

Los Angeles Department of Water and Power - 100% Renewable Energy Study
Advisory Group Meeting #1
Friday, June 23, 2017, 8:45 am to 1:00 pm

Meeting Summary

Location

City of Los Angeles Department of Water and Power (LADWP)
John Ferraro Building
111 Hope Street
Room 1514
Los Angeles, CA 90012

Meeting Materials

The following materials were distributed and/or presented, and are attached to this summary:

- Agenda
- Brochure on the 100% Renewable Energy Study
- Presentation slides

Discussion Summary

1. Welcome and Introductions

The first meeting of the LADWP 100% Renewable Energy Study Advisory Group (Advisory Group) included opening remarks from LADWP General Manager David Wright, 2nd District Councilmember Paul Krekorian and LADWP Senior Assistant General Manager of Power System Andrew Kendall.

2. Council Motion: 100% Renewables Study

The first topic of discussion provided background on the City Council Motion that directed LADWP to conduct a 100% Renewable Energy Study. The motion directed LADWP conduct research on four specific recommendations, including a robust stakeholder process, partnership with Department of Energy and Mission Innovation, work with local institutions for high quality careers, and a report back to Council within 60 days on specific areas of research to be considered and how a stakeholder engagement process would be initiated.

3. Overview 100% Renewables Study

The 100% Renewable Energy Study mission is to develop and implement research partnerships that will utilize technical, academic, and policy experts to determine the investments necessary for reach a power supply that is 100% renewable. Study considerations are to maintain system reliability, types and availability of clean energy resources, roles of energy storage, energy efficiency, demand response, energy imbalance market, and development of new technologies.

The report back to Council outlined the development of the 100% Renewable Energy Advisory Group and

an engagement process to address the research areas. Advisory Group membership is comprised of two individuals from each represented organization, one primary and one alternate member. The Advisory Group meetings are anticipated to occur at least quarterly, for the purpose of continuity throughout the process and to ensure a successful outcome.

Research Partnerships will also be part of the study to assess potential for high quality careers and equitable local economic development, including local hiring programs for work that must be performed to modernize the electric system infrastructure within the city, increasing efficiency and energy storage, and creating a distributed system.

LADWP is currently pausing the Once-Through Cooling (OTC) repowering in order to perform a six to eight month study to examine the role of natural gas OTC units, which will eventually feed into this study. The OTC study and IRP will work in parallel. These study steps include developing an approach, data collection, develop models and scenarios, develop a recommendation, prepare report, create visualization, and present findings.

4. Advisory Group Introductions

Advisory Group members were asked to introduce themselves and to highlight the resources that their organization can contribute to the study. LADWP staff and others in attendance also participated in the introductions.

- **Graciela Geyer, Sierra Club.** The Sierra Club has a strong and expansive membership network for the study.
- **Michelle Kinman, Environment California.** Her organization has about 200,000 members throughout the state, and that they are working on a vision for economy wide GHG reductions. The organization also performs a great deal of clean energy outreach and anticipates 265,000 conversations in Los Angeles.
- **Allison Smith, SoCal Gas Energy Policy Management.** SoCal gas is interested in how natural gas can play a role in transitioning to GHG reduction strategies. SoCal Gas is investigating in renewable gas pathways for GHG reduction, power to gas, and how to integrate renewable gas with power generation.
- **Ernesto Hildago, Neighborhood Council Sustainability Alliance.** He is on the DWP Advocacy Committee and Sub Committee on clean energy and can educate the City on these issues.
- **Carlos Baldenegro, City of Los Angeles Harbor – Manager of Alternative Energy Program.** The Harbor currently has 10 MW of solar, and is working on wind power, fuel cells, energy efficiency, alternative maritime power, and has issued a clean air action plan.
- **Shaouki Aboulhosn, Port of Los Angeles.** Works with Carlos Baldenegro on high voltage infrastructure for LADWP.

- **Rebecca Andreassen, Mayor's Office.** Works on the infrastructure team focused on achieving the Mayor's goals.
- **Kendrick Okuda, Los Angeles World Airports.** Works in Environmental Affairs and the airport has current initiatives to convert its fleet to electric power. He is excited about tenants installing solar on hangers and structures, which feed the LAX grid. There are ten sites identified in the LAX study.
- **Samantha Beasley, LA Chamber of Commerce (LACC).** Engaged with the business community for this study and LACC has a strong robust educational advocacy, where half of the Chamber's resources are dedicated to work force and career opportunities.
- **Ben Airth, Center for Sustainability.** The Center's main focus is on creating a sustainable community for LA. They are focused on consumer, access, and creating a better environment and reducing utility cost.
- **Shane Phillips, Central City Association (CCA).** CCA is focused on the downtown area, where members develop and own large buildings in LA and opportunities are interested in opportunities for energy efficiency.
- **Angela Johnson Meszaros, Earth Justice.** Law firm interested in environmental justice and her background is in air pollution and energy working with South Coast Air Quality Management District. She stated that part of the right to zero campaign is to electrify everything and combine with clean energy. Earth Justice's offices would be helpful with policy advocacy and rate design for renewables to compete with combustion sources.
- **Alex Morris, California Energy Storage Alliance,** is interested in energy storage.
- **Steve Hinton, Skipping Stone.** Energy consulting firm interested in energy storage and renewables to support the Environmental Defense Fund.
- **Tim O'Connor, Senior Attorney at Environmental Defense Fund.** Experience through continued work with the California Public Utilities Commission (CPUC) and IRP planning, SB 380, process and will evaluate and provide expertise into this study. He stated that his organization will identify areas for a transparent market to deliver on goals of the study and identify areas to make changes to State policies. His organization also hired Skipping Stone as a Consultant.
- **Camden Collins, Rate Payer Advocate Office.** Guided the stakeholder process that led to the formation of the California Independent System Operator (CAISO) before it was formed.
- **Fred Pickel, Rate Payer Advocate (RPA).** RPA Office analyzes anything that affects water and power rates. The Office has 3.5 professionals and has experience in the utility industry. RPA is working on renewable and unconventional resources and view this as a very long term process with the potential to be very costly; however, with the right timing, it can also be done cost effectively.

- **Nurit Katz, UCLA.** UCLA has a large role on research and education. A study is ongoing with demand response research. UCLA also has undergraduates and graduate students who are available to work on projects related to this endeavor. UCLA is also a major customer of LADWP with about 80,000 people and operate a 42 MW co-gen facility and has a major need for renewable energy. The physical campus can be a testing group for this endeavor and LADWP has been an excellent partner. UCLA's goal is to be carbon neutral by 2025.
- **Lauren Faber O'Connor, Mayor's Office of Sustainability.** Mayor could not attend because he is attending a major climate meeting in Miami. The Mayor has committed to implementing the Paris Agreement regardless of President Trump's withdrawal from it. The Mayor is passionate about 100% renewable and would like to emphasize that this process will determine how to get to 100% renewable and not if.
- **Ted Beatty, Southern California Public Power Authority (SCPPA).** SCPPA is a joint power authority with 12 members, and LADWP is the largest. SCPPA has helped utilities with developing programs, particularly renewables. SCPPA implements the needs of Utilities and has expertise in operation and development.
- **Brad Packer, Director of Fuel and Power Purchase Division.** He has over 30 years of experience with LADWP and half of his career was at the Energy Control Center, overseeing economic dispatch for the Power System. He currently manages over 90% of LADWP's renewable projects with an emphasis on reliable and safe electric service. He is also certified to operate the power system and would like to provide a presentation on Power System Operations if given an opportunity.
- **Alexandra Nagy, Food and Water Watch (FWW).** FWW's interest is to eliminate natural gas storage and infrastructure. She is involved with the Aliso Canyon situation, and would like to see a ramp up in energy storage and demand response. Food and Water Watch is working with Synapse to study electrification and its strong area is in Community Outreach.
- **Andrea Leon-Grossman, Food and Water Watch.** The goal is to take LA to 100% renewable, and that she is an advocate of transportation electrification.
- **Loraine Lundquist, California State University Northridge's Institute for Sustainability.** Expertise in engineering and economic policy. She is also focused on community engagement and partnered with LADWP to engage with customers.
- **Jack Durland, Valero.** Valero currently has 50 MW of wind and solar at its headquarters. They are working closely with ERCOT. He mentioned that during the Eastern Interconnect incident, 50% of renewables cause grid instability and operators had to take great measures to avoid curtailment. Small cities in Texas are claiming 100% renewable but they are buying renewable credits.
- **Scott Haase, NREL.** NREL is part of the Department of Energy National Labs and is focused on energy storage. They are working on big picture issues and on managing a strategy between policy

and technical aspects. NREL is working on bridging the gap between DOE initiatives while working with complex data, power flows, and Policy.

- **Arne Olson, E3.** E3 is a 45 person consulting firm in San Francisco. The company is performing studies on high renewable cases, working along a high variety of segments with CPUC, CAISO, etc. to determine the value of energy efficiency, demand response, and other clean alternatives. They also work closely with developers, universities, and offer a broad perspective for planning high renewable cases.
- **Andy Shrader, Councilmember Koretz's Office – 5th District.** Councilmember Koretz is on the City Council's Energy and Environment Committee and seconded Krekorian's Motion. Concern is that LA is not moving fast enough to combat climate change. He stated that he is committed to not spending another dime on new gas infrastructure.
- **Nancy Sutley, LADWP Chief Sustainability Officer.** Extensive work on environmental policy on the Federal and State level. This process is important to reach end goals and is an opportunity for LA to lead the way in terms of sustainability.
- **Rafael Prieto, City of LA - Chief Legislative Officer.** Works closely with the Mayor's Office and this study is a clear priority for the Mayor to move forward with implementing the City Council's motion.
- **Marvin Moon, LADWP Director of Power Engineering Division.** The Division focuses on building power plants, distributing stations, receiving stations, and is the supporting the manager for the transportation electrification program and leading advocate for electric vehicles.
- **Jay Lim, LADWP Integrated Resource Planning (IRP).** Involved in the long-term planning of the Power System, developing a roadmap that drives financial priorities over the next 20 years. Eventually, the outcome of the 100% Renewable Energy Study will feed into the IRP.
- **Antique Rahman, LADWP Transmission Planning.** Involved with transmission planning and studies.
- **Brian Koch, LADWP Assistant Director of Power Engineering.** Past experience with renewable development and is excited to see the progress of renewables and the transition.
- **Dawn Cotterell, LADWP Community Affairs.** Involved with Neighborhood Councils and leads coordination of community events and programs.
- **Nick Schlag, E3 – Senior Managing Consultant.** Has worked on studies on how to integrate more renewables.
- **Greg Brinkman, NREL.** NREL is modeling high renewable scenarios.
- **Joseph Avila, LADWP, Staff Assistant to the General Manager**

- **Carol Tucker, LADWP Communications.**
- **Simon Zewdu, LADWP.** Responsible for supporting the senior Assistant General Manager in technical matters. He stated that he initially took this study and is interested in the success of this process.
- **Anton Sy, LADWP.** Part of the 100% Renewable Energy Study and is also leading the Castaic Relicensing work.
- **Joan Isaacson, Facilitator from Kearns & West.** Focuses on providing services for stakeholder facilitation and stakeholder engagement.
- **Ted Bardacke, Director of Infrastructure in Office of the Mayor.** It is important to recognize that the rate of change in terms of technology, planning, and policy, may outpace developing infrastructure over time. In a 10 to 20 year planning horizon, technology may change at a faster pace compared to infrastructure development. He is excited to see people in long term planning working with people who are innovating and driving change at a much faster rate. The Advisory Group should be mindful that LADWP is a balancing authority, and his hope for the group is to provide a line of dialogue for other efforts under way. The LADWP Board is also anxious to see the outcome of this study and for it to provide real, actionable recommendations. The Board is relying on staff and stakeholders for input.

5. LADWP Power System Overview

The Integrated Resource Plan (IRP) is a roadmap for the Power System over 20 years and the last 2016 IRP ran over 16 case scenarios. LADWP serves about 500 square miles and approximately 4 million customers. Los Angeles is a concentrated load pocket with limited amount of space. LADWP expanded its transmission system out of basin and continues to look for opportunities to expand the system, as customer demand from increases during the day. Load growth will continue in the future, primarily due to electrification, and the efficiency point for building out-transmission must be determined.

6. Achieving Economy-wide Deep GHG Reductions

A Deep Decarbonization study was performed before California Air Resources Board (CARB) set their GHG reduction targets. Decarbonizing California's economy requires efficiency and conservation, fuel switching, decarbonizing the electric supply, and decarbonizing liquid and gas fuels. Key questions for the electric sector includes the level and shape of new electric loads for decarbonization of other sectors—electric vehicles, electrification of space heating and industry, and availability of additional decarbonization tools. Other factors may include significant new demand for electricity to make hydrogen fuel and significant new demand to make low carbon natural gas using power to gas technology.

7. Advisory Group Input and Q&A

An open forum was then held for Advisory Group input and questions, which yielded the following discussion. Questions and answers summarized below.

- Why does the Deep Decarbonization Study indicate that while the electricity sector contributes less GHG compared to industrial, the degree of GHG reduction percentage is greater?**
 The model is currently not an economy wide optimization model at this point and it tends to be cheaper to reduced GHG in the electric sector compared to industrial.
- What is the role of demand response in renewable integration? How it would impact reliability must run?**
 Demand response is incorporated into the flexible load category. E3 worked with National Labs to investigate the value of demand response, including shifting, skimming, etc. For demand response, a baseline for what customers would do in absence of the program needs to be determined. Ultimately, it boils down to rate design for automated customer participation.
- What is the role of biomass, including wood, as well as small nuclear reactors?**
 Biomass, including wood are typically considered renewable even though they are not 100% green. Small nuclear reactors have some interest, especially in the North West, but they are beyond the edge of being commercially available today due to the competitive cost of solar.
- Why is a demand response baseline needed?**
 The baseline is needed in order to determine the incremental increase in demand response to determine the actual demand response achieved due to the program.
- What's the update on LADWP's current power shift program?**
 The load shift program ramped up last year and includes 35 MW of shift.
- Why doesn't the model shown in the E3 presentation include 100% renewable?**
 The study was based on an economy wide decarbonization and is not a detailed electric sector model and not suitable to assess reliability. It is a high level model and other models can be used.
- How much of an island is LADWP compared to the rest of the grid, and should LADWP work with other balancing authorities? How quickly can LADWP get to 80% RPS without stranded assets and is there a difference between 80% RPS and 100% RPS for a no-regrets scenario?**
 This 100% Renewable Study's objective is to answer these questions. NREL will also utilize the results from the OTC study for a no regrets scenario and determine how to incorporate it into the 100% Renewable Study. There will be questions back to the Advisory Group on what it means to get to 100% Renewable. In previous modeling of the California 50% RPS by 2030 scenario, significant solar over-generation with many hours exceeding 50% and also many hours when renewables were providing less than 50% variations throughout the year.
- Could LADWP purchase RECs to achieve 100% Renewable?**
 The Advisory Group will provide input on whether LADWP should self-generate or include purchases during the course of the study.

- **Could a breakeven analysis be performed as a way to determine the tipping point of renewables, with the 100% renewable scenario with low electrification being a much different than a scenario with high electrification?**

Typically, replacing inefficient internal combustion engine vehicles is the cheapest measure to do for GHG reduction. Whenever, a resource is squeezed to make it pure, it is always the most expensive and most difficult. The path will be dependent on a multi sector approach due to load dependency.

- **What is the definition of no lifestyle degradation?**

The baseline services of every end use was determined, and kept at the same level across the board. The same demand for energy services was assumed for the baseline.

- **Will other City of LA departments be involved in the study?**

The Port of LA and LAX are participating and that other departments will be considered as well.

- **Will water resource planning and the water nexus be included in the study?**

The issue was brought up to NREL and they concluded that LADWP's electricity usage for water is very low compared to the overall electricity usage.

8. Next Steps and Wrap up

An invitation with a confirmed date for the next meeting will be sent out as soon as possible.