

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

Advisory Group Meeting #5 – Distribution System Planning

Summary **Draft**

September 19, 2024, Time 10:00 a.m. – 12:00 p.m.

Virtual Meeting

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. City Attorney, Bill Kysella
4. City of Los Angeles, Mayor's Office, Luis Gutierrez
5. Climate Emergency Mobilization Office (CEMO), Marta Segura
6. Climate Resolve, Jonathan Parfrey
7. Communities for a Better Environment (CBE/AIRE Coalition), Theo Caretto
8. DWP Advocacy Committee, Jack Humphreville
9. DWP MOU Oversight Committee, Tony Wilkinson
10. Enterprise Community Partners, Michael Claproth
11. Food and Water Watch, Andrea Vega
12. IBEW Local 18, Martin Marrufo
13. LAANE, Diana Umana
14. LAANE, Lauren Ahkiam
15. Los Angeles Business Council (LABC), David Fink
16. Los Angeles Unified School District (LAUSD), Christos Chrysiliou
17. Metropolitan Transportation Agency (Metro), Cris Liban
18. Move LA, Denny Zane
19. Natural Resources Defense Council (NRDC), Hilary Firestone
20. Neighborhood Council Sustainability Alliance, Dan Kegel
21. Neighborhood Council Sustainability Alliance, Ravi Sankaran
22. Office of Public Accountability (Ratepayer Advocate), Fred Pickel
23. Pacific Asian Consortium in Employment (PACE), Susan Apeles
24. Pacoima Beautiful, Miguel Miguel
25. Port of Los Angeles (POLA), Amber Coluso
26. Sierra Club, Julia Dowell
27. Sierra Club, Katie Ramsey
28. SLATE-Z, Ruth McCormack



29. Southern California Gas Company, Paul Lin
30. Southern California Gas Company, Vijai Atavane
31. Strategic Concepts in Organizing and Policy Education (SCOPE), Karen Romero Estrada
32. University of California, Los Angeles (UCLA), Bonny Bentzin
33. University of Southern California, Blanca Linares
34. University of Southern California, Zelinda Welch
35. Valley Industry Commerce Association (VICA), Stuart Waldman
36. Valley Industry Commerce Association (VICA), Victor Reyes
37. Water and Power Associates, Bill Engels
38. Water and Power Associates, Ken Silver

Observers

UCLA, Eric Fournier
UCLA, Lauren Dunlap
UCLA, Samantha Smithies
UCLA, Sean Wilder
UCLA, Stephanie Pincetl
City of Los Angeles, Michael Samulon
James Enstrom

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Welcome and Agenda Overview

Joan Isaacson, facilitator from Kearns & West, welcomed Advisory Group members and attendees to the fifth meeting of the Advisory Group for the 2024 Strategic Long-Term Resource Plan (SLTRP) for power. She reviewed the meeting agenda (see slide 2), highlighting the updates to the SLTRP cases, a presentation from the Distribution Planning team, and a reminder of the in-person meeting in November. Isaacson then recapped the role of the Advisory Group, emphasizing that their input helps shape the SLTRP. She concluded with a review of the guidelines for productive discussions, reminding Advisory Group members that only one member per organization should be providing input to maintain a balance of perspectives.

SLTRP Case Updates

Nermina Rucic-O'Neill, LADWP Manager of Power Engineering, thanked the Advisory Group members for joining and gave an overview of the topics related to the 2024 SLTRP updates, schedule, planning process, objectives, and modeling. Rucic-O'Neill explained LADWP is currently in the middle of the 2024 SLTRP schedule, (see slide 9). She highlighted that the modeling will be completed, and the preliminary results will be presented at the November 21st Advisory Group meeting.

She continued with a recap of the power integrated system planning, describing the process of the generation system planning and how that leads to transmission system planning and distribution system planning (see slide 10). She explained the complexity of planning and emphasized the importance of all three systems in the transition to a renewables-based system. She gave a brief overview of goals from the LA100 study and explained that Case 1 builds upon assumptions from the LA100 Study and meets the LA City Council Motion for 100% carbon-free energy by 2035. She added that Case 1 also achieves the 80% renewable portfolio standard (RPS) by 2030, which represents a balance between regional and local resources (see slide 11).

Rucic-O'Neill continued with the 2024 SLTRP objectives, explaining how they align with the LADWP power system goals of achieving 100% carbon-free energy by 2035. She described that affordability will be considered, as with the 2022 SLTRP, and work with financial services and collaboration with customer programs will continue (see slide 12). She explained that LADWP will be partnering with UCLA to develop a user database and tools for customers to transition to energy efficient appliances, including a map to inform customers about energy burdens across zip codes. She emphasized the importance of these tools in helping customers understand energy burden and how this transition will impact overall cost and projected rates.

She then provided an illustration of the 2024 SLTRP modeling, with a focus on Local Policy (see slide 13). She highlighted that the portfolio will be diversified with optimized distributed energy resources (DER) and storage in-basin, including options for non-combustion and hydrogen supply. She explained that the modeling is a forecast of 25 years out and considers the risks, load, constraints, resources and the impacts of climate change. She concluded with a brief overview of the modeling progress and next steps (see slides 14-15).

Question and Answer

Question: Will the energy load and burden from artificial intelligence (AI) be included in the projections of this model?

Response: Yes, we will include new loads, new interconnections, and trends.

Comment: The loads have been relatively stable on both sides of forecasting load growth. We are substantially ahead in energy sales, but we need to plan both ways.

Response: We are considering all the risks, including overestimation and low estimates. Load planning is iterative and completed internally every two years. We look at trends for the markets, electrification, etc.

Question: Are data centers considered a threat due to their energy needs, and is there regulation?

Response: If a data center interconnects and it's a big facility, it will go through environmental review. Data centers use energy evenly, so that can help reduce rates.

Question: When thinking about green hydrogen, is there only an assessment associated with risk? Is the assumption that those resources will not be there in the future? There is no way to reach goal with no green hydrogen. I prefer for LADWP to have a problem-solving approach.

Response: We are looking at all opportunities – hydrogen and carbon capture – all options need to be considered. That is why we have the opportunity for decarbonization where hydrogen can play an important role.

Question: Is LADWP looking at infrastructure to see its resilience to climate risks?

Response: We are developing a Climate Vulnerability and Adaptation program. Engineers are looking at data to develop a resiliency database for materials, their resistance to these impacts, and replacement updates.

Question: On capacity and reliability, has LADWP looked at the risks of copper theft?

Response: There is a risk when it comes to the increased worth of copper. The team is looking into more security at stations and other assets.

Comment: Batteries have helped us keep the lights on without relying on gas, in terms of green hydrogen.

Response: Our team is looking at all the available technologies, the advantages and disadvantages. We are aware of safety risks with batteries, and their applicability in one area and not others.

Additional Comments and Questions Entered in Meeting Chat

Isaacson noted that additional comments and questions entered into Zoom’s chat function during this agenda item would be captured and addressed by the LADWP team. The following comments and questions could not be addressed verbally during the meeting by the project team due to time limitations. Comments and questions have been lightly edited for clarity and consistency.

- I really appreciate the slides in advance, thank you.
- I doubt there are that many big datacenters in LADWP’s service area, but here is one example: <https://www.coresite.com/data-center-locations/los-angeles>
- Case 1 has very high energy efficiency, meaning low generation capacity and kill load instead. This is not consistent with economic competitiveness for “regional” data centers, which may be part of our jobs’ future. Big Artificial Intelligence data centers will not come to California; they will go to low power rate states.
- Some data center customers are going to require or prefer 100% renewable energy. See: <https://www.google.com/about/datacenters/cleanenergy/>

- Response: Our model includes loss of load expectation (LOLE) reliability standard of only 24 hours out of 10 years when supply may not meet demand. It is a stringent and reliable model.
- Response: Our model is not eliminating dispatchable required generation but rather exploring how to achieve that carbon-free and with no emissions.
- That is why I want to consider capacity and reliability of the City’s power. We will not get the big AI data centers, but regional green-seeking data centers that demand reliability may be a good target customer and job source for us.
- The slide with its declarative “no in-basin combustion, no green hydrogen” on a forecast of 11 years, which is a blink of an eye in utility terms, can come back to haunt LADWP and its planning process.
 - Response: Eleven years from now, our model will evaluate the 2022 case that already includes utilization of green hydrogen in turbines for reliability, however, to determine other alternatives to combustion as requested by City Council Motion 23-0039, we will test the model for reliability and evaluate risks of no hydrogen, which are already discussed in previous meetings.
- I was interpreting Slide 7 as assessing the different sensitivities, risks, and scenarios.
- LADWP is going to have enough of its own green hydrogen at Intermountain to meet its needs. Success of the City’s goals does not rely on other larger-scale uses of green hydrogen. Adding transmission could substitute for in-basin green hydrogen use.
- How are we evaluating the ability to execute any portion of the scenarios by 2035, given LADWP labor capacity, supply chain, and the Olympics?
 - Response: We are modeling required buildout rates and informing Integrated Human Resource Plans, engineering and all other parts of the power system of requirements to meet the goal. The supply chain is outside of the LADWP's control, but some adjustments must be made due to increased lead time on material purchases post-pandemic.
- What are the price assumptions used for building the 70% gas-30% hydrogen turbines and then replacing them with the 100% hydrogen turbines? Where does LADWP plan to get their hydrogen and what are the price assumptions for that? How will these prices be translated to ratepayers?

- LADWP must plan for both a high availability of green hydrogen and not enough availability of green hydrogen, and as far as I can see, they have been doing so.
- This shows LADWP-owned generation is at 49% as of 10:00 am today: <https://www.ladwp.com/who-we-are/power-system/renewable-energy/clean-energy-monitor>
- When will the Eland 1 Solar plant come online, and how will that increase the percent of clean energy shown on the above clean energy monitor (see slide 38)?
 - Response: Phase 1 will come online this fall in the amount of 150MW/600kWh battery energy storage system (BESS). Phase II will have the same energy output and be commissioned in Fall 2025.
- Do you believe the springtime excess solar could go toward producing green hydrogen? It will result in greater cost savings for consumers than utilizing that power for participation in the Extended Day Ahead Market (EDAM) and/or the proposed regional power sharing consortium.
- If other utilities have springtime excess solar, it will not be worth much in the real-time market.
- Southern California Edison (SCE) has studies on the benefits of cool pavements beneath the outdoor distribution/substations.
 - Response: A typical receiving station footprint is around 10 acres whereas a typical distribution station is around one acre.
- This federal reliability standard does not match the risks we have with our limited transmission input locations. We also have not considered the sabotage potential of having 100% of City power dependent on generation that is hundreds of miles away and driven through a few vulnerable transmission lines. The reliability model being used in the SLTRP does not match the risks of LADWP's system or the radical change in the system that eliminated all in-basin generation.
- Scattergood will remain and will be there for emergencies.
- The "zero combustion" goal may be confusing. Does it mean "zero combustion in average years," "zero combustion in 9 out of 10 years," or "zero combustion, ever"? If it is something like the first two, which combustion plants will remain online unused except for emergencies?
- This is the issue of sanity vs. ideological demands. I'm hesitant about green hydrogen but this is system suicide. With no combustion or green hydrogen,

- you're looking at piles of chemical batteries that are a disaster far worse than 5-10% natural gas in 2035 to get a better, cheaper system by 2045.
- I disagree, batteries have affected the ability to operate the grid and help manage surplus and keep the lights on by operating into the evening without gas. The issue with green hydrogen is how much do we need and what are the alternatives, including co-locating batteries and understanding how much the batteries can add to reliability.
 - Response: Our teams of engineers, modelers and analysts are looking at all aspects of each solution. We know about safety issues with batteries and installing in populated areas. We look at flow batteries for urban installation. Modelers look at pros/cons, applicability in different areas, and hydrogen from the standpoint of eliminating natural gas but also the need for large supplies. We have an obligation to look at other alternatives since hydrogen combustion does generate NOx.
 - Do you believe that the springtime excess solar you described, that could go toward producing green hydrogen, will result in greater cost savings for consumers than utilizing that power for participation in the EDAM and/or the proposed regional power sharing consortium?
 - Response: This is being currently being modeled in the SLTRP.

Additional Comments Entered in Meeting Chat

The following comments include exchanges related to power banks and non-combustion alternatives among a limited number of Advisory Group members.

- The battery salesmen fail to deal with the issue of cost, as well as environmental risk. Using natural gas for 5-10% of in-basin generation in 2035 is the sane solution to the cost burden on low-income ratepayers. Demands for "100%" a decade earlier than the original 2045 LA100 study target are essentially "luxury beliefs" that do not consider their negative impacts on low-income communities.
- Batteries are doing a great job on the grid for meeting evening demand, like peakers, and they are much cleaner than peakers, especially as fire safety improves.
- Batteries are not aimed at solving the last 5% problem, which is driven by multiday shortages of renewables or outages. They are for meeting evening and overnight load.

- There must be some base load power generated (or stored) at each of the four in-basin plant locations to properly drive inbound supplies from out-of-basin resources over the distribution lines that radiate from each of those four plants. The four plants can't go dark.
- There are applications where battery storage reduces costs. For example, we might be able to meet our reliability goals more affordably by replacing one old generating unit with batteries. I would be interested in hearing an analysis of scenarios like that.
- As I understand, the "no combustion, no green hydrogen" declaration is exactly what LADWP is planning to do but refusing to say it in the slides.
- I think the scenarios of "no combustion, no green hydrogen" are primarily being explored to understand the costs and challenges, not necessarily because LADWP is explicitly committing to them.
- 2035 is a good target date for 95% clean energy; it's a stretch goal for 100%. Increases after 90% are going to be increasingly difficult and expensive, and we should not expect quick or linear increases past 90%.

Distribution System Overview

Haik Movsesian, LADWP Supervisor of Distribution System Planning, began with an overview of the distribution system, explaining how planning has become more complex with DERs on the system and increased electrification, which are now part of the modeling process. He then provided an illustration of how power and energy travels from the point of generation to consumption by customers (see slide 18). He noted the importance of monitoring and maintaining all these assets in the clean energy transition. He continued with a breakdown of the power distribution system initiatives and an overview of the distribution planning cycle (see slides 21-22). He explained the cycle begins by collecting data and using a 10–15-year planning scenario for assessments and forecasts. He then provided a visual representation of capacity rating, explaining how LADWP is required to provide the appropriate amount of voltage to customers.

He continued with a detailed explanation of load modifiers and distribution load forecasting, including load growth and reduction (see slide 25). With a live demonstration, he explained the different factors affecting load in the LADWP service area on a given day, highlighting the effects of load reduction factors and their impacts on the model. He showed a map illustrating the available power capacity and major electrification loads within the LADWP service area (see slides 28-29).

Movsesian then illustrated electric vehicle (EV) forecasts of cars and trucks, and their impacts on load with different modifiers (see slides 31-36). He highlighted that the

increase in EV adoption will require the development of public charging infrastructure, especially in disadvantaged communities. He continued with an overview of the solar availability and forecast in the region (see slide 38), highlighting the Valley has a higher rate for energy offsets. He added that customer solar adoption will lead to a storage uptake, with an estimated 350 megawatts-hour in the moderate energy storage net metering scenario (see slide 40). He concluded by illustrating four different scenarios for distribution load modeling and providing the next steps in the distribution system assessment (see slides 41-42).

Question and Answer

Question: EV electrical capacity keeps improving. What does that mean for the projections?

Response: It does not have impact on load, since it doesn't mean more charging is happening.

Question: In the graphic illustrating the need for EV chargers, how was that calculated? Does it account for population and existing charging capacity?

Response: It is a consideration of ownership and renters and more about opportunities people will have for charging. For adoption, we look at what a certain area needs in terms of infrastructure and integrate that into the forecast.

Question: Our organization is modeling for local solar development and energy storage and the SLTRP is also looking at projections. Where could we dig into program implementation to look at if implementation happens? Where do we get to help in that phase?

Response: We must determine the resource mix in-basin and the driver is through the SLTRP process. For modeling, we are devising an optimal model. Under customer program groups and integrated with Equity Strategies planning we can take the next step.

Question: Has LADWP considered managing EV charging demand by incorporating time of use rates, like charging vehicles when energy is the cleanest.

Response: From modeling, if you shift charging need based on time of day, we will see a reduced demand on the distribution system. We will have those conversations with the rate team for the modeling results to quantify benefits and figure out rates.

Comment: Getting input from ratepayers is important.

Response: Community meetings are being scheduled at the end of 2024 to gather input from ratepayers in the service areas.

Question: Does the SLTRP include an updated SB 100 case?

Response: Yes, Case 1 references SB 100. We must model it as a state mandate. Every SLTRP evaluation will include this as minimal requirement. Local goals are more aspirational.

Question: Can we see the interactive map for solar slide 31 or 38?

Response: That's internal software for modeling purposes. We do not have a public version. We do have a dashboard with progress on RPS. It's not an interactive map, but a solar photovoltaic permit map may also be useful: <https://data.lacity.org/A-Prosperous-City/Solar-PV-Permits-in-LA-Map/8grp-a9dj>

Isaacson thanked everyone and noted that the Advisory Group members' comments and questions are helping shape the agenda for these discussions.

Additional Comments and Questions Entered in Meeting Chat

- The slide with the electric vehicle in a garage and a lithium-ion power bank on the wall of the garage is currently a residential nightmare. No one is storing their EV in their house-attached garage if they can help it. The safest location, considering spontaneous fire challenges, is in the driveway.
- Gasoline powered cars catch fire much more often than EVs do. See: <https://www.edmunds.com/electric-car/articles/electric-car-fires.html>
- For redistribution and equity issues, LADWP needs to get recognized for the speed with which it is moving forward now on these issues. On EV charging deserts, LADWP will be putting a public charging station in Panorama City on Van Nuys Boulevard north of Panorama High School (on land owned by LADWP). On climate change and heat dangers, they are already distributing free window AC units to low-income customers at events in low-income communities.
- Here's the specific chapter: <https://maps.nrel.gov/la100/equity-strategies/reports/transportation-electrification#section-0>
- The challenge we face with rental apartments is how to make sure credits make it through to the rental costs of tenants vs. getting kept by the landlord. Key to renter benefits would be having new buildings with private per-unit power metering in building.
- Regarding maintenance requirements for charging stations, customers advise charging stations are broken. Is there a process on this issue?
- Best opportunity for shifting Level 2 home evening charging to later in the night might be to work with car manufacturers to add an onboard smart

- charging feature that will lead to lower charging costs without user intervention.
- Is LADWP's distribution modeling estimating equal levels of residential electrification in all communities (e.g. high- and low-income areas)?
 - Response: CBE LADWP distribution circuits serve both commercial and residential customers. We don't plan our system based on low or high income. Planning is based on historic load growth trends and expected load growth across the service territory. In areas where we see many single-family homes, we assume a certain expectation of Level 2 EV charger installation across the entire territory. In areas where there are more multifamily homes, we account for more DC Fast Charging and Public Level 2 charging, which is done primarily during the day.
 - Is LADWP seeing service line capacity issues as buildings electrify and if so, are there trends to where those service line capacity issues are happening?
 - How long before every neighborhood has at least one smart meter?
 - 100% carbon-free energy distribution by 2035 is not some nice topic to be considered; it is a City of Los Angeles policy. 2035 is 11 years from now, we have the time to accomplish this goal, so start with that end goal in mind and engineer accordingly.
 - Response: Information about LA100, <https://www.ladwp.com/strategic-initiatives/clean-energy-future/la100-equity-strategies/100-renewable-energy-study>.
 - My personal view is that real public engagement on LA100 has been discouraged by the mayor's office via its control of the LADWP Board and management to prevent a dialogue about obvious issues like 2035 vs 2045 and the cost of 100% vs 90%, since the politically desired extreme solutions will mean a difference between 8% annual price increases and 5.5% annual price increases. This is a case of public benefit and core purpose of a public power system and desire of elected officials for ideological unity with a political party and campaign funding from environmental organizations.
 - The Los Angeles Business Council (LABC) in partnership with the USC METRANS Consortium did a recent study quantifying the number of zero emission trucks needed to meet the targets of the Advanced Clean Fleets rule. Happy to brief you and your team on the study which might help with forecasting: <https://labusinesscouncil.org/our-issues/sustainability/>
 - The City of Los Angeles' policy is set by City Council resolutions, and the 2035 goal was phrased very carefully to apply to the 2022 SLTRP alone in the council file I saw, <https://cityclerk.lacity.org/lacityclerkconnect/index.cfm?fa=ccfi.viewrecord&cnumber=21-0352>, which said "I therefore move that the Council instruct the Department of Water and Power to prepare a Strategic Long Term Resource Plan that achieves 100% carbon-free energy by 2035, in a way that is

- equitable and has minimal adverse impact on ratepayers." Is there are more recent council motion that updated this?
- The careful wording, I think from Paul Krekorian, of "in a way that is equitable and has minimal adverse impact on ratepayers" does give us hope there can be a reasonable public discussion.
 - Direct link to motion: https://clkrep.lacity.org/onlinedocs/2021/21-0352_misc_03-31-21.pdf
 - We need to do more about climate adaptation given the fact that for every gas plant we kill in the US, China and India put up two coal plants. The ability to reach world greenhouse gas (GHG) goals is highly unlikely. The cost of the extra 10% (in 90% vs 100%), or 2035 vs 2045, would be much more effective if those funds went to climate adaptation, like cooling for low-income households, or elimination of GHG from transportation vs. last 10% from power generation. Environmental groups have "silos" and fail to look to state's overall GHG goal, as opposed to fixating on 100% green power.
 - The internal mapping tool seems like it could also help inform the equity strategies work.

Wrap Up and Next Meeting

Isaacson wrapped up the meeting by sharing the next SLTRP meeting will be in-person on November 21st, 2024. Isaacson shared the project email address PowerSLTRP@ladwp.com and concluded by thanking the Advisory Group members for their participation and engagement.



Los Angeles
Department of
Water & Power