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

LA DWP

NREL
Transforming ENERGY

UCLA

Welcome and Opening Remarks

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

Simon Zewdu
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Transmission Planning,
Regulatory, and Innovation Division

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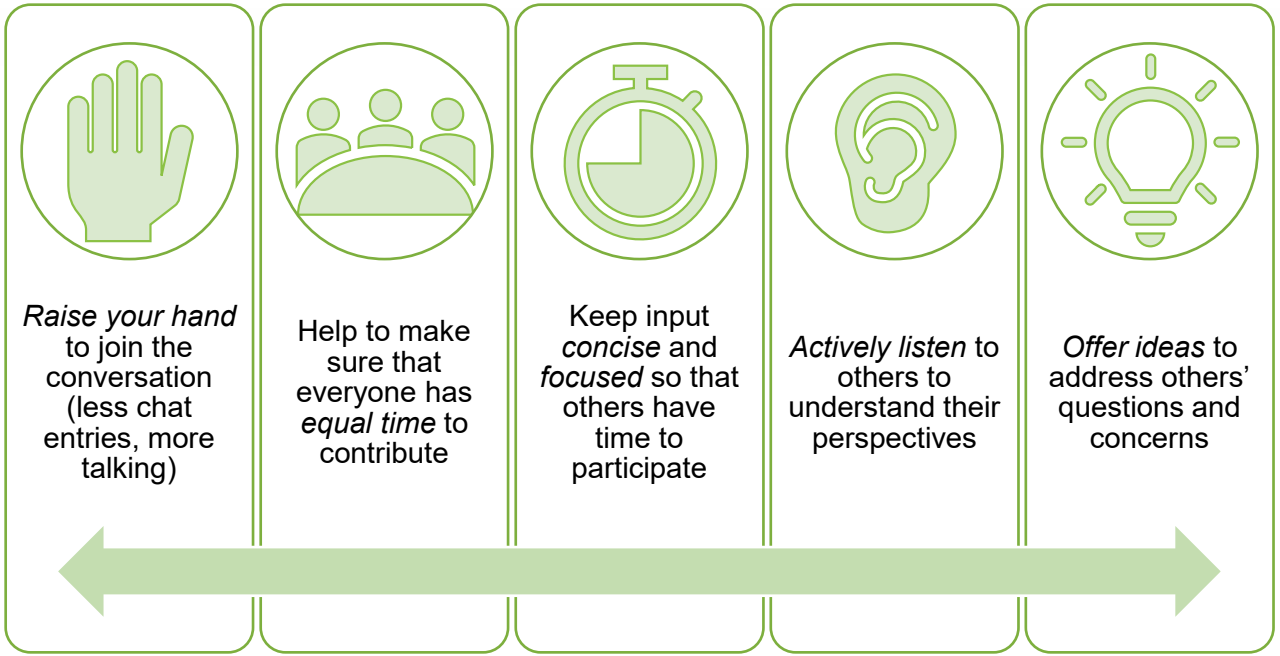
Utility Administrator
LA100 Equity Strategies Oversight
& UCLA Contract Administrator

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 • 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



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	- Prioritized equity outcomes & pathways ← Today's focus - Policy and program knowledge & guidance - Procedural justice						
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.

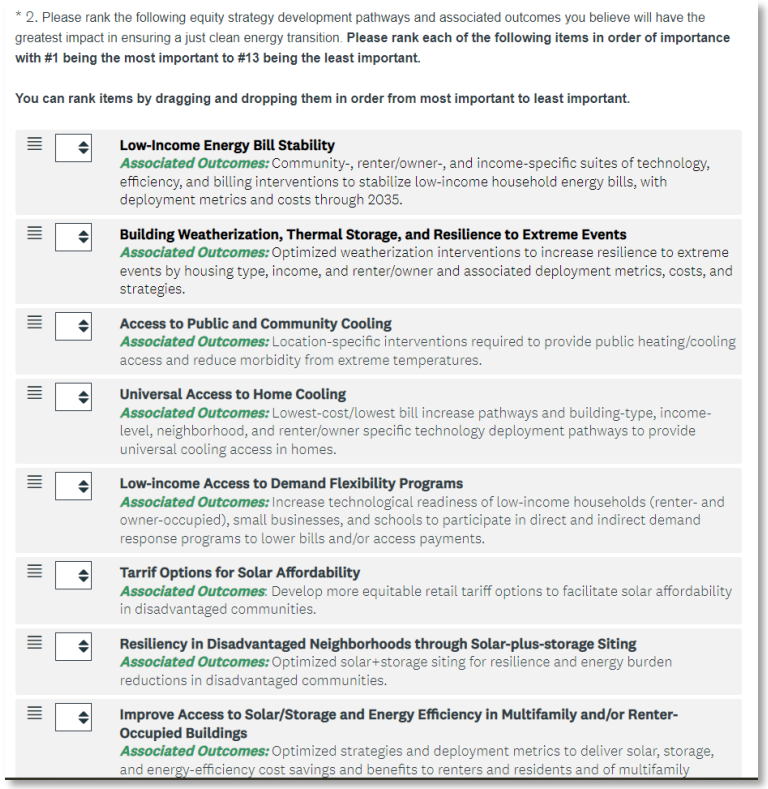
We ask that only one entry be submitted per Steering Committee member organization.

* 1. Contact Information

Name

Organization

Email Address



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:

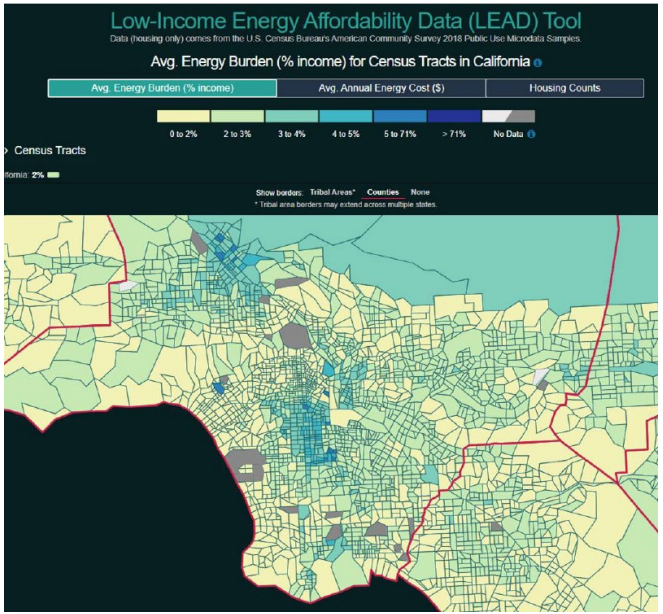
- How will the costs of LA's transition impact low-income household energy bills under a *business-as-usual case*?
- How can different rate structures, assistance, and other utility programs stabilize bills for low-income households?

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/slsc/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

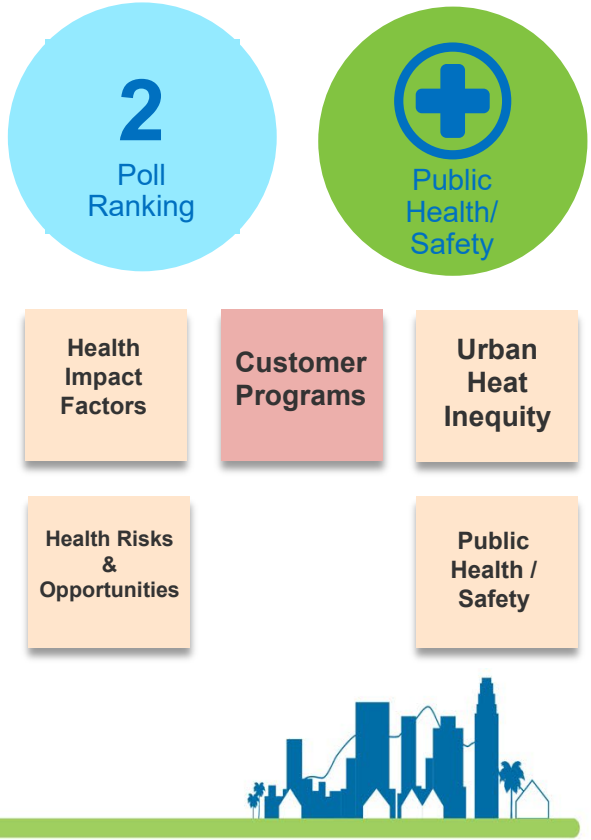
Universal Access to Home Cooling

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:

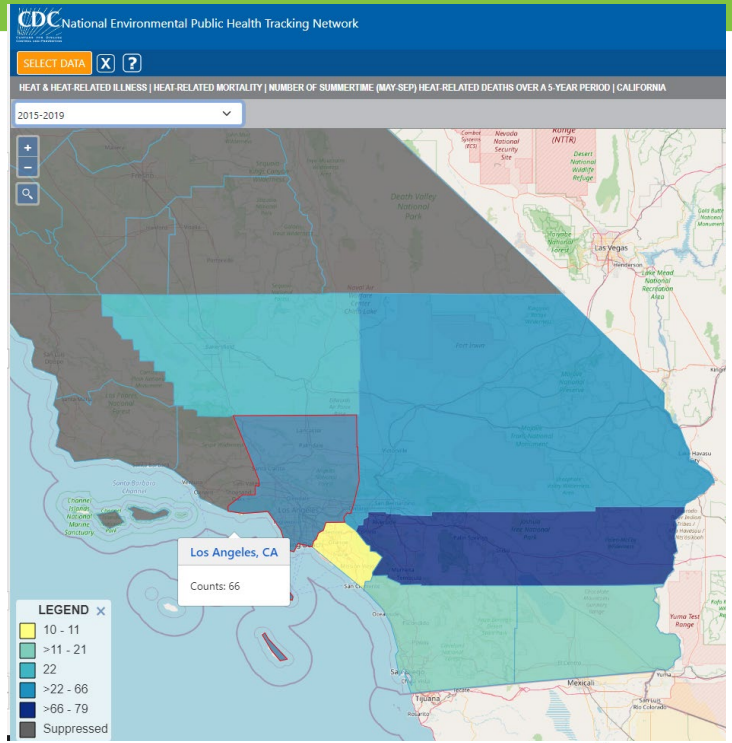
- Where are the intersections of *lack of home cooling*, *vulnerable populations*, and *lack of public resilience centers*?
- What *types of housing* are most vulnerable to dangerous temperature exposures?
- What are *housing-type-specific* cooling interventions?

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://ephtracking.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:

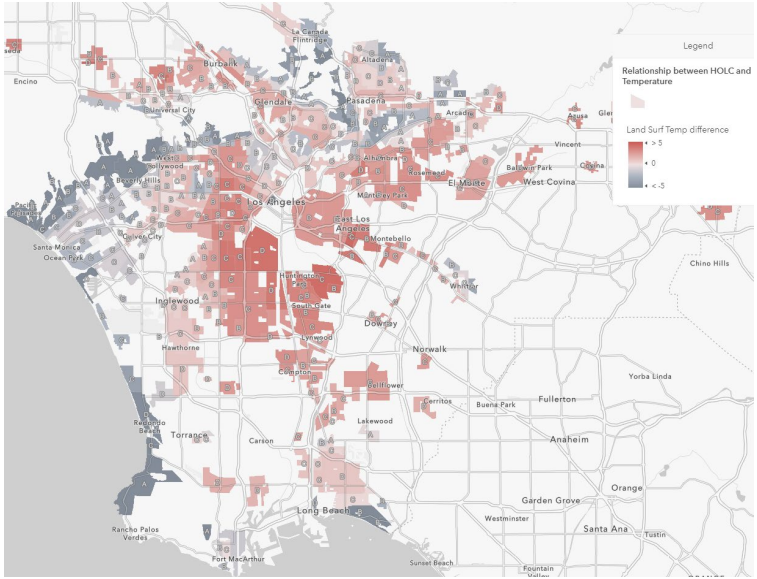
- What types of *homes* and *neighborhoods* have the least access to cooling?
- What are the *most effective weatherization interventions* to prevent dangerous in-home temperatures and associated health risks in an outage situation?

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/htm
Map: https://www.arcgis.com/apps/dashboards/73e329457b6644e7aeff13ecce43c8d8

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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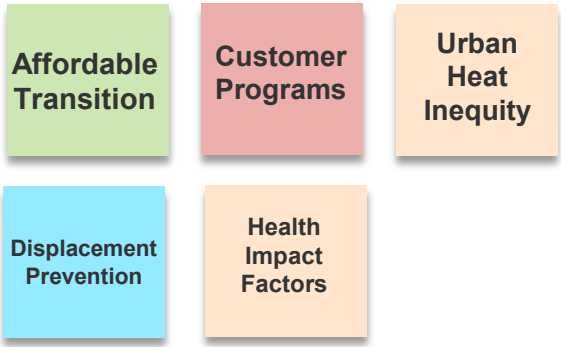


Buildings/Local Solar & Storage

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

Questions to Be Answered:

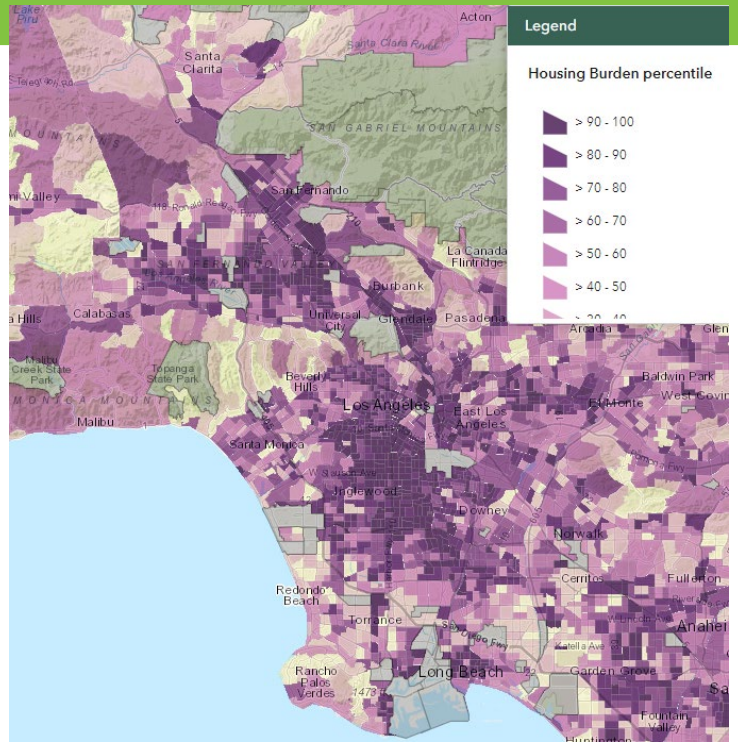
- What type of *programs*, *tariffs* and *subsidies* are likely to be successful in *improving access* to solar/storage and energy efficiency in multi-family or renter-occupied buildings?
- What suites of *building-type-specific technology* and *efficiency interventions* would deliver the highest cost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

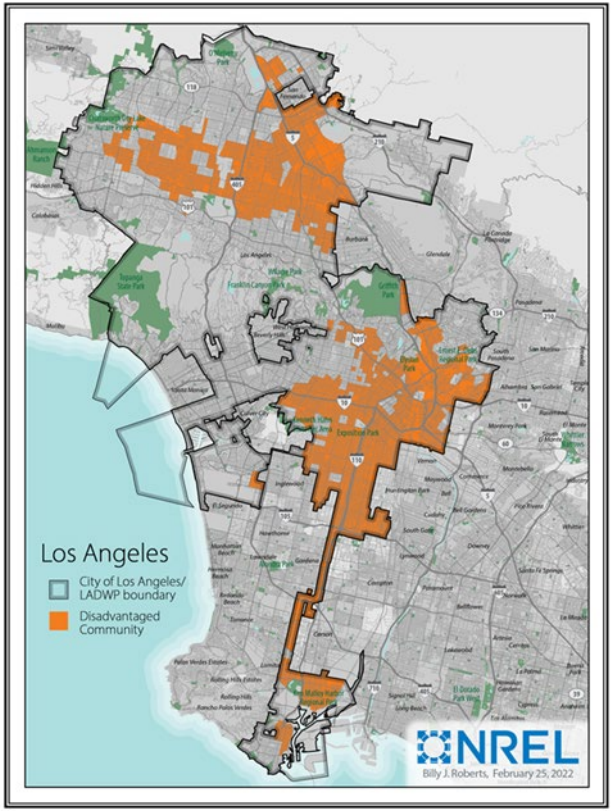
- *Where* and *how* can solar and storage be deployed to increase the hours/days of electricity service in an outage situation in disadvantaged communities?

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:

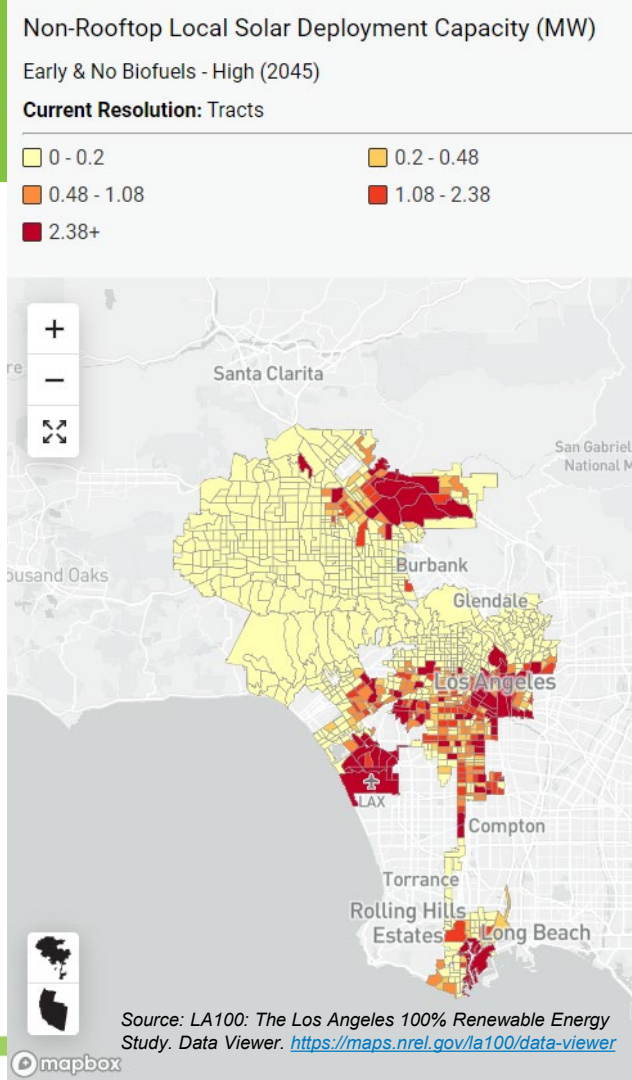
- What *specific locations* could host community solar with storage and deliver cost savings and electricity reliability in disadvantaged communities?

Outcomes:

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

Examples of Steering Committee Guidance:

- Site prioritization.



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:

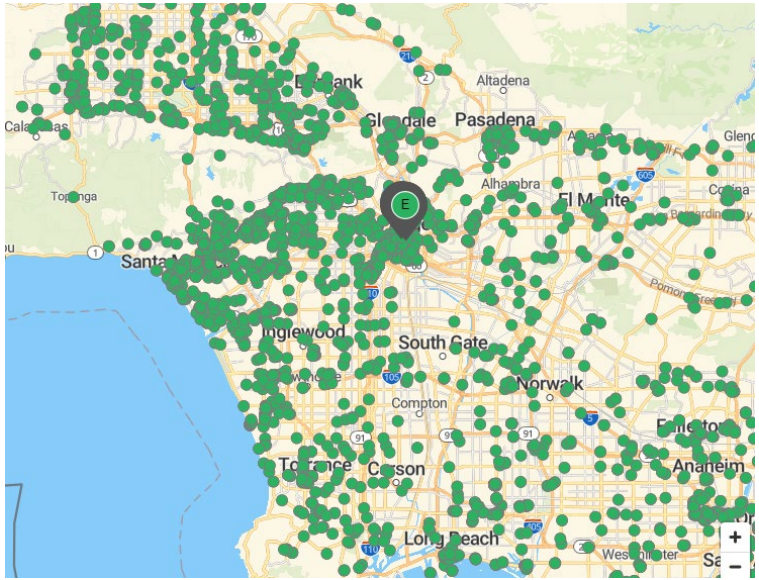
- What would a *business-as-usual, economic EV adoption* scenario look like versus an *equitable adoption model*?
- What are the *electrical loads* associated with equitable EV adoption and access and EV charging infrastructure distribution?
  - Feeds into electricity system upgrades needed to support 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=ELEC

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:

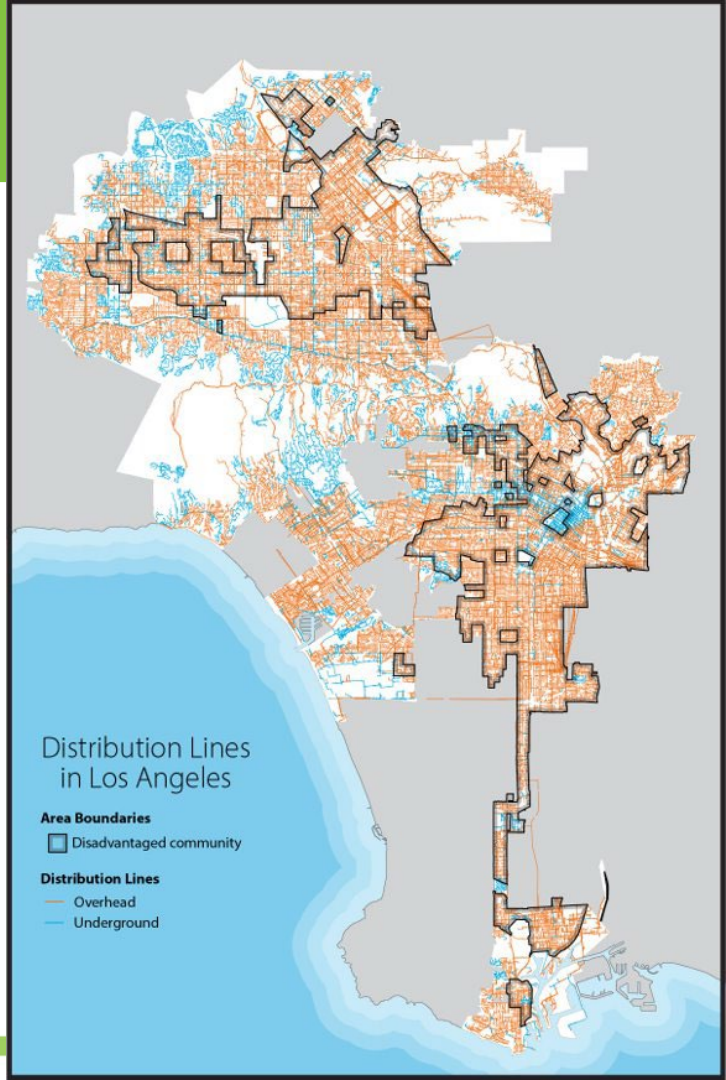
- What *infrastructure investments* are needed to ensure equitable electricity reliability and support solar, storage, and electric vehicle adoption in underserved communities?
- What are the *associated costs* and *avoided costs*?

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:

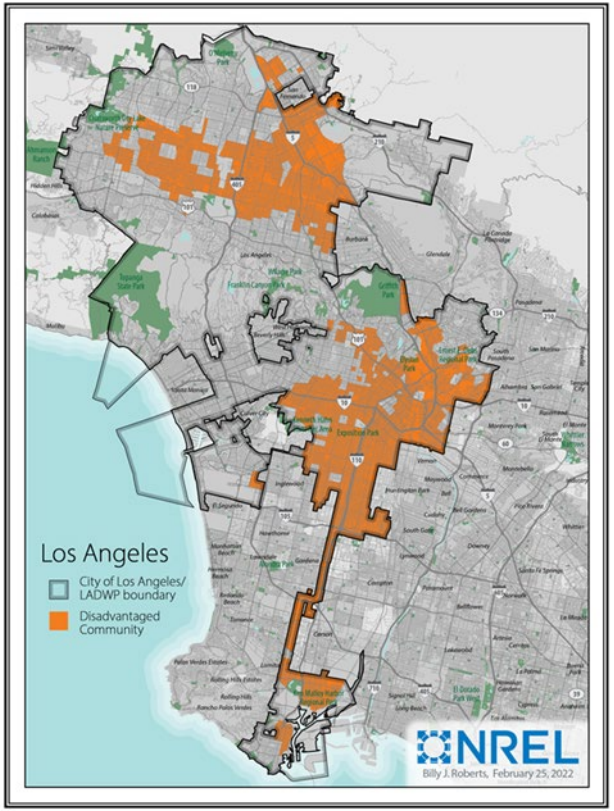
- Electrification of *which types of vehicles (light-, medium-, and heavy-duty)* and *where* would provide the greatest health benefits in disadvantaged communities?
- Will *vehicle electrification* provide greater air quality and health improvements in disadvantaged communities?

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 PM2.5 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 O_3
- 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

Going Forward

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!