



Date: 6/19/18  
Submitted in ECCES Committee  
Council File No: \_\_\_\_\_  
Item No.: 6-14  
Deputy: Adam R. Lid

# **UPDATE: LADWP POWER SYSTEM**

**Energy, Climate Change, & Environmental Justice  
Committee**

**June 19, 2018**

# LADWP HISTORICAL AND RECOMMENDED GOALS

Year	2006	2010	2016	2020	2025	2030	2036	
California RPS		20%	25%	33%	45%	50%		
LADWP'S RPS Target	6%	20%	30%	39%	50%	55%	65%	↑

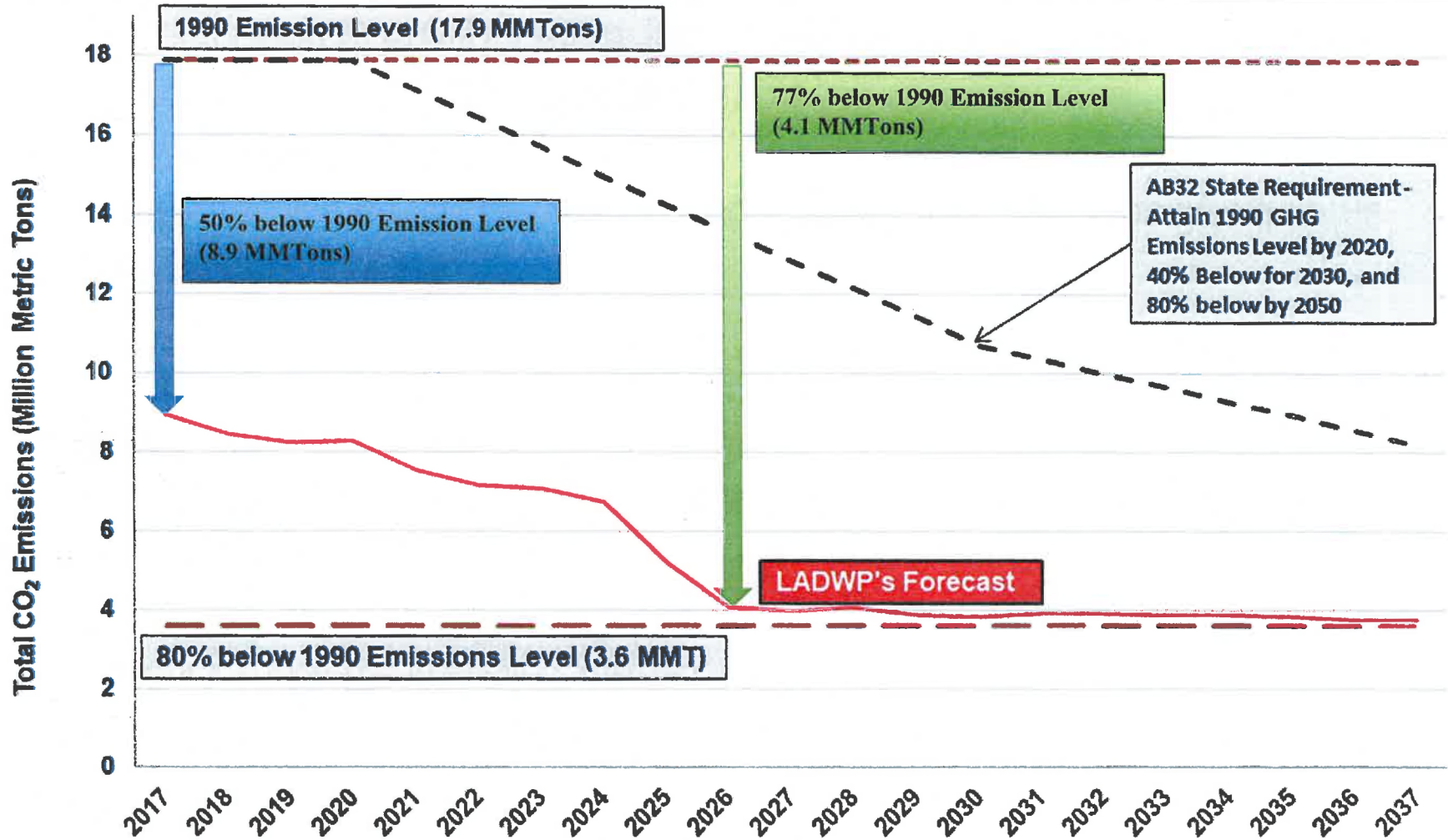
Renewable Generation (Solar, Wind, Geothermal)	331 MW	900 MW	1700 MW	2900 MW	3900 MW	4500 MW	5700 MW (2035)	↑
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Distributed Energy Resources (DER)								
Energy Storage			24 MW	178 MW (2021)	404 MW	404 MW	404 MW	↑
Energy Efficiency (EE)		Baseline	7%	15%	15%	30%	30%	↑
Demand Response (DR)			30 MW	200 MW	500 MW (2026)	500 MW	500 MW	↑

GHG Reduction	6.7%	23.5%	41%	49.1%	68.1%	72%	76.7%	↓
Rate Impact (Estimated) per kilowatt-hour (kWh)	9.6¢	12.0¢	14.8¢	17.8¢	22.1¢	24.5¢	25.8¢	↑



# GREENHOUSE GAS EMISSIONS FORECAST



# CITY COUNCIL MOTION 16-0243

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March 02, 2016

1<sup>st</sup> Council motion – Directed LADWP to develop a partnership with DOE renewable lab to conduct 100% Renewable Energy Study

September 16, 2016

2<sup>nd</sup> Council motion - Directed LADWP to examine potential for high quality careers and equitable local economic development

August 01, 2017

3<sup>rd</sup> Council motion – ECCEJ

- Analysis by the RPA on how the 100% renewable scenarios fit within the current rate structure
- Incorporation of CalEnviro screen into each research area
- Prioritization of environmental justice neighborhoods as the immediate beneficiaries of localized air quality improvement and GHG reduction



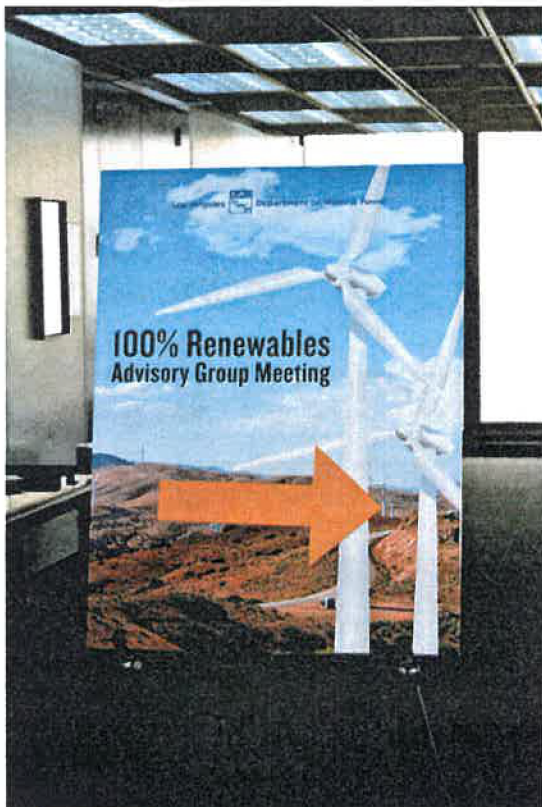
# KEY STUDY FACTORS

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- Maintaining system reliability
- Necessary infrastructure upgrades
  - Critical transmission investments
  - Role of LADWP's existing natural gas generating units
  - Once-Through Cooling (OTC) Study
- Types/availability of clean energy resources/developing technologies
- Role of energy storage, energy efficiency, demand response, and Energy Imbalance Market (EIM)
- Optimization of costs
- Impact to rate payers and local economy
- Prioritization of environmental justice neighborhoods

# 100% RENEWABLE ADVISORY GROUP

Provides input and guidance with a one primary member and one alternate member. The Advisory Group meets at least quarterly.



# Objective, Integrated, Scientific Analysis



**Renewable  
Generation**



**Buildings**



**Vehicles**



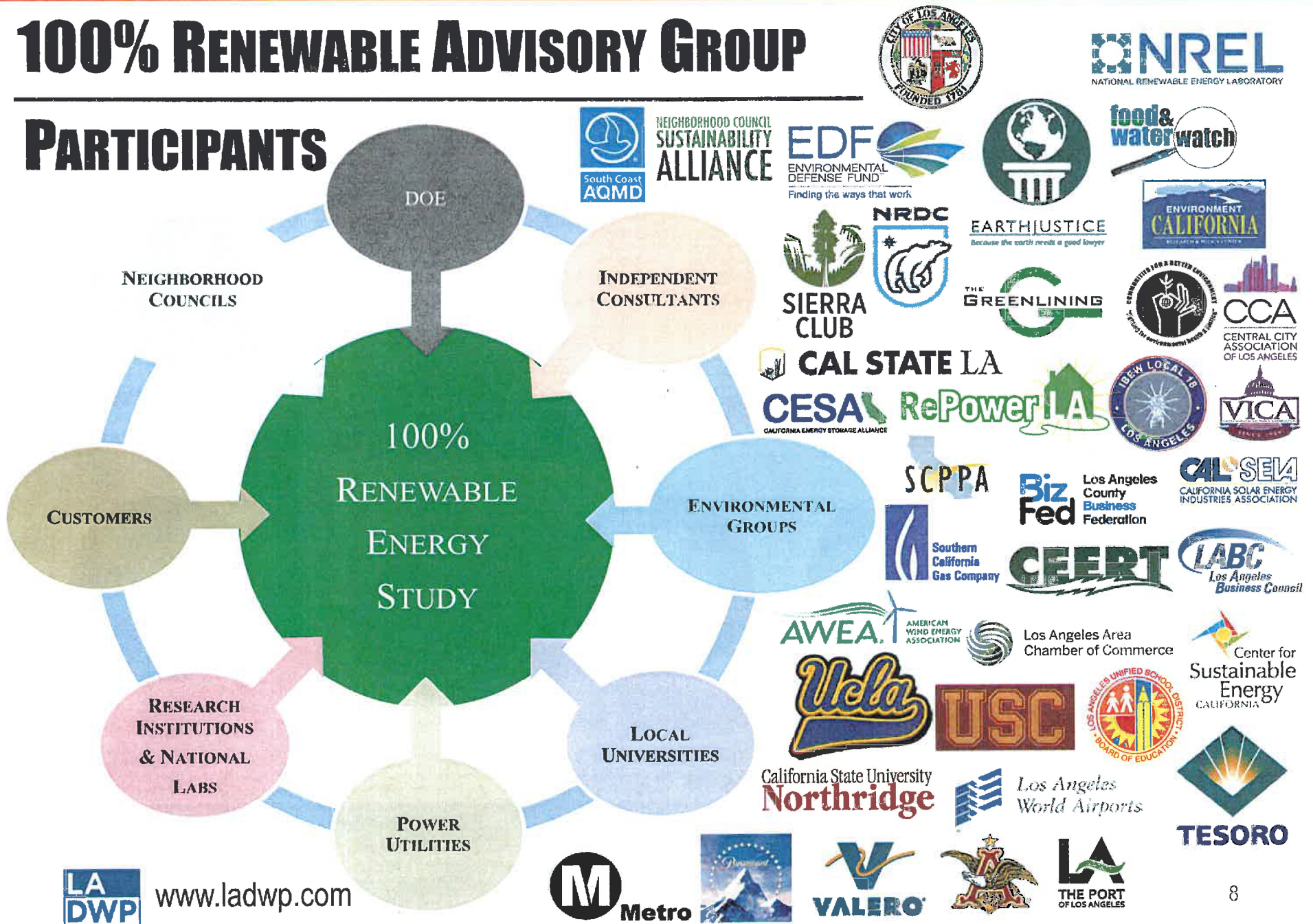
**Data**



**People**

# 100% RENEWABLE ADVISORY GROUP

## PARTICIPANTS



[www.ladwp.com](http://www.ladwp.com)



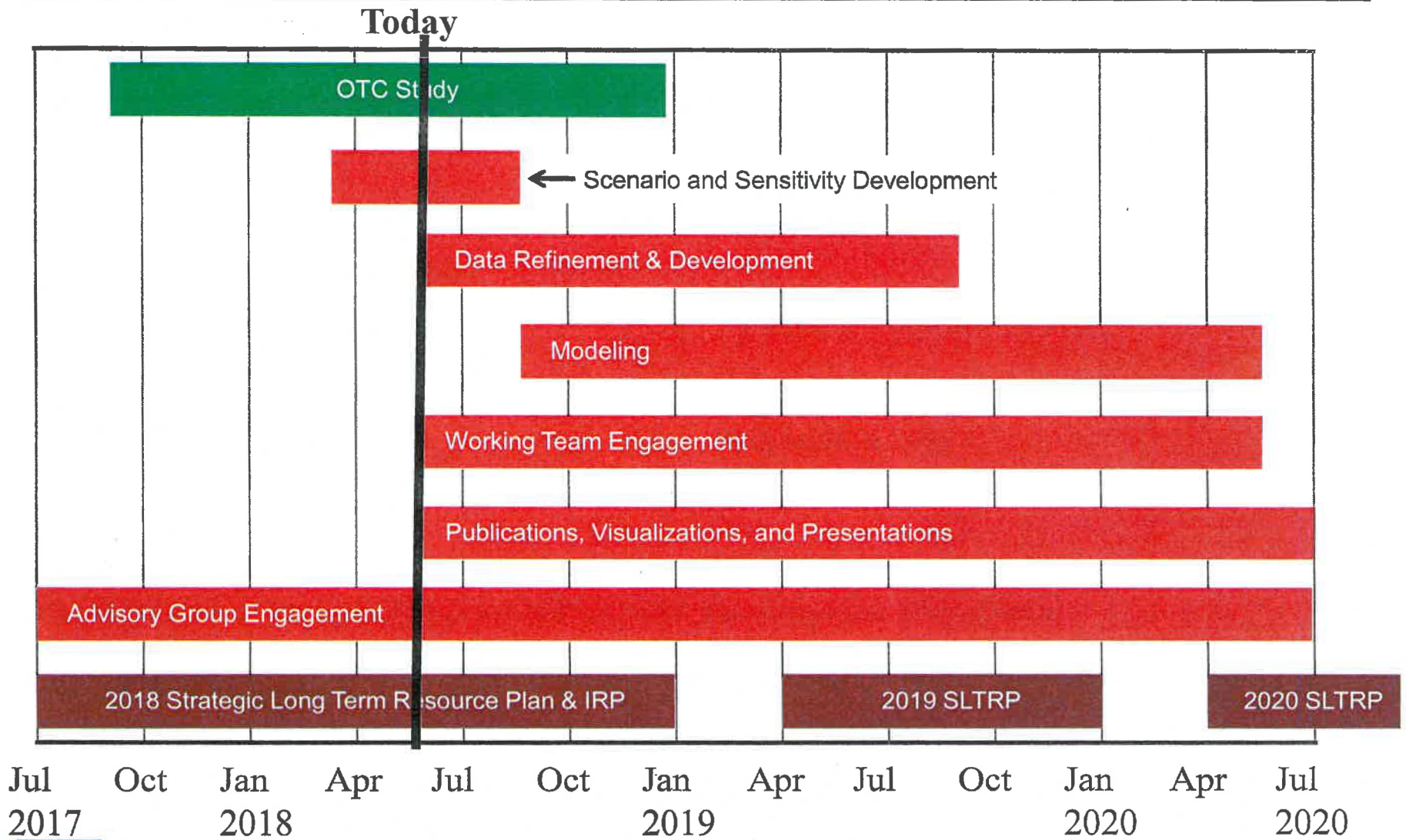
Metro



TESORO



# STUDY PROCESS

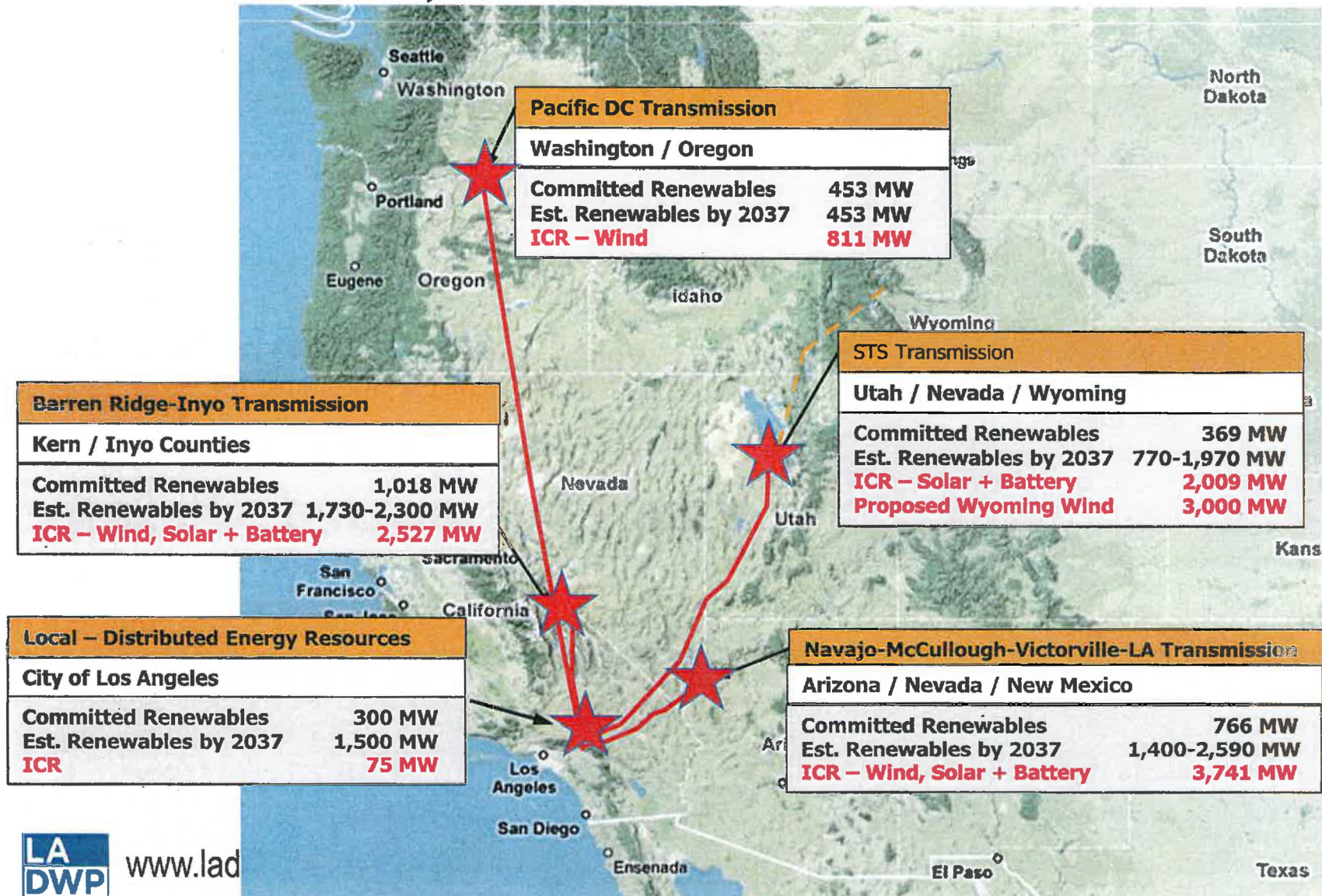


## What might it take to make LA 100% possible?

Reaching 100% renewable electricity, affordably, unlocks potential for decarbonization in other sectors

- Transmission and storage will need to be built
- Seasonal and interannual variability is a significant challenge
- Comprehensive planning is critical to reliability
- Many renewable technologies will play a role
- Flexibility will be crucial
- Demand is part of the solution

# Renewable Interconnection Requests 2017-2037: 12,163 MW

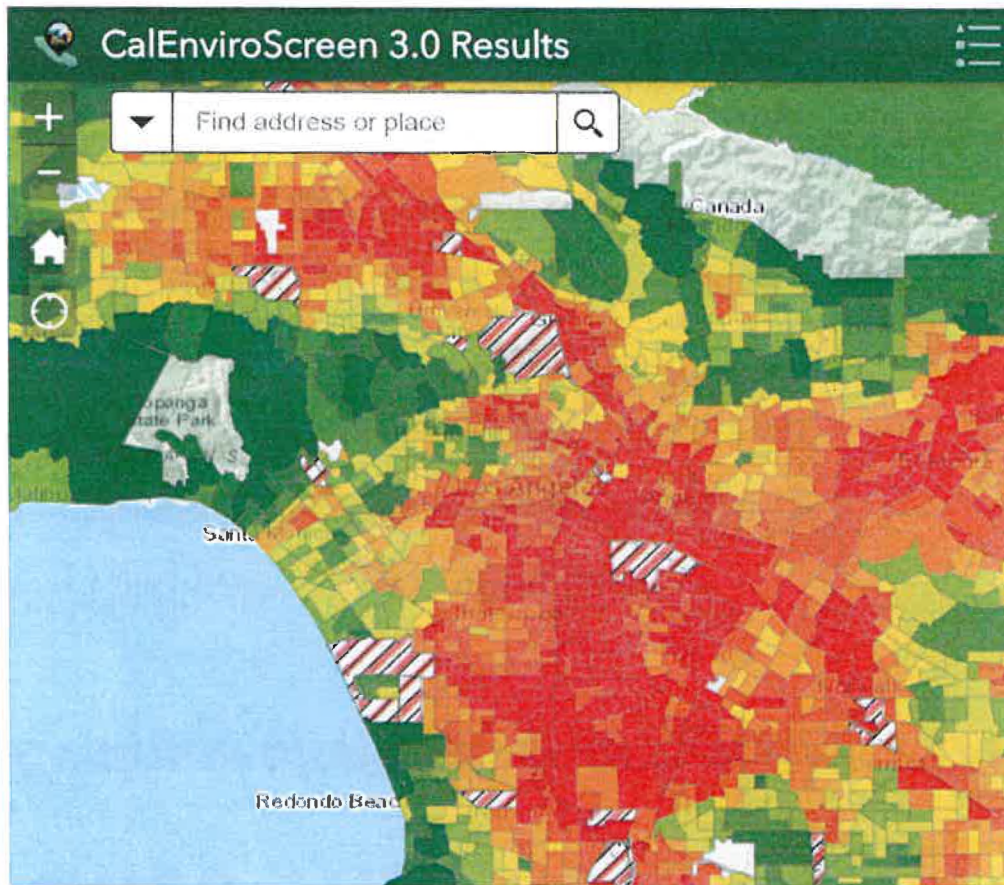


# Economy Wide Impact Economy Wide Analysis

Strategic partnerships with academia enable targeted local analysis



## Emissions, Air Quality, and Environmental Justice



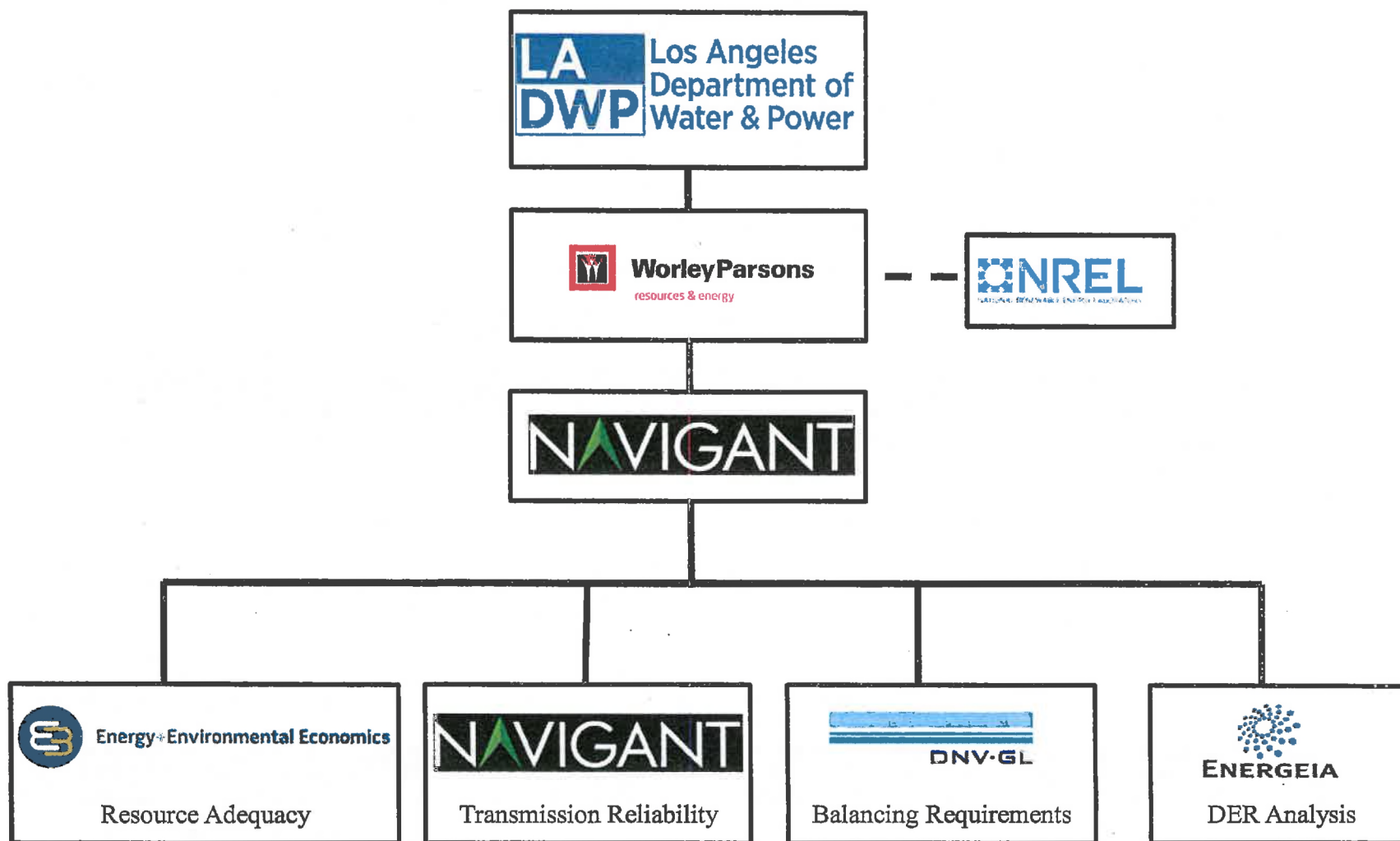
Integrated impacts assessment enables comprehensive insights into the cost of inaction

# Once-Thru Cooling (OTC) Study

*Evaluate alternatives to LADWP's OTC repowering plan*

- Third party, independent study
- Maintains system reliability through 2036
- Evaluates all non-emitting alternatives
- Requires proven technology
- Adopts and expands on 2016 IRP (excludes OTC repowering)
- Considers environmental constraints
- Evaluates the cost associated with various alternatives
- Provides an overall recommendation

# OTC Consultants Organization Chart



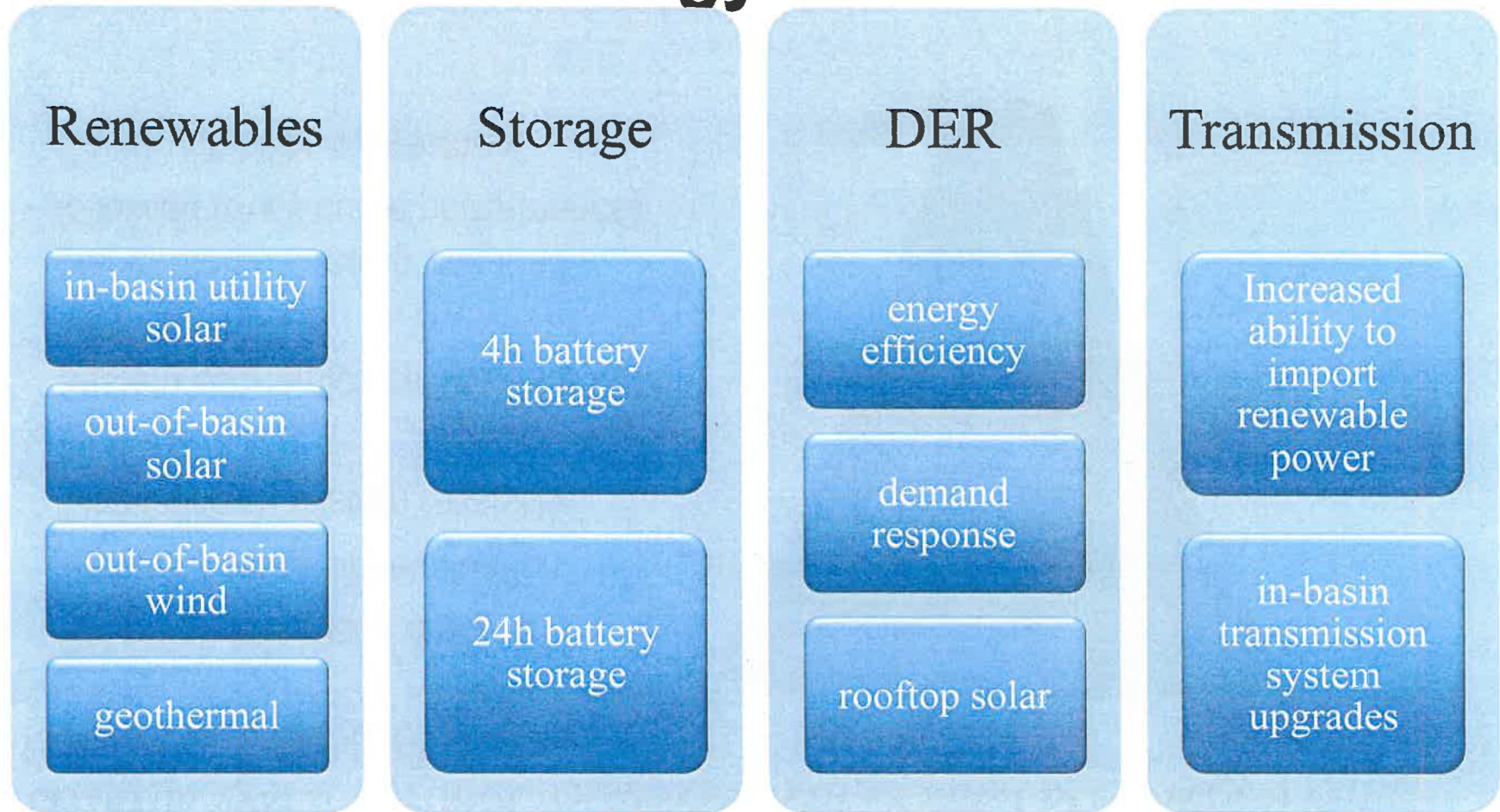
# Study Objective – Retirement Scenarios

Existing OTC Capacity		
Unit	Nameplate Capacity (MW)	LADWP Compliance Date
Scattergood 1	185	12/31/2024
Scattergood 2	185	
Haynes 1	230	12/31/2029
Haynes 2	230	
Haynes 8, 9 & 10	590	12/31/2029
Harbor 1, 2 & 5	246	12/31/2029

Study Scenarios			
Scenario	OTC Units Retired	MW Retired	MW Repowered
A	None	0	1,593
B	All OTC Retired	1,666	0
C	SCAT Retired	370	1,256
D1	All HAY Retired	1,050	582
D2	HAY 8/9/10 Retired	590	919
D3	HAY 1/2 Retired	460	1,256
E	HAR Retired	246	1,348
F	HAY & HAR Retired	1,296	337
G	SCAT & HAY Retired	1,420	245
H	SCAT & HAR Retired	616	1,011



# Alternatives Strategy

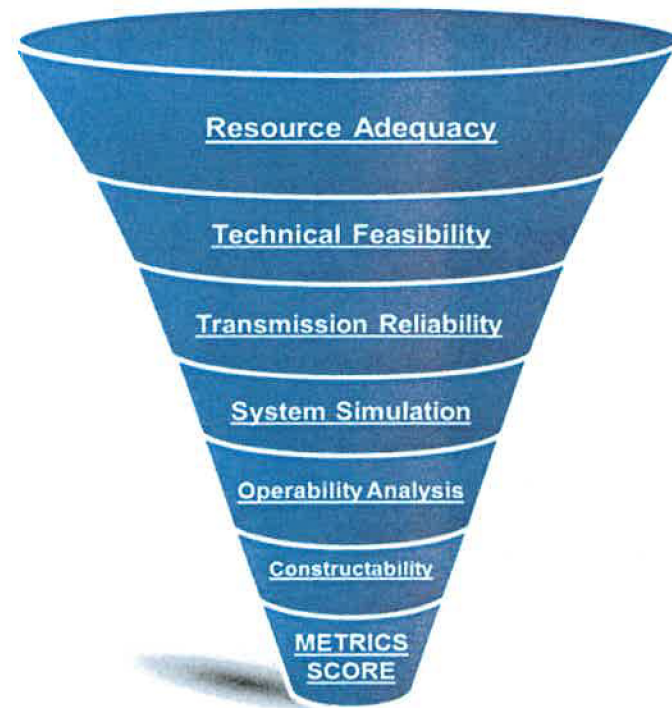


*Other resources were considered but excluded due to technology maturity, construction timing, and GHG emissions*

# Study Methodology

Performs system reliability assessment of each OTC repowering alternative which includes:

- Resource adequacy analysis
- Technical feasibility evaluation
- Transmission system reliability analysis
- System economics estimate for each alternative
- Generation balancing and load following (duck curve performance)
- Constructability assessment



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# Questions?



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