

LADWP Power Strategic Long-Term Resource Plan (SLTRP)

Advisory Group (AG): Meeting #6

Friday, November 19, 2021

10:00 am – 12:00 pm

Zoom Platform (Virtual)

Meeting Summary (Draft)¹

Attendees:

Advisory Group Members/Observers:

1. California Energy Storage Alliance (CESA), Sergio Dueñas
2. California State University, Northridge (CSUN), Austin Eriksson
3. California State University, Northridge (CSUN), Loraine Lundquist
4. Center for Energy Efficiency and Renewable Technologies (CEERT), John V. White
5. City of Los Angeles – Climate Emergency Mobilization Office, Marta Segura
6. City of Los Angeles - Council District 02, Councilmember Paul Krekorian, Aaron Ordower
7. City of Los Angeles - Council District 03, Councilmember Bob Blumenfield, Jeff Jacobberger
8. City of Los Angeles - Council District 05, Councilmember Paul Koretz, Andy Shrader
9. City of Los Angeles - Council District 13, Mitch O’Farrell, David Giron
10. City of Los Angeles – Council District 15, Joe Buscaino, Jacob Haik
11. City of Los Angeles - Office of the City Administrative Officer (CAO), Sarai Bhaga
12. City of Los Angeles - Office of the City Attorney, Jean-Claude Bertet
13. City of Los Angeles - Office of the Mayor, Paul Lee
14. City of Los Angeles - Office of the Mayor, Rebecca Rasmussen
15. City of Los Angeles – Office of Public Accountability (OPA), Camden Collins
16. City of Los Angeles - Office of Public Accountability (OPA), Frederick Pickel
17. Green Hydrogen Coalition (GHC), Janice Lin
18. Green Hydrogen Coalition (GHC), Nick Connell
19. Los Angeles Business Council (LABC), Arielle Lopez
20. LADWP Advocacy Committee, Jack Humphreville
21. LADWP Assistant General Manager, Chief Diversity, Equity, and Inclusion Officer, Monique Earl
22. LADWP Memorandum of Understanding Oversight Committee, Tony Wilkinson
23. National Resources Defense Council (NRDC), Amanda Levin
24. Neighborhood Council Sustainability Alliance (NCSA), Dan Kegel
25. Sierra Club, Francis Yang
26. Southern California Gas Company (SoCalGas), Jonathan Peress
27. Water and Power Associates, William Barlak
28. University of Southern California (USC), Zelinda Welch
29. Water and Power Associates, Bill Engels
30. Port of Los Angeles (POLA), Carlos Baldenegro
31. Port of Los Angeles (POLA), Dac Hoang
32. Melisa Walk
33. Vj Atavane

¹ This summary, prepared to the best ability of the notetakers, is provided as synopsis of the meeting for review of topics covered, and is not intended to represent an official record or transcript of all matters presented or discussed. Not all attendees may be reflected due to early log-offs, no self-identification, and other factors.

LADWP Staff

1. Stephanie Spicer
2. Dawn Cotterell
3. James Barner
4. Glenn Barry
5. Daniel Beese
6. Michael Buck
7. Kai Choi
8. Jonathon Flores
9. Hassan Motallebi
10. Matt Hone
11. Zaw Htin
12. Carlos Jimenez
13. Jimmy Lin
14. Jay Lim
15. Haik Movsesian
16. Ashkan Nassiri
17. Linda Novoa
18. Bernardo Perez
19. Jason Rondou
20. Nermina Rucic
21. Arash Saidi
22. Armen Saiyan
23. Ann Santilli
24. Faranak Sarbaz
25. Steve Ruiz
26. Carol Tucker
27. Kodi Uzomah
28. Jeremiah Valera
29. Julie Van Wagner
30. Jesse Vismonte
31. Lister Yu
32. Simon Zewdu
33. Emil Abdelshehid
34. Paul Habib
35. David Rahimian
36. Luis Martinez

Project Team

1. Joan Isaacson, Kearns & West (Facilitator)
2. Alyson Scurlock, Kearns & West (Polling)
3. Brady Cowiestoll, National Renewable Energy Laboratory (NREL)
4. Megan Day, National Renewable Energy Laboratory (NREL)
5. Brandon Mauch, Ascend Analytics
6. Zach Brode, Ascend Analytics

Note: The meeting presentation slides are posted at ladwp.com/sltrp.

1. Welcome and Introductions

- Joan Isaacson, meeting facilitator from Kearns & West, welcomed the Advisory Group (AG) to AG Meeting #6.

2. Meeting Purpose and Agenda Overview

- Jay Lim, LADWP Manager of Resource Planning, announced that based on AG feedback and desire for additional meetings, an AG meeting has been planned for Friday, December 17th. The hope is to establish a final scenario matrix, after which there will be a break in meetings while team performs analysis. Lim also presented an overview of the agenda for today, covering distribution automation, SLTRP AG feedback and refined draft scenario matrix, as well as a discussion of “what-if” scenarios.

3. Distribution Automation Overview

- Emil Abdelshehid and Kodi Uzomah, LADWP Power Engineering Managers in Distribution Automation, presented on distribution grid modernization.
- Giving an overview on the digital transformation LADWP is undergoing, the team touched on how the use of technology and data can help fundamentally change business practices and performance, and shared LADWP’s vision for the distribution automation program which includes a distribution system that is resilient, has the intelligence to automatically self-heal, greatly reduces the duration and frequency of outages, and shifts employee’s focus towards proactive decision-making, while improving the customer experience. Specific distribution automation benefits outlined include developing the foundation for the power system’s digital backbone and expanding the use of advanced metering infrastructure throughout the service territory.
- The team explained the focus of distribution automation to be on visibility and control outside of substations, on 34.5 kilovolt and 4.8 kilovolt circuits. This segment of the grid is often referred to as “The Middle Mile”. An overview of the communication system was also shown, detailing how multiple efforts such as advanced metering, distribution automation, and other Internet-of-Things applications connect to a wide area network.
- An overview of Phase 1 of the distribution automation program was presented, including deployment of the communication network for field devices, initial deployment of distribution automation devices on the 10% worst-performing circuits, as well as beginning distribution automation applications and integration with other systems.
- Phase 2 of the distribution automation program was presented to be focused on smart meter deployment. The goal is to bring utility benefits such as energy savings, operational awareness, proactive decision making, and increased reliability, as well as customer benefits in awareness, access, and self-service options.
- Phase 3 of the distribution automation program was presented to be focused on grid modernization, bringing together new customer programs, increased distributed energy resource integration, advanced analytics, and advanced distribution management.
- Last, the team presented a high-level timeline and milestones for the distribution automation program, including installation of the communication system and 5,000 smart meters in 2022,

and installation of remaining smart meters by 2028.

○ Major Themes from Advisory Group Member Discussion and Questions

- How do we prioritize whom smart meters go to?
 - *A: The first 5,000 meters will be deployed at the worst performing circuits. We want to test out the communication systems and ensure there is high fidelity. The full sequence of the smart meter deployment will be part of Phase 2.*
- Given all the reporting on hacking of utilities, how secure is our grid from cyberattacks and what are we doing to protect our digital system?
 - *A: We are working closely with the ITS Division, dedicated to cybersecurity. They conduct vulnerability assessments, intrusion prevention systems and are constantly having to update the way they address attacks. There is very significant consideration for cybersecurity and cryptography to ensure we have the proper systems and processes in place to mitigate risks as the distribution grid is modernized.*
- How does the Department's fiber network fit into this system? What is the status of the fiber optic network and is LADWP working with other City departments to build-out the fiber network and wireless facilities to maximize efficiencies and opportunities?
 - *A: As far as the distribution automation program, we have a network that makes use of fiber and some of that is already deployed. We also have separate networks such as SCADA and corporate. With regards to the communication network, we are working with the Bureau of Street Lighting to try and leverage some of those facilities and once the communication system is up and running, perhaps there will be more opportunities for collaboration.*
- Higher levels of electrification appear to require voltage upgrades to the distribution system. Has the system been updated and if not, when will it be updated and at what cost, including costs for grid modernization?
 - *A: We currently do not have that information here, but distribution automation efforts will complement distribution system upgrades. With respect to the LA100 Study, costs and upgrades to alleviate distribution system overloads as well as for grid modernization were not included, as it was assumed that the distribution system already had these in place. This will need to be included as part of the SLTRP.*
- There needs to be caution in distinguishing between distribution automation and intelligent metering, as the latter requires a lot of data storage, software improvements, as well as a scalable data management system. Changing out meters for every customer is a multi-billion-dollar cost and there should be consideration for what is the intended purpose of the data gathered, and how data management will be handled.
- How will this help to automate greenhouse gas emissions reporting for buildings and facilities, and do you see this improving how we make policy and investment decisions?
 - *A: As mentioned, there is a need to have systems in place that are going to capture and manage data and inputs from meters to calculate necessary information. Perhaps an area of demand response or distributed energy resources with smart meters can help validate and verify improvements with regards to clean energy*
- Is there anything customers can do to help fast track the adoption of smart meters? For

larger customers smart meters are critical for proper management of facilities.

- *A: We listen to customers and appreciate the desire to accelerate roll out of smart meters. While we try to get these first 5,000 smart meters deployed and ensure data flows and communications work properly, we want to be sure a properly thought-out change management system is in place, as this will be critical for us to observe. By voicing your opinion at forums such as these and Board of Commissioners meetings, we will do our best to support this.*
- Suggestion for the SLTRP to look at a resiliency and reliability metrics to ensure enough generation is kept online and track increased likelihood of blackouts.
 - *A: Historically, utilities have not been good at quantifying resiliency, and there currently is not a widely-accepted best practice. Nevertheless, the LA100 Study looked at this to some extent, and LADWP is continuing to do a lot of work in this area to assess the impact of high-impact low frequency events such as wildfires. This is extremely important because as more resources are deployed out-of-basin, there is an increased dependence on transmission corridors and the system is at risk during stress conditions, as seen in the Saddleridge Fire. We will incorporate key findings from the LA100 Study into our modeling framework, and continue to participate in industry working groups such as EPRI's Value of Resilience Interest Group, and look to incorporate tools such as Lawrence Berkeley National Laboratory's Interruption Cost Calculator, into our process.*

4. 2022 SLTRP: Advisory Group Feedback, Refined Draft Scenario Matrix, and What-If Scenario Discussion

- Lim went over AG feedback from AG Meeting #5, and noted the top three categories of interest to the AG as hydrogen (28%), transmission/grid (14%), and reliability as well as scenario selection (9%).
- With respect to the statement “*The draft scenarios capture the range of the Advisory Group’s interests and priorities for the SLTRP process*”, a poll in which 21 AG members responded resulted in 67% of the responses agreeing (strongly agree [14%], agree [5%], good enough [48%]), and 33% not yet agreeing².
- Furthermore, Lim once again went over the City Council Motion instructing LADWP to prepare an SLTRP that achieves 100% carbon-free energy by 2035, and showed a high-level overview of the SLTRP modeling process split into two phases. Phase I will entail modeling the SLTRP core scenarios and applying price sensitivities to variables such as natural gas, greenhouse gas emissions allowances, and energy storage. Phase II will take a tentative draft recommended case, and apply “what-if” scenarios in the event certain emerging technologies, demand side resources, transmission projects, and load are not realized.
- Showing a refined draft scenario matrix, Lim explained that the proposed 100% carbon-free by 2035 scenarios were named Case #1, Case #2, and Case #3, to not show preferential treatment to one over the other, and that the SB 100 reference case also remained as a reference scenario to model the state requirement for the renewable portfolio standard and 100% clean energy. Of the four draft scenarios shown, the SB100 scenario was the only one that retained natural gas as on

² Comments and poll results shown are informal and should not be considered a representative nor complete illustration of the Advisory Group’s opinion at large. 14 AG members responded live and 7 responded via email for a total of 21 responses.

option to account for transmission and distribution losses, all other scenarios transformed natural gas to decarbonized capacity. The 100% carbon-free by 2035 scenarios also showed a high level of distributed energy resources and do not allow for use of renewable energy credits.

- Preliminary assumptions for local solar and energy efficiency were also shown, emphasizing that SLTRP staff were working with the distributed energy resources team to get a firm assumptions to use for modeling. Although LADWP has historically offered generous incentives for local solar, deployment is highly correlated with customer adoption and there have been recent challenges with COVID-19, as well as rooftops that are inadequate to support solar systems.
- A recap of the LA100 Study results for “no in-basin combustion” were also summarized, emphasizing that while in-basin long-term dispatchable resources are used infrequently during normal grid conditions, they may be heavily relied upon during stressed grid conditions. Furthermore, a lack of in-basin long-term dispatchable resources leads to increased reliance on the transmission system, which creates vulnerability to transmission outages, and may cause high-impact low-frequency events such as wildfires to be very disruptive to the power system.
- Last, Lim emphasized that the LA100 Study did not consider implementation risks, and that “what-if” sensitivities, more complex than price sensitivities are proposed to be conducted to address risk implications due to implementation and other factors outside of LADWP’s control. Areas out of LADWP’s control may include emerging technologies, customer-sided programs based on participation, transmission timelines and permitting, and load uncertainties due to electrification. Lim reiterated that LADWP does not recommend conducting a no in-basin combustion scenario as a core scenario since power flow modeling will not be able to be conducted during the SLTRP timeline, however several “what-if” sensitivities could be considered to highlight some factors of interest to the AG.
- Major Themes from Advisory Group Member Discussion and Questions
 - Concerns with extreme weather events affecting the security of the electric grid and related supply chain.
 - Concerns with climate adaptation, more so than climate mitigation (e.g., greenhouse gas emissions reductions), as there will be countries that continue to use coal which will inevitably translate to some levels of additional climate change.
 - What energy storage technologies are included in the cost sensitivities?
 - *A: We realize there are a numerous amount of different energy storage technologies and we are selecting energy storage technologies based on system needs. These may include pumped hydro, green hydrogen storage, and others as they emerge. These resources will be inputs to our capacity expansion model and the model will choose based on optimization.*
 - LADWP should model long-duration energy storage resources in terms of cost, instead of limiting themselves to li-ion, flow, pumped hydro, and hydrogen technologies, as there are many different structures possible with respect to MW, MWh, and round-trip efficiencies. Price sensitivities are great, but representing emerging technologies could be done better. Technologies do not need to be specifically represented, but instead, they can be evaluated by showing different efficiencies at different price points.
 - *A: Do you have readily available cost assessments by technology? We will look at energy storage based on system needs and as we start decarbonizing,*

longer energy storage will eventually be needed. The LA100 Study identified green hydrogen as a potential option for capacity within the basin, but as technology matures, we will consider these in our modeling.

- Do the “what-if” sensitivities still maintain 100% by 2035?
 - *A: LADWP is trying to meet policy and we will try our best to meet that objective, however some things are outside of LADWP’s control.*
- Can you better explain the relationship between natural gas, hydrogen, and distributed energy resources in the scenario matrix?
 - *A: If more distributed energy resources are an option to the model and deployed, the hope is that they will help mitigate the buildout of hydrogen capacity within the basin, however, there will be tradeoffs in terms of costs and emissions benefits.*
- Have you done any sensitivities on the costs of customer conversion to electricity from other fuels?
 - *A: We are considering costs for all building electrification as well as varying levels of incentives.*
- Focusing on the carbon contribution of a single sector can be very expensive as shown by the LA100 Study.
 - *A: The last SLTRP showed tradeoffs and greenhouse gas emission benefits from fuel switching from gasoline to electricity for the transportation sector.*
- The issue of renewable energy credits is of preference but not of policy as SB 100 allows them.
 - *A: Yes, it is correct that SB 100 allows renewable energy credits.*
- In terms of building electrification, when will marketplace.ladwp.com offer the same kind of fuel switching incentives and financing on par with those provided by marketplace.socalgas.com? At the moment, LADWP does not offer any heat pumps or induction stoves, and does not appear to offer financing like SoCalGas.
 - *A: Yes, we do plan to incorporate electric end-use appliances into these programs by next year.*
- Comments expressing the importance of analyzing actual and feasible energy storage options rather than abstract solutions.
- Desire to see a case in the SLTRP that shows the greenhouse gas emissions impacts and cost impacts of using natural gas to supply electricity, in the event that green hydrogen is not available or cost reasonable.
- Interest in learning more about the [SB 100 Joint Agency Study](#)
- Interest in seeing tertiary power sources listed in the footnotes
- There is a huge difference between the LA100 Study assumptions for local solar and the likely much lower adoption rate by households. This may just be uneconomic, regardless of any reasonable subsidy from LADWP.
- Interest in CARB's low and high estimates for cap and trade greenhouse gas emissions prices.

5. Wrap Up and Next Steps

- The next meeting will take place Friday, December 17, 2021 from 10am-12pm.

Next Meeting: Friday, December 17, 2021; 10:00 am-12:00pm, WebEx Platform (Virtual)