

LA100 EQUITY STRATEGIES



Los Angeles 100% Renewable Energy Equity Strategies

Advisory Committee Meeting #3

April 27, 2022

Summary¹

Schedule and Location

Wednesday, April 27, 10:00 a.m. to 12:00 p.m.

Conducted virtually

Virtual Meeting #3 Attendees

Advisory Committee Members

Civil & Human Rights and Equity Department, Joey Garcia (alternate)
Council District 05 – Councilmember Paul Koretz, Andy Shrader (alternate)
Housing Authority of the City of Los Angeles, Lissette Belon (alternate)
LA Cleantech Incubator, Mayte Sanchez, Lauren Harper (alternate)
Los Angeles World Airport (LAWA), Laura McLennan (alternate)
Neighborhood Council Sustainability Alliance (Advisory Committee), Ernie Hidalgo
Office of Public Accountability (Rate Payer Advocate), Fred Pickel, Camden Collins (alternate)
Office of Los Angeles Mayor Eric Garcetti, Paul Lee (alternate)
Port of Los Angeles (POLA), Carlos C. Baldenegro
Sierra Club, Francis Yang (alternate)
University of Southern California Equity Research Institute, Vanessa Carter

LADWP Staff

Carol Tucker
Cathleen Chavez-Morris
Dawn Cotterell
Denis Obiang
Emil Abdelshehid
Iris Castillo
Jay Lim
Pjoy Chua
Ramon Gamez
Steve Baule
Vanessa Gonzalez

¹ This summary is provided as an overview of the meeting and is not meant as an official record or transcript of everything presented or discussed. The summary was prepared to the best of the ability of the notetakers.



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Project Team

Alana Wilson, National Renewable Energy Laboratory (NREL)

Bingrong Sun, NREL

Bryan Palmintier, NREL

Daniel Zimny Schmitt, NREL

Eda Giray, NREL

Garvin Heath, NREL

Janet Reyna, NREL

Kate Anderson, NREL

Megan Day, NREL

Nicole Rosner, NREL

Sherin Ann Abraham, NREL

Sonja Berdahl, NREL

Thomas Bowen, NREL

Christian Mendez, Kearns & West

Jasmine King, Kearns & West

Joan Isaacson, Kearns & West

Cassie Rauser, UCLA

Greg Pierce, UCLA

Magali Sanchez-Hall, UCLA

Raul Hinojosa-Ojeda, UCLA

Stephanie Pincetl, UCLA

Yifang Zhu, UCLA



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Welcome Remarks

Joan Isaacson, facilitator from Kearns & West, welcomed participants to the third Advisory Committee meeting for the Los Angeles 100% Renewable Energy Equity Strategies (LA100 Equity Strategies). Pjoy Chua, Assistant Director with LADWP's Transmission Planning, Regulatory, and Innovation Division, welcomed participants and thanked Advisory Committee members for their attendance and collaboration. She highlighted engagement over the last few months with community members at the Community Meetings and Listening Sessions, guidance from the Steering Committee, and analysis done with NREL and UCLA research partners. She stated that LADWP has received inquiries from different utilities and members of the Public Power Association as topic of equity has been gaining interest nationwide. Pjoy Chua then shared that the LA100 Equity Strategies is seen as an example of how the transition to 100% renewable energy will impact customers in Los Angeles and the industry.

Agenda Overview

Joan Isaacson reviewed the agenda, noting that it had been informed by the charge of the Advisory Committee, which is to provide feedback on the proposed Equity Strategies concepts as they are developed (see slide 3 in Appendix). She explained that the Steering Committee is the driving force behind the initial input and shaping recommendations. She noted that the Advisory Committee members are asked to share ideas on how their organizations can partner on the proposed strategies identified by the Steering Committee.

Joan Isaacson reviewed the meeting purpose and agenda items, including an update on the Community Meetings and Steering Committee meetings and a discussion on the strategy areas that have been prioritized for further development and analysis. She reviewed the guide for productive meetings and reminded participants on how they can provide feedback to the project team.

Community Engagement Update

Nicole Rosner, Community Engagement and Energy Justice Researcher with NREL, provided an update on key takeaways from the community engagement for the LA100 Equity Strategies (see slides 5–7 in Appendix). She stated that in partnership with NREL, UCLA, and Kearns & West, LADWP hosted two Community Meetings on February 26, 2022, and March 3, 2022. The March 3 meeting was held in Spanish with English interpretation. Nicole Rosner highlighted themes from the community meetings, noting that participants identified barriers related to information access and suggested that LADWP reach people's homes and be more present in communities. She also noted requests for educational workshops on renewable energy and just energy transition. She then highlighted community aspirations such as local access to technology, including electric vehicles (EVs), and integrated technology such as solar panels on public buses and public EV chargers. Nicole Rosner also shared that community members asked for community workshops to inspire residents by visualizing the future that they can co-create.

Nicole Rosner then described the four Listening Sessions conducted in partnership with NREL, UCLA Luskin Center, and LADWP, noting that the sessions were co-designed with community members and adapted to local interests. She explained that the Listening Sessions focused on South Los Angeles, San Fernando Valley, East Los Angeles, and the Harbor Area. In South Los Angeles, community members shared the need for higher rebates for low-income and senior residents to afford EVs. The San Fernando Valley Listening Session focused on poor air quality and the need for transparency on EV incentives and bill costs. In East Los Angeles, Nicole Rosner highlighted comments about how members of the lower-middle class are struggling to pay their energy bills, but residents do not qualify for available assistance programs and services. Lastly, she stated that the Harbor Area feedback





included concerns about air quality compromising health, the need for more affordable energy and technology, and concerns over the lack of EV charging infrastructure.

Major Themes from Advisory Committee Questions and Discussion

- Renters and transient populations being unable to qualify for incentives, assistance, and rebates is an important issue. Has this issue been brought up in the Listening Sessions, and how has it been addressed?
 - Nicole Rosner: This theme was mentioned throughout the Listening Sessions.

Prioritized Modeling, Analysis, Equity Strategy Development Areas

Megan Day, Equity Strategies Project Manager and NREL Senior Energy Planner, gave an overview of the project team's process for the prioritized modeling, analysis, and strategy development pathways (see slides 9-12 in Appendix). Building on the modeling and analysis identified in the LA100 Renewable Energy Study, the project team is now developing the equity strategies, modeling, and analysis approach to achieve distributional justice. Megan Day explained that the project team is conducting an analysis to identify the most impactful strategies and metrics to achieve the prioritized outcomes.

Megan Day stated that the project team presented 13 pathways to the Steering Committee and asked member organizations to participate in a prioritization exercise. She explained that each pathway received a poll ranking and that feedback from the Steering Committee kickoff meeting vision and feedback was incorporated throughout the process. Megan Day then stated that following the poll, ten pathways were selected for further analysis. She invited Advisory Committee feedback on relevant policies, who to engage with, and other Resources to consider during the modeling and analysis process.

Rates/Affordability

Thomas Bowen, Renewable Energy Researcher with NREL, overviewed the rates and affordability pathway. He shared feedback from the Steering Committee on ensuring safe, affordable housing for all and on income-adjusted billing, focusing on direct install programs with upfront incentives as opposed to rebates (see slides 13-15 in Appendix). He then explained that the project team is looking at prioritizing incentives based on the age of properties. Thomas Bowen noted that direct funding assistance has also been considered, along with ensuring all programs are comprehensible to Angelenos. He explained that the project team is working on providing an estimate of customer bills out to 2030, which will help inform strategies to prevent evictions and shutoffs.

Thomas Bowen highlighted several questions to be answered through extensive modeling. These questions include understanding how the costs of Los Angeles' transition will impact low-income household energy bills under a business-as-usual case and how different rate structures, assistance, and other utility programs can stabilize bills for low-income households. He shared that NREL is coordinating with the UCLA School of Law to provide high-level input on strategies that have been studied or implemented elsewhere. Thomas Bowen then described the desired outcomes, including an assessment of customer bill impacts by household and an estimated program cost to LADWP.

Energy Affordability and Policy Solutions Analysis

Greg Pierce, Co-Director of the Luskin Center for Innovation (LCI) at UCLA, presented UCLA's work on energy affordability and policy solutions analysis, highlighting that affordability is the primary equity consideration for the LA100 Equity Strategies (see slides 16-19 in Appendix). He explained that the approach taken at UCLA is to complement and contextualize the modeling that

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NREL is doing and consider uncertainty around costs and expenses with transitioning to 100% electricity. Greg Pierce stated UCLA's goal of supporting a long-term affordability policy. He then presented priority metrics and policies, including enhancing bill discount programs, shutoff prevention or limitation, rooftop solar incentives and assistance, and income-based rates.

Greg Pierce described several proposals to address affordability, including identifying structural constraints and opportunities to address affordability, using energy affordability metrics to identify and prioritize more than eight goals and metrics to narrow down actionable plans, and identifying and prioritizing among more than 15 policy options to narrow down actionable plans. He also shared that the UCLA sub-team in the School of Law will analyze a high-level portfolio of rate design and utility financing strategies, and the UCLA Latino Policy and Politics Initiative and Center for Neighborhood Knowledge will be assessing energy affordability barriers and opportunities for ethnic minority-owned small businesses.

Major Themes from Advisory Committee Questions and Discussion

- Given that Los Angeles is being watched as a model for other cities and utilities, how would you say we are doing on the community outreach? Is the project team developing any metrics to measure outreach success?
 - Megan Day: The prioritization polls are one approach among many for gathering feedback.
- How much feedback has been received from the Community Meetings and Listening Sessions? Is there a log of responses?
 - Nicole Rosner: NREL is currently analyzing the feedback and will provide an overview of the analysis. The community meeting slides, summaries, and recordings can be found on the website: LADWP.com/la100ES

Buildings

Universal Access to Home Cooling

Janet Reyna, Technical Lead on Housing and Buildings at NREL, presented the proposed pathways for the buildings topic by explaining that the project team is looking at universal access to home cooling, low-income access to demand flexibility programs, and improving access to solar/storage and energy efficiency in multi-family and/or renter-occupied buildings (see slides 21-23 in Appendix). She described Steering Committee feedback, including direct installation programs for EV infrastructure in low-income communities, funding assistance, and energy retrofits to address habitability.

Janet Reyna explained the issue of heat-related illness with regard to universal access to home cooling. She shared considerations that the project team is using for analysis, including the intersections of lack of home cooling, vulnerable populations, and lack of public resilience centers; the types of housing most vulnerable to dangerous temperature exposures; and housing-type-specific cooling interventions.

Janet Reyna then noted that the project team is focusing on what would be required to provide cooling for everyone in Los Angeles and how to deploy cooling by building type, income level, neighborhood, and renter/owned specific technology. Additionally, the project team is interested in culturally relevant and compelling implementation approaches. She then stated that the NREL team is working with the UCLA California Center for Sustainable Communities (UCLA CCSC) on understanding cooling technologies in homes.

Building Weatherization, Thermal Storage, and Resilience to Extreme Events



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Janet Reyna continued by describing proposed pathways for building weatherization, thermal storage, and resilience to extreme events (see slides 24-25 in Appendix). Steering Committee feedback included the need to subsidize multi-family affordable housing, incentivize upgrades in older rental properties, and address habitability with energy retrofits.

Janet Reyna explained that the project team is considering questions such as the types of homes and neighborhoods that have the least access to cooling and the most effective weatherization interventions to prevent dangerous in-home temperatures. In the analysis, energy use will be simulated, and the project team will examine what will occur when the power is shut off. She highlighted that the project team is interested in Steering Committee feedback on culturally compelling implementation approaches to deploy life-saving weatherization interventions. Lastly, Janet Reyna noted that the NREL team is working with the UCLA CCSC on this topic.

Major Themes from Advisory Committee Questions and Discussion

- Has there been any discussion on requiring retrofits upon resale for properties?
 - Janet Reyna: This is an option to be explored with the rates technical team.
- There are challenges with retrofits and mandating them.

Solar and Storage

Improved Access in Multifamily and/or Renter-Occupied Buildings

Janet Reyna described the proposed pathways for improving access to solar/storage and energy efficiency in multi-family and/or renter-occupied buildings (see slides 28–29 in Appendix). She noted several questions to be answered by the project team, including what types of programs, tariffs, and subsidies are likely to be successful in improving access and what suites of building-type-specific-technology and efficiency interventions would deliver the highest cost savings.

Janet Reyna stated that Steering Committee feedback included the importance of funding assistance for low-income communities, avoiding eviction and loss of affordable housing, and using incentives rather than rebates. She then stated that the project team is interested in understanding the main challenges to installing solar, storage, and energy efficiency in multi-family or renter-occupied buildings aside from affordability and split incentives.

Increased Resiliency through Targeted Solar-Plus-Storage Siting

Megan Day overviewed the proposed pathways for the local solar and storage topic and explained that the project team is looking at targeted solar siting in disadvantaged communities to deliver cost savings and local resilience benefits (see slides 30–31 in Appendix). She stated that the focus is on improving resilience and noted a question to be answered by the project team: Where and how can solar and storage be deployed to increase the hours/days of electricity service in an outage situation in disadvantaged communities?

Megan Day shared feedback from the Steering Committee on the topic, such as a strategy to utilize curtailment through storage, backup power in the basin for disruption periods, and a focus on regions prone to wildfires. The project team is interested in Advisory Committee feedback on what types of solar-plus-storage deployment programs would be most effective in serving disadvantaged communities.

Targeted Community Solar Siting



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Megan Day described the proposed targeted community solar siting pathway and Steering Committee feedback (see slides 32-33 in Appendix). Some of the feedback mentioned sustainable community solar programs, ensuring low-income communities benefit from the green energy transition, and increasing financial benefits to community solar participants. She noted that the project team is focused on identifying specific locations that could host community solar with storage and deliver cost savings and electricity reliability in disadvantaged communities. Megan Day highlighted the proposed outcome of targeted community solar siting and strategies that reduce energy costs in disadvantaged communities. She stated that the project team is interested in Advisory Committee guidance on sites to prioritize for community solar.

Major Themes from Advisory Committee Questions and Discussion

- Electric panel size will also be important to analyze.
 - Megan Day: That's another collaboration area between NREL and UCLA CCSC. Electrification will often require upgraded panels. UCLA CCSC is working on estimating what fraction of housing that needs a panel upgrade and the cost of a typical panel upgrade in Los Angeles.
- Adding electric vehicles and solar often requires panel upgrades.
- New roofs may be a need for communities in the transition to renewable energy.

Transportation

Bingrong Sun, Senior Research Engineer with NREL, presented the transportation pathways, which include equitable EV and charging access and reduced transportation energy burdens (see slides 35–37 in Appendix). They described what was heard from the Steering Committee on the topic, such as the need for EV sharing programs, the equitable distribution of EV charging stations, and active transportation routes around transmission lines and corridors.

Bingrong Sun shared questions to be answered by the project team, including what a business-as-usual, economic EV adoption scenario would look like as compared to an equitable adoption model, the electrical loads associated with equitable EV adoption and access and EV charging infrastructure distribution, and the potential for increased multimodal electric mobility (e.g., bikes, scooters, car share). They noted that the project team will analyze the impact of electrification on the transportation energy burden and that they are interested in feedback on critical factors limiting e-bike, e-scooter, and car-share access.

Major Themes from Advisory Committee Questions and Discussion

- LADWP is looking into a pilot EV electrical rate to reduce demand charges.
 - Greg Pierce: This example only applies to commercial rates as residential is more complicated, particularly doing it equitably given rental dynamics: <https://www.ladwpnews.com/ladwp-board-of-commissioners-approves-new-electric-vehicle-charging-rates-in-bold-effort-to-boost-electric-vehicle-use-citywide-and-accelerate-l-a-s-ev-charging-infrastructure-build-out/>
- LA County Metro is involved in joint development in low-income and high-transit communities to produce affordable housing, as in Boyle Heights, Panorama City, and the Valley. There are similar opportunities to roll out joint initiatives like this (e.g., NREL pathways) for future tenants and surrounding communities.
- A fast-charging plaza for transportation network companies (TNC) and taxis at LAX is being considered. Uber, Lyft, and other TNC drivers in low-income communities may lack access to charging.



Reliability and Resilience

Sherin Ann Abraham, Researcher with NREL, gave an overview of the proposed pathway on supporting electric reliability and enabling solar, storage, and EVs in disadvantaged communities through distribution grid upgrades (see slides 39-41 in Appendix). They noted Steering Committee feedback on the topic, including ensuring investments are in the most pollution-burdened communities, ensuring EV infrastructure in all communities, and providing real-time information on energy sources to low-income households.

Sherin Ann Abraham explained that the project team is working to address questions on the infrastructure investments needed to ensure equitable electricity and reliability, and solar, storage, and EV adoption in underserved communities. While also understanding the associated and avoided costs. They stated that in looking at a more electrified future, the project team is interested in understanding aspects of the current infrastructure that represent barriers and the priorities for electric service in disadvantaged communities during disasters.

Air Quality and Public Health

Garvin Heath, Senior Environmental Scientist and Energy Analyst with NREL, described the air quality and public health topic, including proposed pathways for the mitigation of health impacts due to medium and heavy-duty vehicles (see slides 43-45 in Appendix). He stated that many communities highlighted poor air quality during the community engagement process. Garvin Heath described some of the Steering Committee feedback, including the need to focus on transportation in improving air quality and meeting federal air quality standards to ensure transportation funding.

Garvin Heath highlighted questions to be answered with the NREL and UCLA collaboration, including the electrification of different types of trucks, where electrification would provide the greatest health benefits in disadvantaged communities, and if truck or car electrification would provide greater air quality and health improvements. He stated that the project team is interested in Advisory Committee feedback on which neighborhoods and roads should be prioritized.

Yifang Zhu, Associate Professor in the Environmental Health Sciences Department in the Fielding School of Public Health at UCLA, explained the collaborative approach of the UCLA and NREL project teams (see slide 46 in Appendix). She shared that the study analysis will include medium and heavy-duty vehicles and community-level data. Yifang Zhu noted that the UCLA team is seeking to understand the extent to which equitably transitioning to EVs could bring additional air quality benefits to disadvantaged communities with a focus on particulate matter (PM2.5) and ozone (O3) to measure pollution concentrations and mortality rates.

Major Themes from Advisory Committee Questions and Discussion

- Reach out to the ports and Starcrest Consulting Group, which does analysis on port emissions, emissions inventory, and scorecards.
- The air quality discussion could touch on power generation plants in addition to transportation, especially for communities in Wilmington and Pacoima, and specifically in relation to the conversation about potential hydrogen combustion in power plants, which could create six times worse nitrogen oxides (NOX) emissions than current gas plants.
 - Garvin Heath: NREL is working with LADWP on results from the Strategic Long-Term Resource Plan (SLTRP) study. NREL will look at neighborhood scale data, hydrogen combustion, and NOX emissions.
 - Megan Day: For clarification, the SLTRP study will also include an equity analysis of power generation air quality and health impacts.

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- This study identifies new concerns about greenhouse gas generation from green hydrogen:
<https://www.rechargenews.com/energy-transition/hydrogen-twice-as-powerful-a-greenhouse-gas-as-previously-thought-uk-government-study/2-1-1200115>
- Local generation is one of the most important equity issues regarding hydrogen and air quality.

Jobs and Workforce Development

Abel Valenzuela, Jr., Director of UCLA's Institute for Research on Labor and Employment, overviewed the jobs and workforce development topic and shared the history and values of the UCLA team (see slides 48-50 in Appendix). He stated that the team is focused on empirical data and policy-driven research that empowers local communities and workers. Abel Valenzuela noted that UCLA engages in community-driven research by working on the ground with local, state, national, and transnational organizations. Currently, related projects include a green jobs calculator tool kit that will serve as a model and platform for how local communities can capture the growth in green jobs.

Raul Hinojosa-Ojeda, Associate Professor in the UCLA Department of Chicana and Chicano Studies, explained that the UCLA team is looking at long-term green job prospects and is conducting a detailed community and stakeholder analysis of what is happening in Los Angeles communities (see slides 50-51 in Appendix). He described a pilot case study for funding mobilization in the Wilmington/Port of LA area. Raul Hinojosa-Ojeda then shared that green jobs and workforce needs will be projected from current LADWP sectoral employment to identify frontline workers with a focus on racial/ethnic equity. He explained that the green jobs calculator results will be used to develop pathways and strategies for securing federal and state funding for job creation, employment and training, and workforce development that would be inclusive of Wilmington but also serve as a pilot for other intensive community stakeholder engagement. Raul Hinojosa-Ojeda stated that worker-centered experiences are prioritized in these strategies and case studies.

Major Themes from Advisory Committee Questions and Discussion

- Are out-of-basin jobs being looked at, like with the proposed Navajo Solar project? These are definitely vital to the project's efforts to track those, especially considering LADWP's enormous footprint.
- NREL should work with the Los Angeles Worker's Centers Network. There are Worker's Centers throughout the Greater Los Angeles area.

Wrap Up and Next Steps

Joan Isaacson closed the meeting by sharing the dates for the next Advisory Committee meetings on June 22, 2022, and August 24, 2022. She stated that the topics will include a review of initial findings on factors contributing to current energy inequities and a presentation from the SLTRP team, noting that in August, the energy affordability modeling approach will be shared. Joan Isaacson reminded participants that subsequent meetings will take place on the fourth Wednesday of every month from 10:00 a.m. – 12:00 p.m. PT.

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Appendix

Advisory Committee Meeting #3

April 27, 2022

Presentation Slides





**LA100 Equity Strategies
Advisory Committee Meeting #3
April 27, 2022**



Welcome and Opening Remarks

Los Angeles Department of Water & Power (LADWP) Project Leads



Simon Zewdu
Director
Transmission Planning,
Regulatory, and Innovation Division



Pjoy T. Chua, P.E.
Assistant Director
Transmission Planning,
Regulatory, and Innovation Division



Steve Baule
Utility Administrator
LA100 Equity Strategies Oversight
& UCLA Contract Administrator



Agenda

Start Time	Item
10:00 a.m.	Welcome
10:05 a.m.	Meeting Purpose and Agenda Overview
10:10 a.m.	Community Engagement Update <ul style="list-style-type: none">• Community Meetings• Listening Sessions
10:25 a.m.	Prioritized Modeling, Analysis, and Strategy Development Areas
11:55 a.m.	Wrap Up and Next Steps



Our Guide for Productive Meetings



Raise your hand
to join the
conversation
(less chat
entries, more
talking)



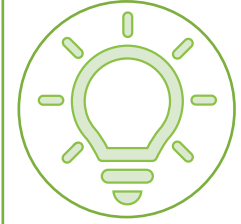
Help to make
sure that
everyone has
equal time to
contribute



Keep input
concise and
focused so that
others have
time to
participate



Actively listen to
others to
understand their
perspectives



Offer ideas to
address others'
questions and
concerns



Community Engagement Update

Community Meetings and Listening Sessions

Key Takeaways

Nicole Rosner, PhD

NREL



Two Community Engagement Meetings

Virtual Community Meetings

- February 26, 2022 (English with Spanish translation available)
- March 3, 2022 (Spanish with English translation available)
- *Both currently online for ongoing public viewing*

Breakout Session Highlights

- **Barriers:** Access to Information
 - LADWP should reach people's homes and be more present on the ground in their communities
 - Community center organizers request renewable energy and just transition educational workshops in their communities
- **Aspirations:** Local Access to Technology
 - See all the benefits of this transition in *their* minority-majority communities
 - Electric vehicles (EV)
 - Integrated tech: solar panels on public buses & EV chargers
 - Community *workshops* to inspire residents by *visualizing* the future they can co-create



Four Listening Sessions

South LA (March 29, 2022)

- Higher rebates for low-income and senior residents to afford EVs
- Aspiration: Solar in parks and covering parking/bus stops
- Barriers: our communities need education, instruction, information

San Fernando Valley (March 29, 2022)

- Poor air quality
- Transparency needed
 - Inaccessible EV incentives: a successful application can still be hindered by personal credit limits
- Bill cost structure breakdown

East LA (March 30, 2022)

- Lower-middle class struggling to pay the bills yet do not qualify for available aid (i.e., programs, services)
- Less complicated program application process

Harbor Area (March 31, 2022)

- Air quality compromising health
- More affordable energy and technology
- Lack of EV charging infrastructure

Prioritized Modeling, Analysis, Equity Strategy Development Pathways

Reflecting Steering Committee Feedback



Modeling, Analysis, & Strategy Development

	Rate Analysis/ Affordability	Buildings	Solar & Storage	Reliability & Resilience	Transportation	Air Quality, Health, Environment	Jobs & Workforce Development
LA100 2035 100% Clean Energy Metrics	\$86 Billion to achieve 100% clean electricity by 2035	↓54% residential natural gas consumption ↑27% residential electricity consumption	2,362 MW residential 366 MW commercial rooftop PV 986 MW storage	\$831 Million distribution system upgrade costs	80% electric vehicles	\$1.4 Billion in annual health benefits based on 2 sq km air quality modeling	15,561 in-basin 3,594 out-of-basin clean energy jobs
Community Engagement	<ul style="list-style-type: none"> - Prioritized equity outcomes & pathways - Policy and program knowledge & guidance - Procedural justice 						← Today's focus
LA100 Equity Strategies Modeling and Analysis	dGen utility bill rate impact analysis for 600,000+ buildings by income, renter/ owner, electricity/ natural gas	ResStock modeling of all residential buildings by income, renter/owner to optimize efficiency and electrification for affordability	dGen modeling of residential, commercial rooftop and community solar optimized for DACs	Distribution grid modeling of upgrades required to support PV, EV adoption, building and transportation electrification and reliability in DACs	Sustainable transportation scenario modeling to optimize benefits for DACs	Neighborhood-level air quality modeling and health-impacts analysis to target benefits to DACs	Job training and readiness and workforce standards analysis
Metrics	Measurable, interim & final distributional justice metrics						
Outcomes	Equity strategies						

Potential Equity Strategy Development Pathways (13)

Low-income energy bill stability

Building weatherization, resilience to extreme events

Access to public and community cooling

Universal access to home cooling

Low-income access to demand flexibility programs

Tariff options for solar affordability

Resiliency in disadvantaged neighborhoods through solar + storage siting

Improve access to solar/storage, energy efficiency in multifamily and/or renter-occupied buildings

Targeted community solar siting

Equitable light duty electric vehicle (EV) & charging access

Reduced transportation energy burdens

Improve distribution system reliability through upgrades to support equitable distributed energy resources

Mitigation of medium- & heavy-duty vehicle health impacts

Prioritization Poll

Prioritizing strategy development pathways and associated outcomes

- One response per member organization
- 11 Responses out of 15 member organizations

<https://www.surveymonkey.com/r/Y5W2NTX>

LA100 Equity Strategies Distributional Justice Modeling, Analysis, and Strategy Development

NREL will build on the extensive research and analysis from LA100 to model community-informed strategies and interim deployment metrics to achieve a just distribution of clean energy technologies and benefits in the transition to 100% clean electricity by 2035. The following strategy development pathways reflect Steering Committee and community input received to date. Additional strategy development pathways will be led by UCLA and considered in greater detail separately. Not all strategy development pathways can be accomplished in the time and budget available. Please rank the following equity strategy development pathways and associated outcomes you believe will have the greatest impact in ensuring a just clean energy transition.

We ask that only one entry be submitted per Steering Committee member organization.

* 1. Contact Information

Name	<input type="text"/>
Organization	<input type="text"/>
Email Address	<input type="text"/>

* 2. Please rank the following equity strategy development pathways and associated outcomes you believe will have the greatest impact in ensuring a just clean energy transition. Please rank each of the following items in order of importance with #1 being the most important to #13 being the least important.

You can rank items by dragging and dropping them in order from most important to least important.

<input type="checkbox"/>	Low-income Energy Bill Stability <i>Associated Outcomes:</i> Community-, renter/owner-, and income-specific suites of technology, efficiency, and billing interventions to stabilize low-income household energy bills, with deployment metrics and costs through 2035.
<input type="checkbox"/>	Building Weatherization, Thermal Storage, and Resilience to Extreme Events <i>Associated Outcomes:</i> Optimized weatherization interventions to increase resilience to extreme events by housing type, income, and renter/owner and associated deployment metrics, costs, and strategies.
<input type="checkbox"/>	Access to Public and Community Cooling <i>Associated Outcomes:</i> Location-specific interventions required to provide public heating/cooling access and reduce morbidity from extreme temperatures.
<input type="checkbox"/>	Universal Access to Home Cooling <i>Associated Outcomes:</i> Lowest-cost/lowest bill increase pathways and building-type, income-level, neighborhood, and renter/owner specific technology deployment pathways to provide universal cooling access in homes.
<input type="checkbox"/>	Low-income Access to Demand Flexibility Programs <i>Associated Outcomes:</i> Increase technological readiness of low-income households (renter- and owner-occupied), small businesses, and schools to participate in direct and indirect demand response programs to lower bills and/or access payments.
<input type="checkbox"/>	Tariff Options for Solar Affordability <i>Associated Outcomes:</i> Develop more equitable retail tariff options to facilitate solar affordability in disadvantaged communities.
<input type="checkbox"/>	Resiliency in Disadvantaged Neighborhoods through Solar-plus-storage Siting <i>Associated Outcomes:</i> Optimized solar+storage siting for resilience and energy burden reductions in disadvantaged communities.
<input type="checkbox"/>	Improve Access to Solar/Storage and Energy Efficiency in Multifamily and/or Renter-Occupied Buildings <i>Associated Outcomes:</i> Optimized strategies and deployment metrics to deliver solar, storage, and energy-efficiency cost savings and benefits to renters and residents and of multifamily



Topic	Prioritized Equity Strategy Development Pathways
Rates/ Affordability	Low-income energy bill stability
Buildings	Universal access to home cooling
	Building weatherization and resilience to extreme events
Buildings/Local Solar & Storage	Improve access to solar/storage, energy efficiency in multifamily- and/or renter-occupied buildings
Local Solar & Storage	Resiliency in disadvantaged neighborhoods through solar-plus-storage siting
	Targeted community solar siting
Transportation	Equitable light duty electric vehicle (EV) & charging access
	Reduced transportation energy burdens
Reliability/ Resilience	Support electric reliability through distribution grid upgrades to enable solar, storage, and EVs in disadvantaged communities
Air Quality/Health	Mitigation of medium- & heavy-duty vehicle health impacts



Rates and Affordability

Thomas Bowen

NREL



Rates/Affordability

Low-Income Energy Bill Stability

Steering Committee Kickoff Meeting Vision:

- “Justice first in climate policy”
- “Safe, comfortable homes for all”
- “Low-income energy needs are affordable”
- “Energy efficient low-income homes”
- “Efficiency first”
- “Income-based bills”

Steering Committee Feedback:

- “More ‘cost’ savings to homeowners”
- “Aligning different program requirements”
- “More direct install programs”
- “Funding assistance for low-income folks”
- “Avoid eviction & affordable housing loss”*
- “Incentives rather than rebates”
- “Incentivized upgrades in older rental properties”



Rates/Affordability

Low-Income Energy Bill Stability

Questions to Be Answered:

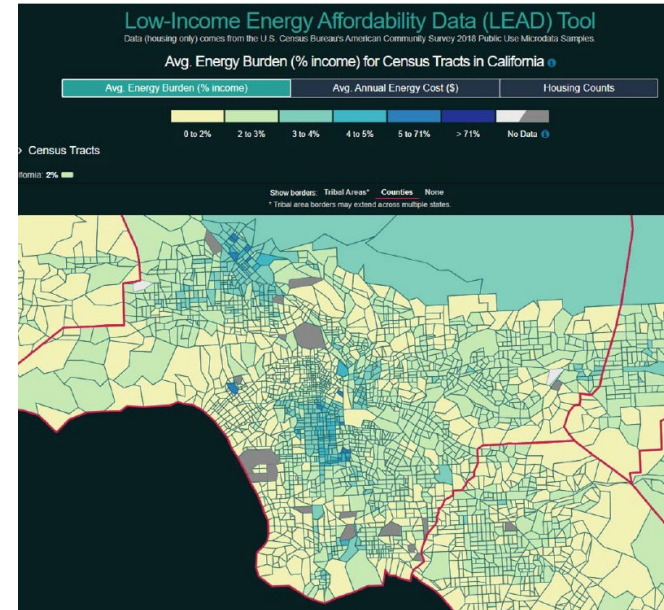
- How will the costs of LA's transition impact low-income household energy bills under a *business-as-usual* case?
- How can different rate structures, assistance, and other utility programs stabilize bills for low-income households?

Outcomes:

- Set of implementation strategies to stabilize low-income household bills
 - Customer bill impacts by household type (e.g., renter/owner-, income-tranche)
 - Estimated program cost to LADWP (change in revenues, install costs, indirect costs)

Examples of Steering Committee Guidance:

- Input on which implementation strategies to test
- Input on what other program design elements should be studied



Source: Low-Income Energy Affordability Data Tool. Average Energy Burden (% income) for Census Tracts.
<https://www.energy.gov/eere/sls/c/maps/lead-tool>.



Energy Affordability and Policy Solutions Analysis

Greg Pierce, PhD

Luskin Center for Innovation (LCI)



Steering Committee Feedback

Affordability is among the most key equity considerations, but is complicated

- The transition cost and its impact on rate (structures) is difficult to project
- The whole LADWP bill (up to 4 services) matters
- Opportunity & challenges with building and transport electrification costs folded into power expenditures

Supporting long-term affordability policy

- Focus on fewer, meaningful goals and policies, building on internal efforts
- Work with partners to set up a long-term data, analysis, and strategy architecture
- Consider but do not be entirely constrained by legal challenges

Priority metrics and policies

- Enhancing bill discount programs
- Shutoff prevention or limitation
- Rooftop solar incentives and assistance
- Income-based rates



Proposals to Address Affordability

UCLA Luskin Center for Innovation

Structural Affordability Considerations

- Assemble primary and secondary existing data sources to assess structural energy affordability and considerations for households across LADWP territory and utility itself

Energy Affordability Metrics

- Identify and prioritize among 8+ goals and metrics to narrow down actionable plans

Energy Affordability Policy Options

- Identify and prioritize among 15+ policy options to narrow down actionable plans

Deliverables

- Full report (chapter), executive summary, and presentation with infographics for each and combined tasks



Proposals to Address Affordability

UCLA School of Law

High-Level Rate Structure, Revenue and Bill Impacts

- Create a high-level portfolio of rate design and utility financing strategies
- Analyze impacts of potential rate structures on bills using the energy atlas

UCLA Latino Policy and Politics Initiative and Center for Neighborhood Knowledge

Assessing Energy Affordability Barriers and Opportunities for Ethnic Minority-Owned Small Businesses

- Engage small business organizations to inform data collection
- Design, test, and administer a survey to micro-businesses and self-employed individuals
- Assess current energy burden among LADWP's ethnic small business customers



Rates and Affordability Discussion



Buildings

Janet Reyna, PhD
NREL



Buildings

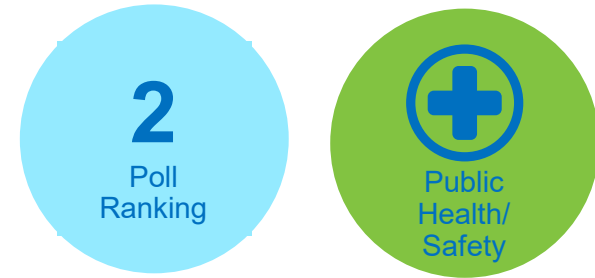
Universal Access to Home Cooling

Steering Committee Kickoff Meeting Vision:

- “Low-income energy needs are affordable”
- “Energy efficient low-income homes”
- “Safe, comfortable homes for all”
- “Equal energy for all”
- “Efficiency first”
- “Justice first in climate policy”

Steering Committee Feedback:

- “More direct install programs”
- “Funding assistance for low-income folks”
- “Electrification should produce & preserve affordable units”
- “Avoid eviction & affordable housing loss”
- “Addressing habitability with energy retrofits”
- “Incentives rather than rebates”
- “Subsidize multi-family affordable housing”
- “Incentivized upgrades in older rental properties”



Buildings

Universal Access to Home Cooling

Questions to Be Answered:

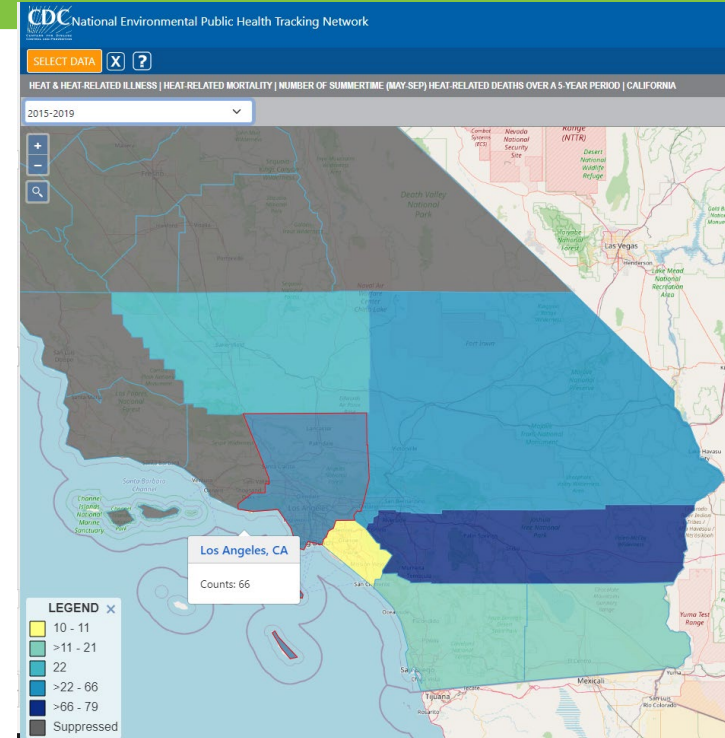
- Where are the intersections of *lack of home cooling*, *vulnerable populations*, and *lack of public resilience centers*?
- What *types of housing* are most vulnerable to dangerous temperature exposures?
- What are *housing-type-specific* cooling interventions?

Outcomes:

- Lowest-cost/lowest-bill-increase strategies and building-type-, income-level-, neighborhood-, and renter/owner-specific technology deployment strategies to provide universal cooling access in homes.

Examples of Steering Committee Guidance:

- What are culturally relevant and compelling implementation approaches?



Source: Center for Disease Control National Environmental Public Health Tracking Network. Heat & Heat-Related Illness. <https://ephrtracking.cdc.gov/DataExplorer/?c=35&i=67&m=1>



Buildings

Building Weatherization, Thermal Storage, and Resilience to Extreme Events

Steering Committee Kickoff Meeting Vision:

- “Low-income energy needs are affordable”
- “Energy efficient low-income homes”
- “Safe, comfortable homes for all”
- “Healthier energy without displacement”
- “Efficiency first”

Steering Committee Feedback:

- “Subsidize multi-family affordable housing”
- “Incentivized upgrades in older rental properties”
- “Addressing habitability with energy retrofits”

Affordable
Transition

Customer
Programs

Distribution
of Risk

Health Risks
&
Opportunities

Urban
Heat
Inequity



Buildings

Building Weatherization, Thermal Storage, and Resilience to Extreme Events

Questions to Be Answered:

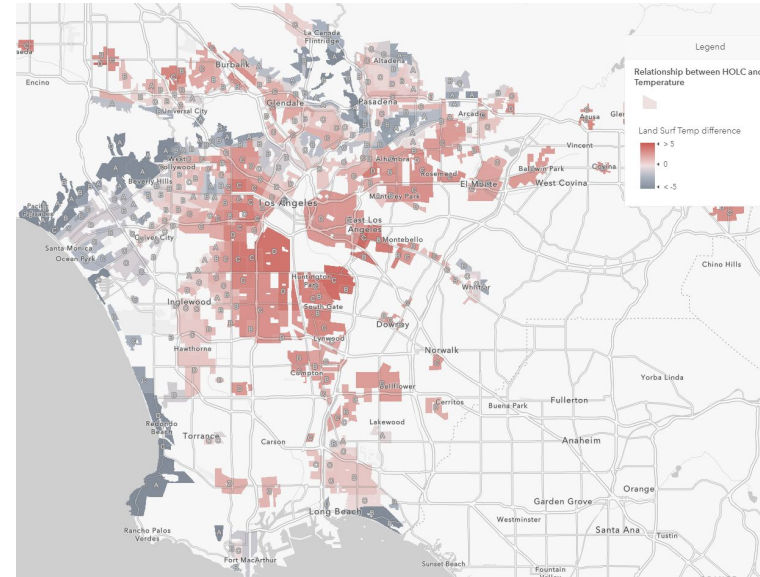
- What types of *homes* and *neighborhoods* have the least access to cooling?
- What are the *most effective weatherization interventions* to prevent dangerous in-home temperatures and associated health risks in an outage situation?

Outcomes:

- Optimized weatherization interventions by housing type to prevent health risks in extreme events.

Examples of Steering Committee Guidance:

- What are culturally compelling implementation approaches to deploy life-saving weatherization interventions?



Source: *The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban*

Areas. <https://www.mdpi.com/2225-1154/8/1/12/html>

Map: <https://www.arcgis.com/apps/dashboards/73e329457b6644e7aef13ecce43c8d8>



Buildings Discussion



Solar & Storage

Ashreeta Prasanna, NREL



Buildings/Local Solar & Storage

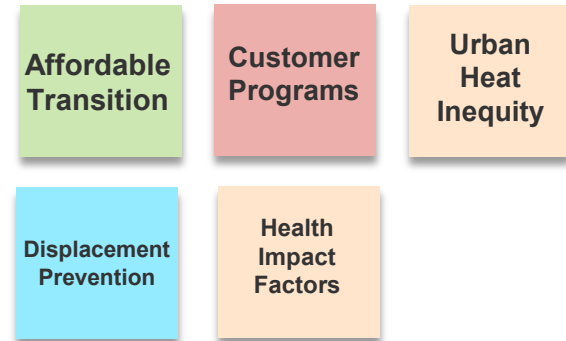
Improve Access to Solar/Storage, Energy Efficiency in Multifamily and/or Renter-Occupied Buildings

Steering Committee Kickoff Meeting Vision:

- “Low-income energy needs are affordable”
- “Energy efficient low-income homes”
- “Safe, comfortable homes for all”
- “Healthier energy without displacement”
- “Efficiency first”

Steering Committee Feedback:

- “More direct install programs”
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- “Incentivized upgrades in older rental properties”



Buildings/Local Solar & Storage

Improve Access to Solar/Storage and Energy Efficiency in Multifamily and/or Renter-Occupied Buildings

Questions to Be Answered:

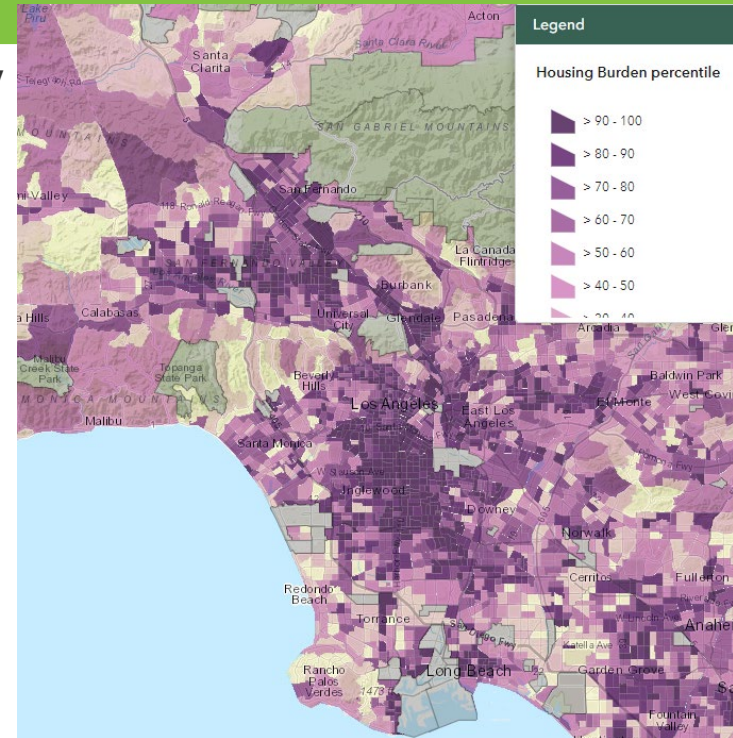
- What type of *programs, tariffs and subsidies* are likely to be successful in *improving access* to solar/storage and energy efficiency in multi-family or renter-occupied buildings?
- What suites of *building-type-specific technology and efficiency interventions* would deliver the highest cost savings?

Outcomes:

- Optimized strategies and metrics for solar, storage, and efficiency interventions that deliver the greatest cost savings in renter-occupied and/or multi-family homes.

Examples of Steering Committee Guidance:

- What are the main challenges to installing solar, storage, and energy efficiency in multi-family or renter-occupied buildings aside from affordability and split incentives?



Source: CalEnviroScreen 4.0 Housing Burden Indicator Map.
<https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/indicators/?views=Housing-Burden>



Local Solar & Storage

Increase Resiliency in Disadvantaged Neighborhoods through Targeted Solar-Plus-Storage Siting

Steering Committee Kickoff Meeting Vision:

- “Low-income communities benefit from green energy transition”
- “Low-income energy needs are affordable”
- “Solar+ roof & electric panel upgrades”

Steering Committee Feedback:

- “Strategy to utilize curtailment through storage”
- “Backup power in the basin for disruption periods”
- “Backup: Batteries, looking at different fuel alternatives”
- “Focus on regions prone to wildfires”

Affordable
Transition

Customer
Programs

Distribution
of Risk

Health Risks
&
Opportunities

City/LADWP
Infrastructure
Investment



Local Solar & Storage

Increase Resiliency in Disadvantaged Neighborhoods through Targeted Solar-Plus-Storage Siting

Questions to Be Answered:

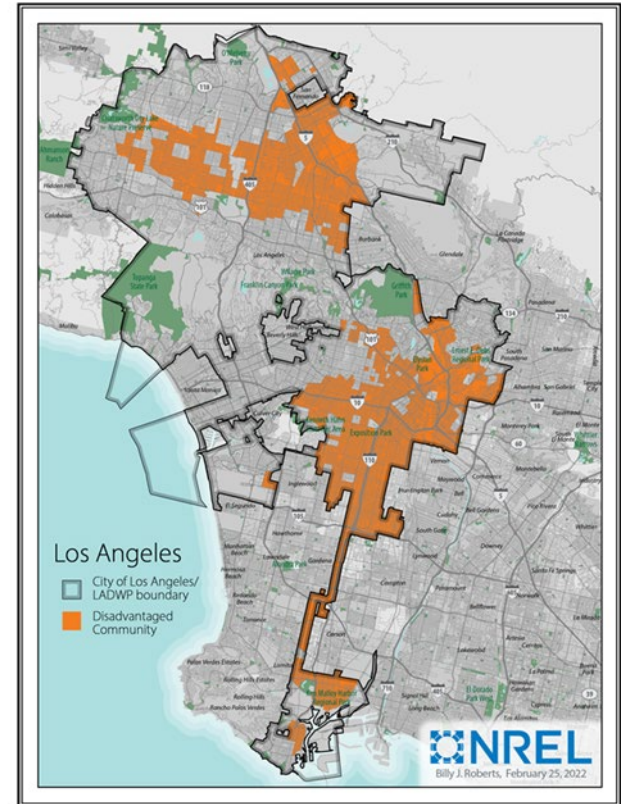
- *Where* and *how* can solar and storage be deployed to increase the hours/days of electricity service in an outage situation in disadvantaged communities?

Outcomes:

- Strategies for equitable solar and storage deployment

Examples of Steering Committee Guidance:

- What types of solar-plus-storage deployment programs would be most effective in serving disadvantaged communities?



Local Solar & Storage

Targeted Community Solar Siting

Steering Committee Kickoff Meeting Vision:

- “Low-income energy needs are affordable”
- “Low-income communities benefit from green energy transition”
- “Healthier energy without displacement”
- “Sustainable programs”

Steering Committee Feedback:

- “Rooftop solar location maybe less important over time”
- “Structural integrity of older roofs can’t support solar”
- “Increase solar/storage options, outreach in low-income communities of color”
- “Increase financial benefits to community solar participants”
- “Rooftop solar maintenance challenges”

Affordable
Transition

Customer
Programs

City
Infrastructure,
Programs, and
Policies

Displacement
Prevention



Local Solar & Storage

Targeted Community Solar Siting

Questions to Be Answered:

- What *specific locations* could host community solar with storage and deliver cost savings and electricity reliability in disadvantaged communities?

Outcomes:

- Community solar siting and strategies for reducing energy costs in disadvantaged communities.

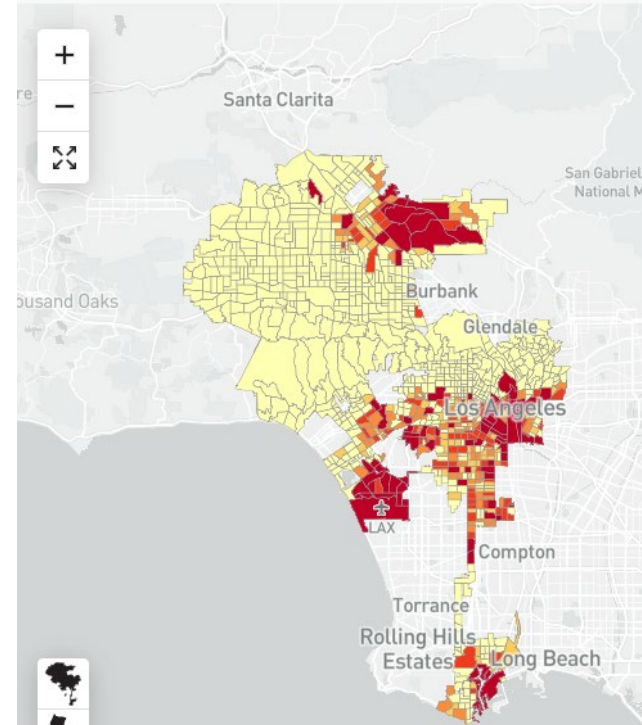
Examples of Steering Committee Guidance:

- Site prioritization.

Non-Rooftop Local Solar Deployment Capacity (MW)

Early & No Biofuels - High (2045)

Current Resolution: Tracts



Source: LA100: The Los Angeles 100% Renewable Energy Study. Data Viewer. <https://maps.nrel.gov/la100/data-viewer>

Solar & Storage Discussion



Transportation

Dong-Yeon Lee, PhD
NREL



Transportation

- **Equitable Electric Vehicle (EV) & Charging Access**
- **Reduced Transportation Energy Burdens**

Steering Committee Kickoff Meeting Vision:

- “Low-income energy needs are affordable”
- “Low-income communities benefit from green energy transition”
- “Equal energy for all”
- “Pollution reduction from underserved community investments”

Steering Committee Feedback:

- “EV sharing programs”
- “EV charging stations distributed equitably across communities”
- “Set up low-income communities for EV infrastructure”
- “Electric bikes,” “Scooter access”
- “Active transportation routes around transmission lines/corridors”

Affordable
Transition

Customer
Programs

City
Infrastructure,
Programs, and
Policies

Health
Impact
Factors



Transportation

- Equitable Electric Vehicle (EV) & Charging Access
- Reduced Transportation Energy Burdens

Questions to Be Answered:

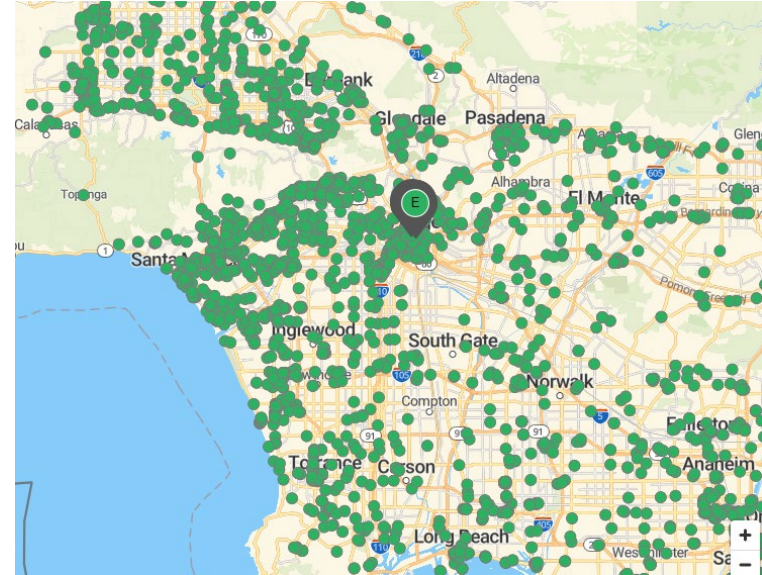
- What would a *business-as-usual, economic EV adoption* scenario look like versus an *equitable adoption model*?
- What are the *electrical loads* associated with equitable EV adoption and access and EV charging infrastructure distribution?
 - Feeds into electricity system upgrades needed to support equitable EV access and charging needs.
- What is the potential for *increased multimodal electric mobility* (i.e., bikes, scooters, car share)?
 - What are the energy cost and demand savings?

Outcomes:

- Strategies to equitably achieve high EV ownership and access
- Strategies for equitable EV charging infrastructure access
- Strategies for reducing transportation energy costs for low-income households.

Examples of Steering Committee Guidance:

- Input on critical factors limiting e-bike, e-scooter, car-share access



Source: Alternative Fuels Data Center – Electric vehicle charging station locations.
<https://afdc.energy.gov/stations/#/find/nearest?location=los%20angeles,%20ca&fuel=EL&EC>



Transportation Discussion



Reliability & Resilience

Sherin Ann Abraham

NREL



Reliability & Resilience

Support Electric Reliability and Enable Solar, Storage, and Electric Vehicles in Disadvantaged Communities through Distribution Grid Upgrades

Steering Committee Kickoff Meeting Vision:

- “Low-income communities benefit from green energy transition”
- “Equal energy for all”
- “Inclusive energy future”

Steering Committee Feedback:

- “Ensure investment in most pollution-burdened communities”
- “Need EV infrastructure in ALL communities”
- “Real time information on energy sources to lower-income households”

Distribution
of Risk

City
Infrastructure,
Programs, and
Policies

Health &
Environmental
Infrastructure
Strategies

Health Risks
&
Opportunities

Reliability

City/LADWP
Infrastructure
Investment



Reliability & Resilience

Support Electric Reliability and Enable Solar, Storage, and Electric Vehicles in Disadvantaged Communities through Distribution Grid Upgrades

Questions to Be Answered:

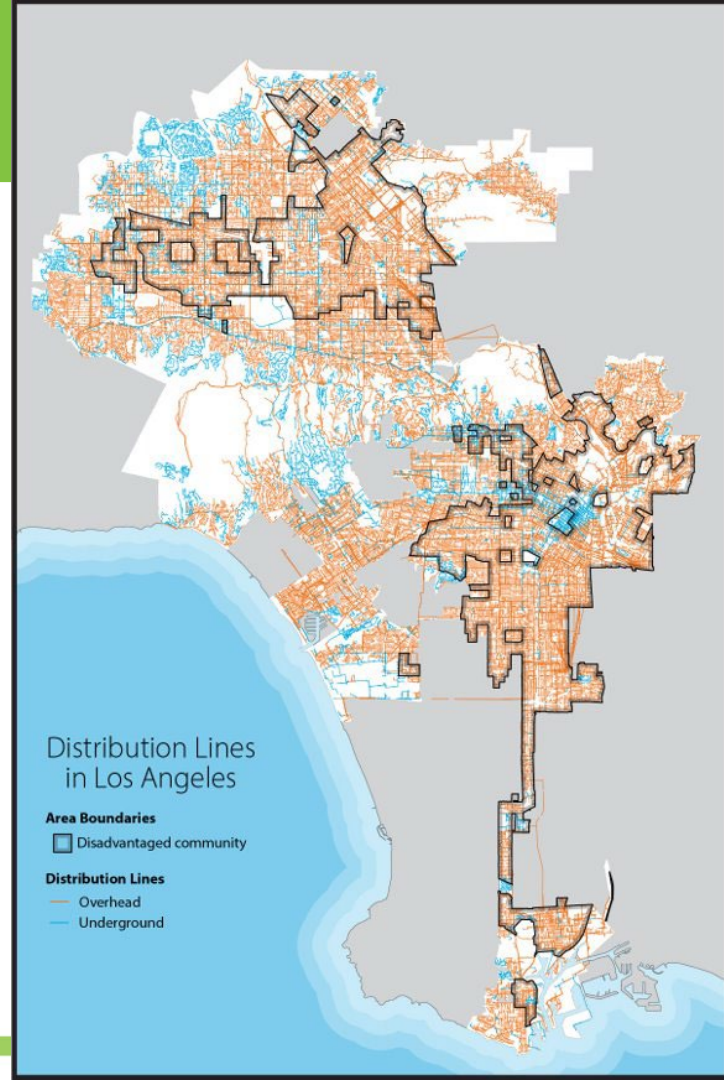
- What *infrastructure investments* are needed to ensure equitable electricity reliability and support solar, storage, and electric vehicle adoption in underserved communities?
- What are the *associated costs* and *avoided costs*?

Outcomes:

- Answers will inform equitable prioritization of LADWP electric distribution system investments.

Examples of Steering Committee Guidance:

- What aspects of today's electric infrastructure represent barriers for disadvantaged communities' path to 100%?
- Considering an electrified future, what are equitable electric service priorities during a disaster or other resiliency event?



Reliability and Resilience Discussion



Air Quality and Public Health

Garvin Heath, NREL

Yifang Zhu, Fielding School of Public Health, UCLA



Air Quality & Public Health

Steering Committee Kickoff Meeting Vision:

- “Low-income communities benefit from green energy transition”
- “Pollution reduction from underserved community investments”
- “Justice first in climate policy”

Steering Committee Feedback:

- “Power generation pollutes less than transportation”
- “Biggest health danger from transportation”
- “Ensure investment in most pollution-burdened communities”
- “Electrifying transportation will reduce GHGs”
- “Failure to meet federal air quality standards could lead to federal transportation funding loss”

Distribution
of Risk

City
Infrastructure,
Programs, and
Policies

Health &
Environmental
Infrastructure
Strategies

Health Risks
&
Opportunities

Health
Impact
Factors

Air Quality



Air Quality & Public Health

Questions to Be Answered with NREL and UCLA collaboration:

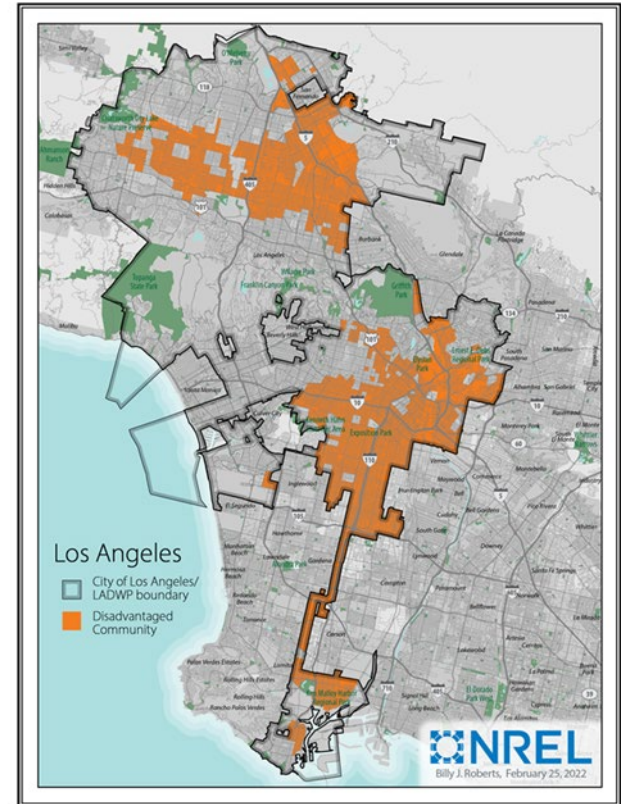
- Electrification of *which types of vehicles (light-, medium-, and heavy-duty)* and *where* would provide the greatest health benefits in disadvantaged communities?
- Will *vehicle electrification* provide greater air quality and health improvements in disadvantaged communities?

Outcomes:

- Answers will inform vehicle electrification incentives and program targeting, and infrastructure investment locations and sequencing.

Steering Committee Guidance:

- Which neighborhoods and roads should be prioritized?
 - Feedback from Steering Committee meeting #5: major freeways, Ports/LAX corridors, Wilmington, Pacoima, South LA



Air Quality & Public Health

UCLA Scenarios

- Zero-Emission Vehicle disparity scenario
- Zero-Emission Vehicle equity scenario
 - Light-duty
 - Light-, medium-, & heavy-duty



Air Quality Modeling

- Model ambient PM_{2.5} and O₃ in 2035 using WRF-Chem (high resolution of about 1 km by 1 km)



NREL Scenarios

- UCLA-developed scenarios
- Medium- and heavy-duty vehicle classes at different electrification levels across a wide range
- Each scenario in many different LA neighborhoods,



Air Quality Modeling

- Near-roadway air quality model (<100 m spatial resolution)



Health Assessment

- Racial/ethnic specific baseline mortality rates
- Mortality due to PM_{2.5}, due to O₃
- Monetized health benefits at a community level



Air Quality and Public Health Discussion



Jobs and Workforce Development

Abel Valenzuela, Jr., PhD
Raúl Hinojosa-Ojeda, PhD
Institute for Research on Labor & Employment
UCLA



Team History & Values

- History at UCLA (urban planning & Chicano and Central American Studies)/Los Angeles
- Research (Social Science for the public good and bridging transnational spaces)
- Empirical, data and policy driven research that empowers local communities and workers
- Community driven research from working on the ground with local, state, national and transnational organizations



Relevant Current Projects

Research Engagement in Green Jobs and Just Transitions

- IRLE/NAID, Green Jobs Calculator Tool Kit:
 - Allows for back tracking and projected Green and Non-Green Jobs (direct, Indirect and Induced) over various scenarios based on LA100 Energy Models.
 - Calculator Tool and Results will focus on a variety of equity variables including race/ethnic and income related to current and future workforce development and Just Transition challenges.
- Forthcoming data portal will allow for accessing data at the community level for Green Jobs Community Workforce engagement.
- Research on building community and stakeholder coalitions for green jobs workforce development funding and implementation strategies (Pilot Case Studies for funding mobilization – Wilmington/Port of L.A.).



Relevant Future Projects

Research Engagement in Green Jobs and Just Transitions

IRLE/NAID, Green Jobs Calculator Tool will be used to:

- *Envision Green Jobs workforce needs based sectoral projections from the LADWP SLTRP based goals and scenarios from LA100 modeling.*
- *Workforce projections will also include the impacts of the transition from current DWP sectoral employment*
- *Workforce needs will be calculated on a direct, Indirect and Induced estimations based on the UCLA SAM Green Jobs model, analyzed within a race/ethnic equity lens.*
- *Projections of employment needs will be reported to support workforce development planning efforts.*
- Calculator results will help in developing pathways/strategies for securing federal and state dollars for job creation, employment and training, and workforce development that would be inclusive of Wilmington but will also serve as a pilot for other intensive community stakeholder engagement.



Jobs and Workforce Development Discussion



Wrap Up and Next Steps



Advisory Committee Meetings

June 22, 2022
Virtual

- Review of initial findings on factors contributing to current energy inequities
- SLTRP Presentation

August 24, 2022
Virtual

- Energy affordability modeling approach

Subsequent Meetings

- **Fourth Wednesday of every other month, 10:00 a.m. – 12:00 p.m. PT**
- **Virtual** for near-term



Thank you!
