LADWP 2024 LA100 Plan - Formerly Power Strategic Long-Term Resource Plan (SLTRP)

Advisory Group Meeting #6

Summary Draft

December 5, 2024, Time 9:00 a.m. – 12:00 p.m.
LADWP Wall Street Building (In-Person)
1350 Wall St., Los Angeles, CA 90015

Prepared by Kearns & West

Meeting Attendance

Advisory Group Members

1. Center for Energy Efficiency and Renewable Technologies (CEERT), V. John White
2. Chief Administrative Officer, Darnell Gray
3. City Attorney, Nirvesh Sikand
4. Community Build, Robert Sausedo
5. Council District-13, Julia Macias
6. DWP MOU Oversight Committee, Tony Wilkinson
7. Los Angeles Alliance for a New Economy (LAANE), Lauren Ahkiam
8. Los Angeles Business Council (LABC), David Fink
9. Los Angeles City Planning Department (LACP), Gabriela Juarez
10. Metropolitan Transportation Agency (Metro), Uduak-Joe Ntuk
11. Move LA, Denny Zane
12. Natural Resources Defense Council (NRDC), Hilary Firestone
13. Neighborhood Council Sustainability Alliance, Dan Kegel
14. Neighborhood Council Sustainability Alliance, Ravi Sankaran
15. Office of Public Accountability (Ratepayer Advocate), Fred Pickel
16. Pacific Asian Consortium in Employment (PACE), Susan Apeles
17. RePower/AIRE, Roselyn Tovar
18. Sierra Club, Julia Dowell
19. Sierra Club, Katie Ramsey
20. SLATE-Z, Ruth McCormack
21. Southern California Gas Company, Zahra Meyduzuela
22. University of California, Los Angeles (UCLA), Sean Wilder
23. University of Southern California, Zelinda Welch
24. Water and Power Associates, Ken Silver

Other Observers

UCLA, Lauren Dunlap
UCLA, Rachel Sheinberg

LADWP Staff

Brendan Watson
Dawn Cotterell
Deborah Hong
Fredy Ceja
Haik Movsesian
Isiah Smith
Jay Lim
Luis Martinez
Nermina Rucic O'Neill
Omar Elayyan
Orlando Garcia
Patricia Macatual
Robert Hodel
Samaneh Nickouei
Samer Fakhro
Vanessa Mahlknecht
Yamen Nanne

LA100 Plan Consultants

Brandon Mauch, Ascend Analytics
Christian Mendez, Kearns & West
Joan Isaacson, Kearns & West
Juan Cabrera, Kearns & West
Robin Gilliam, Kearns & West

Welcome and Agenda Overview

Joan Isaacson, facilitator from Kearns & West, welcomed Advisory Group members to the sixth Advisory Group meeting for the LA100 Plan for LADWP, noting the rebranding from the 2024 Strategic Long-Term Resource Plan (SLTRP). She provided an overview of the agenda (see slide 2), highlighting the focus on distribution planning assessment results and preliminary results from the LA100 Plan modeling. She reminded about the role of Advisory Group members and guidelines for productive meetings and then explained how Mentimeter would be used for submitting questions during the meeting and then helped members to connect.

Isaacson reviewed the LA100 Plan schedule (see slide 11), sharing that community meetings are being planned for January and that input would be shared with the Advisory Group at the February meeting. The second round of modeling results will be presented at the March meeting.

LA100 Plan (formerly SLTRP)

Nermina Rucic-O'Neill, LADWP Manager of Power Engineering, explained the rebranding of SLTRP to the LA100 Plan and gave an overview of the LA100 Plan

schedule (see slides 12-13). She expressed appreciation to Advisory Group members for their participation and continuous collaboration in this process as well as thanked the project team and LADWP executive management and leadership.

Rucic-O'Neill stated that the LA100 Plan emphasizes LADWP's position to fully decarbonize the electric power sector by 2035 while ensuring power is reliable, sustainable, accessible, and affordable to its customers. She further explained that the LA100 Plan expands planning to integrate generation with transmission and distribution system needs with customers as active participants in the process. In the LA100 Plan, she explained, 100% carbon-free by 2035 is the only pathway (scenario). LA100 Equity Strategies will be incorporated into the LA100 Plan, said Rucic-O'Neill.

Question and Answer

Question: What is the assessment of impacts on rates and underserved communities?
Response: Cost assumptions are incorporated into the model, and the team will conduct an evaluation to compare the impact of different investments on rates.

Question: What is the benefit for the City to go ahead the 10-year state target for 100% renewable energy?
Response: The National Renewable Energy Laboratory (NREL) analyzed LADWP's system. Based on two years of research, they recommended that this goal can be accomplished in the 2035 timeline.

LADWP Recent Accomplishments

Jay Lim, LADWP Manager of Resource Planning, presented recent LADWP accomplishments and updates (see slides 15-16), highlighting that in 2024 LADWP is forecasted to achieve nearly 66% carbon-free energy with 49% renewable energy. He also noted $1.8 billion in transmission system upgrades and increases in energy efficiency programs, electric vehicle (EV) infrastructure, and reductions in CO2 emissions. Lim added that LADWP has applied for more than $4 billion in federal, state, and local grants, and has been selected for approximately $150 million to date.

Distribution System Planning Assessment Results

Yamen Nanne, Manager of Distribution System Planning and Management at LADWP, provided an overview of distribution system initiatives, emphasizing improvements and programs to expand system capacity (see slide 18). Nanne explained the improvements include equipment replacement, improvements in the transmission and distribution systems, and programs to expand distribution.

Nanne then introduced Haik Movsesian, Supervisor of Distribution System Planning, who described how LADWP delivers power to customers (see slides 19-21) and the planning process for distribution (see slide 22). He explained that in January 2025, the team will continue scenario development by examining load modifiers (see slides 23-24). Movsesian then described and provided live demonstrations of load modifiers, such as building growth rate and adoption of light- and heavy-duty EVs, photovoltaic solar, and energy storage (see slides 25-37). He also addressed factors such as weather/climate, energy efficiency, the need for public EV charging infrastructure, and hotspots for EV truck charging.

Movsesian then explained the range of scenarios for distribution load modeling (see slide 40) and shared four key findings from the modeling (see slides 41-48). He first described the finding that electric transportation is the single largest driver of load growth and is expected to increase demand on the distribution system by up to 900 MW by 2035. A second finding is that tens of substations and hundreds of distributing circuits will be needed to support electrification. Movsesian described the third finding that shifting residential EV charging times away from peak hours reduces the capacity shortfall of distributing stations and 4.8kV feeders by 31% and 48%, respectively by 2035. The fourth finding is that local solar generation is projected to be misaligned with peak demand.

Movsesian shared five recommendations based on the key findings (see slide 50) and explained the distribution planning cycle as it relates to the integrated planning approach of the LA100 Plan (see slide 51).

Question and Answer

Question: How can distribution grid upgrades make resources like community solar more feasible?
Response: Community solar projects connect to the grid, and we need a strong reliable grid to make that interconnection. Distribution is there to support that integration.

Question: Will LADWP continue net metering?
Response: We are not sure if that will continue.

Question: What type of contingencies are considered in the plan for substations? If one fails, can the others handle the power? Is it based on N-0 or N-1?
Response: The system incorporates redundancies and backup to ensure reliability in the event of a component fails.

Question: What about failure in extreme heat? Integrating distributed energy resources with battery storage in critical locations can ensure communities are served equitably.

Response: The grid supports interconnections and provides additional resiliency. Outages happen for multiple reasons, including old equipment. LADWP is working on a Climate Adaptation Plan for emergencies and future climatic episodes. We are collecting data and analyzing how climate change will impact the system and what can be done in design, implementation, and programming to prepare. LADWP is working with others in the industry, like SoCal Edison, and the Distribution Team is working on with a resiliency hub at Green Meadows Recreation Center.

Question: What about sufficient maintenance and support for broken charging stations and vandalism?
Response: The staff that works on LADWP-owned EV charging is the same staff that works on system repairs. When problems happen on the distribution system, those teams get pulled in due to urgency and are temporarily taken off the EV charging station repairs. We are looking at hiring electricians with lower voltage electrical skills dedicated to repairing EV chargers.

Comment: LADWP should consider developing an app to show the location of chargers and functionality to report maintenance issues.

Question: Making rate changes at LADWP is a challenge. What tailored solutions is LADWP considering? Will time-of-use rates be implemented?
Response: Rate change as a municipal utility, with low-income programs, has been challenging with legal considerations. There could be issues from converting all customers to a time-of-use rate plan. We are deploying a pilot for 3,000 residences that will have a managed EV charging program until the time-of-use challenge is resolved.

Question: Can LADWP link to other activities or contracts that will allow time-of-use rates?
Response: It's not ideal as an ad hoc way to administer billing. LADWP has attempted this for commercial customers but there are challenges to implement time-of-use with residential customers.

Question: What technologies are being tracked that can be disruptive and reduce reliance on other generation/distribution issues?
Response: We are establishing a research and development group to look into technology, gather input on what is available, pilot that and possibly take it to scale. Under an integrated resource plan, LADWP looks at all new technology to see how it aids and integrates into energy systems. We look closely at how it is beneficial to our system.

Comment: It's important to stay close to industry and look at new technologies that are more disruptive than solar and that can help us move faster.
Response: LADWP is engaged with the Electric Power Research Institute.

Question: Building more transmission quickly will cost a lot if it is done the same way it has been done in the past. How can LADWP make a significant contribution and make an impact statewide?
Response: More capacity will be needed, and transmission will need to increase. The transmission planning team is working to see how to develop new systems.

Question: What if there were a major new resource available for program implementation? How would LADWP use that money – to reduce rates or accelerate that program?
Response: LADWP will involve stakeholders and management to make that decision. Ramping up costumer programs will help with rates and savings and provide reliability for customers.

LA100 Plan Preliminary Results

Robert Hodel, LADWP Manager of Integrated Resource Planning, provided an overview for the LA100 Plan scenarios and modeling, beginning with the model runs (see slide 56). He explained how iterative modeling for capacity expansion, reliability, and production cost validates results and then described each modeling type (see slides 57-60). Hodel first presented the model run overview for the LA100 Plan, including policy, resource and electrification inputs and then showed the SB 100 reference case (see slides 61-62). He also reviewed the model run for the LA100 Plan low load/high distributed energy resources (DER) sensitivity analysis (see slide 63).

Next, Brandon Mauch from Ascend Analytics gave an overview of the modeling run status (see slide 66), explaining that models in review will be completed and results shared at the next Advisory Group meeting. He highlighted key takeaways from the LA100 Plan modeling, including the need to acquire significant amounts of solar co-located with storage as well as wind, geothermal, and in-basin green hydrogen capacity (see slide 67). Mauch further explained that building and vehicle electrification will add 71% of load growth by 2035 and that the estimated total cost for the LA100 Plan is approximately $18 billion above the cost of meeting state energy mandates.

Mauch next reviewed LA100 Plan generation by year, noting that by 2033, solar will account for over half of LADWP's energy with wind and geothermal accounting for nearly one-third of generation starting in 2036 (see slide 68). He also explained that green hydrogen will provide energy only during critical periods and account for less than 3% of generation starting in 2035. Mauch described the retirement of all coal in June 2025 and the gradual reduction in natural gas.

On resource assumptions for new builds, Mauch explained that the earliest date to add new resources is 2027 (see slide 69). He described that solar will continue to dominate

with onshore wind capacity being limited and offshore wind becoming available in 2030, adding that green hydrogen will fully replace natural gas generation by 2035. On generation cost, Mauch reviewed a chart for capital costs of different technologies from NREL (see slide 70).

Mauch then reviewed the reliability and energy requirements for the LA100 Plan and the SB 100 reference case (see slide 71) and described how resource adequacy models stress test the resource mix for serving load (see slide 72). He stated that the LA100 Plan meets the loss of load expectation target. He further described how the contribution of generation resources toward reliability is expressed as effective load carrying capacity and explained the difference between nameplate capacity (maximum generation value) and capacity value (see slide 73).

Next, Mauch reviewed the Mid Case for LADWP's load projection and a comparison of total new resource builds from 2025 to 2045 for the LA100 Plan and the SB 100 reference case (see slides 74-75). For the LA100 Plan model output summary, Mauch highlighted that the initial capacity expansion resulted in a reliable portfolio with in-basin green hydrogen running 25% of the time. To reduce the reliance on green hydrogen, the team adjusted the model by, adding wind, solar, storage, and geothermal resources. This reduced the green hydrogen run time to below 10% and reduced hydrogen fuel consumption by 70% (see slide 76).

Mauch shared results on percentage of renewable and clean generation and energy curtailments (see slides 77-78), highlighting that LADWP will meet the renewable portfolio standard of 80% by 2030 and that clean energy will exceed retail sales on an annual basis starting in 2031. He then presented three charts for LA100 Plan hourly generation in January, April, and August 2035 to illustrate differences in load, generation, and curtailment (see slides 79-81) as well as a heat map for generation patterns (see slide 82). To conclude, Mauch presented charts for carbon and in-basin NOx emissions (see slides 83-84).

Public Outreach Meetings

Stephanie Spicer, Community Affairs Manager at LADWP, provided an overview of the public outreach meetings planned for January/February and April 2025. Spicer mentioned two in-person (Harbor and Valley locations) and one virtual (see slides 89-90). She explained that the meetings would cover a power system overview and preliminary results for the LA100 Plan and sensitivities. She added that a series of community meetings are targeted for February and April of next year. Spicer noted the outreach tools, including a forthcoming new website, and the meeting map (see slides 91-92).

Q&A

Question: Does 100% carbon-free apply to all system load or just retail load?
Response: It applies to all system load.

Question: What is LADWP doing to address factors and challenges outside of their control to reach the 2035 goals?
Response: LADWP is looking at those factors and how to address them.

Question: What is the plan for funding this project?
Response: LADWP has applied for about $4 million dollars of grant funding, which is a small amount compared to the actual cost of the entire project.

Question: Why was the non-combustion approach not modeled? When will it be available?
Response: That model is in review and is not ready yet to be shared. The team can provide more information before the February/March Advisory Group meeting.

Question: How is LADWP presenting the cost assumptions in these models?
Response: The costs are being evaluated, and rate estimates are being developed. Financial Services has all the information regarding the LA100 Plan and will develop rates based on that.

Question: What will be the backup if green hydrogen runs out or is not available?
Response: Modeling will look at technologies that can serve as backup. Systems are needed for reliability and our goal is to find a backup that is carbon-free. Neighboring utilities can assist.

Question: Is the $18 billion price tag for generation, transmission and distribution?
Response: This cost is for the LA100 Plan with detailed figures to be presented at the next meeting.

Question: Are data center requests being included in the projections and modeling?
Response: Data centers are minimal right now and requests are included in the distribution forecast. There are eight in the pipeline, but they are still required to go through the approval process.

Question: Is there reliability and economic data that shows the feasibility of green hydrogen?
Response: LADWP has been working with NREL, the Department of Energy, and the Governor's Office to develop and support hydrogen production, storage, and delivery. In the Intermountain Power Plan (IPP), there is a geological formation that allows for the production of renewables for storage. There is no technology right now that will allow

for a carbon-free backup to meet our needs; green hydrogen is the current technology that is being anticipated for use.

Question: What does the $18 billion price tag include?
Response: Total cost for LA100 Plan is estimated to add approximately $18 billion above the costs of meeting California's energy mandates.

Question: Where is the money going to come from for the rest of the project?
Response: Those numbers are a ballpark. Possibilities include increased revenue and electrification, capital borrowing, and future rate actions. LADWP needs to think through the funding aspect.

Comment: Public outreach efforts need to be honest, including details of the $18 billion price tag.

Wrap Up and Next Meeting

Isaacson wrapped up the meeting by thanking Advisory Group members for their participation and reminding them about the next meeting with a date in March to be announced.