



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

Advisory Group Meeting #3

Summary **Draft**

May 16, 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. California State University, Northridge (CSUN), Loraine Lundquist
2. Center for Energy Efficiency and Renewable Technologies (CEERT), V. John White
3. Chief Administrative Officer, Sarai Bhaga
4. City Attorney, Bill Kysella
5. Climate Resolve, Bryn Lindbland
6. Council District 2, Patrick Ma
7. Council District 15, Adam Acosta
8. DWP Advocacy Committee, Jack Humphreville
9. DWP MOU Oversight Committee, Tony Wilkinson
10. Enterprise Community Partners, Michael Claproth
11. Esperanza Community Housing, Nancy Halpern-Ibrahim
12. Food and Water Watch, Andrea Vega
13. Los Angeles Alliance for a New Economy (LAANE), Diana Umana
14. Los Angeles Alliance for a New Economy (LAANE), Lauren Ahkiam
15. Los Angeles City Planning Department (LACP), Gabriel Juarez
16. Los Angeles Unified School District (LAUSD), Christos Chrysiliou
17. Metropolitan Transportation Agency (Metro), Katie Wilson
18. Move LA, Eli Lipmen
19. Natural Resources Defense Council, Manish Bapna
20. Neighborhood Council Sustainability Alliance, Dan Kegel
21. Neighborhood Council Sustainability Alliance, Ravi Sankaran
22. Office of Public Accountability (Rate Payer Advocate), Fred Pickel
23. Pacific Asian Consortium in Employment (PACE), Susan Apeles
24. Pacoima Beautiful, Miguel Miguel
25. Port of Los Angeles (POLA), Dac Hoang
26. RePower/AIRE, Olivia Walker
27. Sierra Club, Julia Dowell

28. SLATE-Z, Ruth McCormack
29. South LA Alliance of NCs, Lonella “Joy” Enix
30. Southern California Gas Company, Paul Lin
31. Southern California Gas Company, Vijai Atavane
32. Strategic Concepts in Organizing and Policy Education (SCOPE), Agustin Cabrera
33. Strategic Concepts in Organizing and Policy Education (SCOPE), Tiffany Wong
34. University of California, Los Angeles (UCLA), Bonny Bentzin
35. University of Southern California (USC) Facilities Planning and Management, Zelinda Welch
36. Valley Industry Commerce Association (VICA), Victor Reyes
37. Water and Power Associates, Bill Barlak
38. Water and Power Associates, Bill Engels
39. Water and Power Associates, Ken Silver

Observers

UCLA, Lauren Dunlap
UCLA, Samantha Smithies

LADWP Staff

Amy Win	James Barner
Armen Saiyan	Janelva Williams
Bernardo Perez	Jay Lim
Brendan Watson	Jesus Enriquez
Caleb Dennis-Kiyasu	Luis Martinez
David Castro	Nadine Dimetry
David Jacot	Nermina Rucic O’Neill
Dawn Cotterell	Omar Elayyan
Denis Obiang	Patricia Macatugal
Dhruv Prajapati	Paul Habib
Greg Reed	Robert Hodel
Haik Mouseian	Samaneh Nickouei
Isai Navar	Stephanie Spicer
Isiah Smith	Tehreem Raza

SLTRP Consultants

Brandon Mauch, Ascend Analytics
Rachel Scheinberg, UCLA
Christian Mendez, Kearns & West
Eunice Lee, Kearns & West
Jasmine King, Kearns & West
Joan Isaacson, Kearns & West

Juan Cabrera, Kearns& West
Karen Lafferty, Kearns & West
Robin Gilliam, Kearns & West

Welcome and Agenda Overview

Joan Isaacson, facilitator from Kearns & West, welcomed attendees and Advisory Group members to the third meeting of the Advisory Group for the 2024 Strategic Long-Term Resource Plan (SLTRP) for power. She reviewed the [meeting agenda](#) and described the goal was to gather input and insights from primary Advisory Group members about the draft scenarios and sensitivity matrix for the 2024 SLTRP. Isaacson reminded participants of the role of Advisory Group members, the guidelines for a productive meeting, and explained how to submit questions via Mentimeter.

Jay Lim, LADWP Manager of Resource Planning, gave an overview of the 2024 SLTRP schedule and the SLTRP process, describing additional distribution system planning meetings being scheduled due to interest in the Power System Reliability Program (PSRP). He then announced that the LADWP distribution planning team will give a short presentation during the June Advisory Group meeting and lead two virtual Advisory Group meetings in the summer.

LA100 Equity Strategies Implementation, Status Update

Dennis Obiang, LADWP Director of System Planning, presented an update on LA100 Equity Strategies implementation and described the next steps for integrating equity strategies to the SLTRP. He explained that the equity review process will require the development of criteria for evaluating equity in the Power System programs and projects. He then described that the goal is to develop and deploy metrics that are flexible and achieve equity outcomes with stakeholders' input.

Obiang then presented a list of initiatives in the Equity Strategy implementation plan ([see slide 12](#)). He highlighted programs such as the EV (electric vehicle) Hubs, EV Charger Rebate, Solar Rooftop, and Cool LA, and explained these initiatives have community benefits such as affordability, access, job creation, and air quality. Next, Obiang provided an overview of the three-phased implementation timeline ([see slide 13](#)). He concluded with describing next steps, which include supporting implementation of equity-focused initiatives, continuous improvement and engagement with stakeholders, and providing updates to the LADWP Board every 6 months.

Greg Reed, LADWP Senior Assistant General Manager of Diversity, Equity, and Inclusion, then provided from the the Equity Strategies Advisory Committee ([see slide 17](#)). He stated that the briefing to the City Council was well-received, and that the DWP Board of Commissioners showed a strong interest in the findings of the Equity Strategies Advisory Committee for equitable programs, recommending urgency to achieve results and outcomes. Reed gave a brief overview of Equity Strategies implementation and the four areas of focus: community involvement, transparency and accountability, the transition to 100% clean energy, and clean energy programs ([see slide 18](#)).

Reed then described next steps for the Equity Strategies Advisory Committee. He explained the Advisory Committee will continue to meet bi-monthly to develop criteria and update metrics. He also talked about the Equity Metrics Data Initiative (EMDI), which is comprised of 50 Board-identified equity metrics and 15 selected metrics for Board reporting. He explained that the Equity Strategies Advisory Committee will need to review and develop recommended updates for these 15 metrics, looking at programs, outcomes, and the measures that need to be incorporated ([see slide 19](#)).

Question and Answer

Question: When will the equity component be included in the primary cost benefit analysis?

Response: We are evaluating affordability. We are working with Financial Services on a rate impact study to inform the average rate increase over time. Once the rate action is concluded with support from executive management and the Mayor's office, we can move forward with a detailed analysis. The new component of the study is energy burden to make sure disadvantaged customers are not disproportionately impacted. We do not want to exceed the bill threshold of 6% of household income used by National Renewable Energy Laboratory (NREL).

Question: What about the health component?

Response: Health was evaluated in the original LA100 study, and there is potential for Equity Strategies to evaluate health with UCLA as consultant. We do not have anything to report at this time. We can take it on as an action item.

Question: Will the presentation slides be shared with us?

Response: Yes, slides were emailed to the Advisory Group yesterday. The updated version of this presentation will be posted on the LADWP website next week.

Comment: Thank you for including the equity matters, particularly the energy burden and rates.

Question: What is the potential timeline for the rate action?

Answer: Rate actions are handled by Financial Services. Once we produce the updated SLTRP, it is used as a basis for a potential rate action. Approval from executive management and the Mayor's office is needed; it's not under our purview.

Comment: The focus should be on bills as opposed to rates. Electrification will increase some bills and decrease others.

Review of SLTRP Advisory Group Feedback (Meeting #2)

Lim provided a recap of input received during the second Advisory Group meeting. Lim shared comments and common themes from the Advisory Group discussion, noting the caveat that not all Advisory Group members participated ([see slides 23-24](#)).

Lim continued by sharing a summary of main points across the four questions posed to the breakout discussion groups ([see slides 26-29](#)). He highlighted Advisory Group members' interests in ensuring the 2028 Olympics energy demands are met affordably and equitably addressing rate equity and sustainability, looking at climate impacts on utilities, a comprehensive evaluation of costs, and concerns with air pollution and the transition from gas to green hydrogen. Lim concluded by summarizing seven key takeaways and the steps being taken to address Advisory Group feedback ([see slides 30-31](#)).

Question and Answer

Question: When can we expect a report of the NREL feasibility study on non-combustion energy options?

Response: We are currently finalizing the contract with NREL. Once we get Board approval we can start work with results coming two to three months from that point.

Question: What is a "stochastic Monte Carlo simulation"?

Response: This will be explained in the next presentation.

Comment: Our organization sees opportunities to add more geothermal and solar plus storage. This can incrementally reduce the use of Intermountain Power Plant combustion and reduce greenhouse gas emissions in addition to eventual elimination.

Question: Do the non-combustion scenarios address increased cost and decreased reliability?

Response: Cost, reliability, and emissions will be addressed in the modeling.

SLTRP Modeling Overview and Sample Model Run (Current System Next 5-years)

Brandon Mauch, Director of Resource Planning Analytics at Ascend Analytics, introduced himself and his firm, highlighting their work with LADWP, including the 2022 SLTRP. He then provided an overview of the six steps of resource planning modeling ([see slide 34](#)). Mauch explained that the Ascend Analytics team is attempting to build an accurate representation of LADWP's power system by setting up scenarios to capture different models of the future based on policy drivers for clean energy, technology costs or availability, and system changes. He also highlighted that the Advisory Group will have the opportunity to provide input once the baselines have been created, with a set of outputs to be reported to the group in summer 2024.

Mauch gave an overview of the resource planning modeling goals of identifying resources best suited for the needs of LADWP, providing insight into future system operations and creating a resource portfolio that meets community priorities at the lowest possible cost while considering reliability, sustainability, equity, and affordability ([see slide 35](#)). He described the role of resource planning modeling in giving insight into what type of resources LADWP should acquire to meet planning targets, the reliability of those resources to meet demand and the response of the current system to new resources, including production cost and operational characteristics ([see slide 36](#)).

Mauch provided a brief overview of the factors that are considered when modeling future predictions ([see slide 37](#)). He explained that one method for studying uncertainty is stochastic analysis, which models multiple realistic futures that are slightly different and captures operational uncertainty by using historic data. He provided an example with solar operations modeled over 3 years of historic data ([see slide 38](#)). Mauch described the final modeling phase, which incorporates testing to determine the level to which assumptions affect outcomes ([see slide 39](#)).

Mauch gave a detailed overview of the current LADWP system, showing how current energy generation resources are 40% renewable energy and 55% carbon-free, which contributes to the renewable portfolio standard (RPS), ([see slides 41-42](#)). He described how the phase-out of coal in July 2025 and the shift toward renewable resources will lead to a system with 55% renewable energy and 70% carbon-free by 2029. He showed

a graph illustrating LADWP's resource portfolio with a 53% decline in carbon dioxide between 2024 and 2029 ([see slide 44](#)).

Mauch presented an example of the daily percentage of clean energy serving load in 2028. He explained how the model illustrates clean energy exceeding load during the daytime, with a drop in renewable energy generation in the evening hours, which is an opportunity for additional storage to shift excess solar energy into the evening hours. He explained how resources like geothermal and wind can provide energy during sundown hours, and carbon free energy from large hydro, nuclear and hydrogen will fill more evening and nighttime hours ([see slide 45](#)). Mauch concluded with a graph illustrating the energy curtailment of the current renewable levels, explaining that between 2024 and 2030, the model shows roughly 1% of energy curtailment.

Question and Answer

Question: How is energy efficiency incorporated into the model?

Response: We have a projection of energy efficiency over 20 years and that saved energy is removed from the load in the model.

Question: Does the model assume storage will meet needs for extreme intra-hour variability?

Response: We assume storage will help meet needs and smooth out intra-hour variability.

Question: How does the analysis cover multiple days of variability, such as losing solar in one location for a few days? How does the model address big disruptions due to climate change?

Response: In the resource adequacy modeling, storage will charge when there is available energy. We restrict Scattergood and Hayes from recharging during one scenario to test that and may find we need more storage to meet nighttime load. We modify assumptions until we can meet load throughout the day. That's why we run 3-month scenarios and many iterations of the model.

Question: How is resiliency being studied?

Response: We model removing a transmission line, for example due to wildfire, and model how to meet load without that line. If we cannot meet load, we determine the cost to become resilient and avoid that risk.

Question: The centralized model of a diverse portfolio seems very expensive until the cost of the grid going down and not having transmission lines into different areas is factored in. How do you assign a cost to the load that has been lost?

Response: When we model removing a transmission line or generation due to a disaster event, we run the model and determine what is needed in unaffected areas to meet load. We [Ascend Analytics] do the modeling; LADWP addresses the value and tradeoffs.

Question: A cost study exists for San Francisco's loss of power and impacts. It's not just about the disaster event; it's also the flux in temperatures in next 20, 30, 40 years.

Response: You are describing the load forecast. Climate change is included, such as with a massive uptake of air conditioning.

Question: Is the uncertainty of hydrogen production addressed in the modeling?

Response: Yes, it's modeled as a sensitivity. We model assumptions for date of availability and how much fuel is used.

Question: Several LA100 Equity Strategies groups have requested a non-combustion scenario be added to the list. What's the status of that request?

Response: We are working on contracting with NREL for that study.

Question: How does the model address the need for dispatchable power? Can load be met affordably with renewables?

Response: In resource adequacy models, we run many simulations of load, wind, and solar. We look at load not served and how that is handled with dispatchable resources. We also model outages and adding storage and more dispatchable resources.

Comment: On resiliency, LADWP in 2022 showed SB100 with all four in-basin combustion power plants as vastly less reliable than Preferred Case#1.

Draft 2024 SLTRP Scenario and Sensitivity Matrix

Lim presented an overview of the 2024 SLTRP scenario and sensitivity matrix. He began by explaining the difference between sales and generation and emphasizing that accounting for the production and sale of clean energy is not the same. He illustrated how approximately 12% of energy is lost from the point of generation to electricity sales ([see slide 49](#)). He gave an overview of the 2024 SLTRP bookends, a chart with the 2030 renewable portfolio standard target, and a draft comparison of the state policy (Senate Bill 100 Energy Sales; [see slides 51-52](#)). He highlighted that local policy and the SLTRP energy goals are more accelerated and ambitious compared to the state trajectory.

Lim highlighted five core themes in the Advisory Group's feedback and discussion around addressing equity in the SLTRP scenarios ([see slide 53](#)). Lim explained that these scenarios will be compared and modeled with expected load, including high and low load

sensitivities, to help understand the tradeoffs and make the modeling more manageable ([see slides 54-57](#)). He then described the possible price sensitivities, stating that there will be 26 different model runs to understand the range of costs for each scenario ([see slides 58-59](#)). Lim concluded with an overview of six implementation risks that will be looked at based on the Local Policy scenario. He stated that a summary analysis of the six risk factors being applied to the four scenarios with two different price sensitivities will be completed within one year.

Question and Answer

Comment: For those who have difficulty distinguishing colors, can you include a line from the legend to the corresponding segment of bar charts?

Response: Yes, thank you for your suggestion.

Question: Will SLTRP provide capital cost and operating cost increases for the politically demanded options above the non-accelerated SB100 line?

Response: This is included in all the scenarios; we have low and high pricing to evaluate the differences.

Question: Is greenhouse gas pricing included in the models?

Response: Yes.

SLTRP Advisory Group Breakout Sessions

In preparation for discussion in breakout sessions, Lim shared a draft summary breakdown and the proposed 2024 modeling scenarios and sensitivities ([see slides 61-62](#)). Lim stated that the proposed models are drafts and that more dialogue will happen at the June Advisory Group meeting.

Isaacson outlined the process for the breakout sessions, emphasizing that the project team wants to hear from primary Advisory Group members. Isaacson previewed the draft 2024 SLTRP scenario and sensitivity matrix and the four questions to be discussed in the breakout groups.

1. What do you view as strengths of the draft scenario and sensitivity matrices?
2. Does the draft scenario matrix align with your organization's priorities and interests, and if not, why?
3. Does the draft price sensitivity matrix align with your organization's priorities and interests, and if not, why?

4. Does the draft “what-if” sensitivity matrix align with your organization’s priorities and interests, and if not, why?

Breakout Session Discussions

A facilitator and notetaker from the project team staffed each of the four breakout groups. Notetakers in each breakout session captured detailed responses to each of the discussion questions. Those responses are compiled and summarized below.

What do you view as strengths of the draft scenario and sensitivity matrices?

When asked about the strengths of the draft scenario and sensitivity matrices, some Advisory Group members shared that they like how different sensitivities and variables are considered throughout the different models; however, many members expressed concern around hydrogen and the cost of production and suggested exploring other alternatives. Some members noted the consideration of climate change in the draft scenarios and sensitivity matrices as a strength, but also expressed concern over the impacts of climate change will have on resource generation, and raised questions about how that will be modeled.

Additional suggestions raised by multiple Advisory Group members included modeling price increases with actual dollar figures, not just percentages, and focusing on affordability, energy efficiency, and customer programs. Other comments included refining modeling choices, achieving parameters set by the Los Angeles City Council, and examining load growth for data centers or commercial spaces.

Does the draft scenario matrix align with your organization’s priorities and interests, and if not, why?

Advisory Group members offered their organization’s priorities and how they align with the draft scenario matrices. Many members found significant alignment with scenarios being modeled but expressed the need to consider non-combustion alternatives. Some members cited concerns about hydrogen as an energy source and questioned whether it can be considered carbon-free. Stability due to climate change, reliability, cost, and safety were also mentioned by multiple Advisory Group members as concerns for the use of hydrogen.

Other topics raised by several Advisory Group members centered around equity in customer adoption, affordability, and targeted benefits for underserved communities. Other comments focused on examining the risks of implementation and considering human capital and LADWP’s ability to carry out these scenarios.

Does the draft price sensitivity matrix align with your organization’s priorities and interests, and if not, why?

Some Advisory Group members shared that the draft price sensitivity matrix needs to be evaluated further. Many members suggested showing the projected bill increases and having transparency when it comes to pricing. One member encouraged including reasoning and explanations behind the price increases to help communities understand the changes in their bills. Multiple members emphasized the need for equity in the draft price sensitivity matrix and suggested including customer incentives, credits, and lower rates for low-income communities.

Other responses centered around prioritizing peak hours and use and incorporating the cost of replacement for energy infrastructure (e.g., solar).

Does the draft “what-if” sensitivity matrix align with your organization’s priorities and interests, and if not, why?

When asked about the draft “what-if” sensitivity matrix, Advisory Group members offered ideas for further examination, including considerations for technological developments over time, incorporating the lifecycle of renewable energy infrastructure, and expanding modeling on timing and transmission. Some members expressed the need to incorporate hydrogen models, the supply source, risks of leakage, infrastructure, and the health impacts. One member suggested large entities should be encouraged to generate energy on-site to lessen the impacts and energy burden to the broader community.

Additional topics discussed by Advisory Group members centered around human capital constraints, micro-climates and extreme heat, generation capacity to assist with long-term goals, and investments in direct installs. One member expressed the need to effectively communicate this information to communities in order for them to fully understand what LADWP is trying to accomplish.

During the meeting, facilitators reported back on a sampling of high-level discussion topics from the breakout sessions.

Question and Answer

Question: What will be the water source for hydrogen?

Response: Hydrogen infrastructure is being developed by external entities and we are monitoring how that develops. All projects will have their own environmental process and reviews.

Wrap Up and Next Meeting

Lim wrapped up the meeting by sharing the meeting map and previewing the June meeting, which will focus on developing scenarios and finalizing sensitivities ([see slide 66](#)). Isaacson shared the project email address PowerSLTRP@ladwp.com and concluded by thanking the Advisory Group members for their participation and engagement.

Appendix A

Questions and Comments Submitted on Mentimeter from Advisory Group Members

Due to time limitations, some of the questions and comments submitted by Advisory Group members could not be addressed. The following questions were received and have been lightly edited for clarity.

Question: What kind of futures are you simulating/predicting and what metrics are used to measure them?

Question: How do you integrate changes in load (future dramatic increase in HVAC loads) or disruption (the cost of the grid going down) due to climate uncertainty into your model?

Question: Resilience doesn't seem to be a robust component of your model; how will this be adjusted? For example, decentralized generation or a more diverse portfolio is more expensive, but more resilient.

Question: What are the top 3 sensitivities included and are weighted scenarios to specific sensitivities being analyzed

Question: What type of extreme heat scenarios are used in this model?

Question: What ranges of carbon costs in \$/ton are used in the sensitivity analysis and/or stochastic simulations?

Question: Have these models included a "no-combustion" scenario? (i.e., no gas or hydrogen combustion)

Question: LADWP's planning to reach 100% carbon free is highly reliant on hydrogen, which is untested at scale. How does your model reflect the great uncertainty this technology presents compared to others?

Question: For all of the "environmentally preferred" options (including no-combustion) will SLTRP provide the COST per unit of GHG reduction?

Question: Will transportation and building electrification be assessed separately or combined? If combined it could show an inaccurate view of load since these sectors have different needs and uses,

Question: What-ifs, LADWP is proposing a new transmission line to New Mexico for wind & solar. What if it cannot be finished by 2035 (which is almost certain)?

Question: In the "Proposed 2024 Modeling" slide, is that based on meeting reliability based on 1-in-20-year weather/outages?

Question: Regarding interest in non-combustion alternatives, it would be helpful to pair this conversation with explanations on the reasons why combustion may be required as well.

Question: Are you including the value in removing restrictions on private energy generation development (PPE) on increasing generation potential?

Question: Is there a methane leak rate assumed in the calculation of carbon emissions from natural gas?

Question: Has there been a comparison between in basin hydrogen combustion and building more transmission to import clean energy generation? And what is the range of costs for producing green hydrogen?

Question: Will a scenario without green hydrogen be used?

Question: Generation from wind and solar is shown to increase substantially in 2028. Has LADWP entered into any specific contracts to deliver this energy?

Question: Why does Haynes CO2 output drop significantly in 2027, with other in-basin plants needing to take up the load?