

# Chapter 3: Community-Guided Energy Equity Strategies

**FINAL REPORT: LA100 Equity Strategies**

Patricia Romero-Lankao, Lis Blanco, and Nicole Rosner



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## Preface

The Los Angeles 100% Renewable Energy Study, or LA100, revealed that although all communities in Los Angeles will share in the air quality and public health benefits of the clean energy transition, increasing equity in participation and outcomes will require intentionally designed policies and programs. The LA100 Equity Strategies project was specifically designed to help Los Angeles identify pathways to such policies and programs in the form of equity strategies. The project aimed to do this by incorporating research and analysis to chart a course toward specific, community-prioritized, and equitable outcomes from the clean energy transition outlined in the LA100 study.

### *The Project Partners*

The Los Angeles Department of Water and Power (LADWP), the National Renewable Energy Laboratory (NREL), and the University of California Los Angeles (UCLA) partnered on the LA100 Equity Strategies project to develop strategies for engaging communities, funding equitable technology and infrastructure investments, expanding existing programs, and designing new programs and policies to improve equity by incorporating what community members themselves know is needed to achieve a more equitable energy future.

### *The Project Approach*

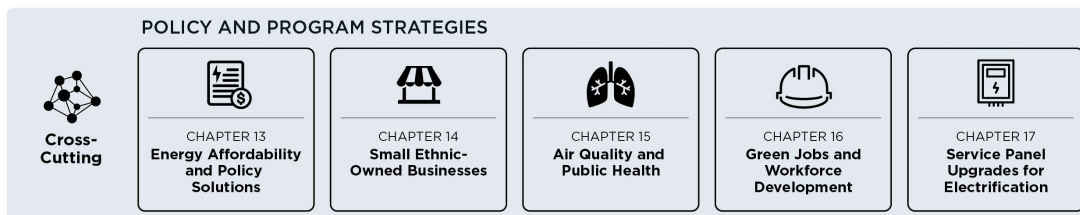
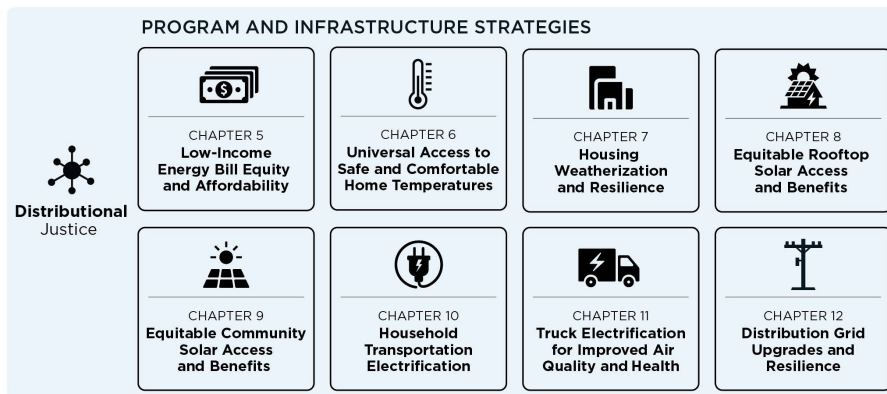
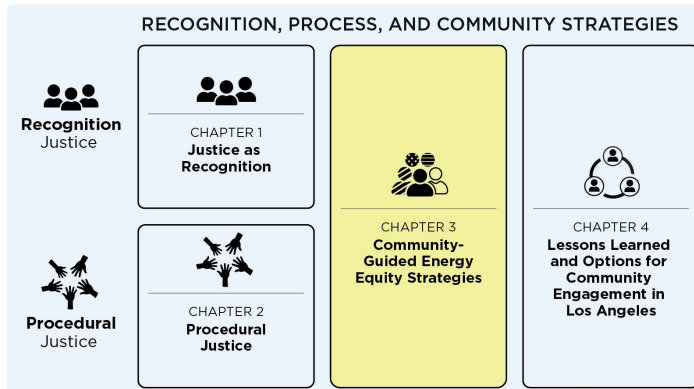
LA100 Equity Strategies employs a unique mixed-methodological approach utilizing three distinct—but connected—research efforts. Through these efforts, NREL and UCLA developed a range of strategy options for increasing equity in LA’s transition to 100% clean energy.

### *A Project Summary*

To get a high-level overview of the project, you can dive into the executive summary, interactive data visualizations, and more on the LA100 Equity Strategies website at [maps.nrel.gov/la100/equity-strategies](https://maps.nrel.gov/la100/equity-strategies).

### *The Full Report*

NREL’s final full report for the LA100 Equity Strategies project encompasses seventeen chapters. The first twelve chapters, authored by NREL, are organized around the three tenets of justice. Chapters 1–4 address recognition and procedural justice, while Chapters 5–12 address distributional justice. The final five chapters, authored by UCLA, provide crosscutting policy and program strategies. Each chapter provides data, methods, insights, and strategies to help LADWP make data-driven, community-informed decisions for equitable investments and program development.



### NREL Chapters

- Chapter 1: [Justice as Recognition](#)
- Chapter 2: [Procedural Justice](#)
- Chapter 3: [Community-Guided Energy Equity Strategies](#)
- Chapter 4: [Lessons Learned and Options for Community Engagement in Los Angeles](#)
- 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 for Equitable Resilience and Solar, Storage, and Electric Vehicle Access](#)

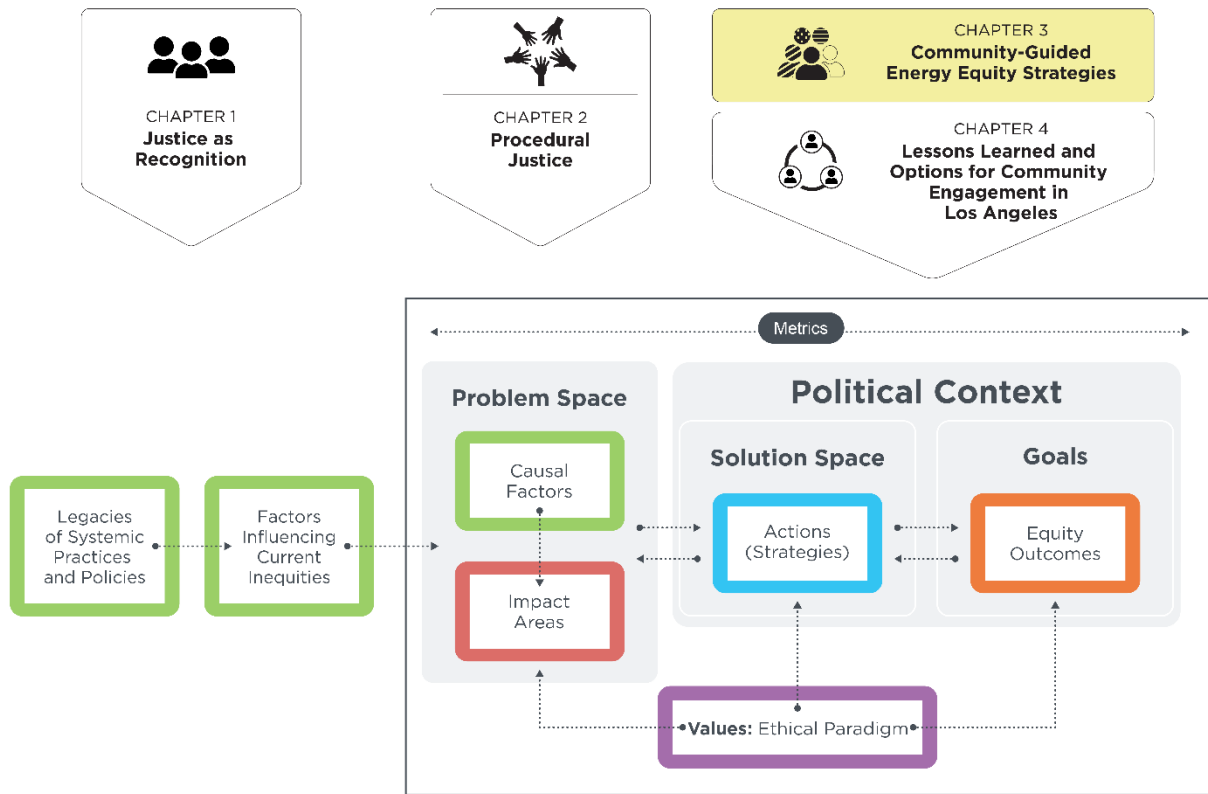
### UCLA Chapters

- Chapter 13: [Energy Affordability and Policy Solutions Analysis](#)
- Chapter 14: [Small Ethnic-Owned Businesses Study](#)
- Chapter 15: [Air Quality and Public Health](#)
- Chapter 16: [Green Jobs Workforce Development](#)
- Chapter 17: [Service Panel Upgrade Needs for Future Residential Electrification](#)



## About Chapters 1–4

In Chapters 1–4, NREL presents community-grounded research and analysis results on recognition justice and procedural justice, community-guided equity strategies and future options for community engagement by LADWP. Across these chapters, a mixed-methodological approach is applied, including a systematic literature review, statistical analysis of access to LADWP programs, and qualitative research with communities and community-based organizations to examine understandings of energy transition needs, barriers, and priorities. This work informs modeling and development of equity strategies by analyzing (1) the distribution of benefits of LADWP programs and strategies in the city and (2) historical and current factors contributing to this distribution and other energy inequities in the city.



## List of Abbreviations and Acronyms

CAMR	Comprehensive Affordable Multifamily Retrofits
DEI	diversity, equity, and inclusion
ESAP	Energy Savings Assistance Program
EV	electric vehicle
HACLA	Housing Authority of the City of Los Angeles
HEIP	Home Energy Improvement Program
LADWP	Los Angeles Department of Water and Power
LATTC	Los Angeles Trade-Technical College
LIHEAP	Low Income Home Energy Assistance Program
LIHWAP	Low-Income Household Water Assistance Program
STEM	science, technology, engineering, and math
UPCT	Utility Pre-Craft Trainee

# Executive Summary

## Rising to the Challenge

The LA100 Equity Strategies project synthesizes community guidance with robust research, modeling, and analysis to identify strategy options that can increase equitable outcomes in Los Angeles' clean energy transition. Grounded in the analysis of past and ongoing energy inequities and engagement with underserved communities, the project presents community-guided strategies that aim to operationalize recognition and procedural justice. Chapters 1 and 2 target the problem space—the causal factors, impact areas, and values affecting LA's energy justice landscape. This chapter threads those themes through to begin focusing on the solution space. We examine community-identified problems and solutions through the lens of recognition and procedural justice, presenting analysis and strategies that form the basis for more equitable outcomes in LA's energy transition.

In our listening sessions, underserved Angelenos highlighted the need to transition away from the status quo one participant described as “transactional extraction of information to check the box. To say yes, we engaged.” She asked the LA Department of Water and Power (LADWP) to approach her community with respect and transparency, stating, “We consider you all to be experts in your community, and we'd like to authentically engage with you in the decision-making process. So, I do think there needs to be some intentional actions for that rapport building and that trust building.” The community-informed analysis and strategies described in this chapter, which are foundational to the LA100 Equity Strategies project, rise to the challenge of engaging authentically to build rapport, establish relationships of respect, and meaningfully involve Angelenos in the decision-making process.

LADWP is already making concerted efforts to redress a disproportionate distribution of investments in physical infrastructure and energy efficient technologies in Los Angeles. This chapter concentrates on the challenge to further rectify past and ongoing inequities in the social, cultural, and institutional scaffolding of Los Angeles. We examine community-guided strategies to tackle this challenge, informed by community input on how all Angelenos can equitably access green jobs and affordable, safe, and resilient energy services, technologies, and programs. These actionable strategies can help move energy equity programs from plans to applied practices, supporting LADWP in launching a just and equitable clean energy transition.



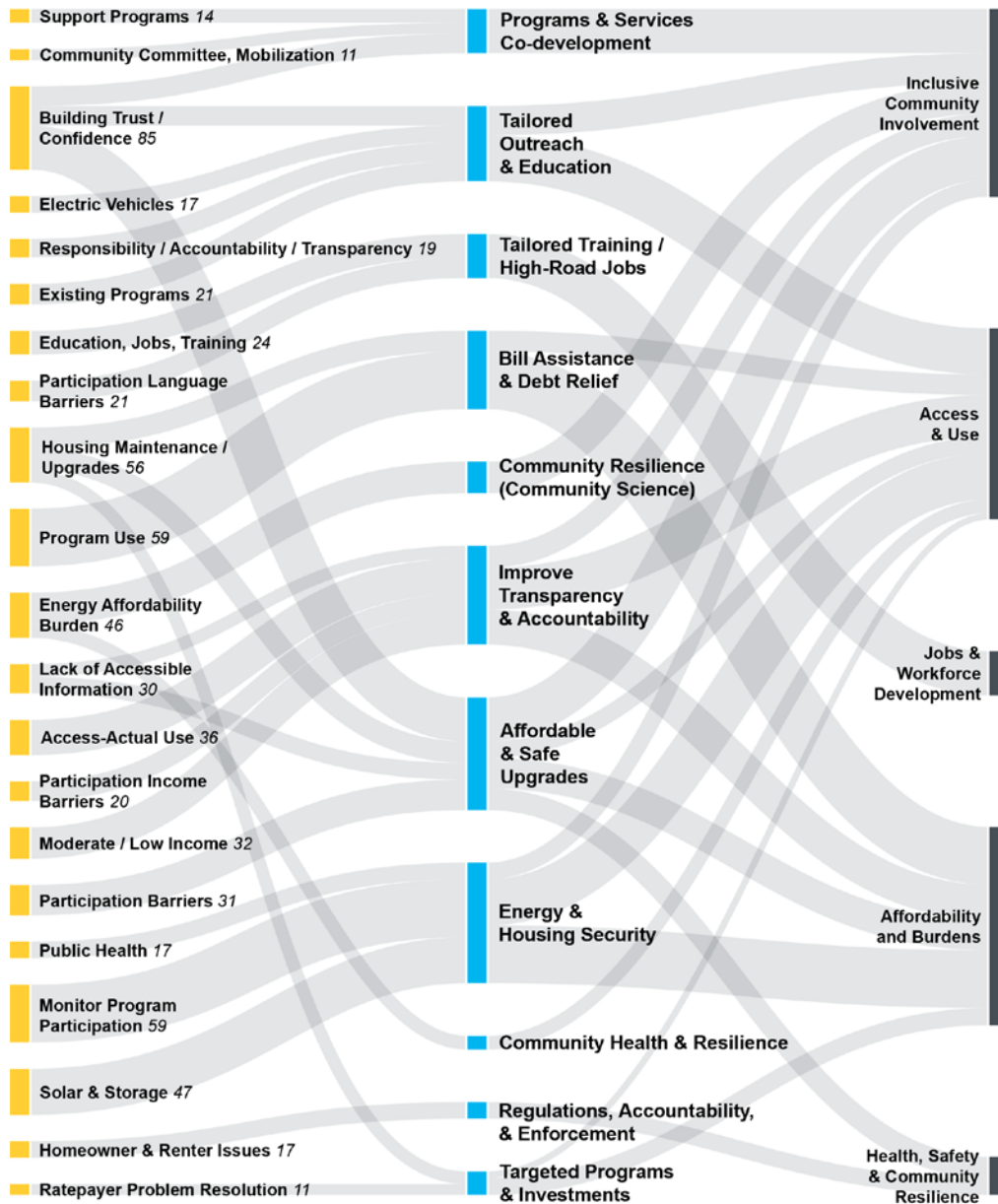
## Goal and Approach

In this chapter, we present 11 community-guided equity strategies aiming to operationalize procedural and recognition justice by grounding our analysis in the needs, priorities, and aspirations of LA’s communities. We draw on a body of energy justice scholarship and empirical research, using quantitative and qualitative methods to examine and present implementation and evaluation options for 11 energy equity strategies. Our approach centers the knowledge, expertise, and lived experiences of underserved communities and community-based organizations in Los Angeles.

## Key Findings

The analysis in this chapter provides foundational building blocks for community-guided equity strategies that LADWP and city agencies could use to achieve more equitable outcomes in the energy transition. This process includes co-developing solutions that redress barriers to energy equity identified by the local community members most negatively affected by the past and existing energy system. Two key overarching findings merit special attention:

- Participants referred more often to “deep infrastructures” (i.e., the social, cultural, and institutional scaffolding that moves energy equity programs from theoretical plans into feasible applied practices) as their primary barriers and challenges, rather than to technological issues. Examples of strategies for addressing deep infrastructure challenges and barriers include tailored training, education, professional development, or guidelines on resources to upgrade electrical panels and retrofit buildings.
- The presentation of 11 community-guided energy equity strategies demonstrates how LADWP could co-design more equitable transition processes to address crosscutting priority areas and achieve energy equity goals (identified on the right columns of Figures ES-1 and ES-2 and discussed in Chapter 4).



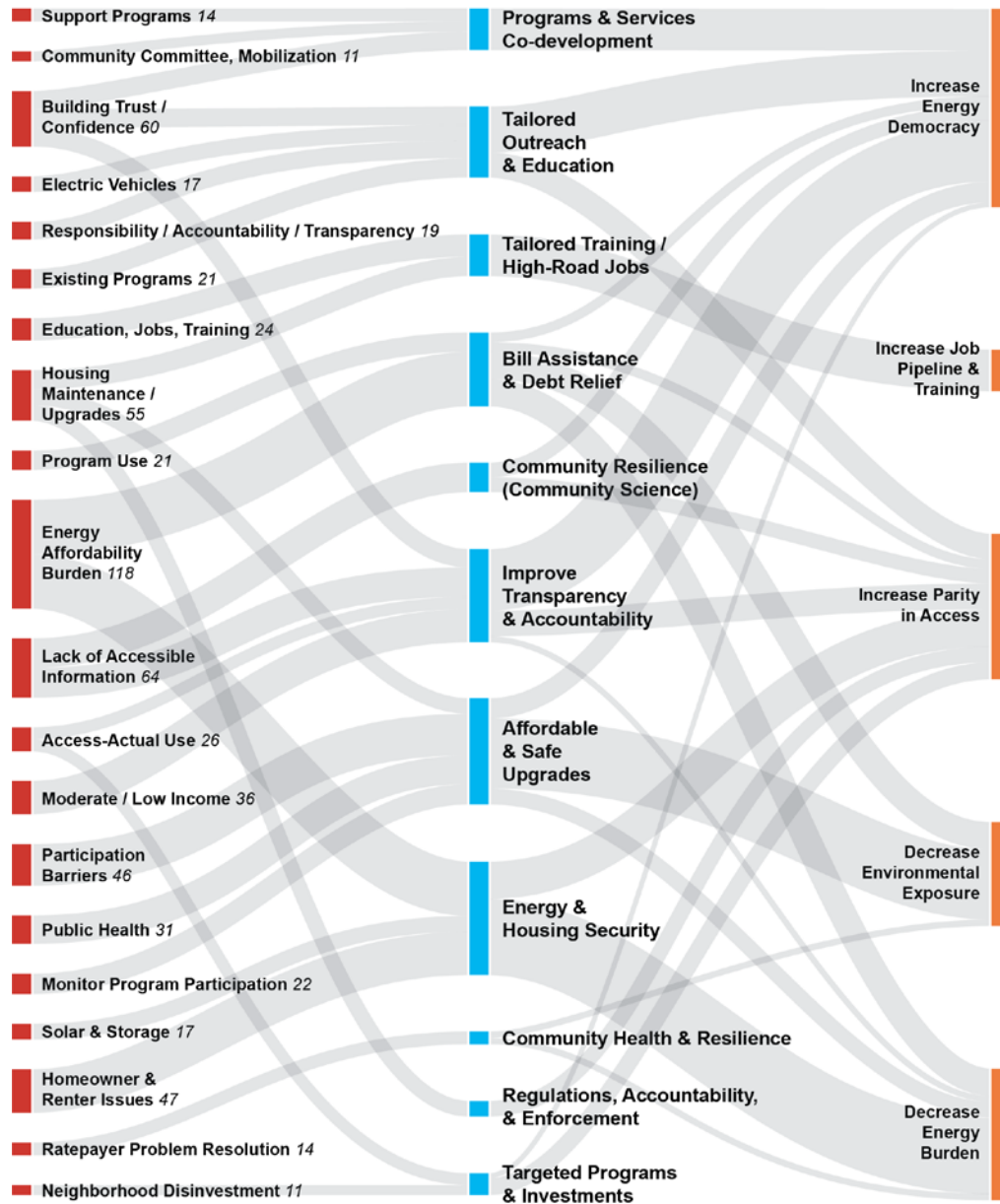
**Figure ES-1. Strategy development analysis: Problem space (left), equity strategies (middle), and priority areas (right)**

The numbers on the left in this figure represent the number of times community members made intersecting comments related to the problems on the left and suggestions for solutions to future LADWP programs. We quantified this number of intersections as overlapping codes. Overlapping codes occur when two themes (codes) are identified in the same passage of a listening session transcript. Our analysis of these overlaps developed a series of community-guided equity strategies that are listed in the center of the diagram. The right column reveals how these equity strategies relate with five crosscutting priority areas: affordability and burdens; access and use; health, safety, and community resilience; jobs and workforce development; and inclusive community involvement. (For details on how these were identified, see Section 2.2, page 3.)

## Envisioning Equitable LADWP Programs

Our first overarching finding—which focuses on social, cultural, and institutional “deep infrastructures”—relates to access and use of energy transition programs, investments, and technologies, but does not singularly focus on technological barriers. In line with this finding, we developed strategies that aim to redress inequities related to access and use of energy rebates, programs, investments, and technologies. The goals of these strategies are:

- Lowering socio-institutional barriers to parity in access and use of energy transition services, technologies, and programs (right column of Figure ES-2).
- Reducing energy burdens by providing affordable options for underserved Angelenos to benefit from the clean energy transition.
- Investing in educational and professional development (increasing energy democracy).
- Supporting community health, safety, and resilience and lowering environmental burdens.
- Including local communities in the design and implementation of the energy transition services, technologies, programs, and policies that affect their lives.



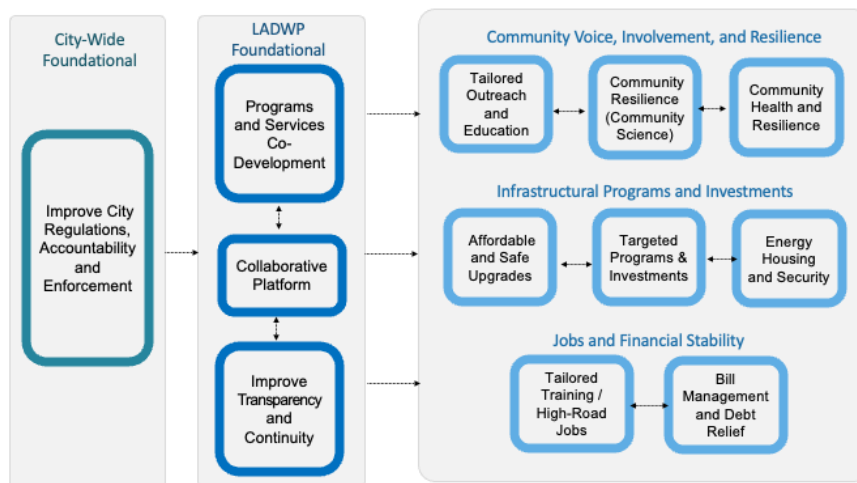
**Figure ES-2. Strategy development analysis: problem space (left), equity strategies (middle), and energy equity goals (right)**

The numbers on the left represent the number of times community members made intersecting comments related to the problems on the left and suggestions for solutions to future LADWP programs. Our analysis of these overlaps developed a series of community-guided equity strategies that are listed in the center of the diagram. The right column reveals how the outcomes of these equity strategies align with key policy priorities identified through a literature review. (For details on how these were identified, see Section 2.2, page 3)

## Envisioning Equitable LADWP Programs

Our second overarching finding demonstrates how LADWP could co-design more equitable transition processes to address crosscutting priority areas and achieve energy equity goals. The 11 community-guided energy equity strategies presented here point to building blocks and

options in crucial priority areas and energy equity goals depicted in the right column of Figures ES-1 and ES-2. Because the equity strategies build on and expand existing programs, LADWP could navigate regulatory and other constraints imposed by the political context (solution space in Figure ES-3). LADWP could use criteria such as relevant implementation entities, success metrics, and regulatory constraints to stage the strategies as follows (see Figure ES-3 and Table ES-1):



**Figure ES-3. Mapping of energy equity strategies**

- **City-Wide Foundational (Figure ES-3 and Table ES-1): Improve regulation, accountability, and enforcement for safe, affordable, and efficient infrastructure and housing.** Improvements in regulation, accountability, and enforcement include inspection and monitoring to support housing maintenance and upgrades, regulations, and informational support to prevent unsafe built-environments, and predatory practices among service and technology providers. These strategies and services are beyond the purview of LADWP’s authority, yet they are foundational, high-impact backbones for LADWP’s success in its energy transition programs, technologies, and policies.
- **LADWP Foundational (Figure ES-3 and Table ES-1): Co-develop programs and services with communities and community-based organizations and improve transparency and continuity.** Effectiveness of LADWP programs can be limited by lack of community involvement in priority setting and decision-making. LADWP can rely on its dedicated personnel and resources and a collaborative platform discussed in Chapter 4 to engage residents in developing programs and services that meet their needs and priorities. Engaging residents in ongoing, more consistent, transparent, and community-adapted outreach and communication builds trust, buy-in, and a continuous feedback loop for decision-making.
- **Develop a collaborative platform** to provide an effective organizational means for an ongoing engagement. LADWP’s Corporate Strategy Communications Division; the Diversity, Equity, and Inclusion Office; and the Customer Service Operations could (1) formalize the current LA100 Equity Strategies’ Steering and Advisory Committees and other partnerships and collaborations into long-term agreements to maintain a continuous feedback loop with community partners, trusted messengers, and residents, and (2) allocate dedicated personnel and resources to co-design, implement, and evaluate the multiple energy equity projects, technologies, and programs involved in LA’s just energy transition. A continuous feedback loop would allow all participants to benefit from and contribute to LADWP’s success (for details, see Chapter 4).

- Community Voice, Involvement, and Resilience (Figure ES-3 and Table ES-1) can be achieved by co-developing programs and services and improving transparency and continuity.** Effectiveness of LADWP programs can be limited by lack of community involvement in priority setting and decision-making. LADWP can rely on its dedicated personnel and resources and the suggested collaborative platform to engage residents in developing programs and services that meet their needs and priorities. Engaging residents in ongoing, more consistent, transparent, and community-adapted outreach and communication builds trust, buy-in, and a continuous feedback loop for decision-making.

Also important is to provide **tailored outreach and education** through local trusted messengers to build awareness of energy programs, train communities on how use resources related to upgrading electrical panels and retrofitting buildings, and foster community health and resilience. A lack of trust in government agencies and misunderstanding of how community members access outreach information can limit access to LADWP programs. LADWP could build on its Community Partnership Grants and Science Bowl to (a) inform ratepayers about the options and benefits of programs, services, and technologies and (b) incorporate energy-related resources into the community science and the promotora (health promoter) educational methods. These strategies are impactful means to foster parity in access to energy programs, increase community health and resilience, and build trust and buy-in with local communities.
- Infrastructural Programs, Technologies, and Investments (Figure ES-3 and Table ES-1).** Without upgrading outdated housing and equipment like home service panels, residents cannot install the infrastructure needed to support clean energy technologies. Three strategies address these challenges: (1) *affordable and safe upgrades of infrastructure, buildings, and electric panels*, (2) *programs and investments targeting solar and storage, EVs, and grid upgrades in underserved communities*, and (3) *programs fostering clean energy and housing security*, for instance, by avoiding affordable housing loss and eviction, and monitoring housing safety needs. LADWP could expand programs like the Home Energy Improvement Program (HEIP), the Comprehensive Affordable Multifamily Retrofits (CAMR), and rely on other city initiatives (e.g., Stay Housed LA, Table ES-1) to develop these recognition strategies. They could collaborate with the Metro and Housing Authority of the City of Los Angeles to provide affordable energy and home upgrades fostering affordable access to solar, storage, EVs, and other technologies.
- Jobs and Financial Stability (Figure ES-3 and Table ES-1) includes tailored job training, and bill management and debt relief.** These strategies seek to foster Angelenos power to determine their own energy future by enhancing access to well-paid jobs, training, and entrepreneurship in underserved communities. Such strategies could include expansion of LADWP programs like the Utility Pre-Craft Trainee Program, the Low-Income Discount Program, and the Lifeline Discount Program. These programs provide LADWP with opportunities to address structural inequities by supporting residents of frontline and underserved communities – particularly the youth – with pathways for more sustainable livelihoods and options to decrease their energy burdens.

In summary, this chapter presents community-guided strategies for LADWP and related government agencies to begin redressing barriers to energy equity. The strategies developed through community engagement and accompanying analysis can lead the way to more accessible and equitable programs and technologies in the LA clean energy transition.



**Table ES-1. Equity Strategies for Procedural and Recognition Justice in Los Angeles**

<b>Equity Strategy</b>	<b>Implementation Entity</b>	<b>Existing Programs</b>	<b>Assessment Metrics</b>
1: Programs and Services Co-Development	LADWP, HACLA, Metro	LIHEIP, RETIRE, REP, ESAP, Community Grants	% of enrollment, % of households eligible, Number of programs and services
2: Tailored Outreach and Education	LADWP	HEIP, RETIRE, REP, ESAP, Adopt a School, Community Grants	% of ratepayers aware of programs, Programs using trusted messengers
3: Tailored Training / High-Road Jobs	LADWP, LATTC	UPCT, Lineman	% of enrollment, % of enrolled Angelenos with LADWP jobs
4: Bill Management and Debt Relief	LADWP	EZ-SAVE Program, Level Pay, LIDP	% of enrollment, % of households eligible, Shutoff protections
5: Community Resilience (Community Science)	LADWP, LAUSD	LADWP Science Bowl, Neighborhood Scientists	Number of programs, Quality of programs
6: Improve Transparency and Continuity	LADWP, HACLA, Metro	HEIP, RETIRE, REP, ESAP	% of enrollment, Improvement in transparent reporting
7: Affordable and Safe Upgrades	LADWP, HACLA, Metro	EE, EVs, LIHEIP, Weatherization Shared Solar, Cool LA	% of structural energy upgrades per type – e.g., solar, panels – benefiting underserved communities
8: Targeted Programs and Investments	LADWP, HACLA, Metro, LAUSD	EE, EVs, Solar, HEIP, RESAP, Cool LA, CAMR	% of sectoral investments and programs per type – e.g., solar panels – benefiting underserved communities
9: Energy and Housing Security	LADWP, HACLA, Metro, City of Los Angeles	LADWP Customer Service, City of Los Angeles online services, Stay Housed LA	% of underserved ratepayers benefiting from: (a) Eviction protections, (b) Monitoring and enforcing programs
10: Community Health and Resilience	LADWP, LA Care Churches	LADWP Science Bowl, Health Promoters	Number and quality of programs using trusted messengers
11: Improve City Regulations, Accountability, and Enforcement	City of Los Angeles,	HEIP, Solar, EVs, EE	Monitoring and enforcement of (a) upgrade and safety programs (b) and service and technology providers
12: Collaborative Platform (see Chapter 4)	LADWP	All programs	Number and quality of collaborative programs

CAMR = Comprehensive Affordable Multifamily Retrofits ESAP = Energy Savings Assistance Program

EZ-SAVE Program = Low-Income Discount Program  
HACLA = Housing Authority of the City of Los Angeles  
HEIP = Home Energy Improvement Program  
LATTC = Los Angeles Trade-Technical College  
LAUSD = Los Angeles Unified School District  
LDP = Lifeline Discount Program  
REP = Refrigerator Exchange Program  
RETIRE = Refrigerator Turn-In and Recycle  
UPCT = Utility Pre-Craft Trainee Program

# Table of Contents

<b>Executive Summary</b> .....	<b>viii</b>
<b>1 Introduction</b> .....	<b>1</b>
<b>2 Equity Strategies and Just Energy Transitions</b> .....	<b>2</b>
2.1 Involving Communities in Equity Strategy Development .....	2
2.2 Analytic Approach .....	3
2.3 Methods.....	5
<b>3 Energy Equity Strategies</b> .....	<b>7</b>
Strategy 1: Engage Residents in Developing Programs and Services Targeting Community Priorities .....	12
Strategy 2: Co-Design Community Outreach with Local, Trusted Messengers .....	15
Strategy 3: Expand Job Programs that Provide Equitable Access to Training Opportunities and High-Road Jobs .....	17
Strategy 4: Tailor Strategies for Providing Debt Relief and Preventing the Accumulation of Debt....	19
Strategy 5: Invest in Programs that Foster Community Health, Resilience, and Well-Being.....	20
Strategy 6: Improve Continuity, Transparency, and Accountability in Program Participation.....	22
Strategy 7: Affordable Programs to Safely Upgrade and Remediate Existing Housing and Infrastructure .....	23
Strategy 8: Prioritize Disadvantaged Angelenos in Energy Transition Programs and Investments.....	25
Strategy 9: Programs to Foster Energy and Housing Security and Safety .....	25
Strategy 10: Invest in Programs that Build Community Health, Resilience and Well-Being.....	27
Strategy 11: Improve City Regulations, Accountability, and Enforcement .....	28
<b>4 Concluding Remarks</b> .....	<b>30</b>
<b>5 Glossary</b> .....	<b>33</b>
<b>6 References</b> .....	<b>36</b>
<b>Appendix. Data Analysis</b> .....	<b>39</b>
<b>Codebook</b> .....	<b>40</b>

## List of Figures

Figure ES-1. Strategy development analysis: Problem space (left), equity strategies (middle), and priority areas (right) .....	x
Figure ES-2. Strategy development analysis: problem space (left), equity strategies (middle), and energy equity goals (right) .....	xii
Figure ES-3. Mapping of energy equity strategies.....	xiii
Figure 1. Analytic approach for equity strategy analysis.....	4
Figure 2. Strategy development analysis: Problem space (left), equity strategies (middle), and priority areas (right) .....	9
Figure 3. Strategy development analysis: Problem space (left), equity strategies (middle), and energy equity outcomes (right) .....	10
Figure 4. Mapping of energy equity strategies .....	31

## List of Tables

Table ES-1. Equity Strategies for Procedural and Recognition Justice in Los Angeles .....	xv
Table 1. Equity Strategies for Procedural and Recognition Justice in Los Angeles .....	11
Table B-1. Code Names and Definitions .....	40

# 1 Introduction

Los Angeles' transition to equitable and zero-carbon energy in sectors such as housing, transportation, and electricity will not merely involve technical and infrastructural changes. This transition will also require seismic shifts in investments, community safety nets, resources, and integrative policy strategies to successfully achieve more equitable outcomes (Dubash et al. 2022; Romero-Lankao et al. 2018a). Strategies that target sociocultural and institutional factors are as crucial as those targeting techno-infrastructural factors (Cherp et al. 2018).

Concerted efforts are currently being made to redress the disproportionate distribution of investments in physical infrastructure and energy efficient technologies across Los Angeles. While important, these efforts alone cannot rectify Los Angeles' past and ongoing energy inequities. First, there must be an understanding of *why* past investments were inequitably distributed (Chapter 1), *what* impact they had on local communities (Chapters 1 and 2), and *how* to develop procedures that center Los Angeles' historically underserved communities in the energy transition decision-making process (Chapter 2). This chapter concentrates on operationalizing the recognition and procedural justice aims outlined in Chapters 1 and 2 by presenting a series of community-guided equity strategies for the LA energy transition and examining *how* to design more equitable processes to develop these strategies (also see Chapter 4).

Various actors will need to participate in the LA energy transition, from transportation and housing officials to commercial firms, community members, and community-based organizations (Avelino 2021). Furthermore, all Angelenos play crucial roles as ratepayers, users of technological solutions, adopters of more efficient energy practices, and voters who influence regulators and policymakers (Sauerma et al. 2020). Incorporating the lived experiences, aspirations, and voices of historically underserved communities in the decision-making process for Los Angeles' energy transition is critical to ensuring more equitable outcomes in the city's future (McCauley et al. 2019; Devine-Wright 2005).

## 2 Equity Strategies and Just Energy Transitions

### 2.1 Involving Communities in Equity Strategy Development

The technical and societal elements of energy transition problems and solutions are determined by multiple causal factors that cut across areas such as housing, transportation, the energy system, urban planning, health, and economic development (Rutherford and Coutard 2014; Castán Broto et al. 2020). Problems and solutions involve governmental, private, and civil society sectors and are approached differently across disciplines, from engineering and economics to the social sciences (Sauermann et al. 2020; Romero-Lankao et al. 2018b). Community members have often been excluded from the energy decision-making process (Nowotny 2003; Sauermann et al. 2020; Smith, Stirling, and Berkhout 2005). However, community involvement in strategy development has been found to be essential to addressing the inherent complexity of problems and solutions, improving energy equity outcomes, and achieving “democratically legitimate consent” (Burke and Stephens 2017; Sauermann et al. 2020; Nowotny 2003; Smith et al. 2005).

Two crucial reasons underlie the importance of involving underserved Angelenos in equity strategy development in the LA energy transition. First, avoiding the reproduction of past energy inequities necessitates understanding *why* the current energy system produced disproportionately inequitable impacts across LA communities, what strategies can improve energy equity outcomes, and *how* to design more equitable processes to develop these strategies. Therefore, this chapter follows a just energy transition approach, whereby ordinary Angelenos—particularly in the communities that have been most adversely impacted by the current energy system—have guided our analysis, grounding the identification of a set of priorities and understandings to inform the Los Angeles Department of Water and Power’s (LADWP’s) energy equity strategies.

Second, a solid body of scholarship (Sauermann et al. 2020; Heaslip and Fahy 2018) has found that energy transition solutions, such as community solar and electric vehicle (EV) infrastructure charging, often prompt not only support but also opposition—particularly if their promoters use top-down, one-way engagement approaches (for details, see Chapter 4). These approaches can contribute to public indifference, and even opposition, because of community and ratepayer uncertainties and concerns about potential safety, health, and energy affordability impacts (Boudet 2019; Devine-Wright 2005; Devine-Wright and Devine-Wright 2009).

Those problems often arise when there is a lack of community involvement and co-ownership in strategy development (Hall et al. 2020). Moving away from top-down engagement approaches, developing co-ownership of knowledge production with local communities can ground institutional understandings of the problem space in residents' lived experiences. Furthermore, incorporating community experiences into research development improves the effectiveness of the analytic models that inform energy strategies and solutions (Sauermann et al. 2020). Particularly for government entities, involving residents in the decision-making process—a key element of procedural justice—fosters community trust in those institutions.

Through equitable community involvement, Angelenos learn about potential benefits, options, and trade-offs while actively participating in decisions about key energy problems and solutions (Sauermann et al. 2020). This inclusive method creates precedents and capacities for long-term,



meaningful involvement in energy system decision-making (Burke and Stephens 2017). By centering local understandings and regulating the influence of powerful decision-makers, government entities are able to expand both the effectiveness of and the equity in energy transition outcomes.

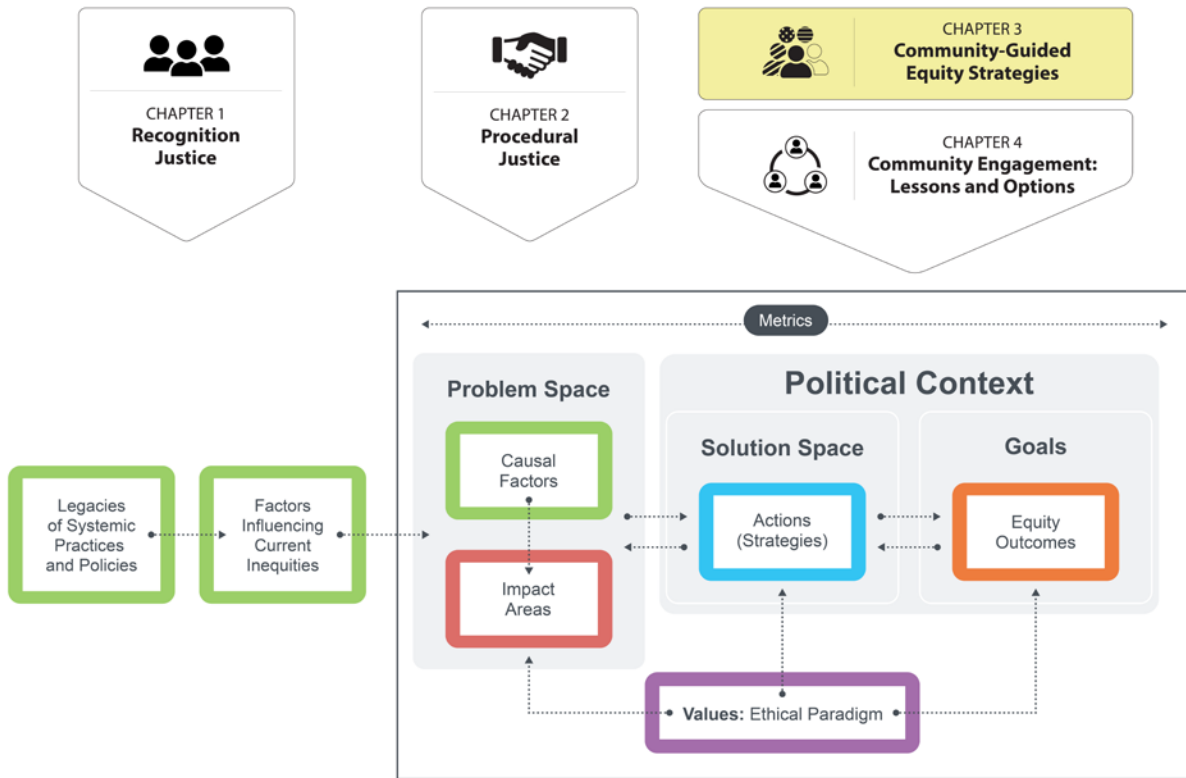
## 2.2 Analytic Approach

In Chapters 1 and 2, we focused on the LA energy transition’s problem space—community-identified causal factors and impact areas and the underlying values that condition local understandings of the current energy system and future transition. In this chapter, we move from the problem space to the solution space by presenting a series of community-guided equity strategies. Aligning local community and city concerns with federal priorities<sup>1</sup> (U.S. Department of Energy 2021), we identify those that decrease energy burdens, increase parity in access to transition programs and technologies, increase access to low-cost capital, decrease environmental exposure, improve the clean energy job pipeline and training, and enhance energy democracy. This process of priority alignment and identification of energy equity strategies requires examining options that connect stated priorities to potential avenues for practical application in Los Angeles. Here, we focus on the solution space of our analytic approach laid out in Chapters 1 and 2.

Within the solution space, the *political context* (Figure 1) entails any institutional element that might impact how LADWP, as well as other city officials, approaches a problem and the strategies (actions) to target that problem. In Los Angeles’ current political context, LADWP and other city officials can benefit from institutional opportunities (Section 3, page 7)—such as those offered by the federal Inflation Reduction Act of 2022 and the Bipartisan Infrastructure Law—to prioritize equity strategies. Beyond federal incentives, the political context consists of other potential influences, including regulations (e.g., California Propositions 26 and 218), local and state elections and changes to executive or legislative offices, and consensus and coalition building (Sabatier 2007; Bjerkan and Seter 2021).

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<sup>1</sup> Justice40 Policy Priorities: [www.energy.gov/diversity/justice40-initiative](https://www.energy.gov/diversity/justice40-initiative).



**Figure 1. Analytic approach for equity strategy analysis**

*Equity strategies* entail the design, implementation, and evaluation of instruments and programs, which are the means to achieving more equitable energy goals, termed here *equity outcomes* (Figure 1) (Arndt et al. 2017; McCauley and Heffron 2018; Carley and Konisky 2020). Equity strategies include the “what”—the instruments to achieve energy equity outcomes—and “how” those instruments are developed. Implementation refers to any city entity, including LADWP, with remit over equity instruments and the financial and human resources allocated for energy equity program execution, such as LADWP’s Refrigerator Exchange Program and their Low-Income Discount Program analyzed in Chapter 1.

However, program implementation is not enough. Policy evaluation is an essential phase of equity strategy development (Dubash et al. 2022). As a critical method of implementing energy justice, this evaluation often focuses on tools and measures to increase a program’s environmental effectiveness, economic efficiency, and affordability, and/or lower institutional barriers to implementation (Section 3; Chapters 4–11).

Equity *metrics* are essential to operationalizing and evaluating energy equity strategies and are aimed at creating concrete measures that serve multiple objectives. These aims include categorizing and quantifying forms of disadvantage, assessing the performance of policy design and implementation, or assessing energy equity outcomes for underserved communities in the short and long term (Barlow, Tapio, and Tarekegne 2022; Romero-Lankao and Nobler 2021). Following this understanding, metrics are not inherently targets or indicators of success or

failure. To inform or refine solutions, we utilize qualitative methods to develop an evaluation process that evinces why and how such metrics could inform a more transparent and accountable energy transition. Here, we orient our analysis toward the Justice40 policy priorities to ground this energy equity evaluation process in federal justice standards for achieving and assessing energy outcomes (see Section 3).

## 2.3 Methods

Building on the methodological approach used in Chapters 1 and 2, this chapter analyzes the LA100 Equity Strategies engagement data developed with local communities, stakeholders, and both the Steering Committee and the Advisory Committee to co-design a series of community-guided energy equity strategies. Developing equity strategies to operationalize energy justice in the transition to clean energy is a complex endeavor, which requires a two-step approach:

1. Grounding strategy analysis in lived local realities. This entails assessing community-informed strategies that improve access to energy services and technologies that are affordable, accessible, safe, resilient, reduce negative impacts on health and quality of life, and provide opportunities for workforce development. Therefore, we organized community engagement around four *crosscutting areas prioritized* by Steering Committee members, as well as academic literature on energy justice and in U.S. policymaking (e.g., Justice40). This chapter adds *inclusive community involvement* as an additional (fifth) crosscutting area (see Section 3).
2. Evaluating energy strategies based on a series of criteria (e.g., responsible entity, benefits) and metrics that can assist LADWP in identifying the most effective strategies for improving equity in the Los Angeles energy transition (Section 3). Not all criteria are applicable to all strategies or in all circumstances, and the relative importance of diverse criteria depends on the strategy objectives (see Konidari and Mavrakis 2007 and Cohen et al. 2019 in (Dubash et al. 2022)).

The listening sessions (Chapter 2), which center community voices in the development of LADWP's equity strategies, were divided into two phases. First, the National Renewable Energy Laboratory, LADWP, and the partnering community-based organizations from the Steering Committee co-designed five listening sessions adapted to the realities of five LA regions: two regions of South LA, East LA, San Fernando Valley, and the Harbor Region. To design the sessions, we grounded them in a mutual understanding of context-specific (in)equities in the following crosscutting priority areas:

1. Affordability and burdens
2. Access to City of Los Angeles and LADWP infrastructure, services, and programs
3. Public health, safety, and community resilience
4. Jobs and workforce development

Coding and content analysis of the first round of listening sessions conducted in March and April 2022 revealed a set of causal factors, impact areas, and underlying values that helped focus and refine questions for the remaining 10 listening sessions conducted from September to December 2022.

Chapter 2 laid out in detail how the National Renewable Energy Laboratory developed the methodological and analytic approach to community engagement, utilizing ground theory and both deductive and inductive analysis. (See also Annex and Azungah 2018). We began by organizing community engagement activities around the four prioritized crosscutting areas described above. We then utilized these prioritized areas deductively (top-down) to design all listening sessions. We utilized qualitative coding to identify categories and concepts in the data and link passages of 15 listening session transcriptions to themes that became labeled with a particular “code.” When two themes were identified in the same passage, we labeled that intersection “overlapping codes.” Key findings emerged as we used the frequency of overlapping codes to analyze key relationships between energy equity issues and solutions.

In this chapter, we add *inclusive community involvement* as an additional (fifth) crosscutting area. We present solutions to energy justice problems proposed by community members over the course of the listening sessions. These solutions formed the basis for the assessment of community-guided strategies. These strategies relate to how LADWP and other government entities can redress ongoing causes of inequity across energy-related sectors through the design, implementation, and evaluation of programs for underserved Angelenos. Thus, the following subsections examine information—segments of listening session text—shared by members of those communities that we coded as related to “future programs, support, and policies.” These segments also overlap with causal factors and/or impact areas, connecting the problem space identified by community members with their suggested solutions for redressing past and existing inequities.

### 3 Energy Equity Strategies

This section presents 11 community-guided strategies seeking to improve access to affordable, safe, and resilient energy services, technologies, and programs. These improvements range from the reduction of negative impacts on health and quality of life to creating opportunities for workforce development in the green economy. Many strategies also include a focus on procedural justice: the procedures, practices, and decision-makers involved in designing, implementing, and evaluating benefits such as LADWP programs. Some strategies also operationalize recognition justice by examining energy strategies that redress the structural legacies of energy inequity. Yet other strategies focus on both procedural and recognition justice.

Below we describe how each strategy addresses community-identified issues related to procedural justice and/or recognition justice. While community members and community-based organization shared a rich set of strategies, this chapter focuses on the recurrence (saturation) of solutions provided, the quality of the proposed strategies (i.e., their ability to address community-identified needs and barriers), and their viability for implementation.

Below, we examine quotes from listening session participants organized in the following 11 energy equity strategies, connecting them to the problem space and five crosscutting priority areas (see also right column of Figure 2, page 9):

- **Equity Strategy 1:** Engage Residents in Developing Programs and Services Targeting Community Priorities (Programs and Services Co-Development)<sup>2</sup>
- **Equity Strategy 2:** Co-Design Community Outreach with Local, Trusted Messengers (Tailored Outreach and Education)
- **Equity Strategy 3:** Expand Job Programs that Provide Equitable Access to Training Opportunities and High-Road Jobs (Tailored Training / High-Road Jobs)
- **Equity Strategy 4:** Tailor Strategies for Providing Debt Relief and Preventing the Accumulation of Debt (Bill Management and Debt Relief)
- **Equity Strategy 5:** Support Community Science Through Programs that Foster Community Health, Resilience, and Well-Being (Community Resilience (Community Science))
- **Equity Strategy 6:** Improve Continuity, Transparency, and Accountability in Program Participation (Improve Transparency and Continuity)
- **Equity Strategy 7:** Affordable Programs to Safely Upgrade and Remediate Existing Housing and Infrastructure (Affordable and Safe Upgrades)
- **Equity Strategy 8:** Prioritize Disadvantaged Angelenos in Energy Transition Programs and Investments (Targeted Programs and Investments)
- **Equity Strategy 9:** Programs to Foster Energy and Housing Security and Safety (Energy and Housing Security)

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<sup>2</sup> The text within parentheses represents the short title of each strategy, which is used in the Sankey diagrams and Table 1 (page 11) in this chapter.

- **Equity Strategy 10:** Invest in Programs that Build Community Resilience (Community Health and Resilience)
- **Equity Strategy 11:** Improve City Regulations, Accountability, and Enforcement (Regulations, Accountability, and Enforcement).

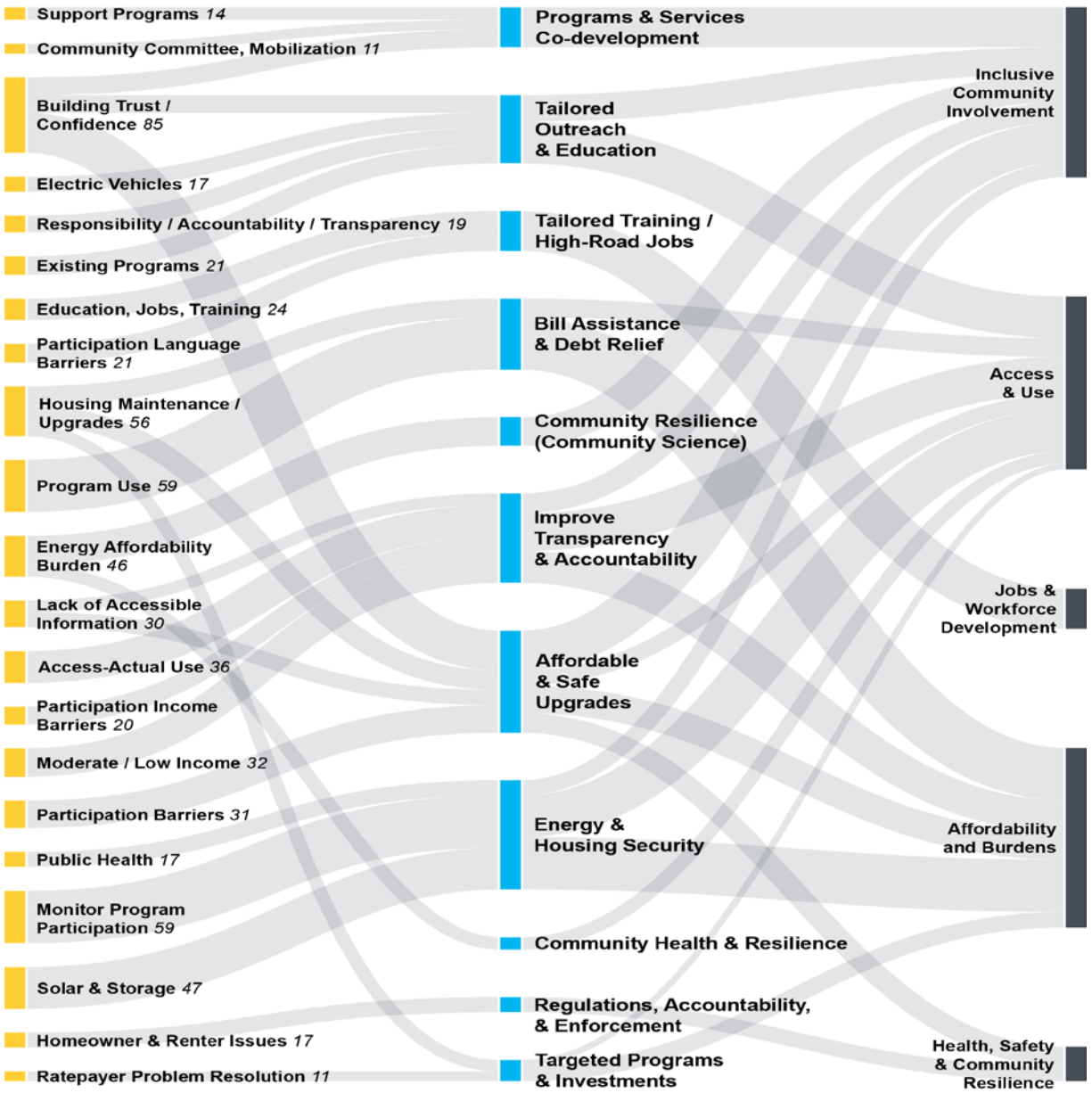
The codes on the left in Figure 2 (page 9) represent the number of times community members made comments related to problems, such as those related to past and current LADWP programs and suggestions for solutions to future LADWP programs. We quantified this number of intersections as overlapping codes. Based on the analysis of these overlaps, we developed the 11 community-guided equity strategies that are listed in the center of the diagram (also see Table 1, page 11). The right column in Figure 2 connects these solutions to the five crosscutting priority areas:

1. Affordability and burdens
2. Access and use
3. Health, safety, and community resilience
4. Jobs and workforce development
5. Inclusive community involvement

Figure 2 depicts how the equity strategies (middle) connect with the crosscutting priority areas. Figure 3 (page 10) shows how the outcomes (right) of these equity strategies align with key policy priorities. Table 1 summarizes a series of actionable building blocks for LADWP to design, implement, and evaluate the 11 strategies, including:

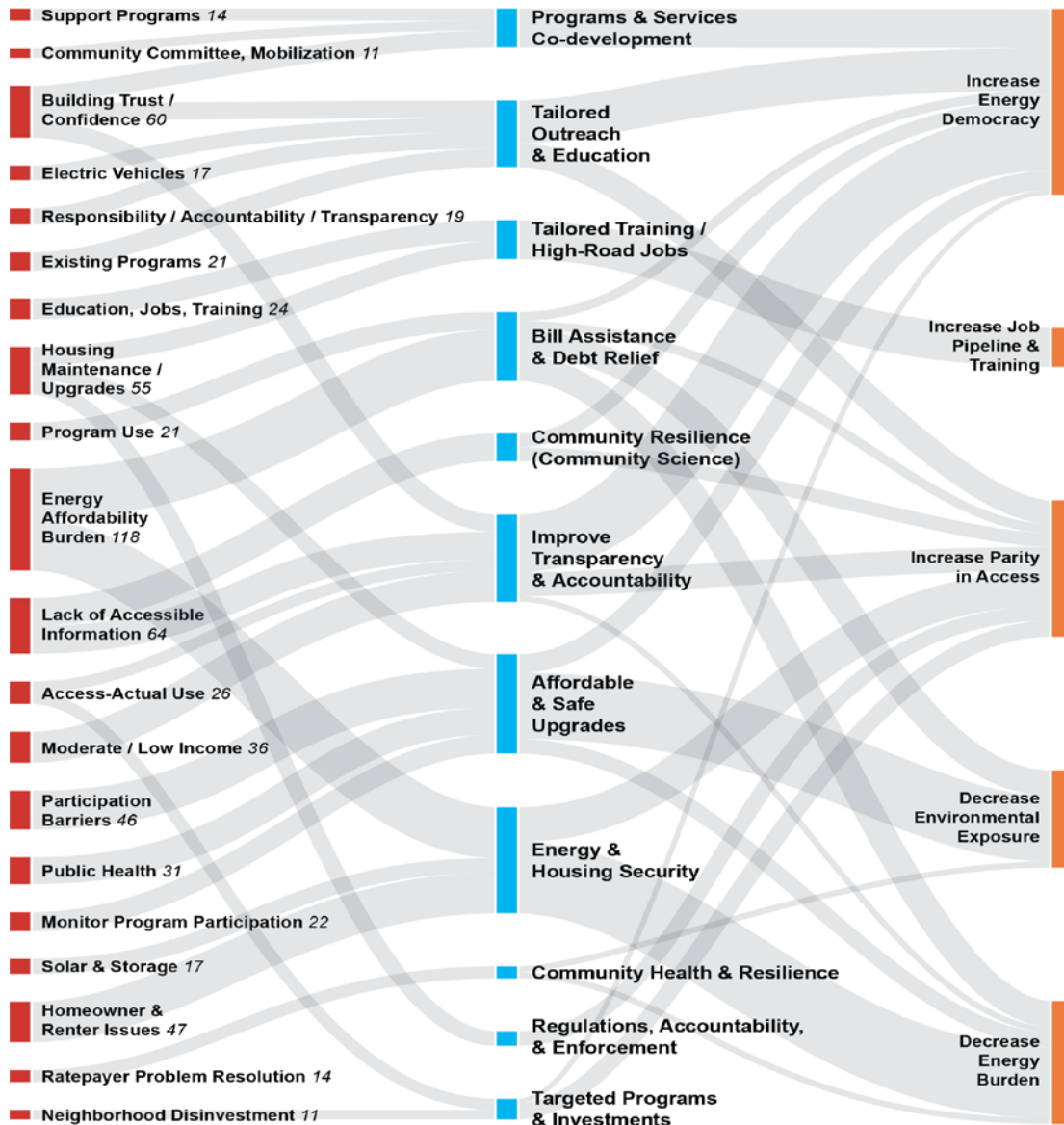
- Relevant LADWP or governmental entity (implementation entity)
- Existing programs LADWP can build on in the near term
- Specific assessment metrics for success.





**Figure 2. Strategy development analysis: Problem space (left), equity strategies (middle), and priority areas (right)**

The numbers on the left in this figure represent the number of times community members made intersecting comments related to the problems on the left and suggestions for solutions to future LADWP programs. We quantified this number of intersections as overlapping codes. Our analysis of these overlaps developed a series of community-guided equity strategies that are listed in the center of the diagram. The right column reveals how these equity strategies relate with five crosscutting priority areas: affordability and burdens; access and use; health, safety, and community resilience; jobs and workforce development; and inclusive decision-making. (For details on how these were identified, see Section 2.2, page 3.)



**Figure 3. Strategy development analysis: Problem space (left), equity strategies (middle), and energy equity outcomes (right)**

The numbers on the left represent the number of times community members made intersecting comments related to the problems on the left and suggestions for solutions to future LADWP programs. Our analysis of these overlaps developed a series of community-guided equity strategies that are listed in the center of the diagram. The right column reveals the outcomes of these equity strategies align with key policy priorities identified through a literature review. (For details on how these were identified, see Section 2.2, page 3.)

**Table 1. Equity Strategies for Procedural and Recognition Justice in Los Angeles**

<b>Equity Strategy</b>	<b>Implementation Entity</b>	<b>Existing Programs</b>	<b>Assessment Metrics</b>
1: Programs and Services Co-Development	LADWP, HACLA, Metro	LIHEIP, RETIRE, REP, ESAP, Community Grants	% of enrollment, % of households eligible, Number of programs and services
2: Tailored Outreach and Education	LADWP	HEIP, RETIRE, REP, ESAP, Adopt a School, Community Grants	% of ratepayers aware of programs, Programs using trusted messengers
3: Tailored Training / High-Road Jobs	LADWP, LATTC	UPCT, Lineman	% of enrollment, % of enrolled Angelenos with LADWP jobs
4: Bill Management and Debt Relief	LADWP	EZ-SAVE Program, Level Pay, LIDP	% of enrollment, % of households eligible, Shutoff protections
5: Community Resilience (Community Science)	LADWP, LAUSD	LADWP Science Bowl, Neighborhood Scientists	Number of programs, Quality of programs
6: Improve Transparency and Continuity	LADWP, HACLA, Metro	HEIP, RETIRE, REP, ESAP	% of enrollment, Improvement in transparent reporting
7: Affordable and Safe Upgrades	LADWP, HACLA, Metro	EE, EVs, LIHEIP, Weatherization Shared Solar, Cool LA	% of structural energy upgrades per type – e.g., solar, panels – benefiting underserved communities
8: Targeted Programs and Investments	LADWP, HACLA, Metro, LAUSD	EE, EVs, Solar, HEIP, RESAP, Cool LA, CAMR	% of sectoral investments and programs per type – e.g., solar panels – benefiting underserved communities
9: Energy and Housing Security	LADWP, HACLA, Metro City of Los Angeles	LADWP Customer Service, City of Los Angeles online services, Stay Housed LA	% of underserved ratepayers benefiting from: (a) Eviction protections, (b) Monitoring and enforcing programs
10: Community Health and Resilience	LADWP, LA Care Churches	LADWP Science Bowl, Health Promoters	Number and quality of programs using trusted messengers

Equity Strategy	Implementation Entity	Existing Programs	Assessment Metrics
11: Improve City Regulations, Accountability, and Enforcement	City of Los Angeles, LADWP	HEIP, Solar, EVs, EE	Monitoring and enforcement of (a) upgrade and safety programs (b) and service and technology providers
12: Collaborative Platform (see Chapter 4)	LADWP	All programs	Number and quality of collaborative programs

- CAMR = Comprehensive Affordable Multifamily Retrofits
- ESAP = Energy Savings Assistance Program
- EZ-SAVE Program = Low-Income Discount Program
- HACLA = Housing Authority of the City of Los Angeles
- HEIP = Home Energy Improvement Program
- LATTC = Los Angeles Trade-Technical College
- LAUSD = Los Angeles Unified School District
- LDP = Lifeline Discount Program
- REP = Refrigerator Exchange Program
- RETIRE = Refrigerator Turn-In and Recycle
- UPCT = Utility Pre-Craft Trainee Program

### Strategy 1: Engage Residents in Developing Programs and Services Targeting Community Priorities

Program and service co-development implements both recognition and procedural justice and contributes to inclusive decision-making (Figure 2). Listening session participants suggested fostering intentional energy strategies—procedures, partnerships, and practices—that engage residents from underserved communities in developing programs and services that meet their needs and priorities. They highlighted the need for transitioning away from, as one participant explained, the status quo “transactional extraction of information to check the box. To say yes, we engaged.” Instead, she asked LADWP to approach her community with respect and transparency, stating:

We consider you all to be experts in your community, and we'd like to authentically engage with you in the decision-making process. And here are the decisions and the entry points in order to do that. And again, I think this is predicated on a general distrust among the community from the [LA]DWP. So, I do think there needs to be some intentional actions for that rapport building and that trust building.

Rather than an extractive process, “authentic” LADWP engagement that incorporates Angelenos into the decision-making process requires the time to repair mistrust and build rapport with relationships of respect.

The mistrust this participant refers to comes from a history of injustice that still marks community members’ everyday lives. The ongoing legacy of redlining—the practice of



discriminatory mortgage lending examined in Chapter 1—became a point of departure for redressing inequities by identifying where to center engagement and investment in Los Angeles. As one request explained:

...this is where the technology comes in. For centuries we have been marked by redlining, they know which communities are most in need. And this is where [using] technology to our advantage comes. [To know where] to start, what places [need to] have access, obviously, [to pay for] the cost of a better life. And this [redlining] map was much earlier than technology. Because it is a current map, where they marked us [and decided] they are not going to make more loans here, because there are more brown people, there are more people of other races that they will not have to pay. But there they are...if LADWP wants to start something, they can start there [in the redlined areas].

Beyond grounding LADWP's direction to focus engagement efforts and technology investments in communities that continue to live with the consequences of legacies of institutionalized injustice, it is still vital to consider how that relationship between LADWP and these communities will be rebuilt. Remediating the ongoing negative effects of structural inequities requires fostering their relationship with overburdened communities to understand how these inequities are experienced and manifested in their everyday lives.

One resident highlighted that this type of community engagement is not a siloed effort. It is only possible if LADWP listens to community needs as they design Los Angeles' clean energy future, particularly with regard to developing services that redress existing risks and burdens, such as health and safety. She told us that:

Our community has a lot of pollution and a lot of problems, and I know that DWP is making plans to change the energy we receive. Not just solar, not just wind, not just oil, but they're also considering things like green hydrogen and all that. And I just hope that they are listening very well to what people are telling them: that they are tired of the pollution, they deserve more and want better services [from] DWP.

This participant asks LADWP to prioritize redressing the problem of local pollution as one negative effect of the current energy system that disproportionately impacts their community. However, her request moves beyond a singular focus on the problem of pollution to highlight the problems of existing engagement processes that allow such negative effects to continue and, at times, proliferate. She emphasizes a need for LADWP to be active listeners, tailoring their services to remediate community-identified problems and allow these residents to live their lives with dignity. Yet, how will LADWP build this dedicated space for listening to community members and responding to their requests? One resident had a powerful suggestion; she proposed developing a community committee for energy-related decision-making:

And I also think we need a committee from the community, for the community where we can make energy decisions. That LADWP make us part of decision-making, rather than us being part of LADWP, so that our community [has a voice]. Because many times there are no such committees, or at least if there are I am not aware of them. I have tried to investigate a lot of this, where we also take



part in program decisions and our needs are considered. Because you have to be realistic. The owner of the restaurant is not the same as the person who is going to eat there, never. And vice versa. So, it's good to have both sides because if we don't have both sides, the organization [LADWP] just by coming and listening to us can't be aware of everything that's happening. Some will say, the problem was the dealer and others will say, no, the problem was DWP. Others will say who structured the program? But the problem really comes from when the project was established, and all these problems were not channeled. Who is going to take responsibility if the [EV car] dealer wants to impose [an interest] rate of 20 percent? Who is going to take care of this? There is no committee, there is no one to follow up on this. So, I think that if we want to [address] these problems, we have to create committees....

This proposal for a community committee recognizes the importance of understanding both LADWP and community needs, concerns, and priorities. She also argues that active listening on the part of LADWP is not enough to truly tailor programs and services to specific community priorities. From her perspective, understanding the roots—causal factors—of the program problems and following through with their resolution can only be successful if there is a dedicated group of community experts who have lived, on-the-ground experience with energy-related issues and can utilize that expertise to inform LADWP decision-making. The scope and timeline of this type of collaborative work between communities and government agencies was discussed by another participant, who shared her experience with a development project in East LA. Before finalizing the project scope, she explained:

I went to Mariachi Plaza [in East LA]. What we were saying is, we gotta send you a plan with the developer. And the developer is going to convince the community how to work the plan. Community says, no, we want to be a part of the planning. We had to as a commission say, we will stop. We will do it right. The community will speak to us before there is a plan. Before there is a proposal. And it's taking almost eight years to get the project going. But now the entire process, by which decisions are made, means you start with the community. So DWP is never going to get the message, unless they stop, and start with the people who are the consumers... We now have to understand the people who come with, lived the experiences and issues and problems we are trying to solve. Probably have a better mouse trap than we have. And DWP needs to get that.

This participant is emphasizing not only the scoping requirement of “start[ing] with the community,” integrating them into the planning process—a form of inclusive policymaking; she is also calling attention to how long this type of work takes. It took them “almost eight years” to “do it right” by the community. If LADWP wants to solve these problems, according to this participant, they need to restructure their project planning, beginning with impacted communities, and adjust their project timelines to co-design and implement programs, (re)build community trust, and attain buy-in.

Existing LADWP programs hold great potential for actualizing this energy equity strategy for centering community priorities. LADWP could build on existing programs, such as the Home Energy Improvement Program (HEIP) and Energy Savings Assistance Program (ESAP), to engage residents in program development and decision-making processes. Such engagement in

program expansion is an opportunity to increase energy democracy, decrease energy burden, and increase parity in clean energy technology access and adoption in underserved communities (see right column of Figure 3, page 10). To monitor performance as well as maintain transparency and accountability, LADWP could also develop and employ assessment metrics, such as the percentage of underserved communities enrolled in LADWP programs out of total enrollment, the percentage of LA households eligible for specific program participation and services, and the number of programs and services benefiting underserved communities (see metrics suggested in Table 1, page 11).

## Strategy 2: Co-Design Community Outreach with Local, Trusted Messengers

Tailored outreach and education programs can operationalize procedural justice by developing inclusive policymaking that fosters parity in access to services, programs, and technologies (Figure 3). Los Angeles' energy transition requires procedures and programs that build partnerships with local communities. Those actions become the methods used to ground transition goals and equity outcomes in the ideas, visions, and experiences of communities that have historically been excluded from the energy system decision-making process. However, two key barriers to building those partnerships are: (1) on the community side, a lack of trust in government agencies; and (2) on the institutional side, a misunderstanding of how community members access and process outreach information and activities. To redress the latter by co-designing outreach in inclusive policymaking with residents, LADWP could first develop a partnership with local trusted messengers. These trusted messengers not only help their neighbors navigate institutional landscapes and government mistrust, but they also understand their community's needs, aspirations, and modes of gathering and processing information. Thus, this equity strategy entails how to identify and partner with local trusted messengers to build community relationships, as well as how that partnership helps LADWP tailor outreach to local communities to provide accessible information and educational opportunities.

Listening session participants mentioned several trusted messengers. Two prominent types were *promotoras de salud* (community health workers) and local faith-based organizations and institutions. *Promotoras de salud* (also known as *promotoras*) are community health workers, seen as trusted messengers guiding local residents in their Latino communities through the complex health care system. They utilize their knowledge of local sociocultural norms to provide their neighbors access to relevant health and social resources. Several *promotoras* attended the listening sessions in South LA and East LA. A recurrent sentiment in those sessions was how energy education and outreach could benefit from incorporating *promotora* methods of community engagement. As one *promotora* participant noted:

One strategy would also be—what we're doing right now—to provide educational opportunities for more people. To help them reflect on how to avoid destroying our planet. We are, because we are all in this world...Just like what we're doing right now, reaching more people. We are part of an environmental health committee, and we are *promotoras*. So, we go out onto the streets, we hand out flyers. We talk to people, helping them understand. And you know that the *promotora* model works well because the community knows us. So, they trust us. Here comes the lady who...let's see, tell us. They listen to us. They have the



confidence to tell us “it's true, you're right,” I'm going through the same thing as you ... So, I think that spreading this information would be a very good idea. Doing awareness workshops and also providing information through promotoras ... that walk through the community and the community knows us.

By incorporating energy education into a social network of trusted messengers—*promotoras*—that already exists in their communities, this participant is suggesting that both LADWP and residents will gain benefits. Educational content, from awareness workshops to general information, will be more accessible to local residents, given the *promotoras* knowledge of local learning norms, and LADWP will gain the trust needed to co-design outreach that builds a feedback loop with local communities.

Along these lines, residents also pointed to a need for including educational programs in trusted community spaces as part of the energy-related decision-making process. One resident suggested partnering with local leaders of faith-based organizations in his community to build trust and equity strategies that are embraced because they are grounded. He told us:

I think education needs to be up front. And it has to be education directed to the lower-income people and also moderate-income people. Who, frankly, aren't convinced that electric is the way to go. Second, when it comes to churches. Churches have historically been the way that a lot of education is disseminated. A number of pastors in small churches, medium size churches, aren't on board yet. It's going to be difficult to push this forward without them ... if you are talking electric vehicles, I would also like to see a partnership with the churches. And maybe these electrical stations, maybe they receive that. Education happens in front of the churches as a catalyst to bring people onboard.

Paying particular attention to the spaces of historical trust in his community, this participant explains that “partnership with the churches” is one method of developing educational opportunities in trusted community spaces. Emphasizing that his community of lower- and moderate-income Angelenos does not trust electric mobility as their most viable option for the future, he points to the pitfalls of prevailing methods—top-down methods of educating communities about the energy transition. By localizing education about new technologies in spaces of historical trust (i.e., workshops about EV chargers hosted by community institutions), he sees an opportunity for expanding local understanding of, trust in, access to, and use of new energy technologies, such as electric mobility.

Finally, this partnership with local trusted messengers would also help LADWP identify the various methods that could be used to connect with different groups of people across the city. As one resident explained:

I think that another thing that could help our community a lot is to provide more information. And not only to the people who are registered on the bills. If not, to do radio campaigns, television campaigns. I never see them. We could invest in that. Make television campaigns, radio campaigns. So, I think the outreach for our community could be bilingual. There are a lot of people who are starting to understand English more now. And people who didn't speak Spanish are starting to speak Spanish. So, I think that's another way we can reach out to these people.

This participant points to different modes of communication to prioritize in her community that ensures information is accessible, including not only investing in social media, but also in radio and TV campaigns that are bilingual, in English and Spanish. She sees this type of communication and information strategy as moving beyond a singular focus on homeowners—“the people who are registered on the bills”—to reach the Angeleno renters who use the energy in their homes daily. These are the types of equity strategies that develop when government entities co-design community outreach campaigns with local trusted messengers who know their communities.

To redress community mistrust and lack of clear, accessible, and trusted information on program participation and services, LADWP could build on its existing Community Partnership Grants program and community-based events to co-design community outreach with residents. LADWP could utilize the *promotora* model (see Table 1, page 11) and develop partnerships with trusted community entities, such as faith-based organizations, to ground their outreach activities. This procedural justice equity strategy—from partnership with trusted messengers and localizing efforts in spaces of historical trust, to reaching out via familiar communication methods—aims to produce equity outcomes that prioritize the need to (1) increase energy democracy in underserved LA communities and (2) increase parity in clean energy technology access and adoption across Los Angeles (see right column of Figure 3, page 10). To monitor performance as well as program accessibility, LADWP could also develop and employ assessment metrics such as the percentage of ratepayers aware of LADWP programs and number of programs partnering with trusted messengers for outreach and/or application (see metrics suggested in Table 1).

### Strategy 3: Expand Job Programs that Provide Equitable Access to Training Opportunities and High-Road Jobs

Workforce development programs that provide equitable access to tailored training and high-road jobs<sup>3</sup> are crucial to implement procedural and recognition justice in the crosscutting priority area of jobs and workforce development (Figure 2). Throughout the listening sessions, participants stressed that community members’ abilities and power to make decisions concerning the current energy system and the future transition are deeply connected to guaranteeing equitable access to workforce training and well-paid jobs in their communities—called “high-road jobs” by Steering Committee members and some participants. As one resident in Watts put it:

In my humble opinion, we should be considered. I don't ask for free giveaways, I ask for a good job with a good salary for [the people of] the city of Watts. Because companies come and bring workers. And they don't benefit the residents

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<sup>3</sup> The term “high-road jobs” was utilized repeatedly by community-based organizations in the Steering Committee over the course of LA100 Equity Strategies. Following the report “Putting California on the High Road: A Jobs and Climate Action Plan for 2030,” we understand these jobs as part of the “high-road economy [which] supports businesses that compete on the basis of the quality of their products and services by investing in their workforces; these businesses pay the wages and benefits necessary to attract and retain skilled workers, who in turn perform high-quality work. Building the high road requires interventions on both the demand side and the supply side of the labor market. Supply indicates workers and the institutions that train them; demand refers to jobs and the firms or institutions that offer them” (Zabin 2020, 6).

[living] there. They should give jobs to every community where they work. They should give jobs to the people of the community there with good pay. And that, in my opinion, would [be the help I need].

Other residents highlighted the importance of nurturing local energy-related entrepreneurship programs as a co-benefit of the energy transition, supporting community resilience and improved energy efficiency. As one participant stated:

I know what I'm doing. I've already started it. Here through this space, because of the actual development with the Resiliency Hub and Climate Resolve and the work I do with ... schools, we started the Mural Workforce Academy. So, we are starting small and building a workforce of young artists, to teach them how to use this [mineral] paint [that keeps building façades cooler].

Here, this participant clearly reveals how programs investing in the community skills and materials needed to increase energy efficiency has a significant co-benefit of addressing their entrepreneurship needs. Access to these types of skillsets and resources makes energy more affordable for residents as the façades they paint insulate their homes, decreasing the need for energy-intensive cooling technologies such as air conditioners.

While some participants called attention to directing large companies located in their communities to invest in local workforce development, other residents emphasized how to guarantee equitable access to well-paid career opportunities by investing in the expansion of job training and placing programs. As one participant explained:

We human beings have many abilities. And sometimes ... it [happens] that what perhaps she can do, I cannot do. So, sometimes there are barriers for some people, let's say in technology and all that. And sometimes it is very difficult for them to get a job here in Los Angeles. So, it would be good if there were some [mechanism], I don't know, some organization, that when these people need help, perhaps for their rent, they can be provided [with support to] find a job. And say, what skills, what can you do. So that [these people] can have a monthly livelihood, to be able to support themselves and their family. And I believe that this way we will be able to get out of the level of poverty in which we find ourselves.

As this quote highlights, affordability is not just about income but also about access to the resources, services, and opportunities that lead to sustainable livelihoods and to a vibrant economy. Guaranteeing affordability for all Angelenos to “support themselves and their family” requires guaranteeing equitable access to the workforce opportunities that sustain their “monthly livelihoods.” This participant’s observation points to a pathway for achieving sustainable livelihoods for residents of frontline and underserved communities by identifying local skillsets, guaranteeing training to bolster their capabilities, and finally, connecting that education to high-road jobs in the green economy.

To expand job programs that provide equitable access to training opportunities and high-road jobs, LADWP could expand their existing training programs by identifying, utilizing, and enhancing local skillsets. LADWP’s Utility Pre-Craft Trainee (UPCT) program currently offers Angelenos from frontline and historically underserved communities an opportunity for entry-

level jobs and training for work in the green economy, providing trainees with high-road career pathways (Scott and Zabin 2016). LADWP could expand its UPCT, Lineman, and Civil Servant programs to prioritize increasing clean energy jobs and access to the job pipeline, as well as job training for individuals from historically underserved communities (right column of Figure 2 on page 9 and Figure 3 on page 10). Considering training part of a larger educational investment, LADWP could coordinate with entities such as Los Angeles Trade-Technical College (LATTC) that provide institutional support and broaden access to future job opportunities. To monitor performance as well as support sustainable careers in the green economy, LADWP could also develop and employ assessment metrics such as the percentage of underserved communities enrolled in LADWP programs out of total enrollment and the percentage of underserved Angelenos enrolled in LADWP job training programs (see metrics suggested in Table 1, page 11). Scaling up and tailoring this earn-and-learn workforce training model can increase the job pipeline, an important procedural and recognition justice strategy as the city transitions to clean energy.

### **Strategy 4: Tailor Strategies for Providing Debt Relief and Preventing the Accumulation of Debt**

Procedural justice strategies democratizing energy access entail ensuring the affordability of energy use for all Angelenos. Mechanisms for guaranteeing energy access and use include utility bill management procedures and debt relief options. Such mechanisms could be employed via programs that incorporate community suggestions into debt relief and prevention strategies.

The accumulation of debt was a primary barrier to energy affordability for many listening session participants. Once debt is accrued, paying a monthly electricity bill becomes increasingly more onerous. Yet, participants highlighted that payment methods exist to support ratepayers while maintaining their dignity. An action identified by communities was to design tailored procedural strategies for providing debt relief and preventing the accumulation of debt. One resident outlined a strategy for creating a billing structure for residents struggling with the accumulation of debt that allows them to pay off their debt over time. She told us the following:

If the bill was split from ... [the] starting of the pandemic, to where you said it's over. If that bill was split between what you owe presently and then you work out a payment plan for people, I think that it would be a win-win, and then these improvements can happen, the bills still get paid, Water and Power does get their money, the people are satisfied.

Recognizing that many of the programs LADWP and the City of Los Angeles will develop, such as those fostering clean energies and energy efficiency improvement, will be pushed forward regardless of affordability, this participant emphasizes the mutually beneficial strategy of developing debt relief payment plans. When ratepayers are not overwhelmed by an unaffordable monthly bill but are rather given the option of affordable payments over time, they are able to pay their bills with dignity and support the transition to clean energy in Los Angeles.

Tailoring strategies to prevent debt accumulation and provide debt relief requires understanding debt as a main barrier to energy affordability and use. This strategy also entails identifying and incorporating community suggestions into existing and future energy efficiency programs. LADWP's Low-Income and Lifeline customer discount programs currently provide benefits to

underserved communities. LADWP could also collaborate with Los Angeles County Low Income Home Energy Assistance Program (LIHEAP) and Low-Income Household Water Assistance Program (LIHWAP) service providers to decrease energy burdens for underserved Angelenos while increasing energy democracy and community resiliency (see right column of Figure 3, page 10). In addition to low-income communities, moderate-income customers also experience these types of financial burdens. To increase their access and use of clean energy and energy efficiency programs to support affordability, LADWP could expand programs such as the Low-Income and Lifeline customer discounts to moderate-income customers (Table 1, page 11). To monitor energy access and use, LADWP could also develop and employ assessment metrics such as the percentage of low- and moderate-income ratepayers enrolled in LADWP programs out of total enrollment and the percentage of LA households eligible for specific program participation and services (see metrics suggested in Table 1).

### **Strategy 5: Invest in Programs that Foster Community Health, Resilience, and Well-Being**

Investing in programs that foster community resilience supports local capacities to identify and navigate health risks and maintain well-being among community members. One procedural justice method identified by listening session participants was supporting community science by offering home air quality monitors. This is an example of community science (Sauermaun et al. 2020; Cooper et al. 2021) critical to fostering community resilience, health, and well-being (Figure 2, page 9). Here, we refer to community science as a community-driven method of identifying both problems and solutions in residents' own neighborhoods. These Angelenos “can help address technical as well as social aspects of problems...[These] problems are not universal but reflect the interests and needs of particular groups” (Sauermaun et al. 2020, 13, 5). Particularly in communities historically burdened by energy-related pollution, community science becomes a vital decision-making tool for local community resilience. It creates the conditions for Angelenos to shape energy priorities in their communities along with other stakeholders (Fernandes et al. 2019).

In this case, community science is a method of measuring and mitigating community health risks. In the absence of institutional and structural protections, this method allows residents to evaluate everyday risks and chart a course that prioritizes community well-being and resilience. Grounding his community-developed strategy in his lived experience with intergenerational-health burdens, one resident shared the community science project that he has developed to monitor and mitigate the long-term burdens of everyday pollution in his community of Wilmington:

I run a non-profit in the community and we have a STEM program. We have shared [...] a device that we could teach the kids, called the Air Pie. And it [...] gives us data of what the air quality is. So, we [can have] the kids build it. Get the data to understand what's in the air. Benzine, carbon monoxide, whatever. And we are looking at a pilot program for three years, about maybe \$2 million. And [...] put these devices in various locations [...] collect the data. Because of the situation of Wilmington. Since I have been here three generations, half of my family has died from cancer. As young as 34 years old. From breast cancer, lung cancer, liver cancer, kidney cancer. People that don't even drink or smoke. So, I know that the



refineries have an issue. The contaminants from the trucks and the containers, from the breaks. They have a black soot in our community. ... I would like [to put the device] in [our] houses with a signal [...] saying mild, bad. Where it sets off an alarm and goes into the central air-cooling system that has filters that go into effect. And those filters will automatically tell you to shut your windows and your doors. [... It's] something to help the community members in their homes to at least have some kind of fresh air system.

In LA communities like Wilmington, pollution from the local refineries, freight traffic, and the Port of Los Angeles has tangible intergenerational and everyday health and quality of life effects on local families. According to these residents, over generations, these energy-related outputs have been compromising local residents' health and well-being. While the negative consequence of energy-related contamination is palpable to Wilmington residents, the specificity of those contaminants—the “data to understand what's in the air”—remains inaccessible. Without that data and understanding, residents are unable to adapt their actions and environments to mitigate those health risks. They are also unable to provide authorities with hard evidence of the environmental exposure and burdens they have been experiencing to instigate needed institutional change.

Breaking these kind of efforts down into actionable steps, Sauermann et al. (2020), who focus on citizen science, identify “three pathways through which such [resident participation] impacts can occur [across stages in the research process]: (1) Problem identification and agenda setting; (2) Resource mobilization; and (3) Facilitating socio-technical co-evolution.” In the case of Wilmington, Step 1 has been partially taken by residents, as explained above. Step 2 could include LADWP or other city agencies supporting residents with existing resources for air pollution monitoring. One possible option is the existing local air quality monitoring in the Wilmington area, which was set up by the State of California's Community Air Protection Program (California Assembly Bill 617). The program focuses on “reducing exposure in communities most impacted by air pollution. Communities around the state [of California] are working together to develop and implement new strategies to measure air pollution and reduce health impacts” (California Air Resources Board 2022). Eight community air monitors are located in the Wilmington area (see South Coast AQMD 2023). LADWP could develop more transparent and accessible information for communities to utilize existing air quality data. This type of effort creates a framework that builds local capacity for residents to shape and co-design solutions to energy-related problems that are both social and technical.

Investing in programs that foster community resilience, such as community science initiatives, is a strategy that can decrease exposure to environmental hazards (see right column of Figure 3, page 10), and increase local capacities to identify and respond to disruptive energy incidents. Beyond the three steps listed above that support this strategy, LADWP could also build on their ongoing Science Bowl program and the Los Angeles Public Library Neighborhood Scientist program to invest in the development of applied local knowledge. Implementation of this LADWP strategy could involve collaborating with agencies such as the Los Angeles Unified School District. To monitor the performance of this strategy, LADWP could also develop and employ assessment metrics such as the number of LADWP programs available to underserved communities (see metrics suggested in Table 1, page 11).

## Strategy 6: Improve Continuity, Transparency, and Accountability in Program Participation

Part of building a grounded community engagement process is developing a continuous and transparent feedback loop with local residents, leaders, and trusted actors and institutions (procedural justice). Listening session participants emphasized a need to guarantee *continuity, transparency, and accountability* in LADWP’s decision-making process (Chapter 2). Equity Strategy 6 intends to enhance access and use of affordable energy programs, services, and technologies (Figure 2). Continuity becomes a mechanism and tool for communities to maintain transparency and accountability over time. As long as government agencies continue to develop transparent engagement with local communities, those residents can hold authorities accountable for the promises they make.

This accountability mechanism becomes a vital decision-making tool for local communities. As one community leader requested:

For continuity’s sake ... when they [LADWP] come back again, they should at least keep somebody [an LADWP representative] on board [e.g., somebody from Public Affairs or Diversity, Equity, and Inclusion (DEI)], and bring the others involved in prior programs back [to our communities]. Because ... if you’ve already been involved, you’ve heard the message, you at least have a perspective, a context. And you have a lens by which to hear and see what’s going on.

This type of experiential knowledge acquired by continuity and housed within government institutions as LADWP representatives with lasting local ties, such as the public affairs or diversity, equity, and inclusion office, is a catalyst of structural change. It creates a space for institutional actors to become part of the engagement process, maintain that connection over time, and build a lens to ground their understandings of energy-related impacts on these communities. Recognizing the power of utilizing institutional actors to house collective memory within government entities, these communities want to avoid the status quo of constantly “starting over the same” and develop a long-term method of community-guided decision-making.

Transparency and clarity are key to building and maintaining a trusted feedback loop between government agencies and local communities. Participants shared their struggles with the cost of current electricity bills as well as the barriers they experience to accessing the information provided by LADWP regarding their energy needs. One participant explained how these challenges impede their access to clean energy technologies and adoption:

The truth is that I pay a lot for electricity. Too much ... I really want [to have solar energy]. They should also be transparent [about this process], providing information as it should be. That there are no, as we say, hidden words. Little words. That they are direct. That they clearly say how much, so that one ... I’m sure that many people would benefit from those [solar] panels. But let them be honest and let them tell you ... let them tell you clearly how it is [and how much it is].



This request for transparency in energy information provision is also a request for access to clean energy technologies. Providing underserved communities with clear, comprehensive, and actionable materials to access and utilize clean energy efficient technologies (i.e., electric mobility, community solar and storage) will help make the benefits of the transition more accessible to all Angelenos.

By providing collective tools for making more informed and grounded decisions, continuity, transparency, and accountability become forms of self-determination, increasing energy democracy for underserved Angelenos (see Table 1 on page 11 and right column of Figure 3, page 10). To implement this strategy, LADWP could use existing tools such as its Equity Metrics Dashboard and its Board Meeting Environmental Impact Reports to provide continuity, transparency, and accountability. LADWP can use a collaborative platform (Chapter 4) and coordinate goals with the Housing Authority of the City of Los Angeles and other government agencies to enhance accountability and clarity. These actions are key to building and maintaining a trusted and transparent feedback loop between government agencies and local communities. To monitor procedural continuity, transparency, and accountability, LADWP could also develop and employ assessment metrics such as the percentage of enrollment change in LADWP programs from underserved communities over a set period of time and an assessment of improvement in transparent reporting (see metrics suggested in Table 1).

### **Strategy 7: Affordable Programs to Safely Upgrade and Remediate Existing Housing and Infrastructure**

The ongoing need for affordable and safe upgrades in Los Angeles reveals the significance of infrastructural and systemic barriers to energy equity in the crosscutting priority areas (see Figure 2, page 9). Listening session participants emphasized the need to redress unsafe and inefficient infrastructure and housing in their communities (i.e., recognition justice). Recognizing that ongoing history of neglect, they suggested LADWP not only concentrate on making space for new infrastructure and technologies, but also redressing the old by developing programs that safely upgrade and remediate issues of disinvestment and neglect in the built environment of their neighborhood. Causal factors range from the systemic neglect of individual homes to the neighborhood infrastructure that collectively constrains residents' capacity to benefit from technologies and programs associated with the city's clean energy transition.

The causal factors identified included barriers to safely and efficiently upgrading homes, such as the lack of access to resources (i.e., LADWP programs) as well as the high cost of implementing weatherization, electricity panel, and roof upgrades. Participants framed the solution to their individual energy efficiency barriers as collective, benefiting the whole energy system. As one resident explained:

They [LADWP] talk about the [energy] waste we have, well it's because we don't have the incentive programs of going ahead and getting insulation. What we don't have insulation on right now is underneath the home. So, it gets extremely cold. And I think that is another issue that we need to address and have our local representatives and the utility companies to go ahead and take the initiative to understand ... Because they [LADWP] know that they will save the energy if we have these resources.

Highlighting a need for government resources to affordably and safely weatherize her home, this resident also argues that providing affordable energy efficiency upgrades to homes in her community would benefit the city as whole. Along similar lines, another participant emphasized the need for “some options of affordable ways to fix your house to take [use] your [energy efficient] product [i.e., appliances, electric vehicle chargers]. You understand? Work with them [resource providers] ... [to implement] affordable [and safe] upgrades.” Both commentaries recognize how a long history of disinvestment in these communities creates the need for developing equity strategies that provide *Affordable Programs to Safely Upgrade and Remediate Existing Housing and Infrastructure*.

Yet this community-identified strategy can be applied beyond the individual home, expanding to the neighborhood scale. Participants also emphasized the systemic neglect of neighborhood infrastructure as an important causal factor of energy inequity and the negative impact it has on community health and resilience. As one resident explained:

[While] I appreciate raising the concern about addressing current infrastructure, [and shoring] up that infrastructure, I also wonder if there is a plan to remediate some of the infrastructure that currently exists in South LA that is problematic, in terms of known adverse health outcomes ... one thing is capacity. Does our infrastructure have the capacity to deal with these things? But [...] just in terms of—from what I understand from the community—there is a sense of neglect. In terms of the outdated infrastructure that needs remediation [...] I’m hearing discussions about what we are going to do to fix, improve the infrastructure to make way for new. But how are we going to remediate the old? And I think that’s also about building trust in the community. ... Where is the plan to remediate some of the things that currently are causing damage and have been causing damage for quite some time now?

Here, the “sense of neglect” is localized not only in the space of the home. Rather—and importantly—it is localized in the lived experiences of bus stops, streetlights, electric cables, and other infrastructural elements of community spaces. Furthermore, it is localized in residents’ collective memory of past and ongoing “damage” caused by this “outdated infrastructure.” The negative effects of this neglect manifest in adverse quality of life, health, and safety outcomes across the community and across generations, consolidating as an intergenerational lack of institutional trust. Thus, redressing this history of inequity must begin with remediating and building not only infrastructure but also community trust by providing communities with *Affordable Programs to Safely Upgrade and Remediate Existing Housing and Infrastructure*.

Providing government resources that support affordable energy efficiency upgrades to existing residential housing and neighborhood infrastructure would offer underserved Angelenos needed safety and financial benefits. LADWP could implement equity strategies presented in Chapters 6, 7, 8, 9, and 12, and expand their existing programs supporting rooftop solar, energy efficiency, and weatherization, among others listed in Table 1 (page 11). This strategy could be developed in collaboration with agencies such as the Los Angeles County Metropolitan Transportation Authority (Metro) and the Housing Authority of the City of Los Angeles to produce equity outcomes that (1) decrease energy burden, (2) decrease environmental exposure and burdens, and (3) increase community resilience in historically underserved communities (see also Figure 3,

page 10). To measure these equity outcomes, LADWP could also develop and employ assessment metrics such as the percentage of structural energy upgrades per type—e.g., solar, panels—benefiting underserved communities (see metrics suggested in Table 1).

## Strategy 8: Prioritize Disadvantaged Angelenos in Energy Transition Programs and Investments

Without upgrading home service panels, residents cannot install the infrastructure needed to support solar and storage and EVs charging in underserved neighborhoods. Therefore, to enhance access to or actual use of technologies (e.g., solar and storage, EVs) locally, programs and investments operationalizing recognition justice in access to clean energy technologies need to prioritize underserved Angelenos (Figure 2, page 9). As one resident explained:

The issue around charging stations was already put on the table. They are supposed to be put in neighborhoods that needed them the most. The state went ahead of everyone and offered cars to people without charging stations. So, it's almost as if we are being asked to participate in a circular communication [...] But recognizing we have some real issues around what we say we want to do. Electrification, with the governor saying that all vehicles will be electrical, by what, 2030? Can't do that if you don't have the infrastructure. And you can't do that if you don't fix the homes to have the infrastructure.

To enhance access to or actual use of energy technologies (e.g., solar and storage, EVs) and related programs, LADWP could align their efforts with agencies such as the Housing Authority of the City of Los Angeles (HACLA), Metro, and the Los Angeles Unified School District (Table 1, page 11). LADWP could build on HEIP, RESAP, and other existing programs listed in Table 1. LADWP could also collaborate with these agencies to expand and develop programs and investments that (1) increase energy access and resilience in these historically underserved communities, (2) decrease their energy burden, (3) decrease exposure environmental to environmental hazards, and (4) increase job opportunities and training (see right column of Figure 3 on page 10 and evaluation metrics in Table 1). To measure these equity outcomes, LADWP could also develop and employ assessment metrics such as the percentage of sectoral investments and programs per type—e.g., EV charging infrastructure, solar panels—benefiting underserved communities (see metrics suggested in Table 1).

## Strategy 9: Programs to Foster Energy and Housing Security and Safety

As the previous equity strategies elucidate, there is a systemic need for targeting energy and housing security, including homeowner-renter split incentives, affordability issues, and monitoring of housing safety and upgrade needs. This strategy operationalizes procedural and recognition justice in two ways. First, it targets homeowner and renter issues. Second, it focuses on institutionalizing a monitoring system that can ensure ratepayer homes are safely up to code, thus benefiting both renters and homeowners.

One renting participant proposed a solution to the homeowner-renter split incentive problem for energy efficiency and safety upgrades. She suggested:

Like the owner should be like: ok, we're doing these upgrades but you cannot put this tenant out because you feel like you spent ... you know, make some kind of rule for them because it's not the tenant, it's the owners. And they feel like it's my property, I can do what I want [...] I don't know who does these laws for this or who makes these kind of ... for at least five years you can't raise these tenants rent because they gotta [displace people]. Like if you benefited from a program there could be some kind of clause that says you can't raise the rent.

Renter and homeowner issues relate to avoiding affordable housing loss, eviction, and undermining community resilience. A loss of community members—through upgrade-related displacement—can fracture the safety nets and professional networks renting households rely on to deal with burdens (Chapter 1).

Second, by improving transparency and accountability through monitoring, this strategy targets participants' requests for affordable, accessible, and trusted services and resources that provide such monitoring capabilities (Figure 2, page 9). One resident noted the need for:

[...] an organization where you can monitor these types of complaints. Because if you go to, for example, housing equity, they will simply say 'you have electricity, you have water, these processes should have been arranged in a previous contract'. And they remove themselves from responsibility. Then the problem remains for both the tenant and the landlord because it is frustrating to be in a property dispute.

Providing all Angelenos with the security and consistency of institutionalized monitoring that ensures their homes are safely up to code can resolve issues for both renters and homeowners. Neither party gains from unsafe inefficient housing conditions. Designing programs that become responsible for monitoring housing safety and assessing the need for electrical upgrades can help make sure that home improvements are implemented correctly and evaluated for quality over time. Fostering energy and housing security and safety entails institutionalizing programs and services that monitor and guarantee the implementation of safe energy efficient home improvements.

To develop this strategy, LADWP could use its Customer Service Program and the LA Online Service to assess and evaluate the performance of their programs and service providers. It could also rely on the Stay Housed LA County Program connecting tenants with resources related to housing rights and legal assistance (Table 1, page 11). Providing all Angelenos with the security and consistency of monitoring efforts holds the potential to (1) increase energy resiliency in these historically underserved communities, (2) decrease their energy burden, and (3) decrease exposure to environmental hazards (see also Figure 3, page 10). To measure and track energy security, LADWP could also develop and employ assessment metrics such as the percentage of underserved communities benefiting from home energy efficiency programs that monitor use, reach, and participant outcomes (see metrics suggested in Table 1). These metrics could become assessment tools for Angelenos to monitor the safety and efficiency of their home environments over time.

## Strategy 10: Invest in Programs that Build Community Health, Resilience and Well-Being

Part of equipping residents with the tools to hold service providers accountable is providing all Angelenos with the educational opportunities and environments that build community health, safety, and resilience (see Figure 2, page 9). One strategy entails building on existing networks of trusted messengers to improve LADWP’s customer communication and problem resolution. The method that came up consistently during the listening sessions was the *promotoras de salud* (also known as *promotoras*)—the community health workers who become trusted messengers guiding local residents in their Latino communities through the complex health care system. They utilize their knowledge of local sociocultural norms to provide their neighbors access to relevant health and social resources.

Listening session participants suggested that incorporating energy resources into the existing *promotora* educational model could be a powerful strategy for improving community resilience. As one *promotora* who participated in our sessions explained:

I really didn't know that so many organizations exist that can educate us, help us. It wasn't until I became a [health] promotora that I began to learn about a lot [of resources] that we are unaware of as a community. So, I would like the [promotoras] to talk about this too, to include it in schools. That [the promotoras] talk to students in schools, not only that there is a counselor, and they can come to him. [The promotoras] should also open [students'] eyes to the fact that there are organizations out there that they can approach. That there are so many resources that can educate students in other ways. Not just the education they receive at school. I would like them [government authorities] to include [promotoras in their education efforts].

Her proposal links the *promotora* community educational model to the institutional educational model of the school system. Here, she suggests government entities invest in not only adding energy resources to the traditionally health-based model of community education, but also incorporating that pedagogical method into Los Angeles’s school system to begin educating Angelenos about their city’s energy transition at a young age.

To invest in programs that build community health, resilience, and well-being entails not only incorporating community-grounded knowledge (community science) but also fostering and institutionalizing local educational and outreach methods. LADWP could build on its Community Partnership Grants and its Community Outreach Worker Pilot program to add energy-related resources to the traditionally health-based model of community education such as the *promotora* model. This method could also be incorporated into Los Angeles’ school system to begin educating Angelenos about their city’s energy transition at a young age (Table 1, page 11). This strategy has the potential to achieve at least three equity outcomes as programs are implemented and evaluated. These outcomes include: (1) increasing energy resilience in these historically underserved communities, (2) decreasing their energy burden, and (3) decreasing exposure to environmental hazards and health risks as Angelenos gain the tools and knowledge to assess the safety of their own environments and hold responsible parties accountable for upgrades (see Table 1 and right column of Figure 3, page 10). To measure these equity outcomes, LADWP could also develop and employ assessment metrics such as the number and



quality of LADWP programs utilizing trusted messengers for outreach (see metrics suggested in Table 1).

## Strategy 11: Improve City Regulations, Accountability, and Enforcement

One of the quotes in Strategy 7, the strategy for *Affordable Programs to Safely Upgrade and Remediate Existing Housing and Infrastructure*, poses an important question: “Where is the plan to remediate some of the things that currently are causing damage and have been causing damage for quite some time now?” This question points to the underlying structural need for recognition justice improvements in regulation, accountability, and enforcement across city agencies as key preventative measures needed to preclude the reproduction and proliferation of unsafe and inefficient infrastructure in their communities (Table 1, page 11). These types of regulations, which are beyond the purview of LADWP’s authority, become fundamental backbones necessary for historically underserved Angelenos to fully benefit from LADWP programs and projects. However, given the institutional limitations of developing and implementing legal regulations, LADWP could focus on the short-term priority of providing ratepayers with trusted information on service providers to help guide their decision-making.

Without access to trusted resources that help Angelenos understand, assess, and navigate this transition in their own homes, there is no way for residents to hold service providers accountable for the quality of their work. As one resident put it:

There’s a lot of barriers, especially with old houses, and Boyle Heights has a ton of old houses. Or they have houses that are old that were flipped. Like a friend of mine just bought a house on Lorena, and the flipper just basically hid all the old stuff in there and when he found out that basically it was a fire hazard for him to have these old electrical wires. . . . The regulations just aren’t there and there’s no support for families who can’t afford to fix these things. And it’s not necessarily families’ faults that this is happening, or homeowners’ faults, or renters.

Creating regulations and informational support to prevent unsafe environments and predatory practices that have historically burdened these communities is an important action prioritized in the listening sessions. Throughout the sessions, participants identified a need for inspection and monitoring to support housing maintenance and upgrades, particularly in relation to old electrical wires and outdated panels. Without the economic means and informational support to navigate safety assessments and electrical system upgrades, these Angelenos must live with the daily risk of fire and other safety hazards. As another participant noted:

That they inspect the house because we cannot know exactly what the problem is because we are not, well, in my case, I am not an electrician. I don't know where the problem is coming from. All I know is that I would have to turn the switch off and turn it back on to get it working again. But I think it would be good to have a professional inspection to tell us exactly what the problem is. Because you are in danger, the family is in danger. As I mentioned before, there could be a fire, or the gas could explode. First of all, it is important that it’s at no cost. Or low cost.

Providing residents with affordable and accessible professional services and programs that assess home electrical systems and enforce safety regulations is a proactive action to keep those families out of danger. The limited electrical capacity of outdated systems also thwarts their transition to more energy efficient and clean technologies in their homes.

Recognition justice improvements in regulation, accountability, and enforcement across City of Los Angeles agencies could address unsafe and inefficient infrastructure in underserved communities. These types of regulations, which are beyond the purview of LADWP's authority, would support the success of LADWP energy transition programs and projects. Partnering with the City of Los Angeles, LADWP could use existing resources, such as the Housing Services or Rent Escrow Account Program, to develop this type of regulatory strategy. By fostering strategies that *Improve City Regulations, Accountability, and Enforcement*, government agencies can help reach equity outcomes that (1) increase energy resilience in these historically underserved communities, (2) decrease community members' energy burden, and (3) decrease their exposure to environmental hazards and related health risks (see also Figure 3, page 10). To measure and track regulatory practices, LADWP could also develop and employ assessment metrics such as the number and reach of programs and services that monitor home safety and energy efficiency (see metrics suggested in Table 1 on page 11).



## 4 Concluding Remarks

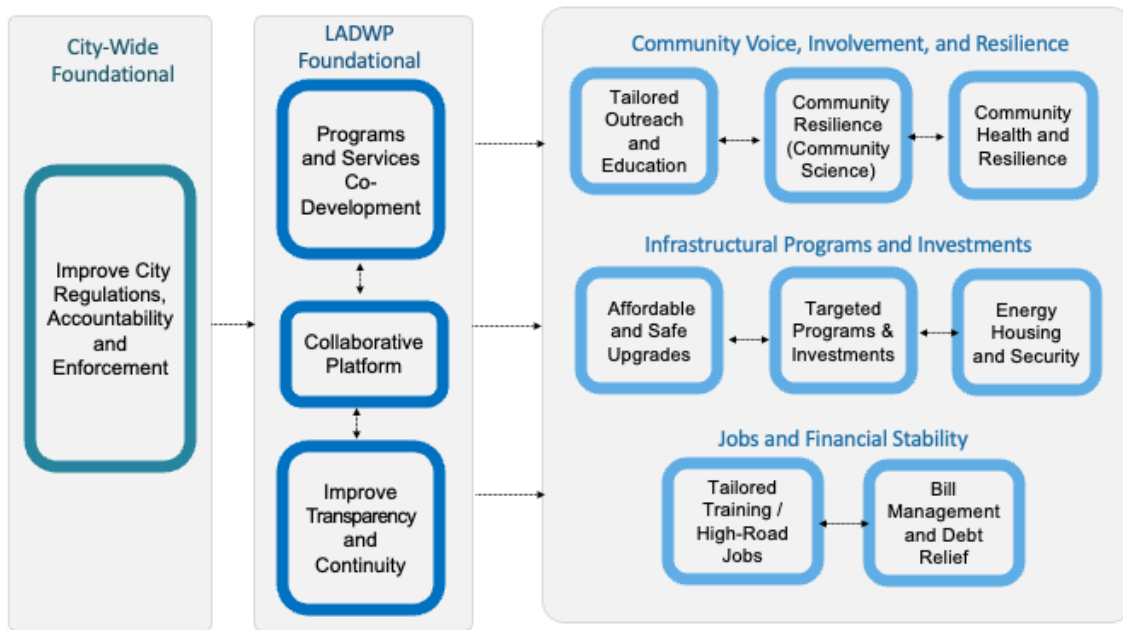
This chapter presents 11 energy equity strategies for LADWP and other government agencies to operationalize procedural and recognition justice, guided by members of the local communities most negatively affected by the past and existing energy system. Two key overarching findings merit special attention:

- First, our analysis revealed that participants referred more to social, cultural, and institutional factors (e.g., lack of meaningful representation and voice, and of tailored training and education) as their primary barriers and challenges to benefit from the energy transition programs, infrastructure, and technologies.
- Second, we present 11 community-guided energy equity strategies that demonstrate how LADWP could co-design more equitable transition processes to address crosscutting priority areas and achieve outcomes aligned to the policy priorities identified by the federal government, practitioners, and scholars (Figure 3). Table 1 (page 11) presents those options for LADWP to build on existing programs, collaborate with other entities, and consider metrics for assessing programs performance and reach (e.g., Equity Metrics Dashboard discussed in Chapter 4).

Our first overarching finding points to program and policy strategies that target inequities in “deep infrastructures”—the underlying social, cultural, and institutional factors that constrain underserved Angelenos’ access to the benefits of energy transition programs and technologies. While they relate to energy transition technologies, these strategies are not singularly focused on technical barriers. Rather, these strategies adapt to different sociocultural and institutional contexts via community engagement approaches aimed at achieving the following goals depicted in Figure 3:

- Lowering socio-institutional barriers to access and use of programs, technologies, and infrastructure
- Providing affordable options for community members at all income levels to benefit from LA’s energy transition
- Investing in the educational and professional development of underserved communities
- Supporting community health, safety, and resilience and lowering environmental burdens
- Including local communities in the design and implementation of the programs and policies affecting their lives.

Our second overarching finding demonstrates how LADWP could co-design more equitable transition processes to address identified crosscutting priority areas and achieve energy equity goals. We present short-term building blocks and options to improve outcomes aligned with policy goals, such as parity in access and improved affordability (right column of Figure 4), while expanding program benefits in the long term.



**Figure 4. Mapping of energy equity strategies**

The 11 equity strategies build on existing programs, thus avoiding elements of LA’s political context such as Propositions 26 and 218 (Chapter 5) by seeking energy equity for all Angelenos. We use criteria such as relevant implementation entities, success metrics, and regulatory constraints to LADWP (among other elements of the political context) to suggest five groups of strategies (Figure 4 and Table 1):

- **City-Wide Foundational:** Improvements in regulation, accountability, and enforcement for safe, affordable, and efficient infrastructure and housing include (a) inspection and monitoring to support housing maintenance and upgrades as well as (b) regulations, and informational support to prevent unsafe built-environments, and predatory practices among service and technology providers. These strategies are beyond the purview of LADWP’s authority, yet foundational, high-impact backbones for LADWP’s success in its energy transition programs, technologies, and policies.
- **LADWP-Foundational: Co-develop programs and services with communities and community-based organizations and improve transparency and continuity.** Effectiveness of LADWP programs can be limited by lack of community involvement in priority setting and decision-making. LADWP can rely on its dedicated personnel and resources and a collaborative platform discussed in Chapter 4 to engage residents in developing programs and services that meet their needs and priorities. Engaging residents in ongoing, more consistent, transparent, and community-adapted outreach and communication builds trust, buy-in, and a continuous feedback loop for decision-making.
- **Community Voice, Involvement, and Resilience:** Tailored training and education, community health and resilience, and community science are procedural strategies aimed to foster social capacities, assets, and resources. Effectiveness of LADWP programs can be limited by lack of community involvement in priority setting and decision-making. LADWP can rely on its dedicated personnel and resources and the suggested collaborative platform to engage residents in developing programs and services that meet their needs and priorities. LADWP could build on its Community

Partnership Grants and Science Bowl to (a) inform ratepayers about the options and benefits of programs and technologies and (b) incorporate resources into the community science and the health promoter methods. These strategies are impactful means for communities to have a voice and be resilient, and for LADWP to build trust and buy-in.

- **Infrastructural Programs, Technologies, and Investments:** Without upgrading outdated housing and equipment like home service panels, residents cannot install the infrastructure needed to support clean energy technologies. Three strategies address these challenges: (1) *affordable and safe upgrades of infrastructure, buildings, and electric panels*, (2) *programs and investments targeting solar and storage, EVs, and grid upgrades in underserved communities*, and (3) *programs fostering clean energy and housing security*, for instance, by avoiding affordable housing loss and eviction, and monitoring housing safety needs. LADWP could expand programs like the Home Energy Improvement Program (HEIP) and the Comprehensive Affordable Multifamily Retrofits (CAMR) and rely on other City of Los Angeles initiatives (e.g., Stay Housed LA, Table 1) to develop these recognition strategies, which build infrastructural and built environment assets and resources. They could collaborate with Metro and HACLA to provide affordable energy and home upgrades, fostering affordable access to solar, storage, EVs, and other technologies.
- **Jobs and Financial Stability:** These strategies include tailored job training and bill management and debt relief. Increased access to both LADWP programs enhancing energy affordability and to well-paid jobs, training, and entrepreneurship has direct and positive impacts on community self-determination. LADWP could utilize two strategies— (1) tailored training for high-road jobs, and (2) bill management and debt relief—to foster employment in the green economy and financial stability. Such strategies could expand LADWP programs like the Utility Pre-Craft Training Program (UPCT), Low-Income Discount Program, and Lifeline Discount Program. These programs provide LADWP with opportunities to address structural inequities by supporting residents of frontline and underserved communities with pathways for more sustainable livelihoods and options to decrease their energy burdens.

By staging these community-guided energy equity strategies, LADWP could transform the energy transition into a long-term socioeconomic opportunity for historically underserved individuals and communities. Overall, the analysis presented in this chapter is a first and promising step to inform strategy design, implementation, and evaluation pathways that address the barriers we identified to accessing the benefits of existing programs, services, and transition technologies in Los Angeles.

## 5 Glossary

**Actions/Strategies:** the means used to solve identified problems in an impact area; actions and strategies involve programs such as bills, regulations, rates, subsidies, and investments and how they are designed, implemented, and evaluated (Dubash et al. 2022)

**Causal Factors:** “Events, incidents, happenings that lead to the occurrence or development of a phenomenon” (Buckley and Waring 2013, 156).

**Climate Justice:** the remediation of the impacts of climate change on poor people and people of color, and compensation for harms suffered by such communities due to climate change (Burkett 2008)

**Co-Creation:** “a process through which two or more public and private actors attempt to solve a shared problem, challenge, or task through a constructive exchange of different kinds of knowledge, resources, competences, and ideas that enhance the production of public value in terms of visions, plans, policies, strategies, regulatory frameworks, or services, either through a continuous improvement of outputs or outcomes or through innovative step-changes that transform the understanding of the problem or task at hand and lead to new ways of solving it” (Torfing et al. 2019, 802)

**Community Engagement:** Community engagement often entails public participation through an ongoing, two-way or multidirectional process, ideally with an emphasis on relationships and trust-building rather than instrumental decisions. The latter are processes where engagement becomes the instrument to achieve social acceptance (Stober et al. 2021).

**Disadvantaged Community:** “Disadvantaged communities refers to the areas which most suffer from a combination of economic, health, and environmental burdens. These burdens include poverty, high unemployment, air and water pollution, presence of hazardous wastes as well as high incidence of asthma and heart disease. One way that the state identifies these areas is by collecting and analyzing information from communities all over the state. CalEnviroScreen, an analytical tool created by the California Environmental Protection Agency (CalEPA), combines different types of census tract-specific information into a score to determine which communities are the most burdened or “disadvantaged”” (California Public Utilities Commission 2023).

**Energy Equity:** the equitable distribution of social, economic, and health benefits and burdens of energy across all segments of society (Jenkins 2017)

**Energy Justice:** the provision of safe, affordable, and sustainable energy to all individuals, across all areas, (Jenkins 2017); this is done with a framework informed by justice movements, including attention to three core tenets:

- *Distributional justice* seeks to ensure a just and equitable distribution of benefits and negative impacts of the clean energy transition.
- *Justice as recognition* seeks to understand and address past and current energy inequities by analyzing structural causes of exclusion and vulnerability and specific needs associated with energy services among social groups.

- *Procedural justice* aims to actively engage partners and communities throughout the project, to co-design the analysis, and shape the resulting equity strategies (Energy Equity Project 2022).

**Energy Transition:** a large-scale or deep societal change in the production, distribution, and use of energy; this transition can entail transformations in social-technical systems and systems of policy and governance intended to substantially improve the outcomes out of unsustainable pathways, such as fossil fuel use (Carley and Konisky 2020)

**Environmental Justice:** the distribution of environmental hazards and access to all natural resources; it includes equal protection from burdens, meaningful involvement in decisions, and fair treatment in access to benefits (U.S. EPA 2023)

**Equity Outputs:** Equity outputs are the immediate, easily measurable effects of an action aimed at achieving equity (Dubash et al. 2022).

**Equity Outcomes:** Equity outcomes are the ultimate changes that a policy will yield (Dubash et al. 2022).

**Equity:** Equity refers to a measurement of fairness and justice. Unlike equality, which refers to the provision of the same to all, equity aims to recognize the historical and ongoing differences in experiences and outcomes between people, groups, and communities to redress those imbalances.

**Frontline Community:** a community, frequently a low-income community of color, that experiences the first and worst consequences of environmental and climate change including floods, heatwaves, and other climate extremes as well as the impacts of facilities that are used to extract, produce, process, and transport energy resources.

**Impact Areas:** particular sectors and subsectors of the energy system impacted by causal factors

**Just Energy Transition:** a deep societal change in the energy system that fulfills at minimum three of the tenets of justice: recognition justice, procedural justice, and distributional justice (McCauley and Heffron 2018)

**Justice** involves removing barriers that prevent equity through energy actions (strategies) that offer individuals and communities equal access to energy resources and options to self-determine their energy goals (Romero-Lankao and Nobler 2021).

**Participation** relates to the involvement of the public in infrastructure siting and other clean energy decisions and policies (Stober et al. 2021). Participation is an umbrella concept that includes processes of community engagement and public decision-making (Stober et al. 2021). Participatory decision-making denotes inclusion of actors such as underserved communities in an energy project as a decision-maker. Direct participation refers to the level of economic and/or political involvement of a local community or municipality in an energy project.

**Underserved Community:** a community, frequently a low-income community of color, that (a) does not benefit from energy programs, investments, and technologies, (b) is not recognized, considered, or able to participate in energy decision-making (Klinsky et al. 2017)

**Values:** the ethical paradigm that structures the sociocultural norms, beliefs, and practices guiding how a group of people prioritize and relate to the current energy transition (Jenkins 2017)

## 6 References

- Arndt, Channing, Mackay Miller, Finn Tarp, Owen Zinaman, and Douglas Arent. 2017. *The Political Economy of Clean Energy Transitions*. Oxford University Press.
- Avelino, Flor. 2021. “Theories of Power and Social Change. Power Contestations and Their Implications for Research on Social Change and Innovation.” *Journal of Political Power* 14 (3): 425–48.
- Azungah, Theophilus. 2018. “Qualitative Research: Deductive and Inductive Approaches to Data Analysis.” *Qualitative Research Journal*.
- Barlow, Jay, Rebecca Tapio, and Bethel Tarekegne. 2022. “Advancing the State of Energy Equity Metrics.” *The Electricity Journal* 35 (10): 107208.
- Bjerkan, Kristin Ystmark, and Hanne Seter. 2021. “Policy and Politics in Energy Transitions. A Case Study on Shore Power in Oslo.” *Energy Policy* 153: 112259.
- Boudet, Hilary S. 2019. “Public Perceptions of and Responses to New Energy Technologies.” *Nature Energy* 4 (6): 446–55. <https://doi.org/10.1038/s41560-019-0399-x>.
- Buckley, Charles A, and Michael J Waring. 2013. “Using Diagrams to Support the Research Process: Examples from Grounded Theory.” *Qualitative Research* 13 (2): 148–72.
- Burke, Matthew J., and Jennie C. Stephens. 2017. “Energy Democracy: Goals and Policy Instruments for Sociotechnical Transitions.” *Energy Research & Social Science*, Policy mixes for energy transitions, 33 (November): 35–48. <https://doi.org/10.1016/j.erss.2017.09.024>.
- Carley, Sanya, and David M. Konisky. 2020. “The Justice and Equity Implications of the Clean Energy Transition.” *Nature Energy* 5 (8): 569–77. <https://doi.org/10.1038/s41560-020-0641-6>.
- Castán Broto, Vanesa, Daphne Mah, Fangzhu Zhang, Ping Huang, Kevin Lo, and Linda Westman. 2020. “Spatiotemporal Perspectives on Urban Energy Transitions: A Comparative Study of Three Cities in China.” *Urban Transformations* 2 (1): 1–23.
- Charmaz, Kathy. 2006. *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*. sage.
- Cherp, Aleh, Vadim Vinichenko, Jessica Jewell, Elina Brutschin, and Benjamin Sovacool. 2018. “Integrating Techno-Economic, Socio-Technical and Political Perspectives on National Energy Transitions: A Meta-Theoretical Framework.” *Energy Research & Social Science* 37: 175–90.
- Cooper, Caren B, Chris L Hawn, Lincoln R Larson, Julia K Parrish, Gillian Bowser, Darlene Cavalier, Robert R Dunn, Mordechai Haklay, Kaberi Kar Gupta, and Na’Taki Osborne Jelks. 2021. “Inclusion in Citizen Science: The Conundrum of Rebranding.” *Science* 372 (6549): 1386–88.



Devine-Wright, Patrick. 2005. “Beyond NIMBYism: Towards an Integrated Framework for Understanding Public Perceptions of Wind Energy.” *Wind Energy: An International Journal for Progress and Applications in Wind Power Conversion Technology* 8 (2): 125–39.

Devine-Wright, Patrick, and Hannah Devine-Wright. 2009. “Public Engagement with Community-Based Energy Service Provision: An Exploratory Case Study.” *Energy & Environment* 20 (3): 303–17. <https://doi.org/10.1260/095830509788066402>.

Dubash, Navroz K, Catherine Mitchell, Elin Lerum Boasson, Mercy J Borbor Córdova, Solomone Fifita, Erik Haites, Mark Jaccard, Frank Jotzo, Sasha Naidoo, and Patricia Romero-Lankao. 2022. “National and Sub-National Policies and Institutions.” In *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

Fernandes, Vicente Aprigliano, Rainer Rothfuss, Volker Hochschild, Marcelino Aurelio Vieira da Silva, William Ribeiro da Silva, Stefan Steiniger, Tálita Floriano dos Santos, et al. 2019. “Urban Resilience in the Face of Fossil Fuel Dependency: The Case of Rio de Janeiro’s Urban Mobility.” *Urbe. Revista Brasileira de Gestão Urbana* 11. <https://doi.org/10.1590/2175-3369.011.e20180160>.

Glaser, Barney G, Anselm L Strauss, and Elizabeth Strutzel. 1968. “The Discovery of Grounded Theory; Strategies for Qualitative Research.” *Nursing Research* 17 (4): 364.

Heaslip, Eimear, and Frances Fahy. 2018. “Developing Transdisciplinary Approaches to Community Energy Transitions: An Island Case Study.” *Energy Research & Social Science* 45: 153–63.

Hindmarsh, Richard. 2010. “Wind Farms and Community Engagement in Australia: A Critical Analysis for Policy Learning.” *East Asian Science, Technology and Society: An International Journal* 4 (4): 541–63. <https://doi.org/10.1215/s12280-010-9155-9>.

McCauley, Darren, and Raphael Heffron. 2018. “Just Transition: Integrating Climate, Energy and Environmental Justice.” *Energy Policy* 119: 1–7.

McCauley, Darren, Vasna Ramasar, Raphael J Heffron, Benjamin K Sovacool, Desta Mebratu, and Luis Mundaca. 2019. “Energy Justice in the Transition to Low Carbon Energy Systems: Exploring Key Themes in Interdisciplinary Research.” *Applied Energy* 233: 916–21.

Nowotny, Helga. 2003. “Democratising Expertise and Socially Robust Knowledge.” *Science and Public Policy* 30 (3): 151–56.

Romero-Lankao, Patricia, Harriet Bulkeley, Mark Pelling, Sarah Burch, David J. Gordon, Joyeeta Gupta, Craig Johnson, et al. 2018. “Urban Transformative Potential in a Changing Climate.” *Nature Climate Change* 8 (9): 754–56. <https://doi.org/10.1038/s41558-018-0264-0>.

Romero-Lankao, Patricia, Sarah Burch, Sara Hughes, S. Auty, Alex Aylett, Kerstin Krellenberg, N. Nakano, David Simon, Gina Ziervogel, and Anja Wejs. 2018. “Governance.” In *Cities and Climate Change, Second Assessment Report of the of the Urban Climate Change Research Network*, Cambridge University Press, 583–606. University of Cambridge Press.

Romero-Lankao, Patricia, and Erin Nobler. 2021. “Energy Justice: Key Concepts and Metrics Relevant to EERE Transportation Projects.” Management Report NREL/MP-5400-80206. Golden, CO: National Renewable Energy Laboratory.

Rutherford, Jonathan, and Olivier Coutard. 2014. “Urban Energy Transitions: Places, Processes and Politics of Socio-Technical Change.” *Urban Studies* 51 (7): 1353–77.

Sabatier, Paul A. 2007. “Theories Ofthe Policy Process.” *WestviewPress: Boulder, CO* 117166.

Sauermann, Henry, Katrin Vohland, Vyron Antoniou, Bálint Balázs, Claudia Göbel, Kostas Karatzas, Peter Mooney, Josep Perelló, Marisa Ponti, and Roeland Samson. 2020. “Citizen Science and Sustainability Transitions.” *Research Policy* 49 (5): 103978.

Scott, Megan Emiko, and Carol Zabin. 2016. “Training for the Future II--Los Angeles’s Utility Pre-Craft Trainee Program: Progress to Date.”

Smith, Adrian, Andy Stirling, and Frans Berkhout. 2005. “The Governance of Sustainable Socio-Technical Transitions.” *Research Policy* 34 (10): 1491–1510.

Stober, Dina, Monika Suškevičs, Sebastian Eiter, Stefanie Müller, Stanislav Martinát, and Matthias Buchecker. 2021. “What Is the Quality of Participatory Renewable Energy Planning in Europe? A Comparative Analysis of Innovative Practices in 25 Projects.” *Energy Research & Social Science* 71: 101804.

Zabin, Carol. 2020. “Putting California on the High Road: A Jobs and Climate Action Plan for 2030.”

## Appendix. Data Analysis

Appendix A, Chapter 2 describes the engagement process in more detail. As for the steps followed to analyze the qualitative data, all 15 listening sessions were recorded, transcribed, anonymized, translated when needed,<sup>4</sup> and uploaded into the qualitative data analysis software MAXQDA for coding. Coding is the process by which categories and concepts are identified in the data and passages of the transcription are linked to themes that become labeled with a particular code (Charmaz 2006; Buckley and Waring 2013). Beginning inductively (bottom-up) in the first round of analysis, each listening session was analyzed by assigning open descriptive and thematic codes, related to energy justice in Los Angeles and the city's transition to clean energy, to segments of the data. After the first five sessions were coded, an analytic coding was applied to organize, refine, and map these inductive categories to the adapted grounded theory concepts developed deductively (top-down), as described above (causal factors, impact areas, actions/strategies, values, and equity outcomes).

The Round 1 coding system was used to analyze the second round of 10 listening sessions, where codes were refined and relations between codes were analyzed (see the tables in Appendix B for details). Through this comparative analysis, the relations between key codes began to attain saturation—the point when gathering more data reveals no new insights, issues, or categories related to this research (Glaser, Strauss, and Strutzel 1968). Concurrently, a code book was developed to define the inductive codes utilizing a grounded theory approach and connect them to energy equity and just energy transition categories, iteratively refining these codes and relations over the course of the analysis process.

An overlapping code occurs when two themes are identified in the same passage. The codes that frequently overlapped in participants' understandings of energy inequities become key data points for analysis. We analyzed these overlaps because they reveal how participants understand relationships between different themes. The MAXQDA software has tools to identify passages with multiple themes. As the overlapping codes attained saturation over the course of 15 listening sessions, they revealed critical causal factors and actions to address in LADWP's pursuit of procedural energy justice in Los Angeles. We organized these high-frequency overlapping codes according to the three tenets of justice: procedural, recognition, and distributional. In what follows, we include the codebook.

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<sup>4</sup> Many of the quotes utilized in this chapter were originally in Spanish and translated into English by the authors.

# Codebook

**Table B-1. Code Names and Definitions**

Code Name	Definition to Guide Coding
<b>Structural Phenomena</b>	
<b>(Dis)Investment and Development</b>	
Economic Development and Land Use	Existing land use and how it relates to opportunity and economic growth; preferred land use; general economic development.
Economic Development and Energy	Economic growth and development related to energy and/or energy business.
Gentrification and Displacement	Housing, job, economic displacement, homelessness, geographic segregation; feeling the push to leave community but not wanting to; rent/landlord caused displacement because of upgrades to home.
Socioeconomic Marginalization	Historic disinvestment in communities, equity vs equality, being left behind; those with and without means get different things (and have different experiences in their communities).
Neighborhood Disinvestment	Physical manifestation of socioeconomic marginalization. Mention of lack of upkeep, excess litter, poor infrastructure; community empowerment/pride in ownership.
<b>Resilience</b>	
Grid Resilience	Threats to electrical grid resilience and practices that support resilience; instances (or insinuations) or examples of resilience or the lack of resilience in the grid; how technologies may help or threaten the resilience.
Community Resilience	Programs or strategies that support a community's energy resilience; could also be related to health; economic resilience; examples of a community being able to withstand hardships.
<b>Public Health and Safety</b>	
Emotional Burden	References to emotions like hurt, sadness, pain, etc. Sometimes related to physical environment; and references to systems to support emotional burdens.
Heat Wave	Mention of heat wave, lack of AC, dealing with the heat.
Shade	Shade or lack thereof (i.e., (un)covered bus stops); lack of trees or presence of trees.
<b>Pollution</b>	
Dumping	Environmental pollution via dumping; physical contamination of certain areas and how it impacts those living there (trash as well); what people are doing to

Code Name	Definition to Guide Coding
	clean up or prevent dumping; targeted; trash and other pollution.
Mobility and Pollution	Clean4 transportation, negative effects of transportation/mobility on surrounding communities, or the desire for clean transportation.
Pollution (other)	General pollution or contamination; noise, odor, other contaminants.
Air Pollution	Comments about air pollution, bad air, and causes and effects of it; specific pollutants in the air.
Air Quality	Comparison of air quality in different places; includes all comments related to air pollution too.
Public Health (or Community Health)	Anything related to public/community health. Or individual health, often as it relates to the environment. Encompasses a lot of the more general statements but also many of the ones in the pollution section above.
Safety	Safety as it relates to health, transportation, and housing; safety of people and goods (cars, houses); accessibility to health facilities.
Crime	General mentions of crime.
Criminal Justice Reform	Mention of criminal justice reform concepts, including reentry programs.
Historical Conditions	Mention of something that happened in the past that affects conditions of the community today.
Cultural Barriers	Barriers to clean energy access and use related to sociocultural norms and traditions.
Public Services	Water, electric, trash services provided by city; commentary on them and supply/ bills.
<b>Infrastructure Phenomena</b>	
<b>Water</b>	
Water Affordability and Burden	Water use, cost, supply; how cost seems inflated.
Water Quality	Drinkability of water, health concerns with water, general water quality.
<b>Public Spaces</b>	
Community Spaces	Schools, churches, places where community members gather or attend gatherings; open to the public; also, community spaces that were lost; general public spaces, or spaces that do not really “belong” to anyone.
Green Space	Lack of green space, or condition of the existing green space; parks.
Cooling Spaces and Heat Island	Places to go when there is a heat wave, effects of heat in city; how you can change (or cannot change) home to have more efficient cooling.

Code Name	Definition to Guide Coding
Public Lighting	Street lighting, darkness in public places.
<b>Maintenance and Upgrades</b>	
Housing Maintenance and Upgrades	Mention of old housing stock, housing conditions related to maintenance and upgrades; energy efficiency of houses (and buildings).
Infrastructure Maintenance and Upgrades	City-wide infrastructure related maintenance and upgrades.
Energy Security	Issues related to infrastructure/LADWP capacity to deliver quality electrical connection to residents.
<b>Mobility and Transportation</b>	
Public Transportation	Anything related to public transportation, its condition and use.
Walking	Mention of walking in relation to mobility impact area.
Biking	Mention of biking in relation to mobility impact area.
E-Scooters	Mention of e-scooters in relation to mobility impact area.
Electric Vehicles (EVs)	Mention of electric vehicle technology in relation to mobility impact area.
Electric Fleets (Heavy Duty)	Mention of Electric Fleets in relation to mobility impact area.
Autonomous Vehicles (AVs)	Mention of autonomous vehicle technology in relation to mobility impact area.
Mobility and Job Access	Driving, public transport and anything that relates to mobility and its relationship to job access.
Mobility and Services	Driving, public transport and anything that relates to mobility and its relationship to services.
Ride-Hailing	Mention of ride-hailing in relation to mobility impact area, such as Uber, Lyft, or some service that you pay for.
Private Vehicle	Mention of using personal vehicles; or lack of one.
Car Share	Mention of car share programs/ and carpooling.
Car Dealer	Mention of car dealer, or dealerships, car salesperson.
Parking	Mention of parking.
Energy Efficient Mobility	Any mention of energy efficiency in transportation, electric, other; also includes some mentions of public transportation.
<b>Housing and Residential Infrastructure</b>	
Appliances	Mention of appliances e.g., outdated, energy inefficient, lack of access to efficient appliances, etc.
Electrical Capacity	Effects of old electrical system in a home, the capacity at a home to charge vehicles, or run appliances; mentions of the failure of electrical capacity in older homes.



Code Name	Definition to Guide Coding
Outages	Mentions of utilities turning off, due to electrical capacity within the home, rolling or planned outages, or community wide electrical/water capacity.
Homeownership	Issues that affect homeowners specifically; barriers to resources because not a homeowner; benefits and burdens of being a homeowner.
Renter Issues	Issues related to renters' experience such as landlord reticence, lack of control over property, cost and safety concerns.
Quality of building (Home)	Issues related to quality of residence's fuse box, rooftops, internal wiring; energy efficiency of a home; not specific to home either, could be community building.
Solar and Storage	Mentions of solar: installation, affordability.
<b>Economic Phenomena</b>	
<b>Affordability and Stability</b>	
Shutoffs (Barriers)	Energy or water (utilities) service shut off due to missed payments.
Economic Stability/Security	Related to broader picture of job stability, or housing stability and housing prices; prioritizing other expenses over energy bills; cost of housing maintenance and how that relates to stability; prioritizing what you choose to pay more for (or what you have to pay more for).
Debt	Mentions of debt or having bills that have stacked up (i.e., ratepayer has not been able to pay off each month).
Energy Affordability and Burden	Passages that relate to people and their communities' ability to pay energy-related costs embedded in their everyday lives—from transportation and housing to work, food, and recreation. Energy burdens are often understood as “the percent of a household’s income spent on utilities for heating, cooling, and other energy services.” This code expands that definition to consider the trade-offs people and families must make to pay all their energy bills alongside other monthly financial burdens (e.g., cost of health care, childcare, rent).
<b>Learning and Workforce Development</b>	
Jobs, Training, and Entrepreneurship	Mention of jobs/work in general, businesses that people own; lack of jobs; jobs in energy; also mentions of trainings, workshops, continuing education with career focus; what prevents people from working (i.e., physical constraints).
Local Jobs and Production	Manufacturing locally, local jobs and training to enable local employment.
Education	Mentions of education, how it should be directed/dispersed; education related to electric energy

Code Name	Definition to Guide Coding
	and solar for consumers and careers, as well as other topics.
Youth Career Development	Educating youth to encourage careers in energy or other sectors; teaching skills to further career development for youth; need for training.
<b>Accessibility Phenomena</b>	
<b>Access and Use</b>	
Access (Actual Use)	Mentions of access to services, resources, and technologies that do not fit within other access categories; this includes how people actually use those services, resources, and technologies and if not, why.
Access to Financial Capital	Access to initial funding for energy-related capital improvements such as rooftop solar, purchase of EV and related EV supply equipment installations; community wide funding and individual funding.
Waiting and Delays	Waiting and delays, specifically with transportation, implementing projects (promises made or hopes for projects).
Monitor Program Application and Reach	Accountability for program implementation and monitoring, generally how was the program implemented, who did it benefit, and who was involved in the implementation; elements to include in order for program to reach the right people and how many people it is reaching.
Eligibility	Specifically, who qualifies for programs, or what causes someone who needs the benefits to not qualify for them.
Predatory Practices	Mentions of contracts not being upheld, paying more than anticipated and not receiving what was promised (from both private and public programs); poor work from contractors.
Electrical Preventive Maintenance	Mentions of unsafe conditions because of overdue electrical preventive maintenance; old electric systems at homes; landlords not doing the work needed.
Technological Barriers	Mentions of barriers to new technology (like EVs, energy efficient appliances, etc.). Mentions of electrical supply (capacity, infrastructure) barriers in the home and community.
Energy efficient technologies	Technology that minimizes energy usage; also mentions of working in energy efficient technology realm; mentions of investment in energy efficient technologies.
<b>Programs and Support</b>	
Urgent Need for Support	Mention of imbalance between need for support now versus plans and policies or programs that have long waiting lists or take years to see change; also mentions

Code Name	Definition to Guide Coding
	of debt and needing to focus on urgent needs versus longer term concepts like the energy transition.
Misunderstanding	Miscommunication, including different interpretations between communities and those implementing policy/government.
Community Study	Recommendations for community wide studies; or comments about previous/current community studies.
Food Banks	Mention of food banks.
Subsidies and Incentives	Mentions of subsidies (or monetary incentives), how they could help and what they currently do not cover; general incentives geared toward a specific group that encourage and facilitate energy efficiency, workforce development and helping communities reach their energy goals.
Grants/ Scholarships/ Internships	Mention of internships or grants geared toward workforce development or school.
Utility Debt Relief	Mentions of extremely high bills that ratepayers cannot pay off and therefore require relief; many related to the covid moratorium that built up; full relief or payment plans that provide debt relief; also, general mentions for need for debt relief.
Consistent Ratepayer Support	Mentions of support to clients by the utility services (customer service). This includes comments related community members' experiences with utility employees who provide direct support to clients; also, requests for forms of support that recognize people who have been consistent customers for years and now cannot pay bills.
Barriers to Program Participation and Support	Passages that relate to obstacles, barriers, and challenges that community members face that limit their ability to participate in, access, and/or utilize existing energy-related incentives, subsidies, and other aid programs. This includes but is not limited to the barriers embedded in eligibility criteria.
Future Programs/Support/Policies	Mentions of future programs/ policies that communities would like to see; and how community members are involved in them, including in their co-creation.
Successful Past or Existing Programs/Policies	Mentions of programs related to energy efficiency, that are either offered, or people are partaking in that have been successful.
Knowledge/access/use of existing programs/services	Mentions of what happens when communities do not have access to knowledge of programs; knowledge that programs are not working; how to spread awareness/ access to the services, resources, and programs coded in the Programs and Support subcategories above.
<b>Participation, Outreach and Communications</b>	

Code Name	Definition to Guide Coding
Building Trust and Confidence	Mentions of commitment, strategies to build trust; lack of trust; not following through on promises.
Continuity	Mentions of that lack of consistency in outreach, communications and therefore participation. This includes outreach that sends different people to have conversations each time communities are engaged. Relates to a lack of accountability due to a lack of continuity.
Circular Conversations/ Stakeholder Fatigue	Mentions of repetitive conversations with no actual output; mentions of being asked for opinions and then asked again.
Lack of information	Mentions of lacking information about plans from government, about how public money is spent, how programs will operate, and how decisions are being made. Being left behind or out of conversations because of lack of access to information, specifically with an energy focus.
Bilingual Communication and Engagement	Outreach/meetings in both Spanish and English; mentions of presence or lack of this.
Customer Communications and Problem Resolution	Utility companies, communication, and customer service; how they respond when people bring up problems; general availability and responsiveness.
Face-to-Face/Door-to-Door	Mentions of canvassing, going to the people, or having face-to-face interaction.
Social Media and Texting	Mentions of social media and texting as ways to communicate information widely.
Mailer	Using flyers etc. to communicate and conduct outreach.
Community Committee and Mobilization	Mentions of building internal community knowledge (mobilization) or committees/councils to represent and provide continuous local insight; also mentions of community coming together to resist interventions and/or build coalitions.
Promotoras Method	Mentions of the Promotoras de Salud (also known as promotoras) method. The promotoras are community health workers, seen as trusted messengers, who guide local residents in their Latino communities through the complex health care system. They use their knowledge of local sociocultural norms to provide their neighbors access to relevant health and social resources.
Participant Motivation and Means	The burden of participation, and what alleviates that burden or makes it worth it; why people are participating in programs or meetings.
Participant Compensation	Mentions of compensating (or needing to) for participation in engagement, outreach, meetings etc.
Workshops	Commentary on workshops that are offered or desire for workshops or that type of continuing education.

Code Name	Definition to Guide Coding
Intergenerational Engagement	Mentions of youth and adults both being engaged, a focus on education, or generally a focus on outreach (or a need for this).
Previous Engagement/Input	Mentions of previous engagement that government or other entities have done, ways they have (or have not) gotten community input.
<b>Participant Observations and Reflections</b>	
Alternative Energy Technologies	Call-out any mention of any alternative energy technology.
Solar and Storage	Mention of rooftop solar (not community solar).
Green Hydrogen	Mention of green hydrogen.
Electric Vehicles (EVs)	Mention of electric vehicle technology.
Electric Fleets (Heavy Duty)	Mention of heavy duty EVs.
Autonomous Vehicles (AVs)	Mention of autonomous vehicle technology.
Energy efficient cooling technologies	Strategies used or technology used to have more energy efficient households, to keep buildings cool.
Socio-demographics of Participants	
Parent/ Individual with dependents	Self-identifying the people who are talking, if they mention these categories.
Disability	Self-identifying the people who are talking, if they mention these categories.
Age and Longevity	Self-identifying the people who are talking, if they mention these categories.
Location	Self-identifying the people who are talking, if they mention these categories.
Large Household (multifamily, intergenerational)	Self-identifying the people who are talking, if they mention these categories.
<b>Ethical Paradigm</b>	
<b>Ethical Entailments</b>	
Quality of Life	When people define what they think of as a high quality of life or a need for this.
Responsibility, Accountability, Transparency	Participants' mention of their personal value of responsibility, accountability, and transparency across the board (between service providers and ratepayers, elected officials, project team, etc.).
Carbon Emission Reduction/Efficiency/Environmentally Friendly	Participants' mention of their personal value of environmentally friendly policies and actions (related to climate change, drought, etc.).

Code Name	Definition to Guide Coding
Reliable Transportation	The importance of reliability in transportation and its personal value.
Self-Determination	Passages that relate to community members' abilities and power to make decisions for themselves in relation to the energy system.
Dignity	Participants' mention of the right to live with respect and the power to make decisions for themselves.
<b>(In)Equity and Inclusion</b>	
Priority Social Groups	Groups that need special focus/priority in the energy transition.
People with Disabilities	Groups that need special focus/priority in the energy transition: individuals with disabilities.
Gender	Groups that need special focus/priority in the energy transition: mentions of gender inequities.
Race	Groups that need special focus/priority in the energy transition: mentions of racial/ethnic groups.
Youth	Groups that need special focus/priority in the energy transition: mentions of youth/children.
Seniors and Retirees	Groups that need special focus/priority in the energy transition: mentions of elderly, seniors, and retirees.
Moderate and low income	Groups that need special focus/priority in the energy transition: mentions of people with low and moderate incomes.
Sociospatial Difference	Mentions of the physical differences in locations or physical disparities that align with sociodemographic differences.
Undocumented and Limited Immigration Status	Mentions of not having valid immigration documents or limited immigration status and its impact on access to programs.
Power Dynamics	Control, power plays in communities, between various actors including companies, organizations, groups of people.
Racism	Specific mention of race and/or ethnicity as a factor influencing participant's experience with energy inequity and injustice.



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