

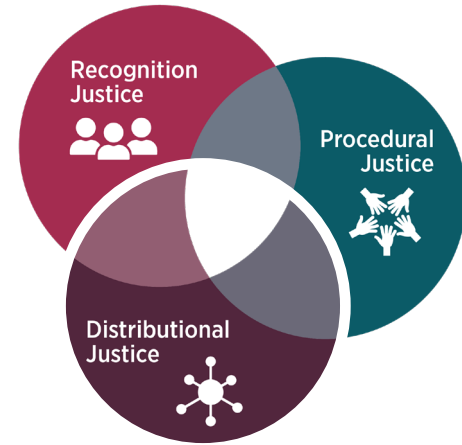
L.A.'s Clean Energy Future Powered by Equity



Agenda

1. Recap Results of LA100 Equity Strategies
2. Equity Strategies Engagement in the SLTRP Process
3. Q&A





Equity Strategies Recap

LADWP Is Leading the Way in Creating a Clean and Equitable Energy Transition

LA100 Equity Strategies

Study by **NREL** and **UCLA**

Goal: Center equity in LA's clean energy transition

2018

2019

2020

2021

2022

2023

LA100

Study by **NREL**

Goal: Model a path to a 100% clean and renewable energy system in LA



LA100 Equity Strategies Was Community-Driven

- Unprecedented 2-year public engagement and research effort
- Independent study and analysis led by NREL and UCLA
- Guided by a Steering Committee
 - 14 LA Community-based organizations active in energy and environmental justice
 - 18 monthly meetings
- 15 “listening sessions” with 150 community members
- Advisory Committee as a resource to the research effort
 - 31 LA agencies, labor, environmental groups
 - 8 bi-monthly meetings



Five Community- Identified Priorities



Affordability and energy burdens



Access to and use of energy technologies, programs, and infrastructure



Health, safety, and community resilience



Jobs and workforce development



Inclusive community involvement



Study Overview



RECOGNITION, PROCESS, AND COMMUNITY STRATEGIES


Recognition
Justice



CHAPTER 1
Justice as
Recognition



Procedural
Justice



CHAPTER 2
Procedural
Justice



CHAPTER 3
Community-
Guided Energy
Equity Strategies



CHAPTER 4
Lessons Learned
and Options for
Community
Engagement in
Los Angeles


Distributional
Justice



CHAPTER 5
Low-Income
Energy Bill Equity
and Affordability



CHAPTER 6
Universal Access to
Safe and Comfortable
Home Temperatures



CHAPTER 7
Housing
Weatherization
and Resilience



CHAPTER 8
Equitable Rooftop
Solar Access
and Benefits



CHAPTER 9
Equitable Community
Solar Access
and Benefits



CHAPTER 10
Household
Transportation
Electrification



CHAPTER 11
Truck Electrification
for Improved Air
Quality and Health



CHAPTER 12
Distribution Grid
Upgrades and
Resilience



Cross-
Cutting



CHAPTER 13
Energy Affordability
and Policy
Solutions



CHAPTER 14
Small Ethnic-
Owned Businesses



CHAPTER 15
Air Quality and
Public Health



CHAPTER 16
Green Jobs and
Workforce
Development



CHAPTER 17
Service Panel
Upgrades for
Electrification

Energy Bill Affordability and Equity

Thomas Bowen, NREL

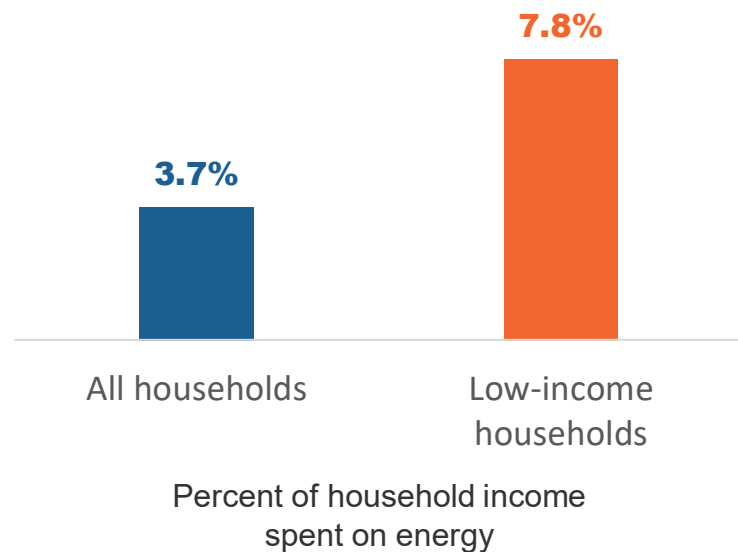
Christina Simeone, NREL



Affordability: Where we are today



- 13% of Los Angeles households are energy-burdened and extremely low-income
- LADWP has low enrollment in bill assistance programs (7% of residential customers in 2019) and low bill discounts (\$8/month in 2019)
- Continuation of the existing rate approach will increase electricity bills more for low-income customers than all customers
- Current laws restrict LADWP's ability to reform rates and increase low-income assistance.



Affordability Strategies



Implement simplified tiered or time-of-use rates, replace solar net metering with net billing

- Low-income monthly bills decrease \$14-\$15/month
- Bill disparity between solar adopters and non-adopters decreases from \$162/month to \$55-\$65/month.

Policy

Program



Implement robust low-income assistance programs

Reduces low-income bills 22% in 2035 compared to business-as-usual rates and increases the number of households receiving assistance by more than 250,000.



Implement low-income customer on-bill tariffs for energy efficiency

Can reduce energy bills for more than 150,000 low-income customers.



Explore income-based fixed charges

Reduces low-income bills 58% and eliminates high electricity burdens for all customers by 2035.



Housing

Katelyn Stenger, NREL

Philip White, NREL

Noah Sandoval, NREL

Tony Fontanini, NREL

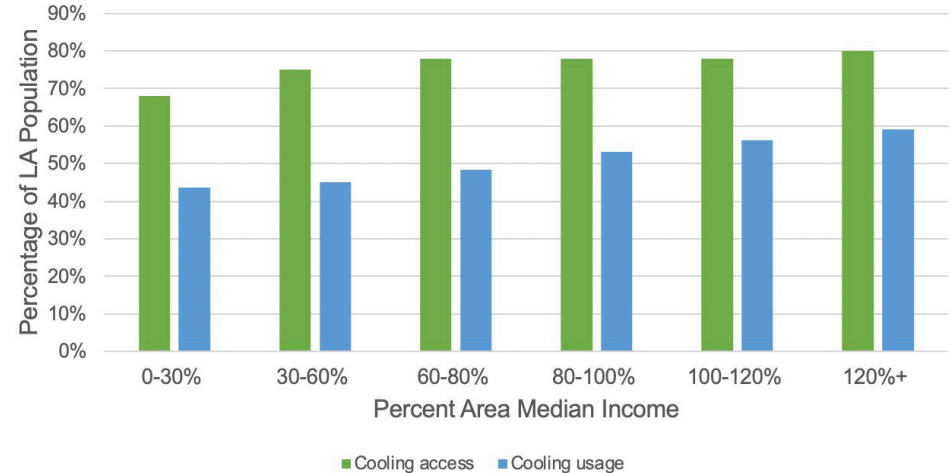
Ry Horsey, NREL



Housing: Where we are today



- Fewer than 50% of low- and moderate-income households use cooling
- More than 30% of extremely low-income households lack access to cooling
- 230,000 low-income households will experience more than two months of exposure to dangerous indoor air temperatures annually by 2035
- Low-income multifamily building renters have highest exposure to dangerous temperatures in an outage.



Housing Strategies



	Policy	Program
<p>Expand direct installation of cooling in extremely low-income households without cooling, prioritizing multifamily buildings</p> <p>Access to cooling is the most effective intervention to reduce exposure to dangerous temperatures for all building types.</p>		✓
<p>Provide heat pump rebates in Cool LA</p> <p>Heat pumps reduce energy bills by providing 29% more energy efficient cooling compared to window AC units; rebates reduce high capital costs.</p>		✓
<p>Mitigate rent increases and displacement from LADWP-supported upgrades</p> <p>Partner with the Housing Authority to provide cooling and weatherization in public housing.</p>		✓



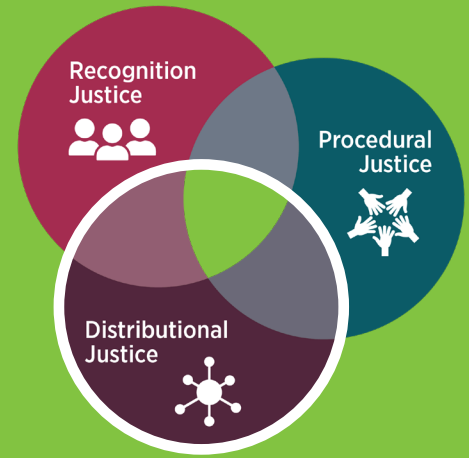
Local Solar

Ashreeta Prasanna, NREL

Ashok Sekar, NREL

Jane Lockshin, NREL

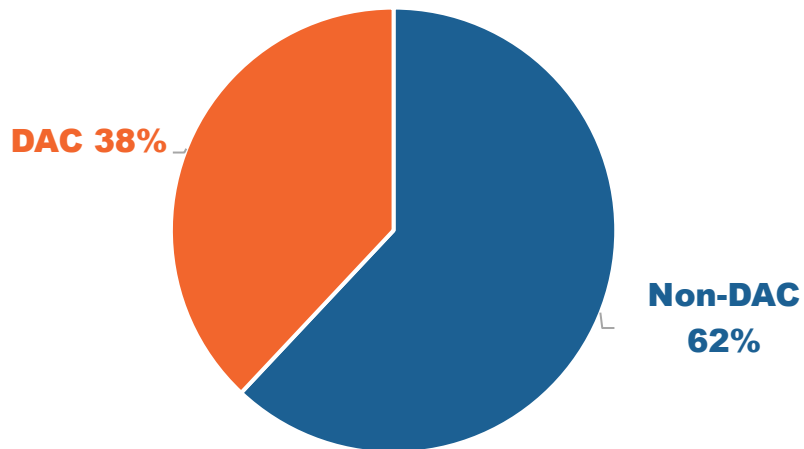
Paritosh Das, NREL



Solar: Where we are today



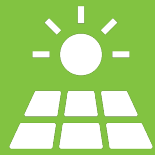
- 62% of LADWP solar net energy metering incentives went to households in non-disadvantaged communities
- \$341M in LADWP solar incentives disproportionately benefited predominantly White, non-Hispanic, homeownership, and wealthier neighborhoods
- The LADWP Shared Solar program has higher participation and subscribed capacity among non-disadvantaged, non-Hispanic, and wealthier communities
- The LADWP Shared Solar program requires a premium payment for enrollment.



Solar net metering incentive allocation
Normalized by number of customers



Solar Strategies



	Policy	Program
Establish a low- and moderate-income Shared Solar subscription rate Increasing max subscription amount to 500 kW/month and lowering the rate to \$0.18/kWh reduces LMI annual energy bills by \$480/household		✓
Substantially expand Shared Solar capacity and allocate 50% of all new project capacity to low- and moderate-income subscribers Prioritize Shared Solar development at the 1 brownfield, 730 multifamily, 21 recreation centers, and 150 LADWP-owned sites with ≥ 30 kW economically viable capacity		✓
Develop Shared Solar on economically viable ≥ 30 kW multifamily sites in low-income tracts to capture the 50% Tax Credit and deliver bill savings LA has 600+ economically viable potential shared solar sites on multifamily properties in low-income tracts totaling 255 MW		✓



Household Transportation Electrification

Alana Wilson, NREL

Bingrong Sun, NREL

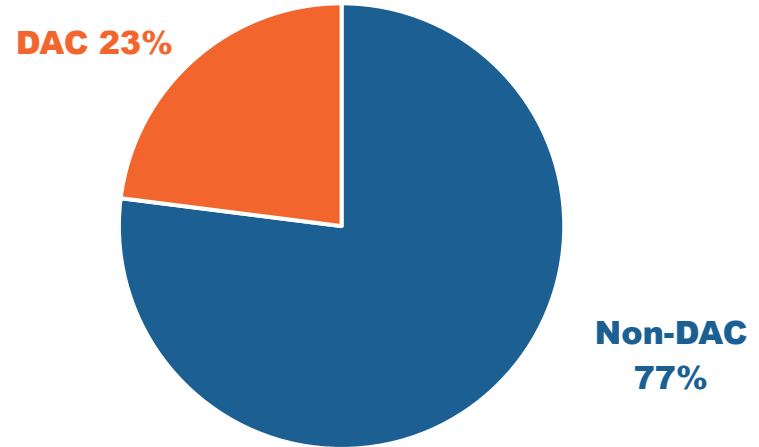
D-Y Lee, NREL



Household Transportation: Where we are today



- 77% of LADWP residential used EV and EV charging incentives went to households in non-DACs
- \$5.4M in LADWP EV incentives disproportionately benefited predominantly White, non-Hispanic, homeownership, and wealthier neighborhoods
- Non-Hispanic households have access to more public charging stations near their homes than Hispanic households
- In LA DACs, 16% of households do not own vehicles (versus 12% citywide)



Electric vehicle incentive allocation
Normalized by number of customers



Household Transportation Strategies

	Policy	Program
<p>Increase LADWP low-income used EV incentive from \$2,500 to \$4,000, add an eligibility purchase price cap of \$25,000 for all rebates, shift to point-of-sale discounts, and establish e-bike and e-scooter rebates</p> <p>Increases used EV adoption among LMI households 50,000 vehicles by 2035 and reduces total household expenditures by about 3%.</p>		✓
<p>Expand at- and near-home light-duty EV charging access for low-income multifamily building residents and include low-voltage charging outlets at charging stations</p> <ul style="list-style-type: none"> • 50,000 new charging ports provide charging access to the 320,000 EV adopters in DACs projected by 2035 • Low-voltage outlets support e-bike, low-speed vehicle, e-scooter, and older-model EV charging. 		✓
<p>Provide vouchers or charging subscriptions for public EV charging to low-income households, especially those without home charging access</p> <p>Public charging costs an average of \$300 more per year compared to at-home charging for LMI households.</p>		✓
<p>Establish EV car-share, e-bike, and e-scooter programs in transportation DACs</p> <ul style="list-style-type: none"> • Provides cost savings of 7% and reductions in travel time of up to 30% • Reduce emissions by 316,000 tons of CO₂e per year (equivalent to taking 62,000 cars off the road). 		✓



Truck Electrification for Improved Air Quality and Health

Garvin Heath, NREL

Vikram Ravi, NREL

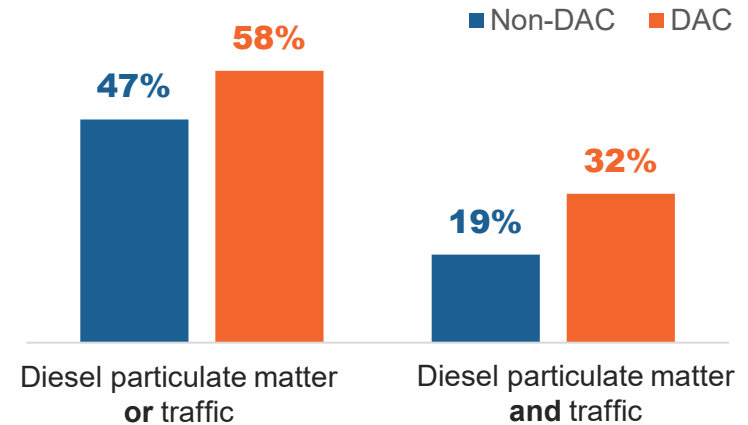
Yun Li, NREL



Truck Electrification: Where we are today



- DACs have a disproportionately high representation among California's most traffic-affected neighborhoods
- Heavy-duty trucks in LA account for more than 50% of on-road transportation NO_x emissions, though they make up only 5% of vehicle population
- Heavy-heavy-duty trucks, such as fire trucks and dump trucks, contribute more than 90% of truck-related NO₂ and 80% of truck-related particulate matter concentration in LA (5x other heavy-duty trucks).



>75 percentile exposure to diesel particulate matter or/and traffic impact

(Source: CalEnviroScreen 4.0)



Truck Electrification Strategies



	Policy	Program
<p>Establish targets, a plan, and a budget for LADWP heavy-duty truck fleet electrification and truck charging infrastructure development, with a carve-out for heavy-heavy-duty trucks</p> <p>Traffic-impacted DACs benefit 25% more from truck electrification than non-DACs.</p>		✓
<p>Collaborate to establish a community-wide 2035 heavy-duty truck electrification target, a target for City-owned truck electrification, and purchase incentives</p> <p>A goal of 28,000 electrified class 3-8 trucks in Los Angeles by 2035 aligns with state policies.</p>		✓
<p>Establish city heavy-duty truck charging infrastructure targets aligned with truck electrification goals, collaborate on siting</p> <ul style="list-style-type: none">• 1,900 – 3,300 truck chargers by 2025• 5,400 – 9,600 truck chargers by 2030• 14,000 – 24,000 truck chargers by 2035.		✓



Distribution Grid Upgrades and Resilience

Bryan Palmintier, NREL

Sherin Ann Abraham, NREL

Kwami Sedzro, NREL

Jane Lockshin, NREL

Gayathri Krishnamoorthy, NREL

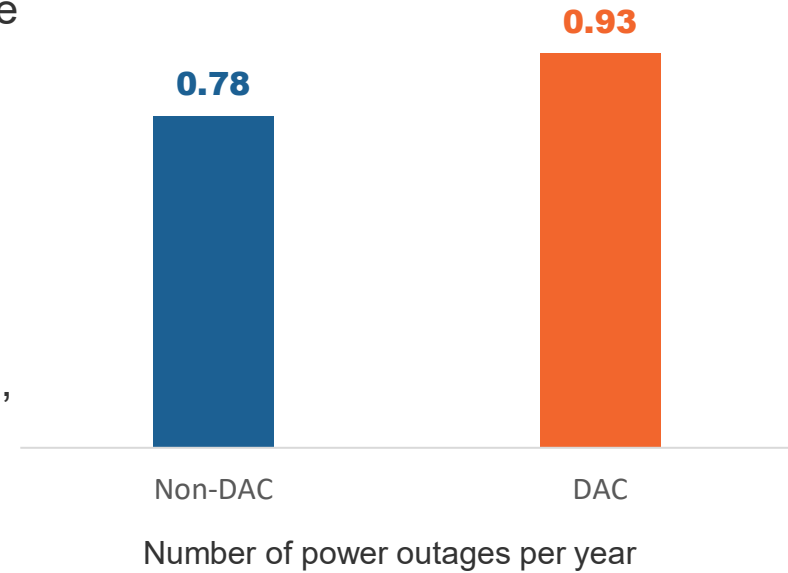
Kapil Duwadi, NREL



Grid Upgrades & Resilience: Where we are today



- DAC and mostly Hispanic communities experience more frequent power interruptions than non-DAC and mostly non-Hispanic communities
- 12.6% of distribution lines are underground in DACs compared to 26.7% in non-DACs
- Grid stress is 14% higher in regions of the city with significant DACs than regions with few DACs, and is projected to worsen to 25% higher by 2035
- In modeled disaster events, DACs have lower access to critical electricity-related services such as grocery stores, hospitals, and convenience stores than non-DACs.



Grid Upgrades & Resilience Strategies

	Policy	Program
Incorporate equity as a priority in grid infrastructure investment planning Incorporate income and DAC status to identify areas of inequity.		✓
Upsize transformer capacity by 2–3+ times when replacing service transformers to accommodate electrification and DERs, particularly for those serving customers with low capacity (<125A) service Coordinate grid upgrade programs with cooling, electric vehicle, home electrification, and electric panel upgrades.		✓
Implement community-specific, equitable resilience strategies Prioritize resilient electricity upgrades for critical emergency services in neighborhoods with low service access.		✓

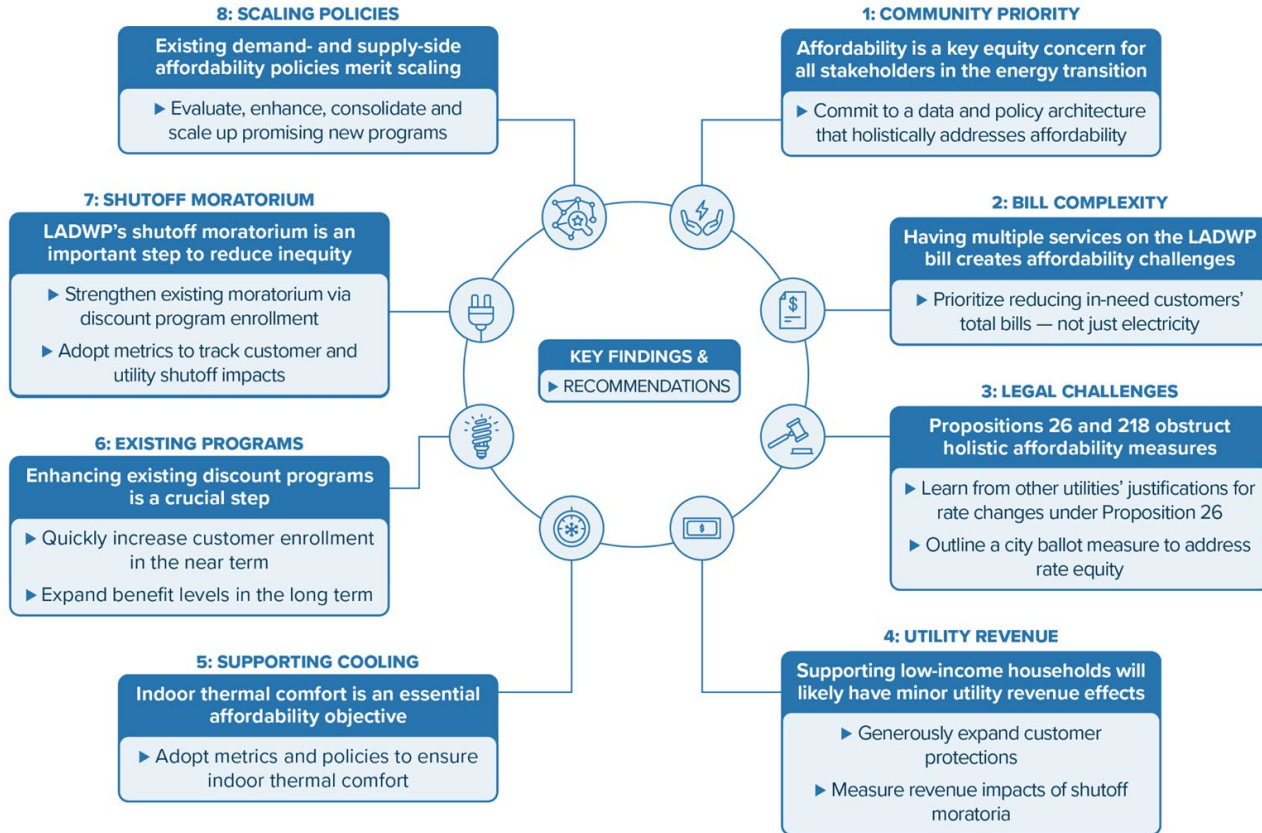


UCLA's Approach & Contributions to LA100 Equity Strategies

Gregory Pierce
UCLA Luskin Center for Innovation



Affordability



Ethnic-Owned Small Business

**Of small,
ethnic-owned
businesses...**

**Almost
1 in 3** are
energy
burdened

>50% have
been hurt by
climate
change

<25%
have a
sustainability
plan

**Only
1 in 10** in LA
understand
DWP's energy
transition

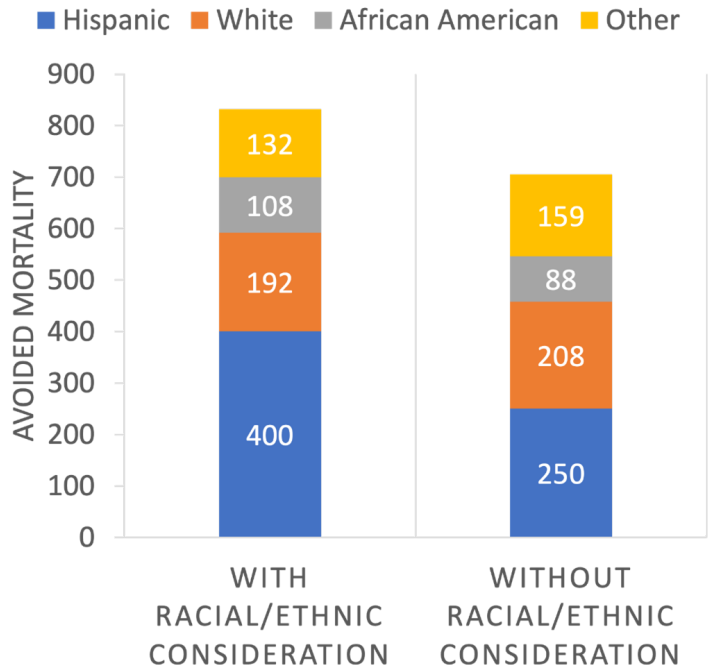
To transition to 100% renewable electricity, small EOBs need...

- new energy efficiency equipment
- payment programs to fund equipment upgrades
- multi-language educational materials on how their business can transition
- to partner with business-serving CBOs and other trusted agencies which can provide technical assistance



Air Quality and Public Health

PM_{2.5} AVOIDED MORTALITY BY RACIAL/ETHNIC GROUPS



Recommendations

- Prioritize electrifying medium- and heavy-duty trucks to bring the most health benefits
- To reduce ozone, further reduce NO_x and volatile organic compounds in parallel with PM_{2.5}



Residential Panel Upgrades for Electrification

Recommendations:

- Leverage IRA funding for panel upgrades
- Pilot electrical load center retrofits at older, multi-family properties in under-resourced communities.
- Develop/adapt programs to
 - **incentivize adoption** of efficient, easily installed appliances for multi-family rentals
 - **implement “smart panel” hardware** for demand response

Electric Panel Status for Multi-Family Properties

Panel Rating Classification	Upgrade Needed for Full Electrification?	DAC Properties [%]	Non-DAC Properties [%]
<90 Amps	Likely	66.85%	56.30%
>= 90 Amps & <150 Amps	Potentially	19.21%	30.04%
>= 150 Amps	Unlikely	13.94%	13.66%

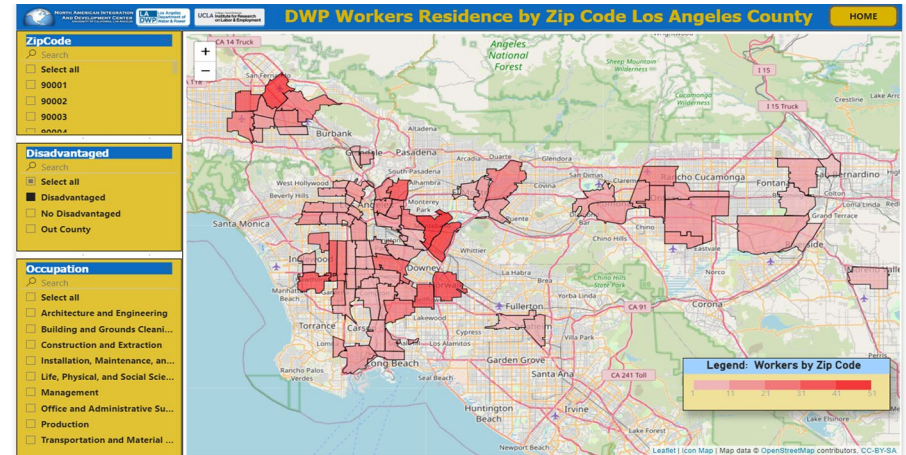


Green Jobs and Workforce Development

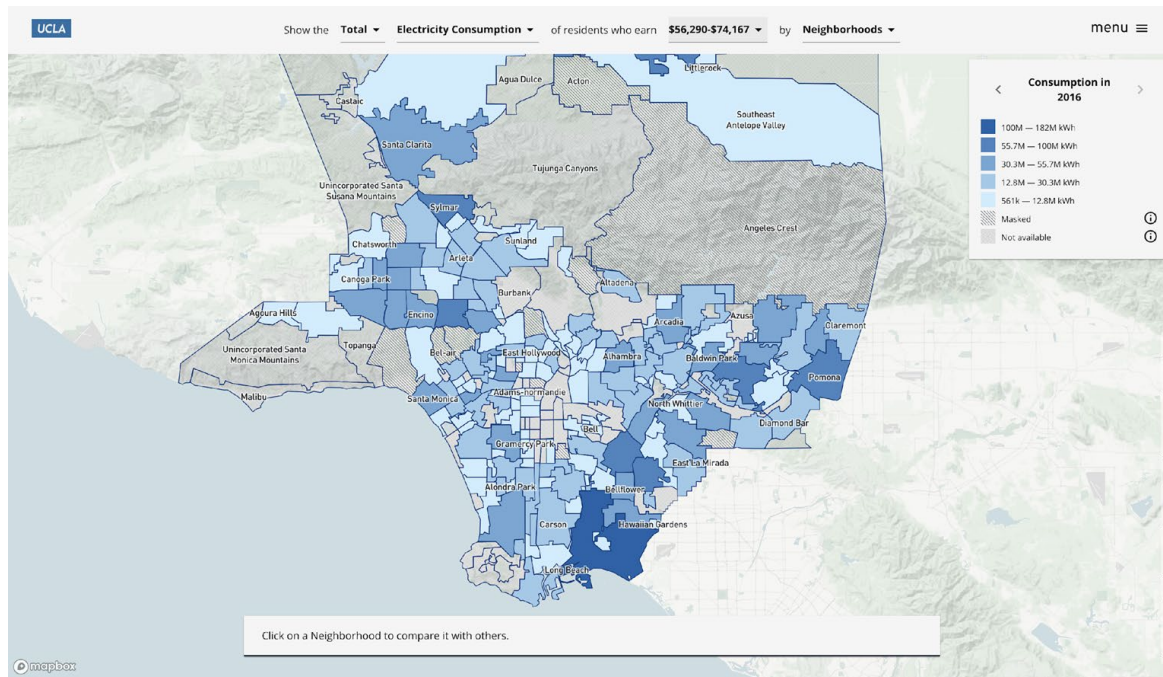
Findings and recommendations

- Continued growth in green jobs in LA City and County to 2035
- LADWP workforce training needed to close race, gender DAC gaps
- LADWP occupational training needed for in-basin construction, installation and maintenance
- Wilmington case study shows community interest in helping develop green job workforce programs

Green Jobs Data Calculator



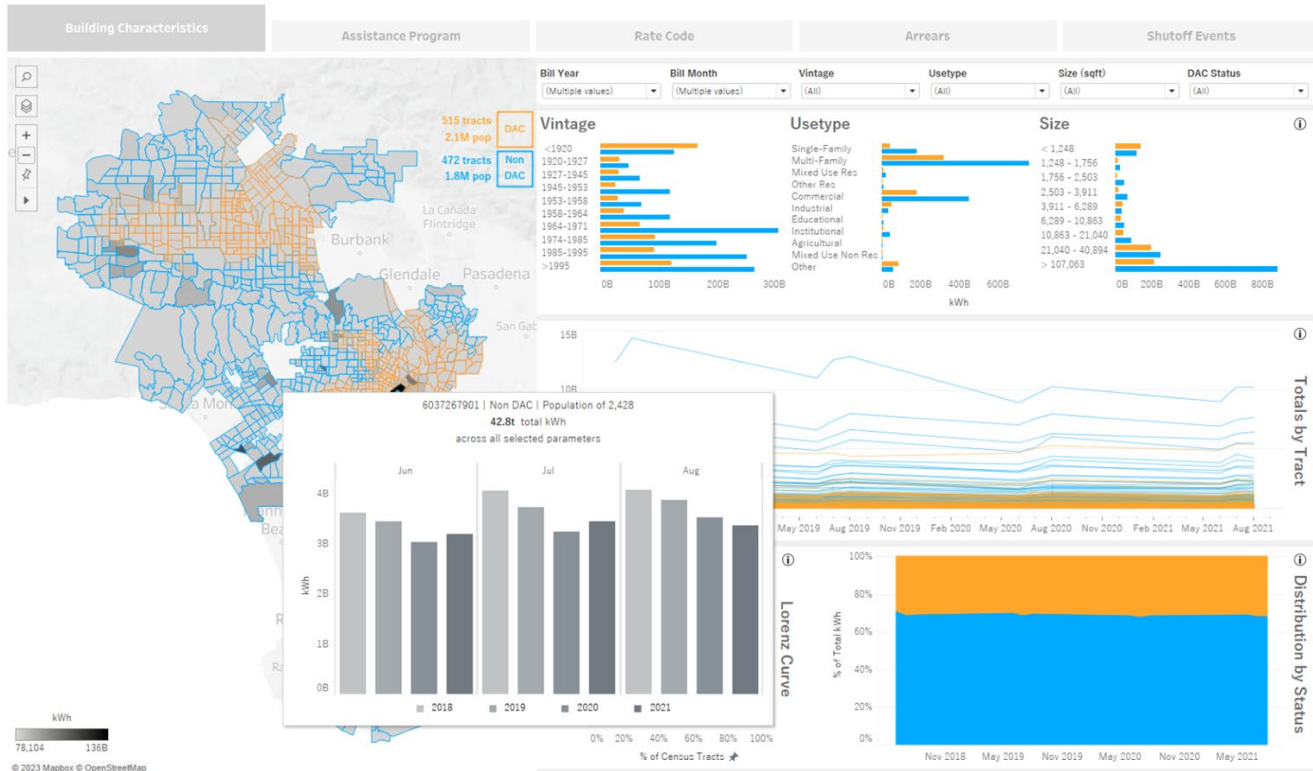
Energy Atlas: Historical Development



- **Public data platform built by California Center for Sustainable Communities**
- **10+ year** partnership with LADWP.
- Data goes back to 2005.
- Users: local governments, CBOs, public
- Functions: explore patterns of energy use normalized by building attributes, demographic variables, etc.



Energy Atlas: LA100-ES Updates



New interactive data visualization tool in beta.

- currently envisioned as an internal data reporting/metrics platform
- oriented towards LA100ES implementation.
- modular platform so it can be easily repackaged / reconfigured for public accessibility



Equity Strategies Report and Website

nrel.gov/docs/fy24osti/85960.pdf

ladwp.com/LA100ES

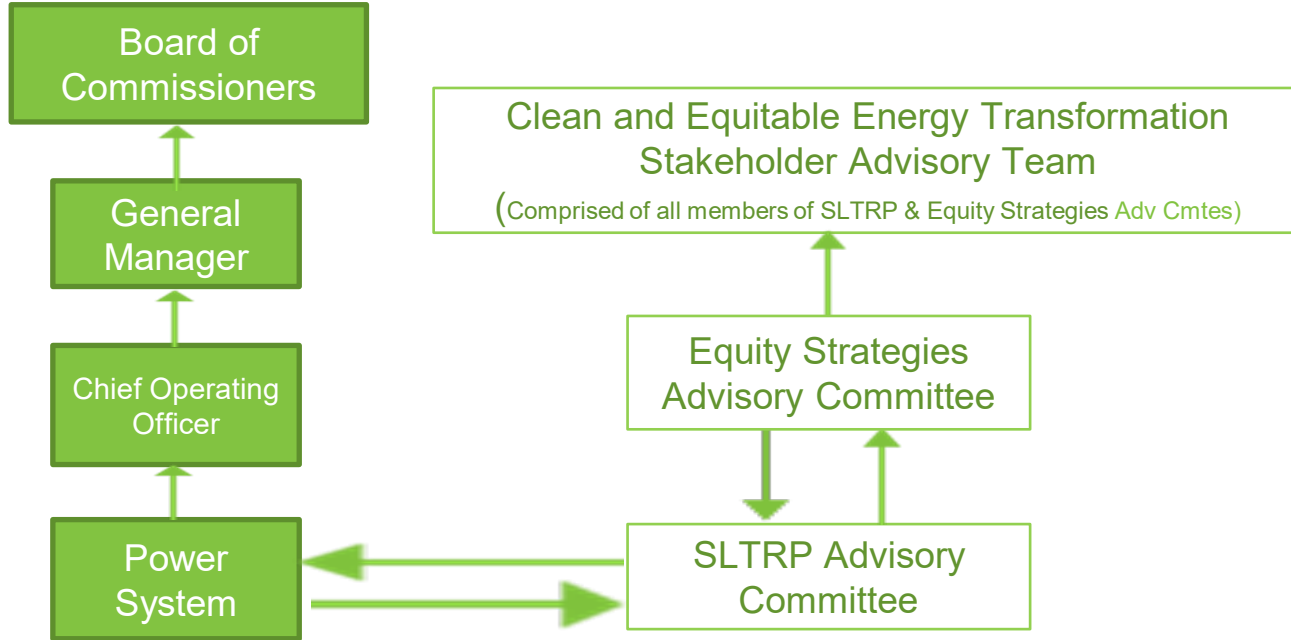
Equity Strategies Steering Committee



DWP-NC MOU
Committee



Equity Strategies Committee Engagement



Equity Strategies Implementation

Community Involvement:

- Public Awareness
- Green Economy Jobs
- Small Business Support and Inclusion
- Public Agency Collaboration



Transparency and Accountability:

- Equity Metrics
- Goals and Progress Reporting
- Public Health
- Customer Incentives Programs



Transition to 100% Clean Energy :

- Strategic Long Term Resources Plan
- In-Basin and External Generation
- Grid Resiliency and Reliability
- Solar and Battery Storage
- Affordability & Energy Burden



Decarbonization and Clean Energy Pgms:

- Building Decarbonization
- EV Adoption & Charging Infrastructure
- Electric Service Panel Upgrades
- Expanded Community Solar



Equity Strategies Advisory Cmte (ESAC) Engagement

Clean and Equitable Energy Transformation Stakeholder Advisory Team

SLTRP Workshops

Advises on SLTRP

Local Air Quality Impacts

Energy Burden & Affordability

Integrated Human Resource Plan

Resources / Customer-Based

Energy Resources

LA100 ES Action Plan Workshops

SLTRP feedback & look ahead

LA100 Equity Strategies Action Plan

Goals, Metrics & Reporting

Green Economy Jobs & Small Business

Community Solar & Customer Programs

Community Grid Upgrades



Equity Strategies Advisory Cmte (ESAC) Engagement

Equity Strategies Reports:

- ESAC Updates to SLTRP
- ESAC Summary Report
- SLTRP Advisory Cmte feedback
- Mgmt Report to DWP Board



Q&A

ladwp.com/LA100ES