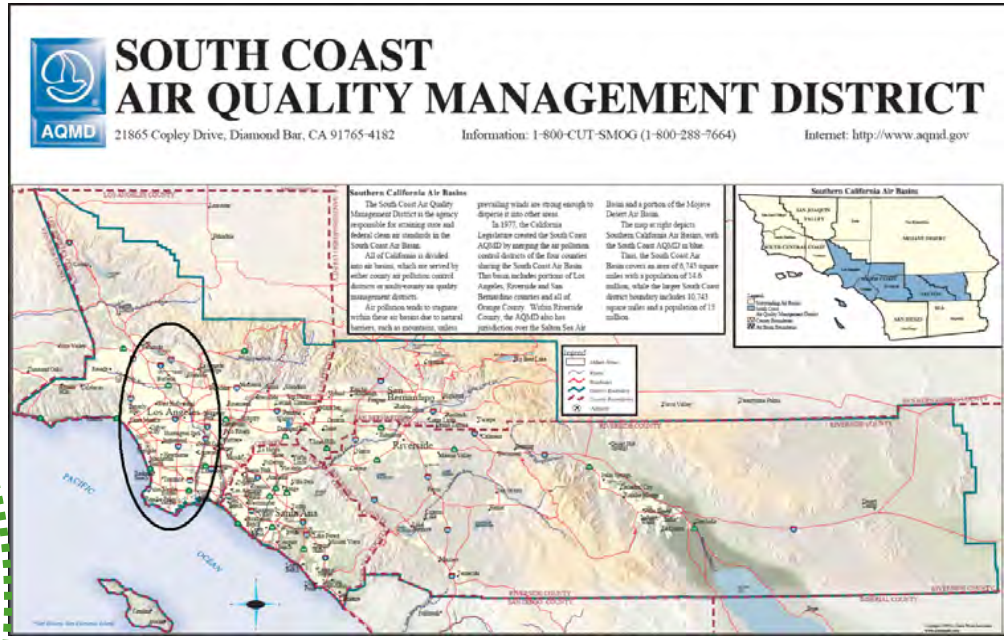
100% overall OTC reduction by 2029

Status Report on Analyses for Assembly Bill 1318

LADWP Local Capacity Requirement Area

IN-BASIN TRANSMISSION SYSTEM





Local Capacity Requirement (LCR) Area

LCR Study Assumptions and Results

Model year 2021; Total LCR area generation: 3471 MW
PDCI Cases: 600 MW and 3100 MW

High-Load Case	
LCR Load	6226 MW
LCR Generation	3386 MW
Customer Outage	358 MW (load shed)

Mid-Load Case	
LCR Load	5600 MW
LCR Generation	3386 MW
Customer Outage	130 MW (load shed)

NERC Load shedding Standard

Under N-1, load shedding is a NERC violation

With all existing OTC units in service, potential load shedding under N-1 load scenario

Avoiding N-1 load shedding requires additional in-basin generation

Mid-Load Case approximates 2014 model year (load forecast of 5632 MW

Controlled customer outage (load shedding) will be needed to prevent equipment damage and cascading outages

AB1318 Study Assumption Comparison: LADWP and CAISO

All major system assumptions are the same, including:

- LCR study methodology (used CAISO's)
  - Load Pocket (max load = max import + LCR)
  - NERC reliability criteria
- Additional Energy Efficiency in Mid-Load case only

Assumption differences

- Dispatch of Co-generation in the LCR
  - LADWP: Online in Mid-Load, offline in High-Load
    - Customer load shedding needed to meet NERC criteria
    - Load shedding needed in both Mid- and High-Load cases
  - CAISO: online in both Mid Load and High Load
    - No customer load shedding expected to meet NERC criteria

LADWP Status on AB 1318 Offsets

From 2012 – 2029, LADWP re-powering projects will be consistent with the OTC schedule.

Gross megawatts will be repowered as follows:

Facility/Unit	Gross MW
Haynes 5&6	604
Scattergood 3	460
Scattergood 1&2	368
Haynes 1&2	460
Harbor 1, 2, & 5	277
Haynes 8, 9, & 10	597

In Conclusion

The agreed-upon schedule to eliminate OTC by 2029 will enable LADWP to maintain grid reliability and meet forecasted load, but requires a seamless execution of each element of the OTC repowering process.

Truncating the OTC schedule would affect system reliability:
All units must stay on line while new ones are built due to LCR and NERC requirements.

The AB1318 Local Capacity Requirement assessment shows that in 2012 all of the coastal plants are needed to meet NERC reliability standards.

Expanding transmission is NOT an option; extremely difficult to get built in dense urban areas. (LADWP's proposed underground Scattergood Olympic Line 1 has taken almost 15 years and a route is still not approved.)

Unexpected shutdown of San Onofre Nuclear Generating Station this summer, as well as the recent UCLA study projecting extremely hot days to triple in downtown LA and quadruple in the Valley, must be factored into future planning assumptions and allows no margin for such unexpected events.

Thank you!