



Equity Strategies for LA's 100% Clean Energy Transition

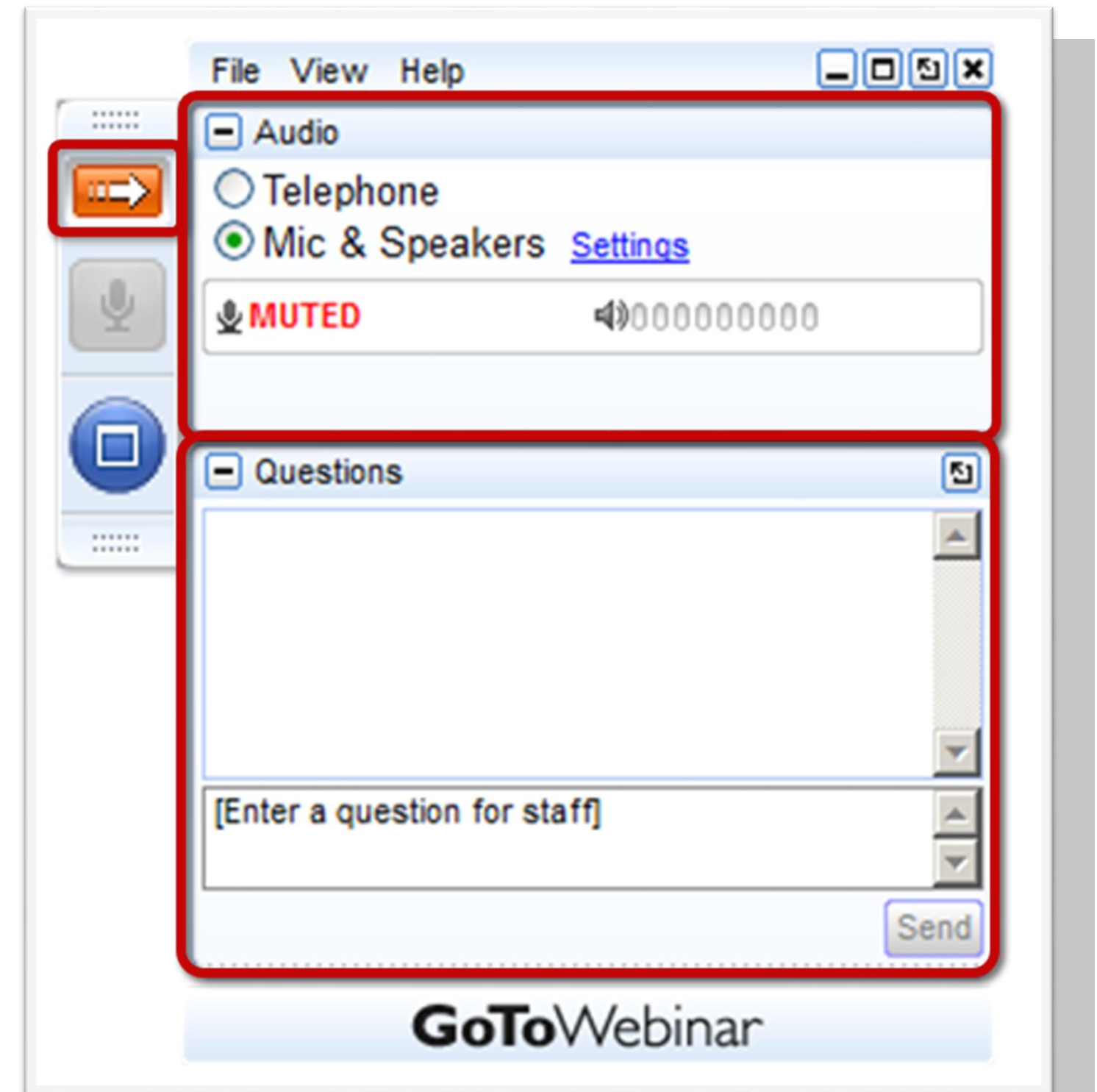
May 2, 2024

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LA100: The Los Angeles 100% Renewable Energy Study and Equity Strategies

March 2021



<https://maps.nrel.gov/la100/>

Webinar Speakers



Warren Leon
Clean Energy States
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Megan Day
National Renewable
Energy Laboratory



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Thank You

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Upcoming Webinars

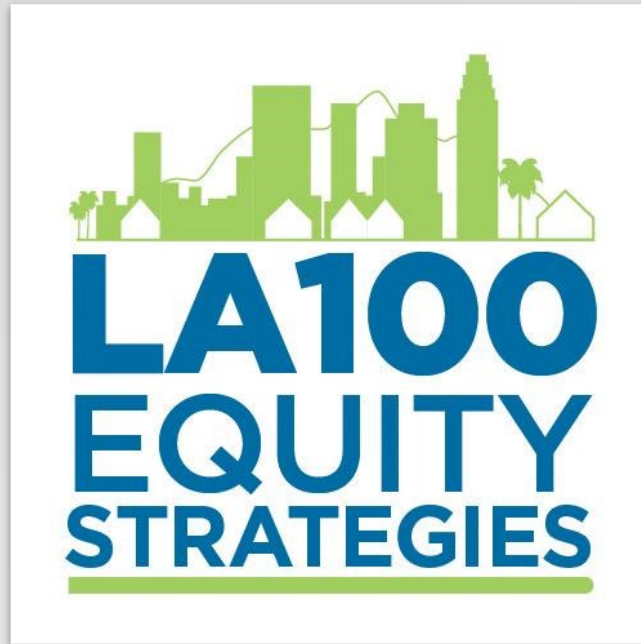
Using LIHEAP and WAP to Expand Low-Income Solar Access (May 9)

Batteries 101, Part 1: An Introduction to Energy Storage and Massachusetts' Battery Storage Programs and Policies (May 15)

Micro-Financing and Locally Led Development: A Scalable Model for Resilient Power in Rural Communities (May 16)

Energy Storage Interconnection – Challenges and Solutions (May 21)

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

Megan Day, NREL

Gregory Reed, LADWP



An aerial photograph of a city, likely Los Angeles, showing a dense urban area with various buildings, streets, and green spaces. In the background, a range of mountains is visible under a clear sky. The image is used as a background for a text overlay.

In 2021, NREL's LA100 study found that
reliable, 100% renewable energy is achievable,

and, if coupled with electrification of
other sectors—primarily transportation—
can provide significant environmental and
health benefits.

An aerial photograph of a city neighborhood, likely Los Angeles, showing a mix of residential buildings, trees, and a clear blue sky. A dark, semi-transparent rectangular overlay is positioned in the upper left quadrant, containing text.

But improving energy equity requires intentionally designed strategies.


An aerial photograph of a city neighborhood, likely Los Angeles, showing a mix of residential buildings, trees, and a clear blue sky. A dark, semi-transparent rectangular overlay is positioned in the lower right quadrant, containing text.

LA100 Equity Strategies set out to identify ways to improve energy equity in LA's transition to clean energy.

An aerial photograph of a densely populated residential neighborhood. The houses are mostly single-story with light-colored roofs. There are many trees scattered throughout the area. In the background, a range of mountains is visible under a clear sky. A dark, semi-transparent rectangular box is overlaid on the top left portion of the image, containing the text 'Community Guidance:'.

Community Guidance:

A Steering Committee of 14 community-based organizations representing underserved, environmental justice, and communities of color guided the project.

An aerial photograph of a residential neighborhood, similar to the one above. This view shows a long, narrow parking lot filled with cars on the left side of the frame. A long, single-story apartment building or townhome complex runs across the middle of the image. The surrounding area includes more houses and trees. A dark, semi-transparent rectangular box is overlaid on the bottom right portion of the image, containing the text 'NREL held listening sessions with more than 100 community members from low-income, energy burdened households to hear their barriers to and strategies for energy equity.'

NREL held listening sessions with more than 100 community members from low-income, energy burdened households to hear their barriers to and strategies for energy equity.

An aerial night view of a city skyline, showing numerous illuminated buildings and streets. The image is dark, with a semi-transparent black overlay in the upper left and middle sections containing white and green text.

Community Guidance: Advisory Committee

City agencies, nonprofits, and council offices provided feedback on the feasibility of strategies and areas for alignment with existing programs and plans.

Community-identified priority areas:

- ✓ **Affordability** and energy burdens
- ✓ **Access** to and **use** of technologies, programs, and infrastructure
- ✓ **Health, safety,** and community **resilience**
- ✓ **Jobs** and workforce development
- ✓ **Inclusive community** involvement.

















Inclusive Community Involvement

Community members report mistrust in their utility and feel they have been ignored in decision making.

Promote inclusive community involvement by implementing a **collaborative platform** for ongoing engagement, **co-developing** programs and services, and providing **tailored outreach, education, and job training.**

LADWP RESIDENTIAL INVESTMENTS 1999–2022

		NUMBER OF YEARS	TOTAL AMOUNT SPENT	AVERAGE AMOUNT PER CUSTOMER DAC/Non-DAC	% OF INCENTIVES Normalized by number of customers DAC/Non-DAC	WHICH COMMUNITIES DISPROPORTIONATELY BENEFITED FROM PROGRAMS?				
						DAC /Non-DAC	Mostly Non-White /White	Mostly Hispanic /Non-Hispanic	Mostly Renters /Owners	Below /Above Median Income
SOLAR INSTALLATION (1999–2022)	 Net Energy Metering Programs	 22	\$340,604,541	0.25 kW vs 0.41 kW	38% DAC, 62% Non-DAC	Non-DAC	White	Non-Hispanic	Owners	Above
	 Home Energy Improvement Program	 3	\$3,378,869	\$3 vs \$2	61% DAC, 39% Non-DAC	DAC		Hispanic	Owners	
	 Refrigerator Turn-In and Recycle Program	 5	\$2,667,307	0.010 vs 0.014 refrigerators	42% DAC, 58% Non-DAC	Non-DAC	White	Non-Hispanic	Owners	Above
ENERGY EFFICIENCY (2013–2021)	 Consumer Rebate Program	 6	\$93,248,144	\$64 vs \$74	46% DAC, 54% Non-DAC	Non-DAC	White	Non-Hispanic	Owners	Above
	 Other Non-Low-Income-Targeted Programs	 15	\$36,343,548	\$178 vs \$196	35% DAC, 65% Non-DAC	Non-DAC	White	Non-Hispanic	Owners	Above
	 Energy Savings Assistance Program*	 5	\$7,897,260	\$11 vs \$1	92% DAC, 8% Non-DAC	DAC	Non-White	Hispanic	Renters	Below
	ELECTRIC VEHICLES (2013–2021)	 Incentive Programs	 8	\$5,361,426	\$41 vs \$64	23% DAC, 77% Non-DAC	Non-DAC	White	Non-Hispanic	Owners

* Low-Income Targeted

Anderson, et al. 2023. "Executive Summary." In LA100 Equity Strategies, edited by Kate Anderson, Sonja Berdahl, Megan Day, Casandra Rauser, and Patricia Romero-Lankao. Golden, CO: National Renewable Energy Laboratory. NREL/TP-5C00-85947. <https://www.nrel.gov/docs/fy24osti/85947.pdf>, p.22.



Low-Income Energy Bill Affordability

Continuing current rate and solar compensation structures will **increase electricity bills 50% more for low-income customers** than an average customer.

Bill affordability and equity strategies may involve **rate reform**, shifting from solar net metering to **solar net billing**, **on-bill tariffs** for heat pump water heaters and enhanced insulation, and robust **bill assistance programs**.



The **Shared Solar** program **requires a premium** to enroll and has higher participation among non-disadvantaged, non-Hispanic, and wealthier households.

Compared to low-income rooftop solar installations, **Shared Solar with a low-income discount rate** can support **five times more capacity** for the same investment and deliver savings to multifamily, renter, and low-income households.



Housing Weatherization and Resilience

230,000 low-income households who don't have or can't afford to use cooling will experience more than two months of exposure to **dangerous indoor temperatures** by 2035.

Direct installs of **heat pump cooling** for low-income households can provide **safety** and **comfort**, especially in multifamily buildings.



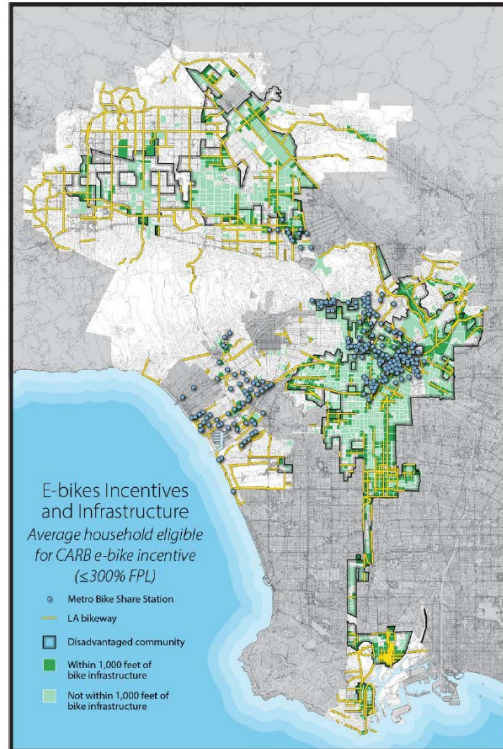
Household Transportation Electrification


150,000 low-income households projected to adopt electric vehicles (EVs) by 2035 will **lack home charging access**.


Strategies include **at- and near-home EV charging, charging vouchers, and increased used EV incentives** for low-income households, which could increase adoption by 50,000 vehicles. **Shared EV and e-bike programs** can reduce transportation costs and time for transportation disadvantaged communities.

Less than 50% of households eligible for low-income e-bike incentives are within 1,000 feet of existing bike infrastructure.


























































Optimal Multimodal Transportation Electrification Strategies Differed by Neighborhood



 Shared e-bike access

 Shared EV access

 Improved transit

Transportation Analysis Zone ID & Neighborhood	Most affordable	Most time efficient	Access to most opportunities	Transportation Analysis Zone ID & Neighborhood	Most affordable	Most time efficient	Access to most opportunities
3718 – Panorama City				4111 – Boyle Heights			
3731 – Panorama City				4114 – Boyle Heights			
3734 – North Hills				4115 – Boyle Heights			
3737 – Panorama City				4150 – Boyle Heights			
3864 – Reseda				4335 – East Hollywood			
3866 – Canoga Park				4611 – Wilmington			
3872 – Winnetka				4612 – Wilmington			
3877 – Van Nuys				4614 – San Pedro			
4067 – Boyle Heights				4630 – Wilmington			
4105 – Boyle Heights				<i>Calculated for low-vehicle ownership, low transit access, disadvantaged communities</i>			

Optimized, neighborhood-specific multimodal strategies for affordability, time efficiency, and access to opportunities (by transportation analysis zone and associated neighborhoods)





Truck Electrification for Improved Air Quality and Health

Heavy-duty trucks account for 5% of LA registered vehicles, but **51% of on-road NO_x emissions** and **32% of primary PM_{2.5} emissions**. Heavy-heavy duty trucks like dump trucks and firetrucks **contribute 80% of truck particulate matter**.


Accelerate LADWP and city heavy-duty truck **fleet electrification** and heavy-duty truck **charging infrastructure** development.



Grid Upgrades and Resilience

Disadvantaged communities experience higher **grid stress** and lower **access to critical services that depend on electricity**, like grocery stores and hospitals, in modeled disaster events.

Prioritize **equity in grid infrastructure** investments; **upscale transformer capacity** during replacement; and pursue resilient electricity **upgrades for critical emergency services**.

An aerial night photograph of a city, likely Los Angeles, showing a dense grid of lights from buildings and streets. A dark, semi-transparent rectangular overlay covers the upper portion of the image, containing white text. The sky is a gradient of dark blue to orange, suggesting dusk or dawn.

LA100 Equity Strategies methodologies and many of the strategies can be adapted to other communities that are undertaking an equitable energy transition.

Dive into the project at maps.nrel.gov/la100

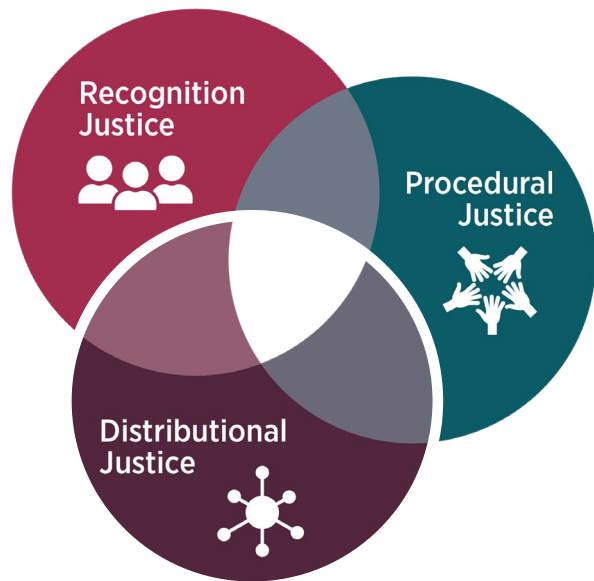


Enquity Strategies Implementation

*Gregory Reed, Sr. AGM
Office of Diversity, Equity & Inclusion
Los Angeles Department of Water and Power*



Principles for Just and Equitable Transition



Recognizing legacy and current disparities

Procedurally inclusive and collaborative
community engagement

Equitable sharing of benefits and burdens



Equity Strategies Advisory Committee



DWP-NC MOU
Committee



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

Clean Energy Programs:



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



STRATEGIC LONG-TERM RESOURCE PLAN (SLTRP)

2024 SLTRP:

- Is a roadmap to LADWP's clean energy transition
- Initiated in March 2024 as a refinement to the 2022 SLTRP
- Includes Equity Strategies Steering Committee members

Integrating Equity Strategies to the SLTRP:

- Demonstrates LADWP's continued commitment to equity
- Provides a venue for transparent public engagement

POWER SYSTEM EQUITY REVIEW PROCESS

Equity Review Process:

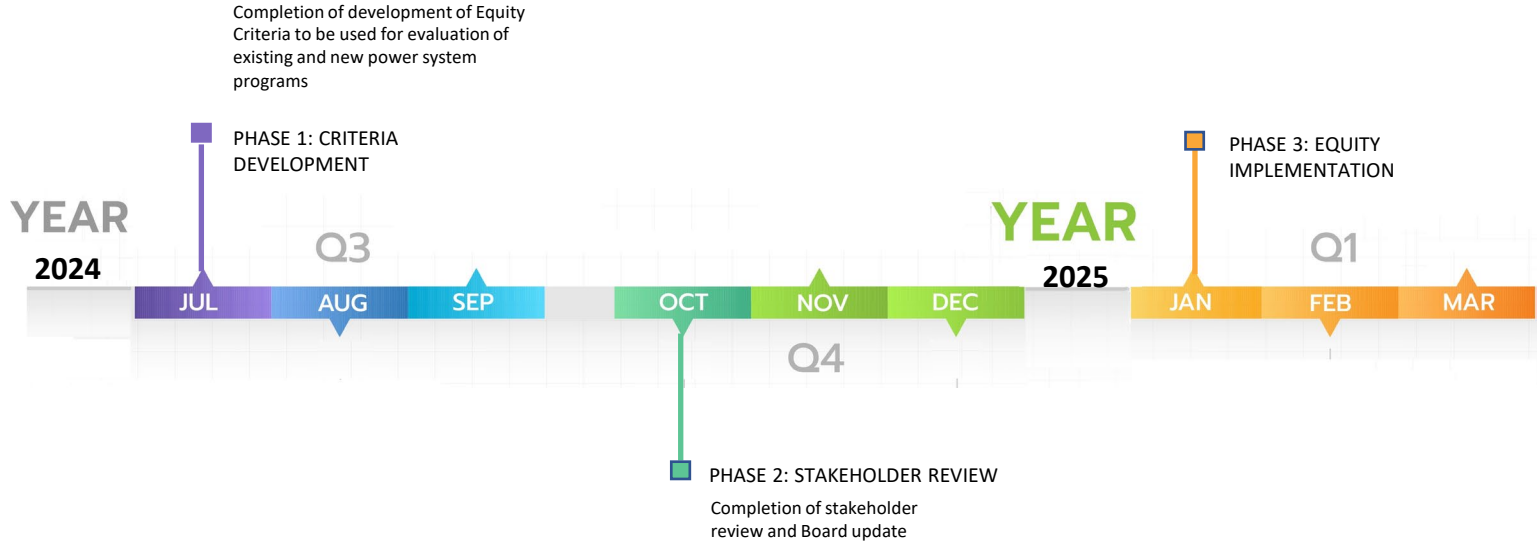
- Develop criteria for evaluating equity in Power System programs/projects
- Equity determination of existing Power System programs
- Incorporate equity in the development of new Power System programs and projects
- Develop steps for achieving equity outcomes with stakeholder input

Continuous Monitoring:

- Develop performance metrics
- Incorporate a flexible process to ensure sustained progress towards equity goals
- Communicate results with internal and external stakeholders.

EQUITY STRATEGY IMPLEMENTATION

IMPLEMENTATION TIMELINE AND MILESTONES



EQUITY STRATEGY IMPLEMENTATION: LADWP POWERED-BY-EQUITY INITIATIVES

Initiatives	Description	Community Benefits			
		Affordability	Access	Jobs	Air Quality
EV Hubs (Charging Plazas)	Provide EV charging access across the City of LA	✓	✓	✓	✓
Used EV Rebate	Provide \$4,000 rebate for used EVs	✓	✓	-	✓
EV Charger Rebate	Provide up to \$1,500 to purchase and install Level 2 chargers	✓	✓	✓	✓
Metro, LAWA, and POLA Electrification	Provide and support the electrification of Metro, LAWA, and POLA to significantly reduce GHG emissions throughout the City of LA	-	✓	✓	✓
Heavy Duty Truck Charging Infrastructure	Provide and support EV charging infrastructure for heavy duty trucks across the City of LA	-	✓	✓	✓
Solar Rooftop	Proliferate solar across the City of LA by leasing their rooftop to install solar in exchange of a direct monthly payment	✓	✓	✓	✓
Shared Solar	Provide access to solar energy for multi-family residents (mostly renters) with no individual rooftops	✓	✓	✓	✓
Cool LA	Provide air conditioner incentive to low income residents particularly to those vulnerable to heat waves	✓	✓	-	✓
Commercial Direct Install	Provide assessments and free efficiency upgrades to qualifying business customers.	✓	✓	✓	✓
Comprehensive Affordable Multifamily Retrofit (CAMR)	Assist low income buildings in retrofitting to reduce both energy and water usage	✓	✓	✓	✓
Project Powerhouse Affordable Housing	Accelerate the delivery of affordable housing projects at a reduced cost	✓	✓	✓	-
Home Energy Improvement Program (HEIP)	Provide a free home assessment to identify energy efficiency improvement areas. The program also performs necessary upgrades identified in the assessment.	✓	✓	✓	✓
EZ Save	Provide discount and explore higher discount to low income customers to reduce their electric bill	✓	✓	-	-
Senior Citizen/Disability Lifeline Rate	Provide discount to low income senior and disabled customers to reduce their electric bill	✓	✓	-	-
Level Pay	Provide option to pay higher seasonal bill across a 12-month period	✓	✓	-	-
Extended Payment Programs	Provide option to pay electric and water bill up to a period of 36 months for all customers and 48 months for low income customers	✓	✓	-	-

LA Connect E-Hub Program



Initial roll-out prioritizes areas lacking home charging including DACs



Targeting 5,000 fast chargers and ~150 sites by 2028.



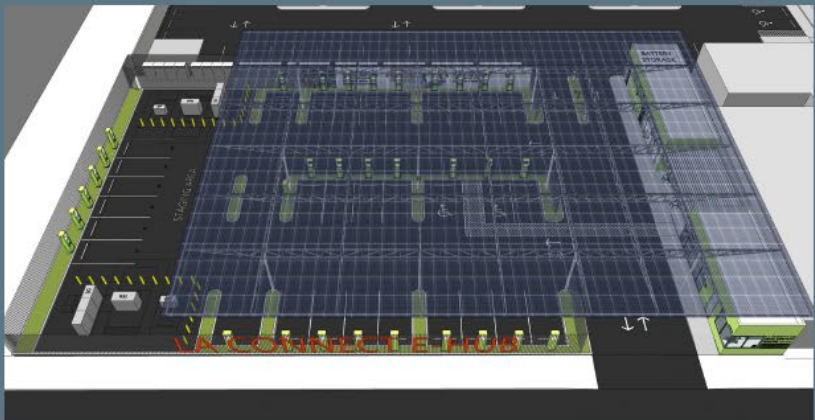
Some sites offer clean + comfortable waiting areas, patios, & restrooms.



350kW chargers able to charge one vehicle to 80% in 10 mins



E-Hub In-Progress Sites: Valley – Panorama City & South LA – Normandie Ave.



Van Nuys E-hub In-service date:
11/21/25



Normandie E-hub In-service date:
9/19/25

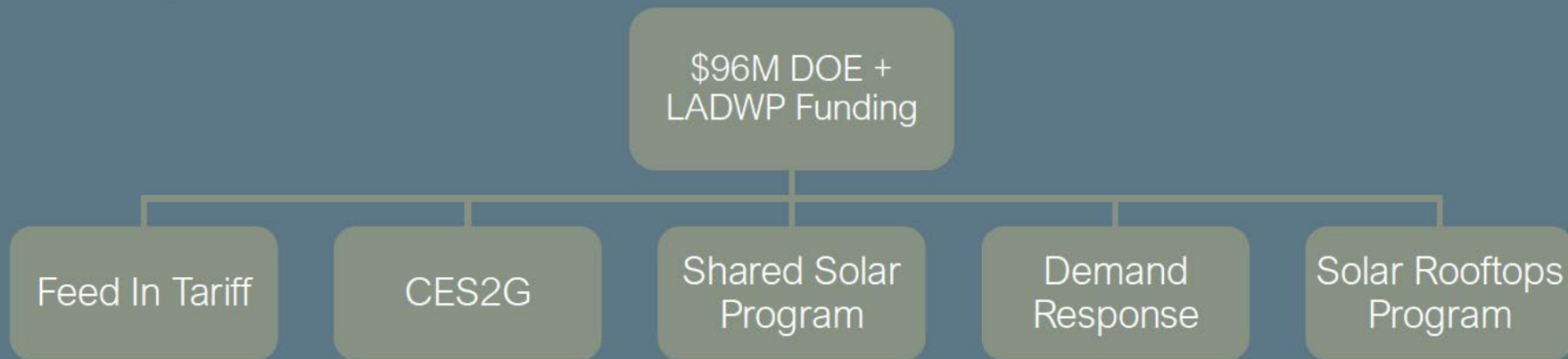
Current Progress:

- ✓ Architectural site layouts complete
- ✓ PV panel and BESS battery has been selected
- ✓ PV, BESS, EV single line diagrams are complete, full design underway

DOE Funding



LADWP is matching its awarded \$48M DOE grant, concentrating on disadvantaged communities & low-income customers with low DER adoption.



Shared Solar Program

PROGRAM SCOPE

Provides multi-family residents a fixed kWh rate for energy blocks up to 10 years.

CUSTOMER REACH

Estimate of 2,355 to 4,710 total participants.

IMPACT

DOE Grant Funding



Savings for Low-Income Customers

GAP Contributions
from USC
\$93,500/annually

Self-Generation Incentive Program (SGIP)

LADWP is awaiting the CPUC decision to administer the \$82M to incentivize residential & multifamily adoption of energy storage and/or solar.



Incentives cover 90% or more of system costs



LADWP awaits CPUC authorization on 3/21/24 to become the Program Administrator for our service territory.



Agency Collaboration

Collaborate with City and County leaders, departments and CBOs on opportunities and constraints for achieving an equitable clean energy transition.



LOS ANGELES
CITY PLANNING





Thank you

maps.nrel.gov/la100

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