L.A.’s Clean Energy Future

Board of Water and Power Commissioners
June 6, 2017
Mission and Priorities

Power System is committed to provide:

• Safe and reliable electric service
• High-quality service in an environmentally responsible manner
• Competitive rates

Power System key priorities include:

• Replacing aging infrastructure
• Meeting and exceeding renewable energy mandates
• Improving customer service
LADWP Accomplishments

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2010</th>
<th>2016</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2036</th>
</tr>
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<tbody>
<tr>
<td>California RPS</td>
<td>-</td>
<td>20%</td>
<td>25%</td>
<td>33%</td>
<td>45%</td>
<td>50%</td>
<td>-</td>
</tr>
<tr>
<td>LADWP’S RPS Target</td>
<td>6%</td>
<td>20%</td>
<td>29%*</td>
<td>39%</td>
<td>50%</td>
<td>55%</td>
<td>65%</td>
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*estimated

Renewable Progress:
- 930 MW large solar
- 221 MW BTM solar
- 996 MW Wind
- 384 MW planned

LADWP GHG (CO2) Reductions Exceed State Mandates

LADWP expects to exceed statewide goal 13 years early
Replacing Aging Infrastructure

LADWP is committed to replace and upgrade its aging infrastructure in all functions of the Power System:

- Distribution System Reliability Program
- Substation System Reliability Program
- Transmission System Reliability Program
- Generation System Reliability Program
Originally Proposed Repowering Schedule of OTC Units

- Haynes Units 5 & 6: Completed
- Scattergood Unit 3: Completed
- Scattergood Units 1 & 2:
  - Unit 1: 62 Yrs
  - Unit 2: 61 Yrs
- Haynes Units 1 & 2:
  - Unit 1: 67 Yrs
  - Unit 2: 66 Yrs
- Harbor Units 1, 2 & 5:
  - Unit 1: 34 Yrs
  - Unit 2: 34 Yrs
  - Unit 3: 34 Yrs
- Haynes Units 8, 9 & 10:
  - Unit 8: 24 Yrs
  - Unit 9: 24 Yrs
  - Unit 10: 24 Yrs

OTC Compliance Date
W&R Warranty & Reliability Phase
Reassessment of Repowering Projects

LADWP has put on hold all planned local repowering projects until a system-wide, in-depth, and independent study/analysis is conducted to:

• Analyze the necessity for repowering
• Identify all viable alternatives to repowering

Key Components of the System-wide Study are:

• Meet all NERC/WECC Reliability Standards;
• Local Transmission System Reliability;
• Resource Adequacy Requirements;
• Local Generation Balancing and System Reliability; and (Ramping and Integration of Renewables)
• Mitigation Solutions, Practical Alternatives, and Impact on Environment
System-wide Study

The study will:

• Analyze the reliability of local generation and transmission systems during planning period 2017 through 2030 (Will consider all units that were scheduled for repowering)

• Evaluate Green House Gas (GHG) levels of each alternative

• Include high penetration of renewable resources based on LADWP RPS targets

• Provide qualitative, quantitative, and comparative analysis of all alternatives

• Recommend the most practical mitigation solutions

Study results will be used to:

• Develop Scope of Work, Procurement Strategy, and Impact on Rates

• To determine optimal solutions, technologies, and projects to maintain and improve the reliability of LADWP’s local electric system
Potential Alternatives may Include...

- Repowering of OTC Units at a Reduced or Requisite Capacity
- Renewable Energy Resources with Energy Storage System
- Transmission Line(s) Improvement Only
- Repowering of OTC Units as Originally Planned
- Transmission Line(s) Improvement with Energy Storage System
- Deployment of Distributed Energy Resources
  (Energy Efficiency, Demand Response, PV solar, Electric Vehicle Charging, Energy Storage)
- Combination of Any of the Above or Any Other Viable Alternatives
Study Timeline and Associated Impacts

Timeline:
• Anticipated Completion No Later Than Early 2018

Approved Study Recommendations and Findings:
• Will be incorporated in future Integrated Resource Plan (IRP) documents

Budget Activity:
• No funds will be expended for repowering projects until the system-wide study is completed and final recommendations are approved

• All repowering projects require Board and City Council approval

• Fiscal Year 17/18 Power System budget includes $61.5 million to complete demolition projects at Scattergood and Haynes Generating Stations and prepare the site for future energy projects
Power System Major Initiatives

- Expansion of Renewable Generation Portfolio
- Expansion of the Electric Vehicle Charging Infrastructure
- Expansion of Energy Storage
- Grid Modernization/Smart Grid
- 100% Renewable Energy Study (Stakeholder Engagement and R&D)
- Energy Efficiency, Community Solar, and DER Integration Pilot
- Exploring New Hydro Pumped-Storage Power Plant Opportunity
Next Steps

- Collaborate with other utilities to solve common challenges
- Increase reliance on renewables and energy storage
- Explore viable technologies/programs to reduce GHG emission
- Partnership with research institutions such as NREL
- Taking steps to participate in CAISO’s Energy Imbalance Market (EIM)
- Expand public outreach
- Work closely with other City Departments/Bureaus
- Present study results and findings to Board of Commissioners