UNIVERSITY OF CALIFORNIA

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Resilience Matters: The Design and Contention of Climate Just Futures

A dissertation submitted in partial satisfaction

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in Urban Planning

by

Nicole Lambrou

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ABSTRACT OF THE DISSERTATION

Resilience Matters: The Design and Contention of Climate Just Futures

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Nicole Lambrou

Doctor of Philosophy in Urban Planning

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Professor Anastasia Loukaitou-Sideris, Chair

Resilience planning, in framing environmental and social relations as interdependent and interrelated, risks perpetuating inequalities unless the question of justice is central to those plans. In the absence of a clear focus on justice, different priorities can give rise to ongoing inequalities even when those priorities fall under the framework of resilience. Confronting the underlying politics of resilience planning and design entails accounting for the ways in which the implementation of resilience can exacerbate inequality. Guiding this dissertation is an environmental justice framework that centralizes systemic inequality and active and violent exclusion of certain populations and communities as the cause of the vulnerabilities faced by frontline and fenceline communities.

Within this framework I pursue three distinct avenues of research related to resilience planning and design. The first paper evaluates resilience plans adopted by cities in the US. I analyze the content of thirty-eight resilience plans by US cities in order to reveal how cities define resilience, how cities conceptualize goals and implementation strategies in order to

achieve resilience, how cities involve the public in formulating their plans, and how cities address equity through resilience framings.

The second paper pays close attention to how resilience, as a concept and project, scales down from the city to the neighborhood, using Los Angeles as a case study. Through my research on the Watts community of South Los Angeles, I examine how resilience plans and strategies, which were conceived of and generated at the city level, are then adopted, understood, implemented, and contested at the finer scale of the neighborhood. I look at how resilience is taken up by community activists and stakeholders who attempt to address existing, historic, and systemic inequalities by appropriating and contesting resilience projects.

The third paper addresses resilience design as a process and product that envisions climate just futures, and asks what these processes mean for populations and regions most vulnerable to climate risks. The study analyzes the nine proposals that resulted from the Resilient by Design project in California's Bay Area, and focuses specifically on the intersection of resilience design and equity.

The dissertation of Nicole Lambrou is approved.

Stephanie S. Pincetl

Kian Goh

Elizabeth C. Koslov

Anastasia Loukaitou-Sideris, Committee Chair

University of California, Los Angeles

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Over the course of my lifetime so many abrupt and extreme changes in the climate have left their impression on me. In part driven by a sense of alarm at the very magnitude of environmental injustices, I chose to pursue research in this field. But my ability to complete this work rests soundly on the generosity of others, first and foremost my committee who agreed to work with me and whose relentless support is unparalleled. In particular, I owe so much to Anastasia Loukaitou-Sideris, without whose guidance and encouragement on all aspects related to my intellectual and career pursuits I would be lost, and to Stephanie Pincetl, without whose insights and wisdom, ever so critical at every juncture of my intellectual development, I would be equally lost. I am incredibly grateful for Kian Goh and Liz Koslov, for their willingness to engage with lengthy conversations that helped guide my work. And many thanks to V. Kelly Turner, who was instrumental in shaping my research early on. I literally cannot thank these individuals enough.

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Vita

EDUCATION

Yale University 2006
Master of Architecture

Binghamton University 1998
Bachelor of Arts

SELECTED PUBLICATIONS

Peer-Reviewed Journal Articles

Lambrou N. and Loukaitou-Sideris A. (2021). Resilience plans in the US: an evaluation, Journal of Environmental Planning and Management. DOI: 10.1080/09640568.2021.1904849

Articles Under Review

Lambrou, N., Kolden, C., Loukaitou-Sideris, A., Anjum, E., and Acey, C. "Social drivers of vulnerability to wildfire disasters: A review and framework for achieving climate justice."

Book Chapters

Lambrou, N. (2022). "Downscaling Resilience from Los Angeles to Watts: Contestations, Appropriations, and Opportunities." *Justice in Climate Action Planning*. Springer, Cham: 119-138.

Lambrou, N. (2020). "Dematerializing Oil: The Disappearing Act of the Los Angeles Oil Fields," in Schultz, A.C. (Ed.) *Real and Fake in Architecture: Close to the Original, Far from Authenticity*. Fellbach: Edition Axel Menges.

Lambrou, N. (2018). "Making Landscapes Legible: An Ecology of Feedback Loops*,"* in *Inflection: Journal of the Melbourne School of Design.*

Other Publications

Lambrou, N. (2018) "Making Landscapes Legible: An Ecology of Feedback Loops*,"* in *Inflection: Journal of the Melbourne School of Design.*

Lambrou, N. (2017). "Hudson Yards: A Sustainable Micropolis," in *The Avery Review* https://averyreview.com/issues/22/hudson-yards-a-sustainable-micropolis

Lambrou, N. (2015) "Below the Acropolis*," in Clog: Landmark.*

Lambrou, N. (2014) "Big Data, False Data, Smart Data, Dumb Data," *Applied Research Practices in Architecture Journal.*

ACADEMIC APPOINTMENTS

California State Polytechnic University, Pomona — 2021-22
California Center for Ethics and Policy
Faculty Fellow

California State Polytechnic University, Pomona — 2017-22
College of Environmental Design
Lecturer, Department of Urban Planning

University of California, Los Angeles — 2021
Department of Urban Planning
Teaching Fellow

University of California, Los Angeles — 2018-21
Institute of the Environment and Sustainability
Teaching Fellow

PROFESSIONAL APPOINTMENTS

tinkercraft: Design & Advocacy Group — 2016-present
Executive Director

Assessing Wildfire Risk and Recovery Efforts in California — 2021-present
Project Manager

GRANTS

Dissertation Year Fellowship, UCLA — 2021-22
UCLA Ziman Center Research Grant Award — 2021-22
A.G Leventis Foundation — 2019-21
Bette and Hans Lorenz Fellowship — 2016-17

PROFESSIONAL AFFILIATIONS

Registered Architect, New York State
LEED Accredited Professional, US Green Building Council

Chapter 1. Introduction

The resilience of a city is largely understood as a measure of how well it will function in the face of a disturbance. Envisioning how a region will absorb, and respond to, a given disturbance is a project that is riddled with assumptions and unstated values, with implications for the making of just and unjust environments. In this study I trace the roots of resilience as a substantive and metaphorical framework for envisioning urban pasts and futures, and highlight the implications of such a project for just transitions across three distinct pathways: resilience in climate action plans adopted by cities, resilience as more than a strictly climate-related goal taken up by community activists, and resilience as a design process that reinforces, but also subverts, efforts to shift critical decision-making towards frontline and fence line communities vulnerable to climate risks.

Resilience in urban settings is a function of its exposure to risk, a framing that departs from the strict ecological definition of resilient systems as complex and adaptive (Folke 2010). As a result, resilience takes on a specific meaning in urban settings. Where an adaptation or mitigation measure, for example, against wildfire risk involves regulating setbacks, building materials, and strengthening evacuation routes, a resilience approach could potentially assess and address the systems-wide link between housing, exurban development, and forest management as interdependent concerns. Despite its promise resilience is riddled with questions - who will benefit, what plans and solutions are legitimate and why, how the idea of a system at various scales is delineated and who the actors within that system are, among other.

Since climate change effects are felt unequally, resilience can either entrench existing inequalities or promote more just transformative futures. Large-scale land use and infrastructure changes on the one hand, and smaller scale distributed strategies on the other, are approaches

that rely on informed knowledge of environmental and climate data as the basis for sound and rational development decisions, but this reliance tends to obscure or minimize existing inequalities and contestations over resource allocations, often the case despite the participatory nature of these efforts (Anguelovski et. al. 2016).

Justice in Urban Resilience Planning and Design

The apolitical nature of resilience relies on assumed 'natural' relationships observed in ecosystems to promote the preservation of certain landscapes over others, prohibiting other uses for that same land that may otherwise be more socially equitable (Fainstein 2015). How to rebuild after a natural disaster, and how to prepare for future climate events, are efforts that rely on particular understandings and visions of nature, but are also politically driven insofar as they symbolize the resolve of people to promote the implementation of a certain institutional agenda (Vale 2015). Without taking on the question of equity as a central component in resilience plans, the potential to transform landscapes towards an equitable future is lost.

Increasingly, researchers are paying attention to the local and specific ways in which individuals perceive climate risk and resilience (Smith et. al. 2012). That perception is a function of a community's social capital, or the ability of people to form relationships to each other and to act on those ties, as well as to place-based knowledge, or the collective relationships between people and their environments. Resilient communities are often self-described as such when they are able to organize themselves to resist or recover from risk, often skirting the larger structural issues that exposed those communities to risk in the first place. Insofar as resilience planning can address multiple scales and timeframes, it can mitigate short-term impacts (i.e. from extreme weather events) while bringing to light systemic and structural inequalities produced and reinforced across scale and time.

Knowledge at the level of the lived experience, or place-based knowledge, takes on a central role for just and equitable resilience planning. Resilience plans that envision urban futures must take seriously the experiences, narratives, knowledge, and desires held by urban citizens, and be especially sensitive to those who are marginalized. It is not possible to address the holistic undertaking of an ecological resilience framework without remaining attuned to, and attempting to overcome, social inequality. Such a project has implications for planning and design: it cannot stop once a plan or design is conceived, or even implemented, but needs to reflect on the impact such efforts have for people, communities, cities and regions.

Despite the changes in the physical form, or design, of a city that adaptation and resilience plans involve, such as those necessary to accommodate green infrastructure or ecological restoration projects, research surrounding these processes rarely references the design or planning of space itself, focusing instead on regulatory hurdles (Dhar and Khirfan 2017). The second and third chapters of this dissertation attempt to address the design and planning of space by looking at how resilience is applied on the ground, with a specific focus on how resilience design and planning processes are taken up by people in and for their communities, particularly those most vulnerable to climate risks and extreme weather events.

The Nature of Resilience

Resilience framings rely on ecologically-based proposals for dealing with climate change risks. It nevertheless remains unclear how, more precisely, to implement the concept of resilience in urban settings. This lack of clear strategy is exacerbated by the fact that planning efforts that previously relied on a 'predict and prevent' model now face the unpredictable nature of extreme weather events. Resilience planning must therefore account for unknown futures and needs to take place across multiple scales of governance and geographies, while insisting on a just present

and future. Where resilience can strengthen adaptation planning is in its emphasis of the multiscalar considerations of adaptive strategies. Decisions are made at multiple levels, and are driven by a number of factors with embedded and unstated values: how we frame an issue and the ends we want to achieve, the selection criteria and alternatives we identify as important in determining an outcome, and establishing the guidelines that are best deployed to achieve those goals (Davidoff and Riner 1962).

The first paper of this dissertation evaluates the climate-related official plans adopted by cities across the US that have an exclusive or substantial focus on resilience. The underlying assumption driving this study is that an integral part of assessing resilience in and for a particular region is the structure of regulations, policies, and knowledge that governments and institutions promote and within which decisions are made. These frameworks of rules, guidelines, and regulations can be both formal and informally adapted, operate at a number of different scales, and are often contested or appropriated when applied to different scales and contexts. I find that in the US resilience equity manifests in both explicit and implicit ways throughout the plans but is rarely operationalized; that cities gather a wide range of social, environmental, physical and economic goals under the term resilience, which may imply a recognition of the complexity of urban systems but renders those goals ineffective; and the majority of resilience plans advocate a quick return to a previous state in the face of a disturbance, forgoing the opportunity to take on the transformative potential of the term towards an equitable future.

The second paper of this dissertation is concerned specifically with how resilience themes and ideas are appropriated, absorbed, and contested by a specific community in South Los Angeles attempting to address systemic disinvestment by claiming their right to more than strictly climate-related goals. Community stakeholders and activists appropriate resilience, as a

framework and project, to contest and mitigate a history of active exclusion and disinvestment in housing, education, and infrastructure in their community. This chapter focuses on how one specific community took on, challenged, and appropriated the principles and strategies outlined in its city's resilience plan, and argues for resilience planning that is situated and embedded, and discusses the implications of this study for climate justice.

Finally, the third paper examines resilience design processes more specifically. Resilience design processes involve a number of public and private agencies and institutions, as well as a wide range of community representatives and stakeholders, and envision urban and regional transformations for a climate just future that implicate stakeholders in frontline and fenceline communities. Though resilience is a seemingly neutral response to the planetary problem of climate change, it is driven by decisions that are political in nature. Understanding and stating who resilience is for, especially when resilience calls for changes in governance, regulations, and the form of urban landscapes, is an important task. If resilience plans promote our adaptive capacity to an unknown future, not just to a specific and foreseeable event, it matters whether and how we plan for spaces of debate, questioning, and contestation. Insofar as the goals of resilience include strengthening the adaptive capacity of an urban system as an end in itself, the nature of resilience becomes critical especially for questions of justice and equity.

This research, as a whole, discusses the link between resilience and climate change, its application to urban design, and its implications for questions of justice. Implied in this discussion are questions not only of the distribution of amenities and harms but also larger issues of participation, representation, and citizenship. These are frameworks that do not work in isolation - each contributes to an approach to justice in different ways depending on the specific context at hand (Schlosbert 2004). In this way, justice is understood as situated (Holifield 2001).

We might, then, fair better in thinking of justice as an act, a deliberative process, instead of an assumed objective shared universally. In order to deliberate on the distinctive path towards justice, resilience planning work would benefit from remaining open to the specific ways in which socio-environmental meanings and relations are formed from case to case. By remaining expansive, justice goals are not diluted, as is often the fear, but are understood as situated, relational, and embedded in different ways that call for different action.

Chapter 2. Resilience Plans in the US: An Evaluation

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Abstract

Resilience is a framework that drives cities' responses to climate change, evidenced by the increasing number of resilience plans that cities have adopted. Resilience plans can offer insights on how cities conceptualize resilience. We undertake a content analysis of 38 resilience plans of US cities to understand how they define resilience, conceptualize goals and implementation strategies, involve the public in their formulation, and address equity issues. We find that equity manifests in explicit and implicit ways throughout the plans but is rarely operationalized. Cities gather many social, environmental, physical and economic goals under the term resilience, which may imply a recognition of the complexity of urban systems but renders those goals ineffective. The majority of resilience plans advocate a quick return to a previous state in the face of a disturbance, forgoing the opportunity to take on the more transformative potential of the term towards a more equitable future.

Introduction

In recent years, considerable discussion in urban planning has focused on the issue of city resilience. Having primarily emerged from the fields of ecology and engineering, the concept of resilience has in the last decade also been employed extensively by urban planners as an aspirational goal for cities, often in the context of planning for climate change, but also disaster

planning, energy security, or water management. In general terms, city resilience is largely understood as a measure of how well a city would function in the face of a disturbance. Disturbances (or more commonly called disasters) are broadly defined as human-caused or natural, and vary by scale and impact (Vale and Campanella 2005).

In the last decade, a number of cities in the US and in other parts of the world have sought to develop resilience plans, which include goals and implementable actions to protect them from disaster and respond to the challenges of climate change. For some of these cities, such planning efforts have been supported by Rockefeller Foundation's *100 Resilient Cities* initiative. Many US cities have also developed Resilience Offices as official arms of their local government, that work with communities, local institutions, and financial consultants on resilience plans. Resilience Offices are supposed to facilitate resilience efforts across different scales of social and environmental life through anticipatory governance, enabling coalitions and partnerships (Quay 2010).

In this study, we argue that a rather unexplored way of understanding what resilience is about in the context of a city is through the examination of the scope, content, and goals of its resilience plan. This plan records the values, intentions, and methods of planners in shaping a city's resilience efforts. It is meant to offer guidance and a roadmap on how cities should plan to protect their residents from future disasters. Resilience plans should, therefore, afford significant insights into how resilience is conceptualized and formulated and for whom, also offering a window into the practice of resilience planning along with its current orientation and prominent goals.

A number of studies have analyzed the literature on resilience as discussed in academic journals, spanning both the environmental and social sciences. These studies generate resilience-

related criteria that can serve as a framework for assessing resilience across different themes, including infrastructure, security, environment, economy, institutions, and social life (Sharifi and Yamagata 2014; 2016). A much smaller literature has examined resilience in the context of professional planning. These studies are mostly based on interviews with planners (Saw and Maythorne 2012; Wilkinson et al. 2010) and not on an analysis of their plans. Some of this literature focuses on questions of justice – who benefits and who loses from resilience strategies, and are such strategies helping the most vulnerable groups? (Anguelovki et al. 2016) This is because envisioning how a city will absorb and respond to a given disturbance is riddled with assumptions and unstated values that have implications for social justice and equity (Leichenko and O'Brien 2008). Despite the changes in the physical form of a city that resilience plans might involve, such as for example those necessary to accommodate green infrastructure or sea level rise, there is little research surrounding these plans: What are their goals? How are these goals developed? Do they lead to actionable strategies? What exists primarily focuses on issues of governance and regulation and rarely references the design or planning of space itself (Dhar and Khirfan 2017). There is also so much rhetoric about resilience in scholarly and professional cycles that leads Porter and Davoudi (2012: 329) to wryly observe: "resilience appears to be fast replacing sustainability as the buzzword of the moment. It may follow a similar fate and become a hollow concept for planning: an empty signifier which can be filled to justify almost any ends."

This study takes a close look at the resilience plans of US cities, employing content analysis to examine and compare their vision and stated goals, what these imply about urban form, and how, if at all, they address issues of social equity. An additional reason for examining these plans and their general context within which they are created is to examine if plan

development processes are participatory or not. More specifically, this study hopes to get a better insight about the context of resilience planning by addressing the following questions.

1. How do the varying definitions of resilience complement or conflict with each other in setting resilience planning goals?
2. How is resilience used to frame specific physical, social, economic, or environmental aims in urban settings?
3. To what extent resilience plans address social equity issues?
4. What is the role of public participation in the development of resilience plans?
5. To what extent do the plans talk about specific strategies for implementation, including design-driven strategies?

In what follows, we first give a brief literature review on the topic of resilience in the context of cities. We then discuss our research design and methods, and our findings from the content analysis of 37 plans. We conclude by responding to our research questions and reflecting about resilience planning practices in US cities.

Literature Review: Resilience in the context of cities and planning

Because the concept of resilience can apply to the natural, physical, or social worlds, it has acquired multiple meanings and definitions. For this study, we are particularly interested in the resilience of cities, and how the concept is defined within the practice of planning. We start, however, this review with a distinction made by ecologist Crawford Stanley Holling (1973) between engineering resilience and ecological resilience, as each can lead to different planning strategies and interventions (Lamb and Vale 2019).

Engineering resilience expects that a system (in our case a city) would return to an equilibrium after a natural disaster (e.g. earthquake, flooding, tornado, etc.) or human-caused disaster (e.g. a war, an act of terrorism, a pandemic, etc.) (Holling 1973; 1986). This view assumes that there is a stable equilibrium state, and the more resilient a city is, the stronger its ability to withstand external disturbances and return back to this state. However, after conducting additional research with ecologist colleagues, in which he incorporated larger timeframes and scales of research as well as more complex relations among agents in an ecosystem, Holling proposed that ecosystems are not in equilibrium but always in flux (Folke 2006); they could evolve into a state composed of different relationships and hierarchies between organisms and their environment than those present before a disturbance (Holling 1996). Thus, ecological resilience accepts the existence of different equilibria (Davoudi 2012) and multiple possible stable states (Walker and Cooper 2011) and engages with questions of change, uncertainty, and adaptability (Holling 1996). Under this view, a resilient city is one that has the ability not only to persist throughout a disturbance but also to adapt to new circumstances in its aftermath in ways that are better than before the disaster hit (Vale and Campanella 2005).

In terms of physical alterations to achieve more resilient outcomes, one can distinguish between engineering-centered structural projects which seek to keep hazards away from residents, such as levees, seawalls, and concretization of river embankments, and "green resilience" projects and strategies, which "anticipate a more flexible coexistence between people and their natural systems," favoring, for example, floodable open spaces and floodplains and permeable paving in the place of concrete walls and levees (Lamb and Vale 2019, 375). Proponents of green resilience believe that ecological processes are better suited for dealing with both slow and extreme weather events than a strict reliance on hard infrastructure and

engineering. Ecosystems, or ecological systems, are increasingly understood as better able to absorb climate-change disturbances such as storm surges and floods compared to purely engineered systems. Preserving, restoring, and enhancing ecosystems are therefore critical in strengthening a city's resilience.

The engineering view of resilience has been very influential in government actions for disaster response and resilience planning, as governments aspire to make their cities "bounce back" to a previous "normal" condition (Folke et al. 2010). For example, in order to strengthen urban regions in the face of climate change unpredictability, cities are adopting resilience plans. Frequently, the principles guiding these plans tend to assume that a return to a previous urban state is the optimal choice. But preserving existing processes and relationships reinforces the way things are as opposed to finding opportunities following a disturbance to establish new socio-environmental relations. In this context, resilience is not a benign term, or ecological framework, that enriches our understanding of social relations to the environment but an active project that potentially entrenches and perpetuates existing inequalities across different scales, from individual citizens to larger regions (Joseph 2013).

For this reason, many scholars question the uncritical adoption of a pre-disaster "normal" as the ideal state of things, as it may likely include injustices in social, economic, and political conditions (Pendall et al. 2010). They instead call for resilience planning that can imagine "alternative futures," and "change rather than continue doing the same thing" (Adger, 2010: 1); in that sense favoring an adaptive view of resilience that calls for "evolutionary" (Davoudi 2012; White and O'Hare 2014), "progressive" (Vale 2014) or even "radical" resilience planning (Shaw 2012).

The promise in adhering to a transformational view of resilience is that it supports changes in relationships and environments that can be triggered by a disturbance. Despite this promise, however, resilience planning is still riddled with questions: Who will benefit? What plans and solutions are legitimate and why? How the idea of a system at various scales is delineated and who the actors within that system are? How does resilience planning intersect with governance/public participation and equity?

Equity

A subset of the resilience planning literature examines the equity implications of planning decisions and policies. While scientists often rely on the alleged objectivity of "scientific truths" to legitimize their inherent claims, such claims are largely accepted without consideration of the equity impacts of implementation decisions (Jasanoff 2010). The purported apolitical nature of resilience relies on assumed "natural" relationships observed in ecosystems that promote the preservation of certain landscapes over others. But such actions may prohibit other land uses or activities that may otherwise be more socially equitable (Fainstein 2015). How to rebuild after a natural disaster, and how to prepare for future climate events are efforts that rely on particular understandings and visions of nature, but are also politically driven insofar as they promote the implementation of a certain institutional agenda or private interests (Vale 2015).

Meerow et al. (2019) employed a tripartite framework - distributional, procedural, and recognitional - to analyze how equity is addressed in the resilience plans of cities. *Distributional equity* is concerned with the distribution of amenities and resources. This opens several questions: Whose voices are considered when making that determination? How social differences position people differently in relation to having access to that process of determination? What constitutes a legitimate voice? *Procedural equity* is concerned primarily

with equitable institutional processes: Who is involved, who is represented, and who counts (Schlosberg 2004). Procedural equity requires an open process in reaching decisions and formulating future visions, specifically incorporating the community affected by the result of that process. It includes open and equitable access to information to reach informed decisions, and equipping communities with the tools necessary to obtain, understand, and apply that knowledge (Heiman 1996). Lastly, *recognition equity* focuses on the underlying structures that lead to inequalities and entails the equal weighting of voices from different identities and statuses (Schlosberg 2004).

Empirical studies that have examined the impact of climate adaptation policies in different cities find that they can heighten sociospatial inequalities and exacerbate power asymmetries. More specifically, examining climate adaptation policies in two cities of the Global North and six cities of the Global South, Anguelovski et al (2016: 333) found that these cities' "efforts to reduce climate vulnerability through land use planning tools were often embedded in the very institutions and development processes that reproduce uneven risk exposure and socio-economic vulnerability." They observed that such plans and policies produce two kind of injustices: *acts of commission*, when they disproportionately impact underprivileged social groups negatively; and *acts of omission*, when they prioritize the protection and welfare of wealthier over poorer groups, or fail to include the latter in decision making processes. Similarly, a study of Cape Town, New Orleans, and Phoenix found that their resilience plans may be transformative for the purposes of carbon emissions reduction but do little, if anything, to restructure socio-environmental relations with an eye towards justice (Ernston et al. 2010). Looking specifically at planning for climate adaptation Leichenko and O'Brien (2008) talk about a "double injustice," as some disadvantaged groups that contribute the least to global carbon

emissions are bearing a disproportionate amount of the social cost of climate adaptation and resilience plans.

Scholars find that resilience planning risks perpetuating inequalities unless the question of justice is central to the plans. This is precisely the point put forward by Meerow and Newell (2016) who show how in the absence of a clear focus on justice, different resilience priorities can give rise to ongoing inequalities. Using Los Angeles as a case study, they show that stormwater management can intensify the lack of access by low-income communities to parks, given the city's topography. They advocate for a "politics of urban resilience" that accounts for the ways in which the implementation of resilience strategies can exacerbate inequality.

In summary, this subsection of the literature argues that without taking on the question of equity as a central component in resilience plans, the potential to transform landscapes for a more equitable future is lost.

Governance

A smaller subset of the resilience planning literature examines the governance of processes aspiring to create resilience cities. The primacy and legitimacy of the public sector to lead such efforts emerge out of its ability to maintain consistency and stability. However, some scholars argue that governmental bureaucracies may stifle the reflexive and adaptive capacity necessary for dealing with the unpredictability of disasters and climate change (Walker 2000). Empirical studies based on interviews with public-sector planners find that their primary attention goes to "recovery" or "survival," rather than "transformation" (Shaw and Maythorne, 2012; Shaw 2012), and argue that "such an understanding [of resilience] reduces the term's usefulness as a more creative and strategic agenda." (Shaw and Maythorne, 2012: 60). In

response, some scholars call for anticipatory and "adaptive governance" (Quay 2010) and "interpretive planning" (Davoudi 2012) as a resilience strategy that can best deal with unpredictable circumstances, such as extreme weather events.

Only a few studies examine how governments finance resilience interventions and how many of these interventions actually get implemented, as financing resilience across cities remains largely discretionary. Scholars observe that despite the threats of extreme weather events, and the human and economic losses associated with such events, funding for resilience and adaptation strategies is quite sparse (Ferraro and Pattanayak 2006). Lacking public funds to implement the large-scale transformations to urban landscapes called for in many resilience plans, government institutions turn to public-private partnerships (Clark et. al. 2018). However, local government agencies often cannot keep up with the capital put up by global mega-companies for resilience interventions (Clark et. al. 2018), though the Rockefeller Foundation seems to be changing this through its *100 Resilient Cities* initiative, which gave funds to cities to develop Resilience Offices, partner with other private and nonprofit partners, and develop strategies and best practices for approaching resilience (Rockefeller Foundation website).

Public Participation

Implied in discussions about issues of governance and justice are questions not only relating to the distribution of amenities and harms but also issues of participation, representation, and citizenship. While an emerging literature has looked at the larger topic of opportunities and challenges of collaborative governance in environmental planning (Margerum and Robinson 2016), very few studies have examined these issues in the context of development of resilience plans. Examining participatory processes in the Climate Adaptation Santiago (CAS) project, in

Santiago, Chile, Anguelovski et al. (2016) found that residents of some of the poorest and most vulnerable neighborhoods were not given equal opportunities to those offered to better-off neighborhoods to participate in the planning process. The same authors found that the development of Jakarta's Coastal Defense Strategy and National Capital Integrated Coastal Development Master Plan relied primarily on expert and elite group participation, while resilience planning in Manila and Dhaka did not include community-driven alternative proposals for risk management (Anguelovski et al. 2016).

The literature on resilience planning is increasing, signifying the interest of planning scholars and practitioners in the topic. However, this literature is so far lacking a systematic review and evaluation of resilience plans. We believe that such review will be useful as it can offer a window into the vision, goals, processes, and implementation strategies that different cities are adopting to fortify their resilience. In what follows, we describe our inquiry of resilience plans in 37 US cities.

An Empirical Inquiry of US Resilience Plans

Research Design

For this study, we employed a content analysis of resilience plans adopted by US cities. We focused on all cities with populations of 250,000 or more, based on US Census population data from 2018, because we considered larger cities with more resources and planning capacity as more likely to have resilience plans. From this list, we found that 37 cities have either adopted a standalone resilience plan or incorporated resilience planning in an official planning document, such as a Climate Action Plan (Table 1). It is interesting to note that the majority (17) of cities that have a standalone plan were funded by the Rockefeller Foundation's *100 Resilient Cities*

initiative, while only five additional cities that were not funded by the Rockefeller Foundation have developed such a plan. All plans were issued under the auspices of a public-sector agency (typically a planning department, with the plans developed by planning staff, consultants or both).

We analyzed the content of these 37 resilience plans to assess, compare, and draw conclusions on a number of plan aspects. These included a plan's overall vision, goals, equity concerns, public participation, and implementation processes. Our analytical framework was based on previous studies, such as Southworth (1998) and Linovski & Loukaitou-Sideris (2013), which analyzed urban design plans. An analysis of the 37 plans' overall vision for the future of their cities was based on keyword frequencies embedded in their vision statements. For those cities which offered an explicit definition of resilience in their plans, we determined whether that definition most closely adhered to an ecological or engineering resilience approach. Additionally, we coded and categorized the goals of each plan as either social, environmental, governance-related, physical, or economic. We further developed sub-categories for the goals based on the overarching theme of each goal. At times, goals had more than one theme, in which case we placed that goal in more than one category. For example, San Francisco's goal to build strong, healthy, and connected neighborhoods, a goal whose implementation involves both social considerations and physical urban changes, was classified under both the "social" and "physical" categories.

To determine the extent to which cities address equity in their resilience plans, we build on the tripartite equity framework adopted by Meerow et al. (2019). Our analysis further detailed the different ways in which participation and public engagement was incorporated in the writing of these plans, and we classified plans in four different categories based on the extent of outreach

and the willingness of plan authors to allow public participation to inform adopted goals and strategies. We further noted the types of public participation referenced in the plans as part of their plan development process. Where plans did not make any such reference, or that reference was unclear, we contacted the city agencies or individuals listed in the plans to find out whether there was a public engagement component in the plan development process and, if so, what the nature of that engagement was. We should note that Norton (2008) warns that there is a danger of using the final product (the plan) to evaluate the plan-making process, especially with regards to public participation--as some participatory processes may not be listed in the examined documents. Despite this, he finds that there is considerable value in assessing the participatory content of plans.

Limitations to this analysis stem from the manner through which visions, goals, and equity concerns are articulated in the plans. For example, while our goal categorizations were based on the themes presented in the goals, several goals were too broad to be embedded in a single appropriate classification as they contained wide-ranging aspirations that required multiple categorizations. Thus, where the plans acknowledged multiple anticipated benefits, either explicitly or implicitly through their context, these were classified in all applicable categories. However, where goals were explicit in their anticipated effects, we did not apply our own interpretation of possible other benefits.

Findings

Vision

A review of the 37 resilience plans shows that their overall strategies and visions are quite similar in their breadth, encompassing both environmental and social issues. Themes

related to the environment and climate change - from adaptation strategies to sustainability and emissions reductions - are the most frequently cited in these vision statements, while social themes related to community, safety, strength and health are almost as frequent. Aspirations of achieving equity and justice represent the next most prevalent theme, but related concerns involving disparities, inequalities, and vulnerabilities receive much less attention (Figure 2-1).

Notably, the *100 Resilient Cities* plans funded by the Rockefeller Foundation emphasize social goals more than environmental ones, and the majority of them reference inclusivity and equity in their vision statements. Though plans from cities that are not part of the *100 Resilient Cities* also acknowledge social issues in their overall vision, this was tangential to the otherwise clear emphasis on sustainability, mitigation and adaptation strategies, and environmental concerns.

The majority of resilience plans surveyed incorporate equity into their vision statements to varying degrees, and a number of those take on social justice as a central component. Several cities note that a more equitable society, in which poverty and inequality are alleviated, would lead to a more resilient city, but few vision statements address the systems and policies through which such inequalities manifest. Notable exceptions include Tulsa's vision, which states that its resilient future depends on confronting its history of discrimination and inequality, and Oakland's vision, which is a call to action for rethinking government's relationship to underserved residents.

Definitions

As discussed earlier, resilience may be defined as an ecosystem's ability to withstand an external disturbance by returning to its previous state prior to the disruption, referred to as engineering resilience; alternatively it can be defined as an evolution into a new state, referred to

as ecological resilience (Holling 1996). As related to resilience planning, a resilient system is a function of its ability to withstand external disturbances, as measured by its return to those relationships that defined it previously or transforming and reorganizing those sets of relations. How a city defines resilience, or more specifically whether it finds opportunity in the transformative implications of adopting an ecological resilience approach, may have implications for the future vision of the city and the goals and implementation strategies needed to achieve that vision.

Six US cities, all funded by the *100 Resilient Cities* initiative, incorporate an ecological resilience view into their plans by acknowledging the redistributive potential of their proposed actions (Table 2). We make this determination if the definition of resilience outlined in the plan addresses the interdependencies of relationships within urban systems with an emphasis on social and environmental vulnerabilities. Ecological resilience is implied through a city's willingness to explicitly address systemic challenges, such as Los Angeles's claim that resilience also entails "thoughtfully examining how all of our systems, communities, and vulnerabilities intersect and affect one another" (Los Angeles 2018: 5), and New Orleans' expansion of the term to include "striking a balance between human needs and the environment that surrounds us while also combating the chronic stresses of violence, poverty, and inequality" (New Orleans 2015: 2).

Approximately two-thirds of all cities (24) deploy engineering resilience, emphasizing the need for a city to not only bounce back from a disturbance but to grow regardless of anticipated disturbances. For example, San Francisco notes that resilience is "the capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and grow, no matter what kinds of chronic stresses and acute shocks they experience" (San Francisco 2016: 20), while Atlanta strikes a similar description by defining resilience as "the capacity of

individuals, communities, institutions, businesses and systems within a city to survive, adapt and grow, no matter what kinds of chronic stresses and acute shocks they experience" (Atlanta 2017: 40). Seven cities do not define resilience in their plans at all. None of these cities is part of the *100 Resilient Cities* initiative, and only one city has a standalone resilience plan.

Goals

The building or strengthening of responsive social networks and institutions, measures that foster the economic and ecological health of a city, and the physical transformations required to mitigate and adapt to a changing climate are all components for understanding city resilience. In the last decade, many US cities have been busily creating resilience plans that wish to respond to a number of goals. In our analysis, we classify resilience plan goals into five categories: social, environmental, physical, and economic. Social goals involve those that foreground the resilience of social networks at various scales, from individuals to neighborhoods to communities (such as Tulsa's goal to prepare all residents, particularly socially and economically vulnerable populations, to weather adverse events) to institutions and agencies (such as El Paso's aim to enhance the practice of resilience within the organizational structure and operations of the city). Environmental goals typically include larger-scale planning efforts (such as Pittsburgh's goal to achieve long-term environmental sustainability through wise stewardship of natural resources, improved resource management, and a reduced carbon footprint), as well as strategies directed at specific resource management (such as Madison's goal to improve groundwater and water drinking quality). Physical goals require physical transformations, which are at times stated clearly within the goal (for example Cincinnati's goal to have a park or outdoor recreation site within a 10-minute walk of every resident), while at other times are implied (for example Los Angeles's goal to strengthen regional systems and

fortify critical infrastructure). Economic goals specifically target the economic prosperity of businesses and the workforce (for example, Boston's goal to link Bostonians to jobs, entrepreneurship, and financial empowerment tools) or the enhancement of public investments (for example, Oakland's aim to maximize the value of collective infrastructure investments). Finally, governance goals involve forms of civic action such as outreach, education, and planning efforts for community and government preparedness.

Social Goals

Interestingly, the most frequently cited goals are social in nature, accounting for a quarter of all goals listed in the plans (Figure 2-2). Social resilience involves the capacity of individuals or communities to anticipate, resist, adapt to or recover from adversity. Though this capacity is arguably dependent on environmental factors, social institutions, and the larger systems these are embedded in, social resilience is primarily focused on the human capacity to resist and persevere when facing risk (Obrist et al. 2010). Rather than address a specific environmental threat, such as drought or flooding, or a physical one, such as loss of critical infrastructure due to a natural disaster, social resilience focuses instead on the coping, adaptive, and transformative capacity of social entities, regardless of the scale and timeframe at which risks materialize (Keck and Sakdapolrak 2013).

Approximately a third of the social goals listed in the plans address some aspect of equity, but within the equity sub-category the focus of these goals varies greatly (Table 3). The majority of them either talk about equity in general or address economic and workforce equity. The rest of the equity goals are almost evenly distributed among other concerns, ranging from a focus on preparing vulnerable people to climate risk exposure, as described in Tulsa's plan, to

integrating resilience principles into government in order to prioritize vulnerable populations, as listed in the Los Angeles plan (Figure 2-5).

The lack of goals that emphasize equity across all categories is not commensurate with the emphasis on equity and inclusion in the plans' overall vision statements. Though race and ethnicity, as a measure of disparities, feature prominently in the visions for a resilient future, they do not take on a central role by cities when formulating resilience goals.

The second greatest emphasis of social goals relates to health and wellness. This includes not only the broader wellbeing of citizens but also their access to healthcare and asthma-related health concerns. As the link between human health and the distributional inequity of environmental toxicity is clearly established (Hofrichter 2004), and since public health and wellbeing can be considered as social goals, it is surprising that corresponding references to health equity are minimal and references to equity in relation to air quality, pollution, and environmental toxicity are also infrequent.

The third largest category of social goals involves promoting community collaboration and connectedness. Goals under this category aim to strengthen community resilience through dialogue, communication, and collaboration in order to effectively prepare for and respond to current and future risks.

Environmental Goals

The second-most frequently cited goals fall under the environmental category, indicating that resilience is largely an environmental concern. This is in line with the understanding that the wellbeing of social systems relies to a great extent on natural resources and, in turn, on the resilience of environmental ecosystems (Adger 2000). The frequency of environmental goals

may also reflect the fact that many of the threats and stresses that we ought to be resilient against are environmental in nature, such as floods and drought. The majority of the goals that fall under this category, however, are mitigation strategies as opposed to adaptation ones. Thus, the most frequent reference involving a low-carbon future is the reduction of greenhouse gas emissions that range in scale from green building standards to transitioning to renewable energy sources.

A distant second concern addresses water, with a clear focus on changing water management practices, such as Madison's goal to increase water conservation efforts and Buffalo's plan to conduct community-scale water management studies. Preserving and strengthening water infrastructure is less important, as is an emphasis on drinking water quality. Themes of equity, disparities, and access receive very little attention in relation to environmental concerns, implying that planning for specific resources, and related infrastructures, does not incorporate considerations of social vulnerabilities and inequalities.

Governance Goals

Vulnerability encompasses exposure to either short-term or pervasive stresses, and is a function of how well social and institutional networks can be mobilized to help communities rebuild or adapt (Patterson et. al. 2010). Over one fifth of all goals are dedicated to civic action in the form of outreach, education, and planning efforts for community and government preparedness. Notably, nearly half of all governance-related goals are aimed at public education, training, planning, and campaigning strategies meant to strengthen the resilience of individual citizens and communities (Table 3).

Critics have argued that this emphasis on individual and community resilience can be a means for diverting attention from the role and responsibility that government agencies have to

support citizen welfare (Joseph 2013). In this context, resilience is understood as a function of individual decision-making, which collectively can lead to a stable social system that can withstand a disruption, as opposed to fostering and enabling change that can lead to an equitable future, and which is supported through governance (Handmer and Dovers 1996).

Just over a third of these governance goals address changes to governmental planning processes that are mainly directed at developing climate-related plans or at incorporating resilience practices within various levels of governance. Related goals for incorporating data and climate science in decision-making processes are emphasized less. This sub-category also includes goals that promise development of quantification metrics that are aimed at transparency in how risks and vulnerabilities are assessed and managed. A distant last sub-category captures goals that expand agency actions and relationships through new partnerships and programs at various scales of governance.

Physical Goals

Almost one fifth of all goals refer directly to, or imply, the physical transformation of cities . Of these, infrastructure goals prevail, numbering more than half of all goals in this category. The term infrastructure is used throughout the goals listed under this category in wide-ranging ways, at times referring to green infrastructure projects, transportation (see Figure 2-3), or simply referencing the need to strengthen "critical" infrastructure.

Transportation infrastructure is the most frequently-cited infrastructure goal, and targets expansion of active modes of travel as well as increases in public transit ridership (Table 3). Green infrastructure goals follow, and most frequently call for increases in urban canopy/forestry and greenspace. Some plans incentivize green infrastructure projects, through strategies that

encompass both decentralized approaches, such as incentivizing green roof construction, as well as large-scale centralized infrastructural upgrades, such as urban green corridors. The benefits of green infrastructure projects depend on local conditions, often requiring the balance of equity and environmental considerations (Hansen and Pauleit 2014). References to equity in relation to infrastructure are relatively few, however, indicating less concern over the equity impacts of infrastructure expansion projects.

There is no corresponding clear definition for what constitutes "critical" when the term is deployed in a "critical infrastructure" goal. This is in part because what is considered "critical" differs among cities, where critical infrastructure is defined as the physical assets essential for the ongoing functions of a society (Etinay, et al. 2017). Jersey City, for example, aims to protect critical infrastructure, while Los Angeles's goal to prepare a responsive city involves establishing post-disaster restoration targets for critical infrastructure. Given the specificity of place and site in defining what constitutes critical infrastructure, then, the equity implications are important to consider as they, too, are unique to that site and place. The lack of emphasis on equity related to the physical transformations required to meet stated resilience goals is not only a missed opportunity but also separates the planning and implementation of those goals from their impact on social justice.

Just over a quarter of all the physical goals are concerned with the green design of buildings and neighborhoods, both in terms of retrofitting existing buildings and establishing guidelines for new ones. These goals range in scale, from efforts such as Memphis's reduction of household energy loads, to larger regional adaptation strategies, such as Boston's goal to establish neighborhood-based resilience plans.

Economic Goals

Economic goals appear in the smallest numbers in the plans, and are primarily focused on increasing green jobs, promoting green businesses, and soliciting investments for green growth (Table 3). Almost in equal numbers are goals that also promote growth and industry expansion, but those goals do not incorporate green practices, a surprising finding given the emphasis on transitioning to a low-carbon future under the environmental goals category. Approximately, one fifth of the goals involve increasing employment opportunities, with some attention to local businesses and talent.

Equity

Cities approach equity in different ways in relation to their resilience plans, embedding references to equity in their visions statements and goals and implying concerns over equity through their plan development process. For most cities, direct or indirect references to equity appear in a number of plan components. Whether and how equity is defined in the resilience plans has implications for the visions and goals that cities advocate for. Several cities address equity explicitly by defining it in specific ways, and equity concerns may appear in more than one category based on their definition.

In terms of how equity is defined, we found that the plans most frequently cite and understand equity as distributional (Table 4). Only two cities, Indianapolis and Anchorage, address procedural justice when defining equity in their plans. However, attention to participatory processes through public engagement is prominent in a majority of the cities, even when equity is not defined explicitly in the plans as participatory. We discuss the participatory nature of the plans in the next section of the paper.

In our analysis, we expanded the definition of recognition equity by incorporating the explicit acknowledgment of racial disparities as a product of systemic and active disinvestment from marginalized populations. We found five cities, four of which are part of the *100 Resilient Cities* program, whose definitions of equity in their plans incorporate the need to recognize and address the systems by which inequalities are entrenched and perpetuated. The Chicago plan identifies racism and racial equity as a priority area for resilience. The Dallas plan discusses the need to address the interconnected policies and institutional practices that perpetuate poverty and inequality. Indianapolis also acknowledges "the inequities and disparities that some of community members face from historical and systemic discrimination, exclusion, marginalization, exploitation, underrepresentation and disinvestment (Indianapolis 2018: 12). Washington DC recognizes government as an actor in "institutional and systemic biases that intentionally and unintentionally excluded certain people based on race, ethnicity, gender identity, sexual orientation, or other aspect of identity" (Washington DC 2019: 17). Lastly, Louisville's equity definition resulted from a participatory process that defined key focus areas, where "participants identified inequity as one of Louisville's major challenges recognizing the impact of redlining, urban renewal and systemic economic exclusion based on race and how these failed policies and practices led to a segregated and divided city" (Louisville 2019: 21). While several other cities make reference to racial equity specifically, such as Boston, if larger systems, policies, and networks that lead to inequities aren't also assessed and reconfigured, the cities' concern is limited to equitable distribution at best.

Participation

We categorized plans in one of four categories, from most to least extensive public engagement (Table 5), based on the extent of community outreach and public involvement in their plan development process, as evidenced by written descriptions of this process in the plans themselves. While the categories we developed are based on the level and extent of participation in the planning process, plans that were classified as having some level of public engagement may also include certain components developed through top-down planning approaches.

The type of public participation that most cities pursued involved citizen input and various plan oversight processes (Table 6). Citizen input was largely gathered through community surveys, while the major component of oversight in plan development involved stakeholder and community workshops on specific topics. Reference to public meetings, such as town halls and public hearings, was less frequent, and in-person meetings with community groups or individual community members was the least frequent public participation method.

The majority of the plans (21) describe an extensive participatory process that engaged the public actively and through a variety of communication channels (Table 5). Notably, two-thirds of these plans were funded by the *100 Resilient Cities* initiative. These plans also described that public input directly influenced, to varying degrees, the vision, goals, and implementation strategies developed in the plans. In developing New York's resilience plan, for example, the plan authors met with over 1,300 residents, advocacy groups, and elected officials, surveyed 7,500 citizens online and 800 by phone, and worked with 125 representatives from over 70 city agencies, among other strategies. In other instances cities organized groups with the sole purpose of engaging with the public. Atlanta's extensive outreach efforts, for example, involved two phases, the first of which solicited input from over 7,000 residents in developing a

"Preliminary Resilience Assessment." In the second phase the Chief Resilience Office led five working groups, whose members were nominated by the public, to further develop key areas for research and initiatives that would improve upon the initial resilience assessment.

Six cities developed plans that also included a large public engagement component, half of which were part of the *100 Resilient Cities* initiative, but the link between that engagement process and the final plan goals and strategies was not stated or clear (Table 5). The remaining cities were placed in the last two categories, where public participation was either sporadic or not addressed, or the process of stakeholder selection and engagement was unclear. Despite this, we note that the planning processes for the development of these resilience plans included significantly more venues and types for citizen input than the participatory processes for the development of urban design plans in the US observed in Linovski and Loukaitou-Sideris (2013).

Implementation

In order to meet the goals outlined in resilience plans, cities turn to implementation strategies. The resilience plans reviewed typically enumerate strategies for each specific goal; these strategies are wide-ranging in theme and scope. Of all the strategies (2,028) listed in the plans analyzed, there are five times as many policy-oriented strategies (1,652) than design-driven strategies (376). We define design-driven strategies as those which imply or outright require a physical transformation, regardless of scale. For example, Memphis's goal to increase resilience in the energy sector contains implementation strategies that range from green building standards to expanding the urban tree canopy.

Among the design-oriented strategies, upgrading and guiding the development of existing neighborhoods, along with green infrastructure strategies, accounted for over half of all strategies involved (Table 7). Neighborhood upgrades are quite diverse both across city plans and within city strategies. Reno's goal to "create lively, low-carbon neighborhoods," for example, includes broader implementation strategies that involve generating a mix of uses for walkable centers coupled with specific interventions aimed to increase access to healthy foods in underserved communities. Similarly, Houston's goal to create "safe and equitable neighborhoods" involves strategies that touch on mitigating extreme heat through tree-planting and heat island mapping campaigns, but also incorporate broader implementation strategies such as investing in transit-oriented and trail-oriented development, and incentivizing infill development in order to safeguard greenfields. A number of plans suggest neighborhood upgrades and improvements through strategies that will create 'lively' places, such as Pittsburgh's goal to "support a mix of uses in neighborhoods and communities that serve multiple needs" (see Figure 2-4).

Implementation strategies that explicitly address disaster response accounted for only 2% of all strategies. The rest of the strategies mainly involve disaster prevention goals, such as green infrastructure projects to mitigate flooding and guiding the development of neighborhoods. In terms of physical transformations, the emphasis on the overall well-being of inhabitants through guiding existing neighborhood retrofits and new development, as well as on green infrastructure projects, is presumably the main, albeit indirect, way that cities aim to recover and withstand disturbances. The vast majority of these particular strategies, however, are characterized by ambiguous and abstract terms and phrases, such as St. Paul's strategy to "incorporate resilience into the capital improvement planning process," Honolulu's strategy to "empower neighborhoods to co-design safe and complete streets," and Virginia Beach's strategy to

"develop asset management plans for critical infrastructure." Where plans use abstract terms without operationalizing them, such as "*critical infrastructure," "empower neighborhoods,"* and "*incorporate resilience*," the effectiveness of implementation strategies is limited, at best.

Only eight cities indicate sources of funding for their implementation strategies. Of these, two cities (New York and New Orleans) are the most specific, listing a funding source for each implementation strategy. Two additional cities (Phoenix and Madison) list general funding sources, such as 'grants' and 'private funds' for large groupings of implementation strategies based on the goals they address. The remaining four cities (Oakland, Tulsa, Miami, and Louisville) identify whether a particular implementation strategy is funded already, but do not identify how the remaining strategies will be funded. Finally, two cities (Cincinnati and St. Petersburg) provide cost breakdowns but do not identify funding sources.

Conclusion

The quick proliferation of the term *resilience* in planning invokes critical questions of how resilience is defined and understood, and the implications of its various framings for spatial and social systems. In assessing existing policies and driving new ones, resilience as a framework gained even more popularity with the Rockefeller Foundation's initiative of funding cities worldwide to develop resilience plans. In particular, the *City Resilience Framework* developed by Arup, a global engineering firm, with support from the Rockefeller Foundation served as a framework for cities to approach the goals and strategies that comprise their resilience plans (see Figure 2-6). Nevertheless, our analysis shows that the term remains slippery, encompassing a broad and wide-ranging set of goals largely comprised of abstract references to social and environmental equity, and whose effectiveness is therefore diminished.

In our study, cities that are part of the Rockefeller Foundation's *100 Resilient Cities* initiative far outnumber the cities whose plans are funded by other sources. The *100 Resilient Cities* plans tend to be far more extensive in terms of the goals and strategies listed. They are also more far-reaching in their scope, presumably because of their reliance on the *City Resilience Framework*, which contains four major themes to help guide plan authors: leadership and strategy, health and wellbeing, infrastructure and environment, and economy and society.

Our study finds that social and environmental goals comprised exactly half of all the goals listed in the plans, indicating that cities' attempts to address future unpredictability is largely a function of social stability and natural assets management. Within the environmental category, greenhouse gas mitigation measures far outweigh all other goals. Typically, greenhouse gas emissions are measured by sector and on a city-wide basis, so the emphasis on reducing emissions tends to bypass a discussion on the distributional impact of localized and differential pollution effects among different populations within cities. Within the social goals category *equity* was referenced frequently, but received little attention as a percentage of the overall number of goals listed. On the question of what, specifically, an equitable goal entails, most cities were not specific in how equity would be achieved as a goal or what aspect of urban life equity applies to.

Insofar as ecological resilience implies a transformation from one state to another, characterized by a different set of relationships and hierarchies, we also recognized that several goals addressed governance and, by extension, the possibility of transforming social structures by addressing government agencies and institutional relationships. The majority of these goals seek to empower community leadership without addressing how leadership in and of itself is a more equitable distribution of power structures and decision-making processes. This reinforces

the use of resilience as a strategy to shift responsibilities for withstanding unpredictable and extreme social and environmental shocks and stresses from government to the community, and distributing risk to the individual (White and O'Hare 2014).

As a proxy for operationalizing the transformative potential of resilience, we assessed equity beyond its incorporation into plan goals. We recognize that equity is defined and understood in different ways and in different contexts, and evidence of this variability was found in the plans. Insofar as equity can be implied through public engagement in each plan's development, public engagement dominated the majority of the plans. However, it was not clear how the participatory nature of the plans translated into the goals and strategies that were outlined in them.

The variability surrounding equity was also evident in how cities defined the term in their plans. By far, cities define equity as primarily a distributional issue, concerned with how environmental and social amenities and harms are distributed and accessed. Over half of the cities that focus on a distributional assessment of equity are *100 Resilient Cities* ones. This is in line with the Meerow et. al. (2019) finding of a similar assessment of equity as discussed in a select *100 Resilience Cities* plans. We found that only two cities discussed equity as involving procedural concerns, despite the large number of cities whose plans described a fairly involved public outreach component. This discrepancy may, at least in part, explain the desire to describe a lengthy participatory process without subsequently having a clear path from public input to policy in the plans, as discussed above.

Resilience can strengthen adaptive planning by emphasizing multiscalar considerations of adaptation and mitigation strategies, but the findings in this study show that the implementation of resilience in urban settings remains unclear. This lack of clear strategy is exacerbated by the

fact that planning efforts that previously relied on a 'predict and prevent' model now face the unpredictable nature of climate events. The promise of resilience planning is therefore in accounting for unknown futures and needs across multiple scales of governance and geographies, while insisting on a just present and future. The physical urban transformations suggested by implementation strategies, however, are largely centered on broad and wide-ranging neighborhood development endeavors that reference improvements and resident well-being, with significantly fewer strategies incorporating concrete steps towards more equitable changes to urban form. Very few cities discuss how the distributional impact of past policies should lead to targeted policies in specific neighborhoods or for specific populations. Implementation strategies that focus on, for example, energy reductions or green infrastructure projects as a way to reduce greenhouse gas emissions are not discussed in conjunction with the equitable impact as a result of implementing such projects.

Equity, community, and strength, as well as references to vulnerabilities, are terms that dominate vision statements. Though equity is discussed in the plans, it is done so in relative isolation of the goals and implementation strategies outlined in the plans. This is somewhat unsurprising given that most of the plans rely on an engineering resilience definition, privileging a return to a previous state and normalizing risk rather than employing the term's transformative potential.

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Table 1. Resilience Plans Surveyed

	U.S. Cities	*Population (2018 Census)*	*100 Resilient Cities*	*Plan Type/Name*
1	New York, NY	8,398,748	Yes	Resilience Plan
2	Los Angeles, CA	3,990,456	Yes	Resilience Plan
3	Chicago, IL	2,705,994	Yes	Resilience Plan
4	Houston, TX	2,325,502	Yes	Resilience Plan
5	Phoenix, AZ	1,660,272	-	Community Leader Reference Book
6	Dallas, TX	1,345,047	Yes	Resilience Plan
7	Austin, TX	964,254	-	Comprehensive Plan
8	Columbus, OH	892,533	-	Climate Adaptation Plan
9	San Francisco, CA	883,305	Yes	Resilience Plan
10	Charlotte, NC	872,498	-	Strategic Energy Action Plan
11	Indianapolis, IN	867,125	-	Sustainability & Resilience Plan
12	Washington, DC	702,455	Yes	Resilience Plan
13	Boston, MA	694,583	Yes	Resilience Plan
14	El Paso, TX	682,669	Yes	Resilience Plan
15	Nashville, TN	669,053	-	Resilience / Adaptation Plan
16	Memphis, TN	650,618	-	Climate Action Plan
17	Louisville, KY	620,118	Yes	Resilience Plan
18	Fresno, CA	530,093	-	General Plan (Ch. 7: Resource Conservation & Resilience)
19	Atlanta, GA	498,044	Yes	Resilience Plan
20	Kansas, MI	491,918	-	Climate Resilience Strategy +
21	Miami, FL	470,914	Yes	Resilience Plan
22	Long Beach, CA	467,354	-	CAAP Adaptation Actions
23	Virginia Beach, VA	450,189	-	SLR Policy Adaptation Report
24	Oakland, CA	429,082	Yes	Resilience Plan
25	Minneapolis, MN	425,403	-	2040 Comprehensive Plan
26	Tulsa, OK	400,669	Yes	Resilience Plan
27	New Orleans, LA	391,006	Yes	Resilience Plan
28	Cleveland, OH	383,793	-	Climate Action Plan
29	Honolulu, HI	347,397	Yes	Resilience Plan
30	St. Paul, MN	307,695	-	Climate Action & Resilience Plan +
31	Cincinnati, OH	302,605	-	Green Cincinnati Plan
32	Pittsburgh, PA	301,048	Yes	Resilience Plan
33	Anchorage, AK	291,538	-	Resilient Anchorage Roadmap +
34	Jersey City, NJ	265,549	-	Resilience Plan +
35	St. Petersburg, FL	265,098	-	Integrated Sustainability Action Plan
36	Madison, WI	258,054	-	Sustainability Plan
37	Buffalo, NY	256,304	-	Resilient Buffalo Niagara +
38	Reno, NV	250,998	-	Sustainability & Climate Action Plan

+ Standalone resilience plan not part of the *100 Resilient Cities* initiative.

Table 2. Resilience Definitions in US Resilience Plans

Ecological Resilience	Engineering Resilience	Undefined
Los Angeles*	New York*	Charlotte
Dallas*	Chicago*	Memphis
Boston*	Houston*	Long Beach
El Paso*	Phoenix	Virginia Beach
Oakland*	Minneapolis	St. Paul+
New Orleans*	Austin	Madison
	Columbus	Reno
	San Francisco*	Nashville
	Indianapolis	
	Washington*	
	Louisville*	
	Fresno	
	Atlanta*	
	Kansas+	
	Miami*	
	Tulsa*	
	Cleveland	
	Honolulu*	
	Cincinnati	
	Pittsburgh*	
	Anchorage+	
	Jersey City+	
	St. Petersburg	
	Buffalo+	

***** *100 Resilient Cities*
+ Standalone resilience plan

Table 3. Goal Components in U.S. Resilience Plans

	No. of Goals	Percentage
Social	141	
Equity	46	33%
Equity (unspecified)	*13*	
Economic/Workforce Equity	*11*	
Exposure to Extreme Events Equity	*5*	
Green Infrastructure Equity	*4*	
Racial Equity	*3*	
Infrastructure Equity	*2*	
Health Equity	*2*	
Energy Equity	*2*	
Transportation Equity	*2*	
Government Planning Equity	*1*	
Education Equity	*1*	
Health, Wellbeing, & Safety	41	29%
Health & Wellbeing	*32*	
Safety / Crime Reduction	*9*	
Connectedness/Collaboration	29	21%
Culture	9	6%
Affordability	8	6%
Education	5	4%
Access to Technology	3	2%

	No. of Goals	Percentage
Environmental	129	
Reduction of GGE / Promotion of Green Energy	49	40%
Water	26	21%
Management Practices	*20*	
Infrastructure (Stormwater & Wastewater)	*4*	
Drinking Water	*2*	
Flooding	16	12%
Waste	13	11%
Air Quality	9	7%
Ecological Health / Natural Resources	7	5%
Extreme Heat Mitigation	2	2%
Infrastructure (Modernization / Expansion of)	1	1%

	No. of Goals	Percentage
Governance	103	
Public Outreach & Education / Community & Leadership Cultivation	47	45%
Management & Planning Processes	37	35%
Incorporation of Data, Science, and Quantification	11	10%
New Programs & Partnerships	10	10%

	No. of Goals	Percentage
Physical	95	
Infrastructure	55	58%
Transportation Infrastructure	*23*	
Green Infrastructure	*17*	
Infrastructure ('critical' or unspecified)	*15*	
Building & Neighborhoods	23	24%
Housing	10	10%
Urban Farming/Agriculture	4	4%
Land Use	3	3%

	No. of Goals	Percentage
Economic	61	
Green Jobs, Green Businesses, & Green Investments	19	31%
Growth, Industry Expansion, & Investments	16	26%
Workforce Readiness & Expansion	13	21%
Financial Empowerment	7	11%
Small / Local Business Development	6	10%

Table 4. Equity in US Resilience Plans

Recognition	Procedure	Distribution	Undefined or Absent
Chicago *	Indianapolis	New York *	Phoenix *
Dallas *	Anchorage	Los Angeles *	El Paso *
Indianapolis		Houston *	Memphis
Washington *		Columbus	Miami *
Louisville *		San Francisco *	Jersey City +
		Charlotte	Buffalo +
		Indianapolis	Minneapolis
		Boston *	Austin
		Louisville *	Fresno
		Kansas City +	
		Atlanta *	
		Long Beach	
		Virginia Beach	
		Oakland *	
		Tulsa *	
		New Orleans *	
		Honolulu *	
		St. Paul +	
		Cincinnati	
		Pittsburg *	
		St. Petersburg	
		Madison	
		Reno	

* *100 Resilient Cities*
+ *Standalone resilience plan*

Table 5. Planning Process / Participation Levels in US Resilience Plans

Public engagement extensive; public input directly affects goals/strategies.	**Public engagement extensive; no stated link between public input and goals/strategies.**	**Public engagement sporadic or not comprehensive; unclear process for stakeholder selection and engagement process.**	**Either a top-down process or plan does not describe the process of development.**
New York *	San Francisco *	Charlotte	Fresno
Los Angeles *	Houston *	Long Beach	Virginia Beach
Chicago *	Indianapolis	Madison	Jersey City +
Dallas *	El Paso *		Columbus
Austin	Memphis		Phoenix *
Washington *	Reno		Anchorage +
Boston *			Buffalo +
Louisville *			
Atlanta *			
Kansas +			
Miami *			
Oakland *			
Tulsa *			
New Orleans *			
Cleveland			
Honolulu *			
St. Paul			
Cincinnati			
Pittsburgh *			
St. Petersburg			
Minneapolis			
Nashville			

* *100 Resilient Cities*
+ *Standalone resilience plan*

Table 6. Types of Public Participation in U.S. Resilience Plans

	No. of Plans
Public Meetings	**25**
Town halls, open houses, community meetings, public hearings	21
Pop-up meetings (informational booths at community events/festivals)	4
In-person meetings (with individual residents or community groups)	**10**
Citizen Input	**42**
Community Surveys	17
Interviews	5
Focus Groups	7
Listening Sessions (for community input)	4
Input through Digital Platforms (websites, social media)	9
Plan development/oversight	**43**
Stakeholder/community workshops (on particular topics)	21
Task forces/ community workgroups	11
Steering / Oversight Committee (that includes citizen representation)	6
Citizen Advisory Committee	5
Collaborations	**27**
With other city departments and local government agencies	9
With Community-Based-Groups (CBOs) and nonprofits	6
Collaborations with academia or professional experts	7
Collaborations with the private sector/business community	5

Table 7. Design-Driven Implementation Strategies in U.S. Resilience Plans.

	No. of Strategies	Percentage
Neighborhood Upgrades	106	28%
Soft Infrastructure / Nature-Based Strategies	102	26%
Green Infrastructure	50	
Water and Stormwater Infrastructure	28	
Urban Ecosystems and Land Preservation	24	
Transportation	38	10%
Building Efficiency and Retrofit	34	9%
Housing	29	8%
Tree Canopy	21	6%
Flooding	17	5%
Urban Agriculture	13	3%
Extreme Heat	9	2%
Disaster Response	6	2%
Coastal Defense	3	1%

Figure 2-1. Word Cloud of Vision Statement Terms in US Resilience Plans

Figure 2-2. Goals in US Resilience Plans

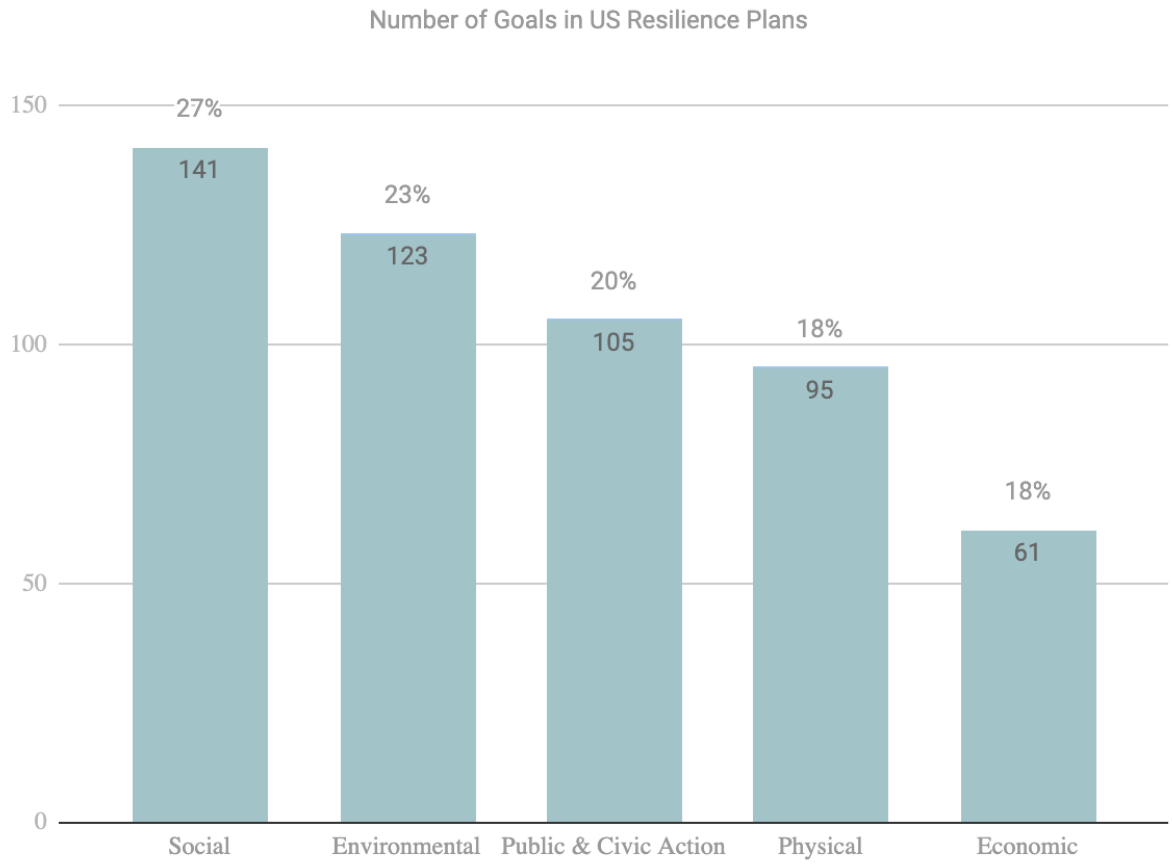


Figure 2-3. New York City's Transportation Goal, Initiative 3 to "Plan for Major Expansions of the Transit Network"

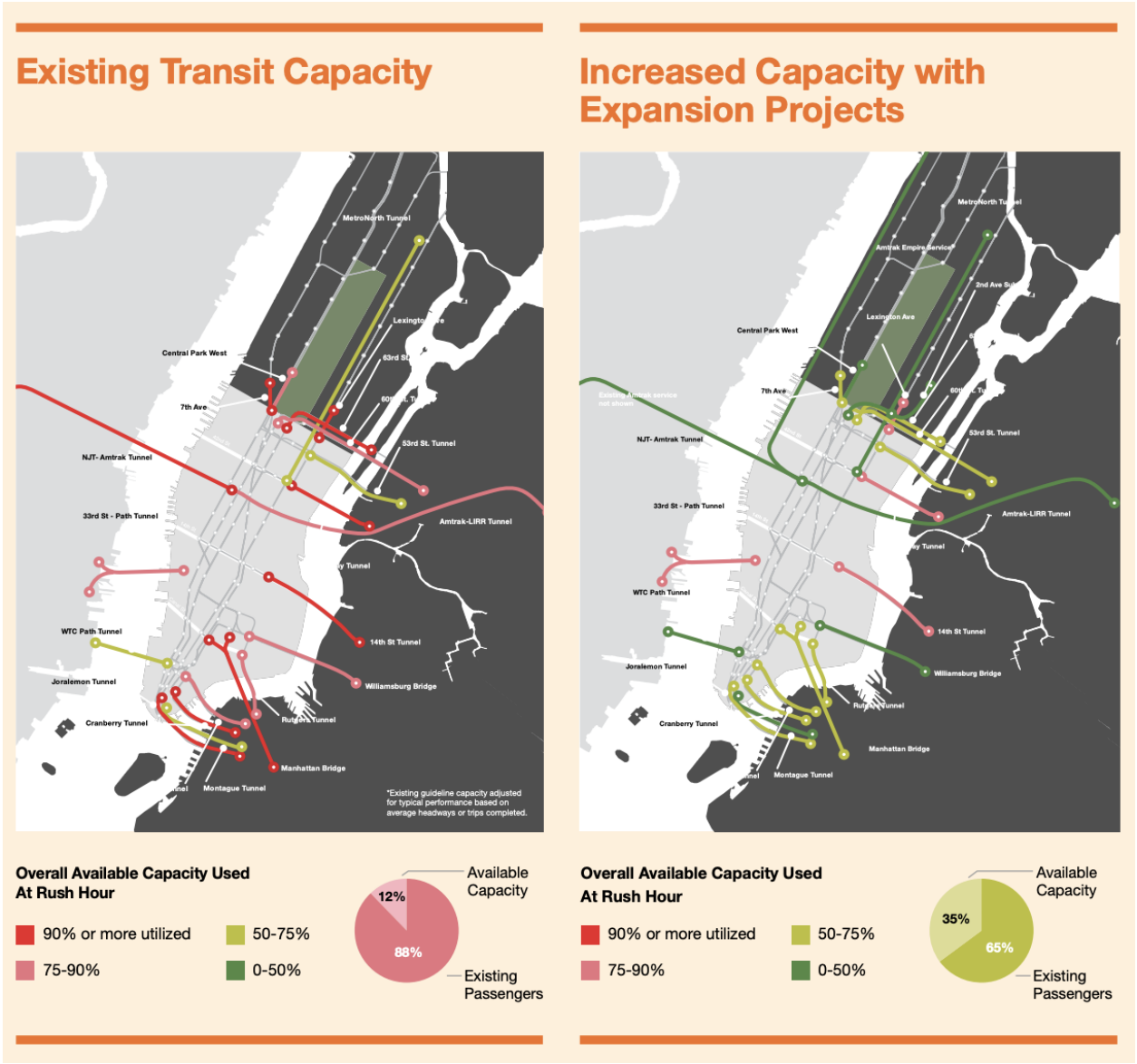


Figure 2-4. Pittsburgh's Implementation Strategy to "Support a Mix of Uses in Neighborhoods and Communities that Serve Multiple Needs"

Support a mix of uses in neighborhoods and communities that serve multiple needs

PITTSBURGH IS MADE UP OF 90 DISTINCT AND OFTEN DISCONNECTED NEIGHBORHOODS AT VARIOUS STAGES OF NEGLECT, VACANCY, REDEVELOPMENT, AND STABILITY. RESIDENTS OF MANY NEIGHBORHOODS AND OF VARIOUS SOCIOECONOMIC POSITIONS FEEL STRONGLY CONNECTED TO ONE ANOTHER AND HAVE A SENSE OF NEIGHBORHOOD PRIDE. ALL NEIGHBORHOODS IN THE CITY SHOULD BENEFIT FROM ACCESS TO HOUSING, COMMERCIAL AMENITIES, JOB CENTERS, AND GREEN SPACE.

FEATURED SUB-ACTION: Complete Streets
LEAD: City of Pittsburgh

In April 2015, Mayor Peduto signed an executive order calling for a city-wide policy on Complete Streets and an adoption of design guidelines. After an internal policy workshop and public meeting, the City drafted a policy to help redesign streets to better meet the needs of all users. This policy will work in tandem with other ongoing comprehensive planning efforts of the Department of City Planning, including the Mobility Plan.

STRESSES & SHOCKS ADDRESSED

Inequity
Aging infrastructure
Environmental degradation
Climate change impacts

ACTIONS FOR IMPLEMENTATION

- Designing and constructing smart and sustainable redevelopment projects
- Promoting equitable development

FEATURED SUB-ACTION: Eco Innovation District
LEAD: City of Pittsburgh

Focused on the Uptown and West Oakland communities, the Ecoinnovation District Plan will create a new model for urban growth that is inclusive, innovative, and environmentally sound. The project is the product of ongoing collaboration among Uptown Partners of Pittsburgh, Oakland Planning and Development Corporation, City of Pittsburgh, Sustainable Pittsburgh, Urban Redevelopment Authority of Pittsburgh, Port Authority of Allegheny County, and Allegheny County Economic Development, neighborhood residents and groups, universities, and other partners.

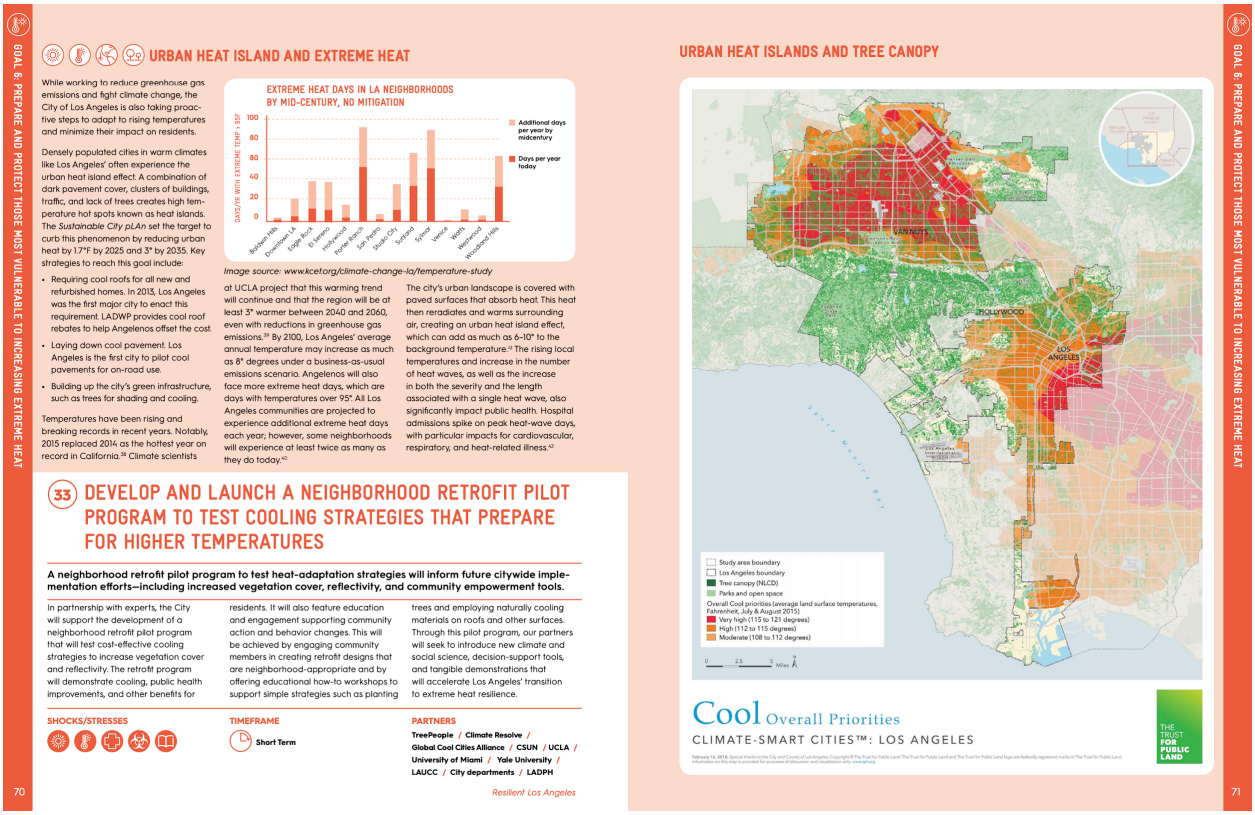
ECO INNOVATION DISTRICT UPTOWN OAKLAND

56 ONEPGH: PITTSBURGH'S RESILIENCE STRATEGY

100RC NETWORK SHARING HIGHLIGHT:
Community-led land use planning sharing with Melbourne

Melbourne, Australia's resilience strategy features an action around "community-led neighborhood renewal and development pilot projects," which brings developers and local residents together to test tools and frameworks for collaborating and sharing in decision-making, work in conjunction with academics to measure results, and contribute to a body of public guidance on participatory planning. This type of approach would promote Pittsburgh's resilience objectives related to land use planning, civic engagement, collaboration, and measurement.

Figure 2-5. Los Angeles's Goal to "Prepare and Protect Those Most Vulnerable to Increasing Extreme Heat"



GOAL 6: PREPARE AND PROTECT THOSE MOST VULNERABLE TO INCREASING EXTREME HEAT

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URBAN HEAT ISLAND AND EXTREME HEAT

While working to reduce greenhouse gas emissions and fight climate change, the City of Los Angeles is also taking proactive steps to adapt to rising temperatures and minimize their impact on residents.

Densely populated cities in warm climates like Los Angeles' often experience the urban heat island effect. A combination of dark pavement cover, clusters of buildings, traffic, and lack of trees creates high temperature hot spots known as heat islands. The *Sustainable City pLAn* set the target to curb this phenomenon by reducing urban heat by 1.7°F by 2025 and 3° by 2035. Key strategies to reach this goal include:

- Requiring cool roofs for all new and refurbished homes. In 2013, Los Angeles was the first major city to enact this requirement. LADWP provides cool roof rebates to help Angelenos offset the cost.
- Laying down cool pavement. Los Angeles is the first city to pilot cool pavements for on-road use.
- Building up the city's green infrastructure, such as trees for shading and cooling.

Temperatures have been rising and breaking records in recent years. Notably, 2015 replaced 2014 as the hottest year on record in California.[38] Climate scientists at UCLA project that this warming trend will continue and that the region will be at least 3° warmer between 2040 and 2060, even with reductions in greenhouse gas emissions.[39] By 2100, Los Angeles' average annual temperature may increase as much as 8° degrees under a business-as-usual emissions scenario. Angelenos will also face more extreme heat days, which are days with temperatures over 95°. All Los Angeles communities are projected to experience additional extreme heat days each year; however, some neighborhoods will experience at least twice as many as they do today.[40]

EXTREME HEAT DAYS IN LA NEIGHBORHOODS BY MID-CENTURY, NO MITIGATION

Image source: www.kcet.org/climate-change-la/temperature-study

The city's urban landscape is covered with paved surfaces that absorb heat. This heat then reradiates and warms surrounding air, creating an urban heat island effect, which can add as much as 6–10° to the background temperature.[41] The rising local temperatures and increase in the number of heat waves, as well as the increase in both the severity and the length associated with a single heat wave, also significantly impact public health. Hospital admissions spike on peak heat-wave days, with particular impacts for cardiovascular, respiratory, and heat-related illness.[42]

33 DEVELOP AND LAUNCH A NEIGHBORHOOD RETROFIT PILOT PROGRAM TO TEST COOLING STRATEGIES THAT PREPARE FOR HIGHER TEMPERATURES

A neighborhood retrofit pilot program to test heat-adaptation strategies will inform future citywide implementation efforts—including increased vegetation cover, reflectivity, and community empowerment tools.

In partnership with experts, the City will support the development of a neighborhood retrofit pilot program that will test cost-effective cooling strategies to increase vegetation cover and reflectivity. The retrofit program will demonstrate cooling, public health improvements, and other benefits for residents. It will also feature education and engagement supporting community action and behavior changes. This will be achieved by engaging community members in creating retrofit designs that are neighborhood-appropriate and by offering educational how-to workshops to support simple strategies such as planting trees and employing naturally cooling materials on roofs and other surfaces. Through this pilot program, our partners will seek to introduce new climate and social science, decision-support tools, and tangible demonstrations that will accelerate Los Angeles' transition to extreme heat resilience.

SHOCKS/STRESSES

TIMEFRAME

Short Term

PARTNERS

TreePeople / Climate Resolve / Global Cool Cities Alliance / CSUN / UCLA / University of Miami / Yale University / LAUCC / City departments / LADPH

Resilient Los Angeles

URBAN HEAT ISLANDS AND TREE CANOPY

Cool Overall Priorities

CLIMATE-SMART CITIES™: LOS ANGELES

THE TRUST FOR PUBLIC LAND

GOAL 6: PREPARE AND PROTECT THOSE MOST VULNERABLE TO INCREASING EXTREME HEAT

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Figure 2-6. ARUP's City Resilience Framework

THE CITY RESILIENCE FRAMEWORK (CRF)

The City Resilience Framework is a unique framework developed by Arup with support from the Rockefeller Foundation, based on extensive research in cities. It provides a lens to understand the complexity of cities and the drivers that contribute to their resilience. Looking at these drivers can help cities to assess the extent of their resilience, to identify critical areas of weakness, and to identify actions and programs to improve the city's resilience.

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Chapter 3. Downscaling Resilience from Los Angeles to Watts: Contestations, Appropriations, and Opportunities

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Introduction

In the past two decades interest in climate justice at the urban scale has become more prominent, and resilience remains a central, albeit contested, aspect of that discussion. Cities worldwide continue to adopt resilience plans, finding promise in the ability of the concept to intersect social and environmental goals with climatic concerns. What sets resilience plans apart from climate action plans is that they adopt a systems-wide approach to addressing climate change risks, and because of this the goals outlined in resilience plans may not necessarily explicitly address only climate-related impacts (Woodruff et al 2018).

Despite recent attention to resilience, how resilience scales down from plans developed at, and targeted towards, the city level to the scale of the community is a question that remains unanswered. And how that downscaling affects marginalized neighborhoods within a city more specifically, or how this act of downscaling addresses equity, is also unclear. Despite recent attention on the ways in which increasing extreme weather events affect marginalized populations, rarely do resilience plans and proposals acknowledge the historic and ongoing systems by which some communities face such risks in the first place. Taking Los Angeles (LA) as an example, this chapter discusses how resilience goals and strategies conceived of and

generated at the city level are adopted, understood, implemented, and contested at the finer scale of the neighborhood.

Considering the diversity of populations, microclimate conditions, risks, vulnerabilities, and capabilities that different communities within a city face, downscaling resilience from strategies adapted at the city level to the neighborhood will presumably take different forms. To better understand this process, I look at how residents of Watts, a community in South LA, adopt and appropriate resilience principles and goals into their neighborhood's planning efforts. Watts is a community facing multiple and intersecting vulnerabilities, but also possessing a strong identity and social networks. The question of how this community, within the larger LA landscape, adopts resilience language and towards what end is a critical one in terms of climate justice.

Climate justice is defined at multiple scales and through different frameworks: the responsibility developed nations have for the effects of their development and industrialization on developing and poorer nations; a developments-rights approach of non-industrialized nations; fostering a just transition from fossil-fuel dependence; and a specific focus on the local impacts of industrial and energy pollution (Schlosberg and Collins 2014). To understand climate justice beyond questions of distributional impacts and procedural rights, the historical and cultural context of an urban setting needs to be central. In this research I rely on this framework that a comprehensive approach to climate justice is a function of recognition at the urban scale. Though there is overlap and interdependence between redistribution and recognition justice, in that the former involves socioeconomic inequalities and the latter engages with the marginalization and nonrecognition of certain populations, recognition can be a useful analytical framework if

separated from redistribution (Fraser 1995). Doing so allows us to ask the question of how addressing recognition can achieve redistribution.

Climate justice at the urban scale should consider the idea of justice as recognition of existing, historic, and systemic inequalities so that climate change policies avoid exacerbating climate risks in vulnerable communities (Bulkeley et al. 2013). The idea of climate justice as the recognition of systemic inequalities is necessary in order to avoid implementing policies and designs that are meant to address resilience but which reinforce underlying vulnerabilities and risks faced by communities. Building on this framework, this paper focuses on how a particular vulnerable community takes on, challenges, appropriates, and deals with the principles outlined in the resilience plans adopted by their city.

Resilience in Climate Justice

The majority of early environmental justice (EJ) work, particularly from the 1980s onward, focused on the unjust distribution of environmental harms and amenities as well as the underlying racial and class structures that facilitate such unevenness (Schlosberg 2013). In more recent years, EJ scholarship began incorporating critical race studies in order to reveal environmental injustices as a function of larger pervasive racialized systems of oppression (Pulido 2015). This move, from exposing a correlation between a polluting source and a minority neighborhood to the entanglement of a racialized society in producing and perpetuating environmental and social inequalities, is taken up explicitly by environmental justice scholar Laura Pulido: “interrogating the underlying conceptions of racism informing these (EJ) debates, I showed how most US researchers conceptualized racism as a highly conscious and deliberate set of acts infused with racial animus or intent. In short, they saw racism as a form of personal

prejudice rather than in structural terms" (2015, 809). Moving beyond race as a fixed category, Pulido positions institutions as active manipulators in creating racialized communities through their unequal enforcement of environmental protection regulations (Lombardi et al. 2015). The association of race with environmental and social degradation is, in this later EJ work, a political act that involves institutional and systemic oppressive efforts to move or keep environmental harm in minority neighborhoods (Bullard and Johnson 2000).

While EJ studies have focused almost exclusively on social injustices, whether in terms of exposure to a polluting source or in relation to vulnerabilities and risks associated with climate change (Raymond et. al. 2018), climate justice not only elevates the importance of climatic concerns but frames inequalities and vulnerabilities as interrelated, interdependent, and co-constituted. Climate justice encompasses more than climate risks. It has been associated with housing justice (Lockwood 2017) and food insecurity (Raganathan and Bratman 2019), among other, and is multidimensional, intersecting with a number of social and environmental facets (Hardy et al. 2017). The broad reach of climate justice may seem like a weakness, unable to precisely measure risk or vulnerability given how entangled climate is with other social issues, such as housing, employment, and education. But this is exactly where its strength lies; namely, in its refusal to focus solely on climate, climate justice has the opportunity to address historic and structural injustices.

Processes that give rise to injustice in urban spaces are entangled with the construction of gender, race, class, and the environment (Braun 2005). Recent scholarship argues that the specific intersection between race, space, and nature offers particularly insightful research trajectories that challenge strictly Marxist explanations for injustice (Brahinsky et al. 2014). At the intersection of the social construction of race and of the environment is the recognition that

"cities have been produced through racialized logics that have been engineered into their building blocks, facades, plumes of dust, streams, forests, and air circulation" (Heynen 2016). It is therefore impossible to separate housing, education, economic development, and public health, among other, from strictly environmental concerns.

Centralizing race and discrimination, as opposed to the question of the distribution of climate risk, positions climate justice as an analytical framework that scrutinizes politics, capitalism, and power in producing racism. The systemic and systematic actions that privilege certain groups and marginalize others are no longer passive and hidden, but can be understood as actively produced and re-produced (Pulido 2000). And by understanding justice as specific, embedded, and place-based, climate justice can uncover the multiple and intersecting ways in which injustice is produced and perpetuated. Climate justice is enacted rather than assumed. Justice itself is to be understood not as something to be dispatched and applied to a site or condition, but "an open egalitarian ideal that movements across the world continuously redefine in embodied and performed ways which are historically and geographically distinct" (Velicu and Kaika 2015, 305).

As cities turn to resilience to address inequalities in their communities, whether resilience policies and projects address historic racial injustices is a question that needs to be asked. The turn to resilience planning as a way to address climate change unpredictability was initially based on the idea that ecological processes are better suited for dealing with both slow and extreme weather events than our traditional reliance on hard infrastructure and engineering. Resilience in urban settings is also a function of exposure to risk, a framing that departs from the strict ecological definition of resilient systems as complex and adaptive (Folke et al. 2010). As a result, resilience takes on a specific meaning in urban settings - where an adaptation or mitigation

measure, for example, against wildfire risk involves regulating setbacks, building materials, and strengthening evacuation routes, a resilience approach potentially addresses systems-wide and interdependent links between housing, exurban development, and forest management.

Urban resilience now encompasses more than environmental concerns, and resilience plans adopted by cities across the US include a number of social considerations, from economic development and education, to housing and public health (Lambrou and Loukaitou-Sideris 2020). This seemingly ever-expanding resilience framework is facilitated by the fact that resilience does not have a clear definition when applied to urban studies, in part because the definition of urban is unclear and in part because of the ambiguity between adapting to a specific threat and the more general approach of strengthening adaptive capacity (Meerow et al. 2015). In the absence of a clear definition that takes into account socio-environmental inequalities, resilience can be a tool for institutions and agencies with the power to define and narrate it for their purposes.

Though resilience is a seemingly neutral response to the problem of climate change, parsing through resilience plans to understand who resilience is for, especially when resilience calls for changes in governance, regulations, and the form of urban landscapes, is an important task. Researchers Meerow and Newell explain that socio-ecological systems as a unit of analysis "can obfuscate inequalities within the system, fail to account for the range of social actors involved, and pay insufficient attention to social dynamics" (2016, p4), and rightfully call for "advancing a politics of urban resilience, which entails confronting inherent political and scalar complexities and trade-offs" (2016, 16).

Decisions on how to mitigate climate and social risks are made at multiple levels, and are driven by a number of factors with embedded and unstated values: how we frame an issue and

the ends we want to achieve, the selection criteria and alternatives we identify as important in determining an outcome, and establishing the guidelines that are best deployed to achieve those goals (Davidoff and Riner 1962). Insofar as the goals of resilience include strengthening the adaptive capacity of an urban system as an end in itself, the nature of resilience becomes critical especially for questions of justice and equity (Chu et al. 2017). If resilience plans promote our adaptive capacity to an unknown future, not just to a specific and foreseeable event, it also matters whether and how we plan for debate, questioning, and contestation at different scales of governance and lived experiences.

In the context of the broad nature of the resilience framework and the need for climate justice to consider equity at different scales, I ask whether and how resilience can strengthen the pursuit of climate justice. Can climate justice encompass addressing risks and oppressive structures that are related but not yet central to the work of most climate activists within its framework? What, if any, is the potential role of resilience in this? In this study I attempt to answer these questions by looking specifically at how urban transformations proposed for a community in South LA are appropriated and contested by the Black American residents of that community in their pursuit of climate justice. In doing so I describe how the language of resilience is used to support their arguments for expanding the scope of these proposed projects to include strengthening social networks that will mitigate the out-migration of younger Black Americans from the neighborhood.

Research Design

Research for this article took place between 2018 and 2020 and involved a series of in-depth interviews with city planners, residents, and grassroots organizations; participant

observations through attending the various workshops that residents and neighborhood representatives in Watts organized around how to address the urban projects at hand; content analysis of LA's resilience plan; research on social and environmental vulnerabilities across the city of Los Angeles; and a neighborhood survey (n=128).

Planners from the Housing Authority of the City of Los Angeles (HACLA) were tasked with engaging community organizations and residents, along with other agencies, in implementing a set of 24 projects in Watts. These projects varied in scale and scope, but they all meant to create a more resilient and sustainable neighborhood. HACLA was required to engage with Watts organizations, churches, and other community-based organizations (CBOs) and other working groups.

The interviews I conducted for this research followed a pre-determined questionnaire (see Appendix 1) and were semi-structured, averaging approximately 1.5 hours each. I interviewed the two HACLA city planners who oversee the projects slated for implementation in Watts, and who are actively engaging with members of the community as part of that effort. I also interviewed representatives from the following CBOs: Watts Clean Air and Energy Committee (1 interviewee), Watts Neighborhood Council (1 interviewee), Watts Labor Community Action Committee (3 interviewees), and Watts Rising Collaborative (2 interviewees). These CBOs act as liaisons between their community and other city-based organizations, including city planners, who are doing work in their neighborhood.

Most extensive was my involvement with WRC, as they were the most active group in their efforts to change the nature of their proposed projects that became a central subject of this research. Representatives from a number of CBOs within Watts, along with Watts residents, formed WRC in 2019 spontaneously. WRC's goal was to direct how planners were handling the

implementation of proposed urban transformations in the Watts community. Members of this task force represented various advocacy groups in Watts who focused on environmental and social issues that spanned from air pollution to urban agriculture and from economic development to housing. WRC represented the community's needs, which often challenged the framing of those projects. Their meetings took place over the course of the latter half of 2019 on a bi-weekly basis, and their intention was to strategize on how to interface with the city planners tasked with implementing projects in the Watts neighborhood. I attended six of those meetings and recorded and transcribed their conversations.

To understand how LA planners and city agencies, as well as other organizations doing work in a local context, approach resilience planning, I analyzed the content of LA's official resilience plan, adopted in 2018. I specifically looked at how resilience is defined in the plan, what the major goals and strategies are for achieving resilience, and how equity intersects with these aspirations. Since this research focuses on how resilience plans and strategies conceived of and generated at the city level are then adopted, understood, appropriated, and contested at the finer scale of the neighborhood, I also looked at census tract data for all of LA city filtered by key demographic (race), social (education attainment, healthcare access, and housing data), and environmental (CalEnviroScreen 3.0 index) characteristics. Through a series of maps I compare the Watts neighborhood to the rest of LA city.

Finally, I assisted the Watts Labor Community Action Committee to administer a survey on behalf of the City of LA to businesses, residents, visitors, and vendors along Central Avenue, the major commercial corridor in Watts. This corridor is part of LA's Great Streets Challenge, which funds the implementation of projects along a select set of main streets in LA in order to make those streets safer and to increase economic opportunities for residents. The survey was

developed for the specific purpose of finding out how respondents felt about the Central Avenue corridor in terms of safety, transportation options, recreational activities, and economic opportunities, among other, in order to help define a set of Great Streets projects for Watts. The survey was administered over the course of several weeks in 2019, both on weekdays and weekends, during both morning and afternoon hours, and convenience sampling was applied by approaching people and businesses along the stretch of Central Avenue that falls within the Watts boundaries (between 108th Avenue and Imperial Highway - see Figure 3-5). The survey is of relevance to this research because improving streets is a strategy brought up repeatedly in LA's resilient plan to achieve a number of resilience goals, from stormwater capture and urban greening to fossil-fuel-free streets to combat air pollution, and from increasing economic opportunities to improving health and well-being via better mobility options.

These methods as a whole helped identify obstacles in the implementation of resilience strategies at the local, neighborhood scale. They also revealed how resilience goals are understood outside of official and entrenched urban planning departments and constituents. Insofar as environmental and social justice groups are concerned with climate justice, interviews and participant observations with members of these groups revealed both agreement and contestation of the official resilience plan strategies adopted by LA. Finally, these research methods uncovered the strategies and visions that residents and CBOS developed as a response to the projects proposed by city planners, alternative resilience plans and strategies that they believe are more closely aligned with their specific climate justice concerns.

I begin by discussing social and environmental risks and vulnerabilities specific to Watts as compared to the larger city of LA. I discuss the specific resilience frameworks, goals, and implementation strategies outlined in the Resilient Los Angeles document, the official resilience

plan adopted by the city of LA. I then analyze how the concept of resilience influenced the framing of projects presented by city planners to Watts residents, and how those framings were then contested and challenged by Watts activists. Through this process of tracing resilience from city to neighborhood level, I extract two main frameworks - first, opportunistic resilience which uses the language of resilience in order to expand the narrow scope of each project by incorporating multiple risk-mitigation strategies, and second, embedded resilience which reveals how resilience can address intersecting vulnerabilities faced by residents by refocusing attention to the systems that perpetually devalue their communities.

Watts and South LA

LA's Watts neighborhood, made up of about 35,000 people, is significant in the larger context of Los Angeles in part because of its central role in racial tensions that materialized in riots at two different times: the neighborhood is home to the Watts riots of 1965 and the Rodney King riots of 1992, both of which were triggered by violence inflicted by the LA Police Department on the Black American community. Neighborhoods near industrial corridors, such as those in South LA where Watts is located, were racially unrestricted during the second Great Migration during the early part of the 20th century, and attracted Black Americans from states where segregation was still upheld. During World War II there was an influx of manufacturing in the region; with increasing suburbanization after the war, whites residents moved out of the South and Southeast LA region to outlying suburbs. A few decades later, during the 1980s, many Black Americans moved out of Watts because of rising housing and living costs. Today, nearly three-quarters of Watts residents are LatinX and only one-quarter Black (see Figures 3-1a and 3-1b).

Watts faces multiple intersecting vulnerabilities resulting from a history of disinvestment and environmental pollution, compounded by climate risks. One major source of air pollution are the freeways that enclose Watts - the Alameda Corridor to the East, the I-105 along the South, and the I-110 to the West (see Figure 3-5). In the context of rising temperatures, and given Watt's urban form, dictated by a density of asphalt and concrete and a general lack of street trees and overall greenery, extreme heat events are predicted to have an especially severe effect on the Watts residents. Air pollution, and proximity to other environmental toxicities, continue to be a major public health issue in Watts, whose effects are expected to have an even greater adverse impact on Watts residents, as increasing heat days are spurred on by climate change (Singh et. al. 2020; Vahmani et. al. 2019).

The poverty level for the majority of Watts residents is many times that of LA City (see Figure 3-2b), with 40% of Watts households under the poverty level compared to less than 15% of LA City households. Just over 75% of Watts households do not have a college education, while in LA City just over 42% lack a college education (see Figure 3-2a). Most households in Watts are renter-occupied, and most residents are considered severely rent-burdened, defined as paying more than half of their income on rent (see Figures 3-3a and 3-3b). The Watts neighborhood is also ranked highly on the CalEnviroScreen index, whose index factors in air pollution, asthma rates, and a number of other environmental threats, an especially critical issue given that a large percentage of Watts residents do not have access to health insurance (see Figures 3-4a and 3-4b).

In analyzing whether South LA, of which Watts is a part, changed from 1960 to 2019 across housing, employment, and transportation, researchers Comandon and Ong (2019) found that investment in the region hasn't translated to increased prosperity for its residents. They note

that South LA's narrative is an example of how "stigma is uneven and interacts with class and race in ways that are difficult to separate" (Comandon and Ong 2019, 21). Resilience planning in Watts is as much about race as it is about dealing with climate risks - these are inseparable, and they not only inform but define one another. How resilience is taken up by a municipality, how planners frame potential projects in a particular neighborhood through their understanding of resilience, and how residents of that neighborhood contest or appropriate those framings through their lived experience are all questions that are indelibly tied to race and ethnicity. Whether, and in what manner, LA's resilience plan takes on the systemic disinvestment and discriminatory practices of marginalized populations, defined by race and ethnicity, is therefore a crucial consideration.

LA's Resilience Plan

The LA Resilience plan, issued in 2018, is broken up into 4 main chapters, or major frameworks, each of which contains three to four goals and a number of action items to meet those goals (Resilient Los Angeles 2018). The first framework calls on individuals, families, and business and property owners to educate themselves around risk preparedness, to provide financial networks of support to vulnerable residents, and to cultivate leadership in a younger generation. The second framework aims to build social cohesion by fostering collaborations and partnerships across communities, and prioritizes mitigating exposure to extreme heat and addressing health and wellness disparities. The third framework focuses on creating a responsive city through post-disaster recovery pathways, upgrading infrastructure, providing affordable housing, and integrating government with resilience principles. Finally, the fourth framework

more specifically discusses the role of collaborations, along with public, private, and other forms of partnerships, in strengthening local resources and critical infrastructure.

The majority of goals listed in the LA resilience plan subtly place responsibility for mitigating exposure to socio-environmental risks on communities and residents: relationships need to be strengthened, new partnerships forged, collaborations and networks revealed and fortified, and so on. However, it is precisely those communities most vulnerable and most exposed to risks that lack the resources to circumvent vulnerability and risk in the first place. The ability to have an affordable home, secure and long-term employment, access to healthy food, transportation, clean air, and education, are all conditions that must be met by systemic investment. To prepare and protect people most vulnerable to extreme heat, for example, the conditions which place people in that vulnerable position in the first place must first be understood; they involve contending with healthcare, education, air pollution, zoning of industrial land uses, and housing, among other. These intersecting vulnerabilities, and systems that give rise to risk, requires contending with the ongoing history of systemic racial discrimination. These systems and histories are not fully acknowledged in resilience frameworks, which makes the implementability and efficacy of resilience goals questionable.

To varying extents, many of the strategies discussed by city planners and by Watts residents echo the aspirational nature of the resilience frameworks outlined in the Resilient Los Angeles plan. But when these resilience goals translate into implementable projects, contention arises because local histories, existing networks, identities, and cultures, and social vulnerabilities are not visible or taken into account. In other words, it is not the resilience goal itself that is questioned or contested, but whether the larger context giving rise to vulnerabilities and risk are acknowledged when proposing projects aimed at achieving resilience. The Resilient

Los Angeles plan does acknowledge the inequitable distributional nature of risk and vulnerability: “inequities in access and opportunities, both generationally and suddenly, strain the community fabric on a daily basis—worsening disparities and impacting Angelenos’ health, wealth, and quality of life” (Resilient Los Angeles 2018, 23). Notable is the city’s tacit acknowledgement that to discuss resilience, we must discuss equity, as researchers have shown that adaptation strategies tend to affect vulnerable populations either directly, through acts such as displacement, or indirectly, by omitting their consideration in adaptation plans (Anguelovski et al. 2016). It is not enough, however, to acknowledge the distributional impacts of inequities; planners and policy makers should incorporate directed ways to change it in order to turn resilience goals and actions from aspirational to implementable and transformational.

Downscaling Resilience

In 2018 the California Strategic Growth Council (SGC) awarded Watts $35 million dollars, the Transformative Climate Communities (TCC) grant, to address climate risks in this neighborhood. The TCC grant is funded by California’s cap and trade program, directing investments to low-income communities that have born the majority of air pollution effects resulting from transportation infrastructure and industrial activity. According to SGC, the TCC grant is awarded to a neighborhood that is severely impacted by pollution and is meant to give those neighborhoods the opportunity to identify their own goals, implementation strategies, and projects that will both reduce air pollution and greenhouse gas emissions (SGC 2020). The projects that city planners propose in Watts therefore focus on producing measurable results for greenhouse gas emissions.

The influence that funding has on climate-related projects is an important part of any discussion on urban transformations. The void left by a lack of implementation guidance on resilience planning is then filled by the narrator of a particular resilience project. In this case that narrative is driven by the requirements of the funding source, namely the need for measurable greenhouse gas emissions reductions. WRC members framed what they considered a too-narrow scope of Watts projects proposed by planners as an issue rooted in the source of funding for the grant. Specifically, the fact that the funds are available through California's cap and trade program in turn requires that their implementation would aid the state's goal to reduce greenhouse gas emissions, a main goal of the California Strategic Growth Council who is administering the funds. Since the main goal is greenhouse gas emission reduction, planners prioritize projects that involve tree-planting and incentivizing electric vehicle ownership over what Watts residents consider much more fundamental to their neighborhoods.

When asked to write out what they value most about Central Avenue, the main commercial corridor in Watts, 32% of the residents who responded noted that maintaining culture, history, and community already present was most important to them. An explicit goal of the LA resilience plan is to build social cohesion and to increase preparedness through community collaborations, and building on the existing sense of community and history would presumably help address that goal. But the actual implementation of this goal, the specificity that community entails, and the particular history that serves as an interpretive frame were not aspects of the lived lives of Watts residents that were seen as assets during discussions on how to best build social cohesion. How to frame, narrate, and execute the projects proposed by planners, in other words how to maintain ownership of the urban spaces in which they live, were the main concern of residents and of CBOs interviewed.

Particularly noteworthy was the WRC's efforts to create and command leadership based on the existing expertise that community members brought to the negotiating table. The WRC was formed by representatives from local CBOs, at least some of whose members were well-informed on environmental and social issues, with access to technical data and tools to measure and represent that data. One WRC member explained that HACLA's attempt to form partnerships with other institutions outside of Watts was evidence of their distrust in Watts and in the resources already in the community, and in the ability of the community to take care of itself. Cultivating leadership was therefore a fundamental aspect of the group, arguably an effort that should have been fully supported by city agencies and planners insofar as building on existing community resources and promoting leadership roles are an explicit goal in LA's resilience plan. Though resilience involves capacity-building and, by extension, strengthening existing and new stewardship relationships (i.e. Tyler et al. 2016; Ziervogel et al. 2016; Hölscher et al. 2016), leadership taken up by Watts residents was equally about self-empowerment as it was about preparing for climate risks. As one WRC member and long-standing Watts resident noted, referring to the knowledge that the WRC represented on behalf of the community -

> "We don't bow down. You guys got so much expertise, we could use that, right? Are we capable of rolling out that level of expertise, in a position that is supportive, not authoritative?"

Notably, planners expressed ambivalence about the term resilience. One planner in particular, a Latinx resident of Watts, admitted that though resilience planning needs to recognize the historical context within which it is applied, it fails to do so. In the case of Watts, she noted as an

example, tree-planting is a charged issue because canopies were deliberately withheld from South LA in order to increase visibility, and therefore surveillance, along streets. Though planners understood the neighborhood with which they were working quite well, their reach was limited because they were situated in broader networks: funding streams, conflicting accounts from residents, and the separation of environmental and social knowledge areas into different planning offices at different levels of governance. This reinforces existing literature, which argues that participatory governance may not be as effective as its promise holds given entrenched institutional dynamics (Healey 2003; Innes and Booher 2010). More recent literature on the transformative potential of co-planning and co-creating urban change also reveals similar implementation obstacles (Scholl and Kemp 2016; Bisschops and Beunen 2018).

With limited implementation guidance for resilience plans, the source of funding for projects that are meant to increase resilience in communities ends up dictating the shape urban transformations will take. Such transformations privilege certain projects and framings over others. In the case of the TCC fund, since those framings are singular and focused on the reduction of greenhouse gas emissions first and foremost, they face opposition by residents of those neighborhoods where those projects will take place. These residents approach resilience in a more comprehensive and holistic way, one that recognizes the complexity of a lived urban experience that is compounded by a history of disinvestment and overt racial aggression by institutions and structures in power. For residents, the effects of projects as interconnected and should be understood and framed as such. This recognition is what drives the opportunistic nature of their counter-resilience planning. Residents who face multiple and intersecting vulnerabilities identify and see those vulnerabilities as interconnected, and find opportunities to address more than the single aspect of social or environmental intervention presented to them.

They do so by bringing those connections to light and by attempting to expand the scope of the singular resilience project towards a multi-faceted and complex set of dependencies that constitute a racialized landscape facing present and future climate risks.

Opportunistic Resilience

Watts residents identified risk in their communities as involving issues beyond strictly environmental ones. Namely, they advocated for projects that promote technology use in schools, safer public transportation routes, transitioning to solar energy for each household, and access to high-speed internet as critical for their community. WRC members capitalized on the fact that planners were expected to engage the community, a fundamental component to securing and administering the TCC fund. They consistently reminded planners of this fact during their monthly meetings with them, and actively sought to reframe how planners approached suggested projects. For example, where planners outlined a tree-planting project, WRC members strategized on which streets would be the most appropriate ones for tree-planting based on the ones most frequently traveled by students to and from elementary and high schools in the neighborhood, referring to this expanded approach as the 'Safe Routes to School' project. The low rate of education in this neighborhood makes the education of the younger generation a central concern for Watts residents. Ensuring the safety of students not just while they are in the classroom but also on their way to and back from school is especially important. In the words of one community member, this is a discussion that is as much about the nature of community engagement is it is about where to plant trees -

> "The takeaway is that they just want to get these projects done and the less that the community is involved the easier it is for them. They said - let's be honest, we put a tree over here (or) we put a tree over here, it's going to do the same carbon sequestration, so why should we ask them what they think? And my position is if you put the tree here and you ask the community, then that tree means something to them. That's what engagement means."

When discussing pilot projects presented by planners to the community, WRC members often attempted to widen the scope of each narrowly-defined proposal so that it could incorporate what they felt were pressing needs. Assuring the energy independence of households through renewable measures, for example, was a matter as tied to the economic insecurity of the area as it was to sustainability concerns. Such attempts were meant to mitigate more than climate risks. They were meant to mitigate the inequalities caused by systemic disinvestment and racism in their community. The goal to provide renewable energy, to retain stormwater, and to upgrade the insulation capacity of each household was as much a sustainability concern as it was an economic one, mitigating the taxing percentage that energy use takes up from each household's income.

One of the more interesting results from the survey, in which 71% of respondents identified as Latinx, was that residents cared the most about "cleanliness and/or local culture" when it came to Central Avenue, a central historic corridor in the neighborhood slated for major street improvements through a separate grant by the city. "Sustainability and environmental preservation" received one of the lowest ratings by respondents (9% of votes), whereas "encouraging economic growth and supporting local businesses" and "accessibility and safety"

both received one of the highest ratings (15% of votes each). In discussions with residents as they were filling out the survey, they repeatedly brought up safety as a serious issue that keeps the community from creating the social and communal relationships they were hoping for from such a public street. Upgrades, they explained, should focus first and foremost on physical infrastructure, reducing car speeds and associated gang activity, and on promoting small business expansion. The connection between social cohesion and people's ability to mitigate climate vulnerabilities is well-established (Klinenberg 2002), so the need to create a public space that can foster and strengthen social relations that this survey revealed must be seen as a central component to climate justice.

In interviews with WRC members and other residents it also became clear that empowering community residents was not a question of, for example, simply upgrading central commercial corridors, unless that upgrade was accompanied by an assurance that broadband would be laid down underneath the streets that were slated for renovations. WRC members specifically advocated for laying down fiber-optic infrastructure on church land, allowing the church to then provide internet service and to pay back a portion of any revenue earned to the fiber-optic owner. This proposal would allow churches to make themselves financially secure so that they can continue their presence in the neighborhood, as important social institutions for residents, while concurrently acting as an internet service provider. WRC members proposed to couple this important infrastructural upgrade with ongoing efforts to upgrade neighborhood churches through sustainable initiatives.

These examples show that social and environmental concerns are inseparable, and they are issues that residents attempt to address through opportunities provided by the otherwise strictly environmentally-oriented projects to be implemented in their community. Environmental

and social issues cannot be discussed, understood, or analyzed separately. Watts residents similarly discuss their inseparability in workshops and meetings, both internal to themselves and in conversations with city planners. “Because it’s 54 years later (referring to the Watts riots of 1965) and we’re rebuilding it ourselves,” a prominent reverend in the neighborhood noted repeatedly, a sentiment echoed by many others during nearly each of the WRC meetings.

Most effectively, WRC members argued for a reframing of how climate knowledge, and accompanying projects based on that knowledge, is handled at different levels of governance. Climate knowledge should not be something that exists a priori and separate from the projects that planners bring to residents. Rather than view climate knowledge as untouchable, WRC members discussed, it should be embedded in the community itself, something that is learned, altered, and wrestled with in workshops and in school classrooms. WRC members argued that funding should go towards supporting building climate knowledge and supporting projects from the ground up. In the words of one prominent member of both the WRC and the Watts Clean Air and Energy Committee -

> “They are so interested in data to show how Watts and South LA have been done wrong. But we know how we’ve been done wrong, and the wheels keep rolling. Where is our data to help us make our decisions for this community?”

In this sense, climate knowledge needs to be funded by supporting the proliferation of technology, public platforms, spaces and programs through which community members can define risk for themselves and generate their vision for a resilient future.

At the scale of the city, evidenced through both the LA resilience plan and the city planners who conceived of the projects for this specific neighborhood, resilience is vague, broad, and largely aspirational. Where its action items are specific, such as the effort to capitalize on existing networks and resources, there is opportunity to test whether those action items do, indeed, lead to resilience. In at least this case, however, residents argued that their existing networks, resources, and knowledge were sidestepped, in large part because of the requirements set by the funding source for the proposed projects and because of the fragmented nature of planning agencies and jurisdictions. Given these constraints, residents actively sought to be opportunistic by taking advantage of the language of resilience, which assumes a comprehensive and holistic approach, in order to broaden the breadth and scope of each proposed project. Importantly, residents sought to expand each project's original intent by capturing efforts to mitigate risk and vulnerabilities that are a direct result of historical trauma.

Embedded Resilience

Community members defined risk for themselves to include more than environmental concerns, extending well beyond the need to reduce greenhouse gas emissions. Risks, and the resulting proposals to help mitigate them, were the result of this community's history of oppression and a desire to overcome that oppression, particularly for the younger generation. Those histories were not acknowledged by planners, evidenced by their adherence to narrowly-defined projects whose effectiveness could be measured as a function of a reduction in greenhouse gas emissions, such as tree-planting and incentivizing electric vehicle use.

In discussing how to embed social considerations into resilience projects in Watts, such as creating a sense of safety in routes to schools and bringing broadband access into the

neighborhood, residents were equally concerned with maintaining a Black American identity in this community. The displacement of Black Americans into surrounding neighborhoods and into cities outside of LA was seen by Black Americans in Watts as forced, and the subsequent effect this had on the long history of Black identity in South LA was brought up repeatedly by WRC members. Though WRC doesn't have a set number of members, only a set number of CBO involvement, the vast majority of members during its bi-weekly meetings were Black.

Resilience was tied to maintaining the Black culture in Watts, especially critical because nearly three-quarters of residents there are Latinx and because one of the main city planners tasked with executing the TCC projects is a Latinx resident of Watts. Safety, education, access to technology, adding trees, transitioning to renewables, among other, are all projects that were seen as critical to creating spaces for Blacks to stay in place. A challenge for planning in multiracial neighborhoods is attempting to find unity in worldviews that are embedded in different histories, cultures, and collective memories (Umemoto 2001). Though the projects, largely promoting environmental and social benefits among Watts residents, were sought after and supported by Black Americans and Latinx residents of Watts, the WRC specifically framed them as potentially empowering the Black American community to stay in place.

Economic opportunities to keep people in the neighborhood were also critically important to Watts residents for similar reasons. Economic empowerment was discussed as a long-term wealth-building strategy, spanning many generations -

> "They're going to bring all these cities into this new paradigm. And they only use the term jobs, they really don't use the term careers. What are the businesses that come out of these types of ideas? How do we build those businesses? Because those business then

become the multi-generational wealth generations. We don't see that in any of the public documents."

Crucially, residents discussed economic opportunities as something to be tied to the development of public space. Main commercial corridors in the neighborhood, currently comprised of largely vacant storefronts, are slated for redevelopment by planners. WRC members discussed how the language surrounding those projects, such as the city's 'Great Streets' initiative, doesn't ask the important question of what constitutes public space for this particular community -

"And they don't think 'businesses' because they don't think 'sustainability'. They don't want to look at that. And so when you look at developing these boulevards, is it fair to say a Great Street or a Complete Street is actually a public space? Is it going to build a community?"

These are pursuits that fall outside strictly constructed ideas involving risk and resilience, but are absolutely essential in pursuing climate just futures. The issue of education is one such example, and was a critical part of every discussion WRC members had. Each project proposed to Watts by city planners was an opportunity that Watts residents used to extract the main themes from them and advocate for its inclusion into the public education curriculum. WRC members formed relationships with the Los Angeles Unified School District in order to allow these projects to be discussed in high school classrooms, and for students to get involved in considering their implementation in their communities. Education was seen as a way to empower the younger

generation, to cultivate leadership potential in their communities, and to ensure a resilient, just, and persistent Black American identity in the neighborhood. As one WRC member put it –

> "It's as much about education as it is about leadership. So we got people in the community that will take leadership responsibility but may not have all the knowledge. They're in a position of authority without any knowledge. So us coming with more knowledge or coming with more professionalism is very threatening. And they're young – they're probably 30 years old. So it's a little bit to their disadvantage that their arrogance with their skill trumps their ability to accept other people to come in and really try to help them."

Rather than push against the limitations imposed by planners and the funding source of the proposed projects, the act of reframing those proposals to incorporate more than their original intention was an act of resistance whose ultimate goal was to achieve a more resilient and just future. In doing so, residents not only claimed authority over how resilience projects should be implemented in their community, but also sought to address historical trauma through an emancipatory vision that foregrounded acknowledging structural racism. If resilience is to be just, it must be understood as embedded, growing out of and contending with past and present histories. Beyond the conclusion that adapting to climate change requires an ongoing negotiation between past and present understandings of risk and vulnerabilities, discussions held by Watts residents also revealed that the past is always present. Dealing with the past's material urban manifestations is a way to deal with injustices that are felt at multiple scales and across multiple timeframes.

Conclusion

Resilience is not a moment we arrive at; it must be understood as a process that involves more than present or future exposure to climate risks. The case study discussed here has implications for climate justice through a resilience planning framework in a number of distinct ways. First, resilience must include the ability of residents to contest how the idea of risk is handed down and to define it for themselves. Who assesses risk and resilience, and the process by which it is defined, has implications for how risk is controlled (Holifield 2009). As discussed through the specific example of the Watts neighborhood in South LA, risk can be as much about a lack of a tree canopy as the lack of access to the internet, and as much about retaining stormwater as reviving local churches. Importantly, these issues are not to be understood as separate, categorized into either environmental or social goals, but as part of a socio-environmental relationship, dependent upon and defining each other.

Second, resilience can be a powerful promise whose language communities can use to fight for the more than strictly climate-related goals of climate justice. I refer to this as opportunistic resilience, and deliberately characterize the act of appropriating the resilience framework towards a climate justice goal as positive. Resilience's broad scope, much of which has been researched and theorized as reason to challenge and replace the term (i.e. MacKinnon and Derickson 2012), can be capitalized on to expand an otherwise narrow climate goal by focusing on the necessary social and environmental rights, otherwise considered tangential to climate-related risks, required for a community to become resilient.

Third, and relatedly, recognizing that resilience is embedded entails a constant negotiation between past, present, and future entanglements of social life and its material urban

manifestations. Embedded resilience implies that when a resilience framework touches the ground it inevitably gets entangled in local politics, and sometimes conflicting histories, of residents. For Watts residents, caring for people in the Watts community meant restoring social ties through promoting safety, inclusivity, and financial empowerment, as well as securing the future education and career success of children, in order to create opportunities for Black Americans to remain in the community.

These arguments assume that climate justice depends on seeing climate risks and vulnerabilities as inseparable from social injustices. Strategies to contest and challenge how proposed urban transformations will yield a climate-just future often give rise to solidarities that potentially shift the way we discuss and deliberate on climate change (Chatterton et al. 2012). The link between climate change and local environmental inequities, such as the effects that fossil fuels have on atmospheric greenhouse gases globally while polluting the air locally and at the source, has connected environmental and climate justice movements worldwide (Méndez 2020). Researchers and activists have also repeatedly shown that environmental inequities are a function of race, ethnicity, gender, and socioeconomic status. Climate justice, then, cannot be achieved outside of racial, ethnic, gender, and social equity. This is not to say that such categories are fixed. On the contrary, categories of gender, socioeconomic status, and ethnicity are increasingly understood as malleable, open to different interpretations depending on what actors are making those claims and are able to make those claims heard (e.g. Young 2002; Butler 2004; Gregson and Rose 2000). Still, the act of producing categories such as black, woman, and minority reveals inequalities by politicizing those terms, even while acknowledging that what defines those categories are movable and fluid notions whose meaning and value changes alongside specific interests and dominant voices.

Interrogating systemic and pervasive racial issues is central to climate justice work. Beyond pointing out the correlation between marginalized populations and the distribution of environmental and climatic harm, taking on the question of structural racism in order to achieve climate justice involves revealing deeper and broader contexts that give rise to vulnerabilities. As the residents of Watts persistently and consistently declared, the environments in which we live are more than a series of discrete social, environmental, and climate concerns. Planting trees along central corridors and providing permeable pavers for stormwater retention may be significant and relevant, but people's concerns reach forward and backwards in time to capture housing, economic, and education risks whose repercussions are multi-generational.

Paying attention to the embodied experience of place is therefore fundamental to climate justice. Justice, in this sense, ought to be thought of as an act, a deliberative process, and is not an assumed objective shared universally. In order to deliberate on the distinctive path towards justice each case demands, climate justice work would benefit from remaining open to the specific ways in which socio-environmental meanings and relations are formed from one context to the next. By remaining expansive, climate justice goals are not diluted, as may be the fear, but are understood as situated, relational, and embedded in different ways that call for different action.

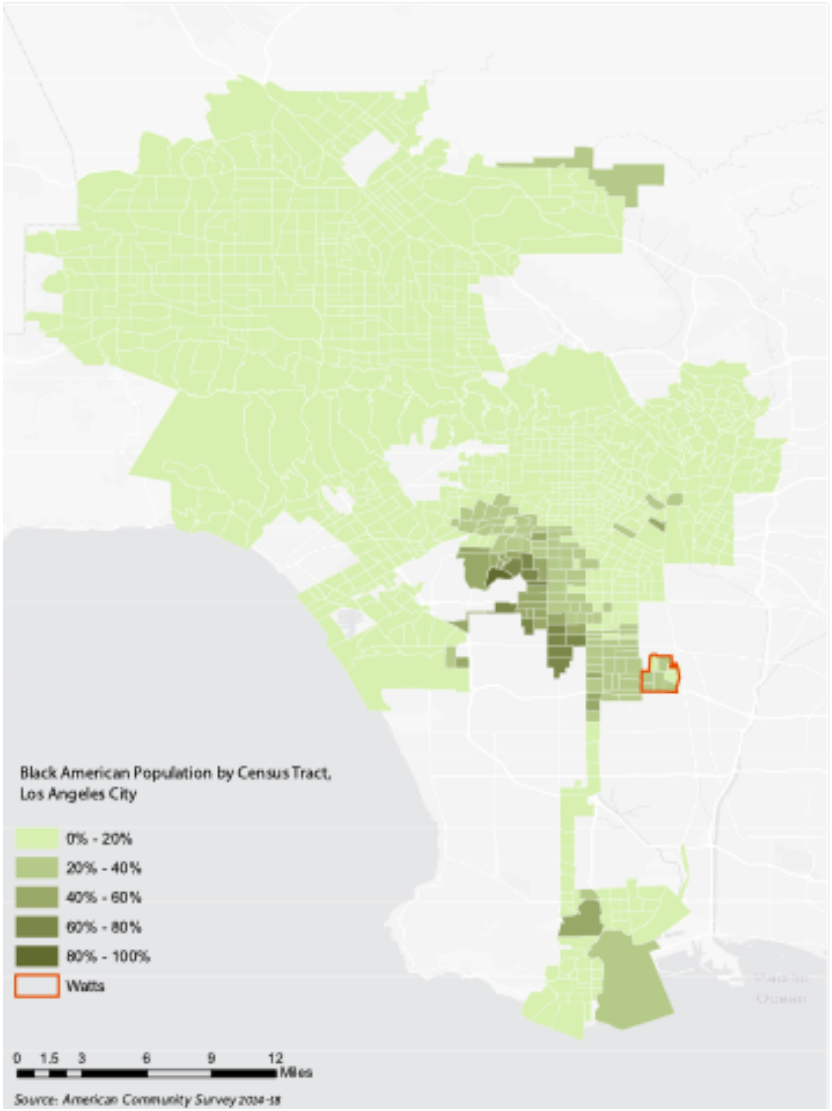


Figure 3-1a. Black American Population by Census Tract, LA City

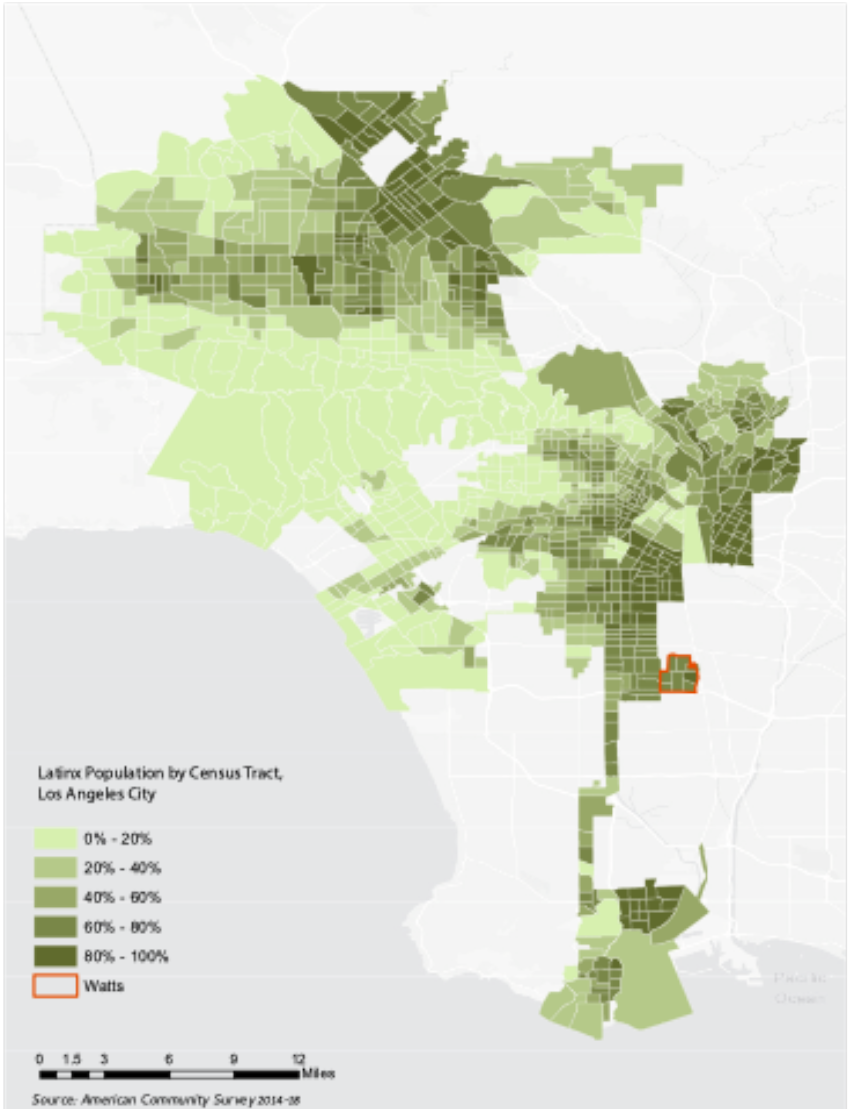
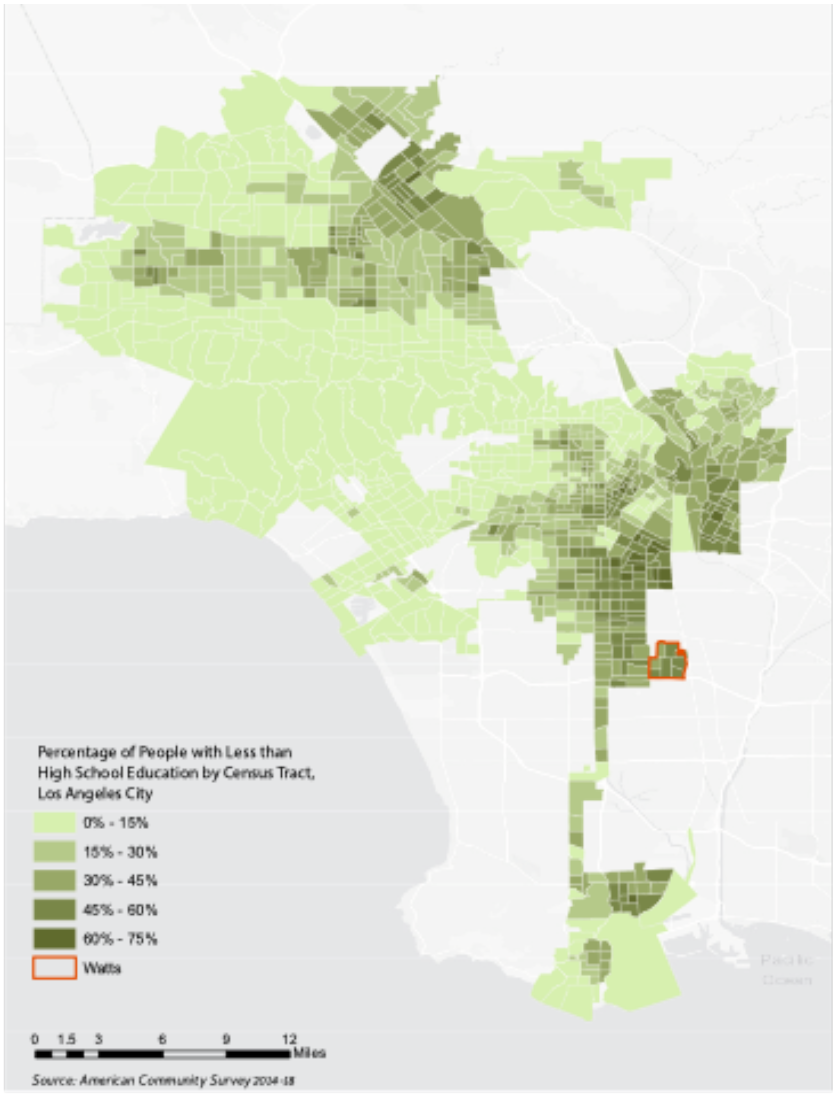


Figure 3-1b. Latinx Population by Census Tract, LA City



Figures 3-2a. Percentage of People Less than HS Education, LA City

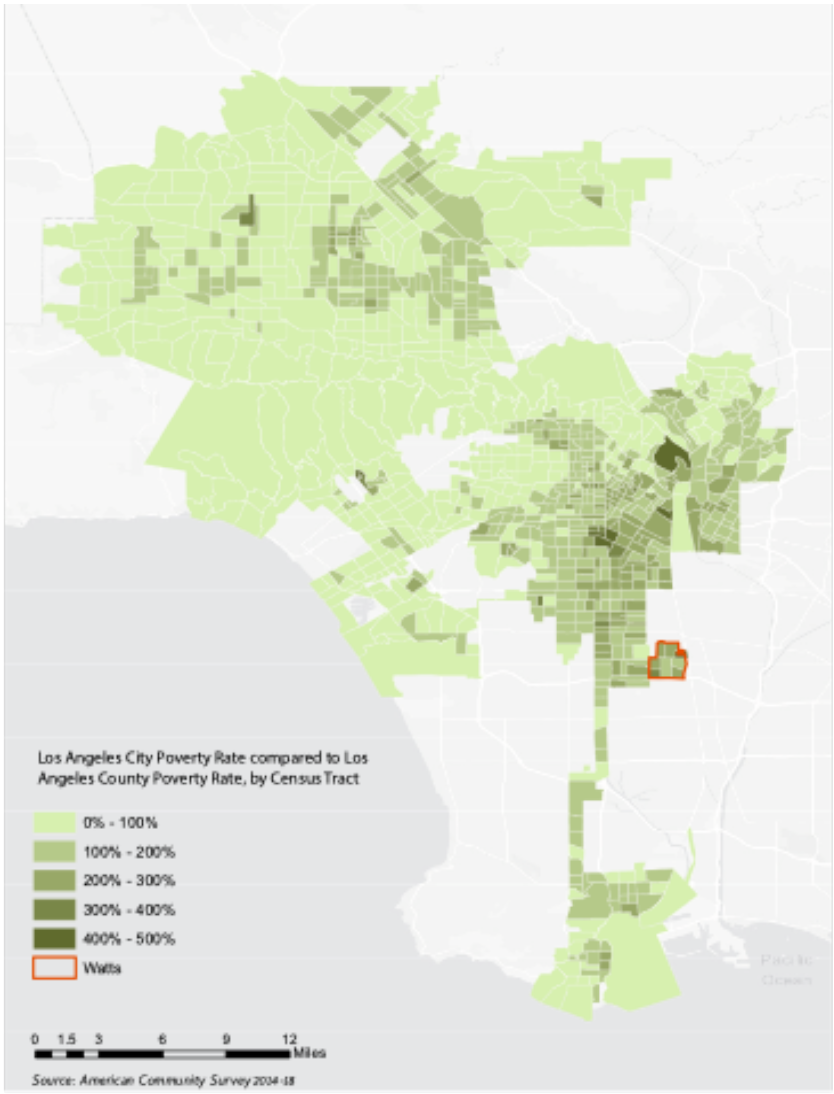


Figure 3-2b. LA City Poverty to LA County Poverty Rate Ratio, LA City

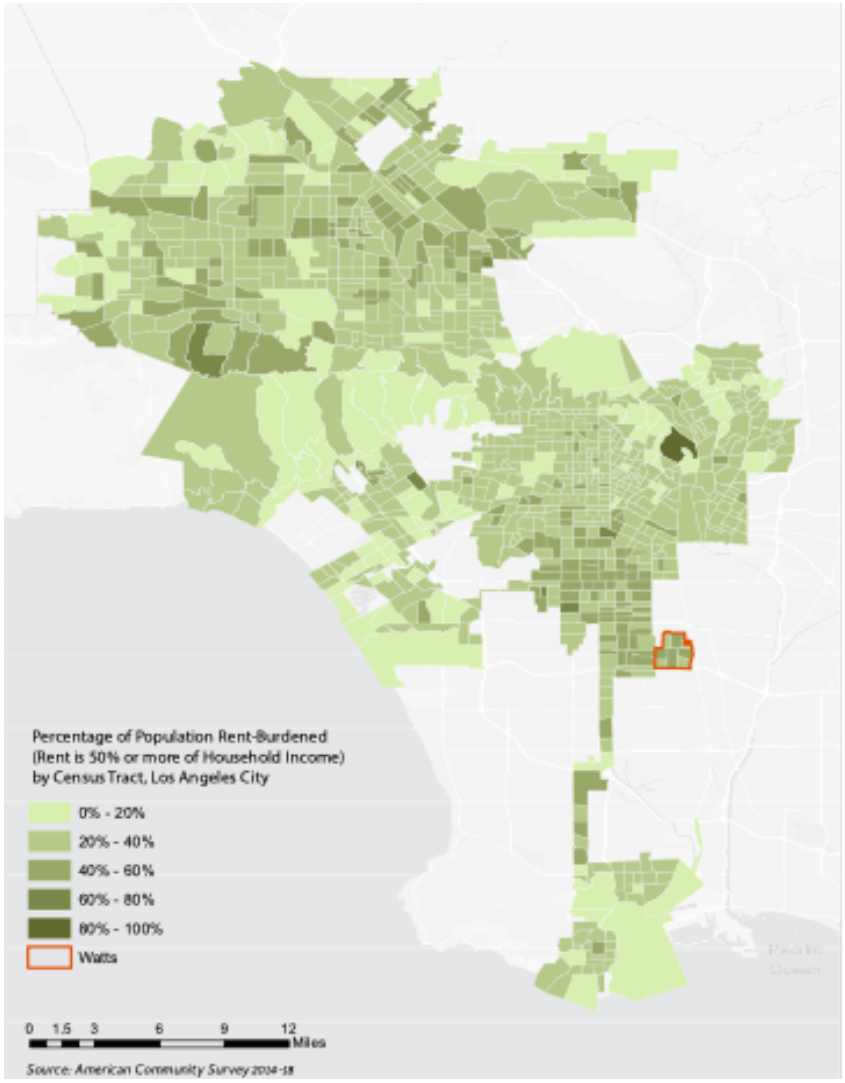


Figure 3-3a. Percentage Population Rent-Burdened, LA City

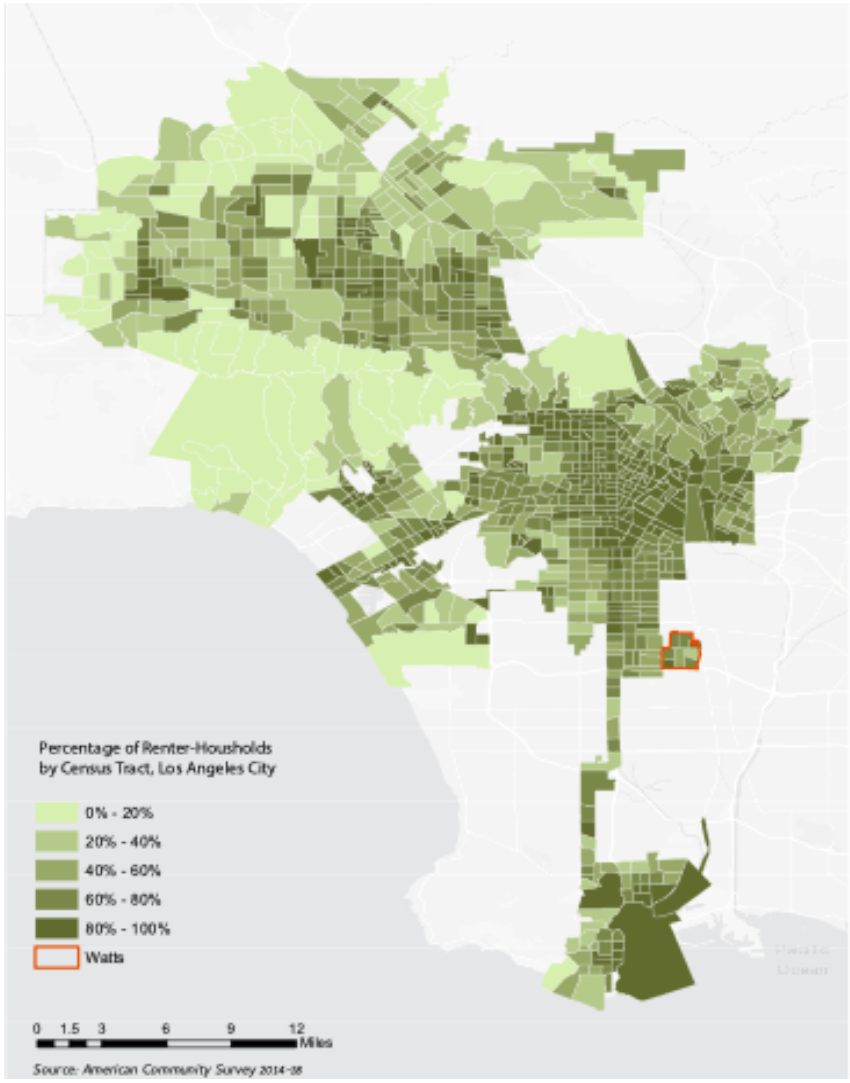


Figure 3-3b. Percentage of Renter-Occupied Households, LA City

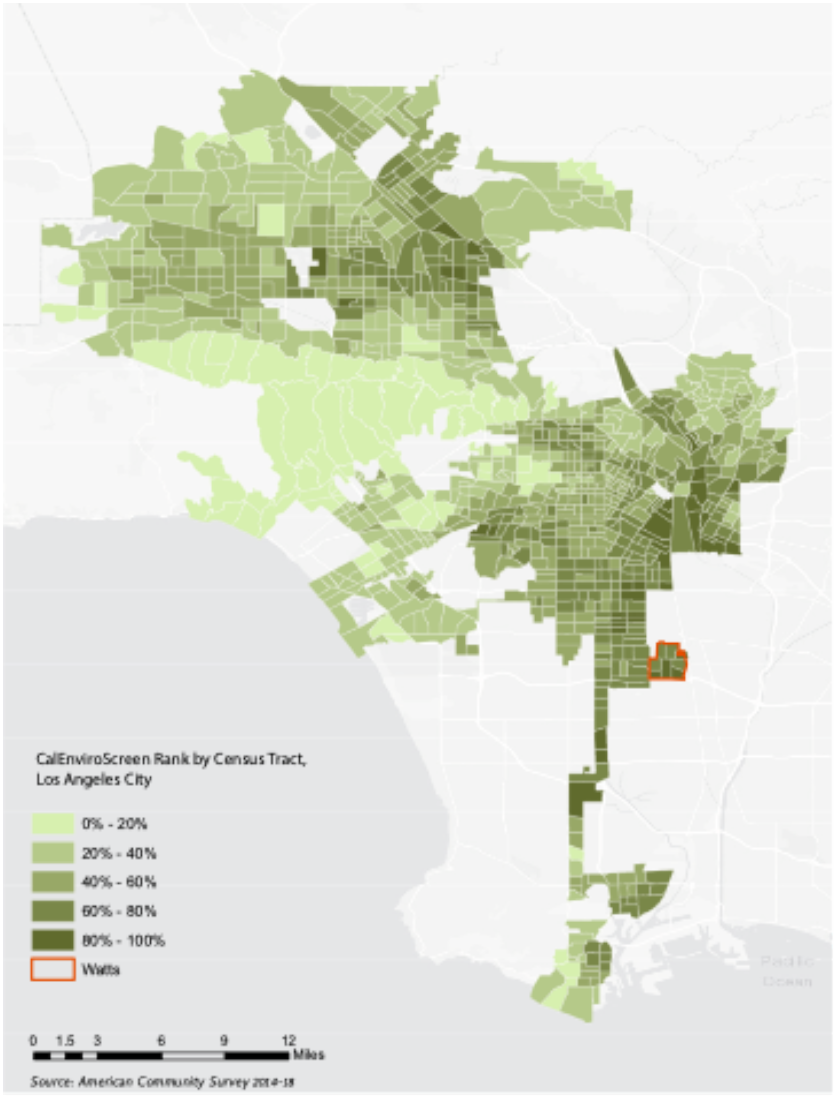


Figure 3-4a. CalEnviroScreen Rank, LA City

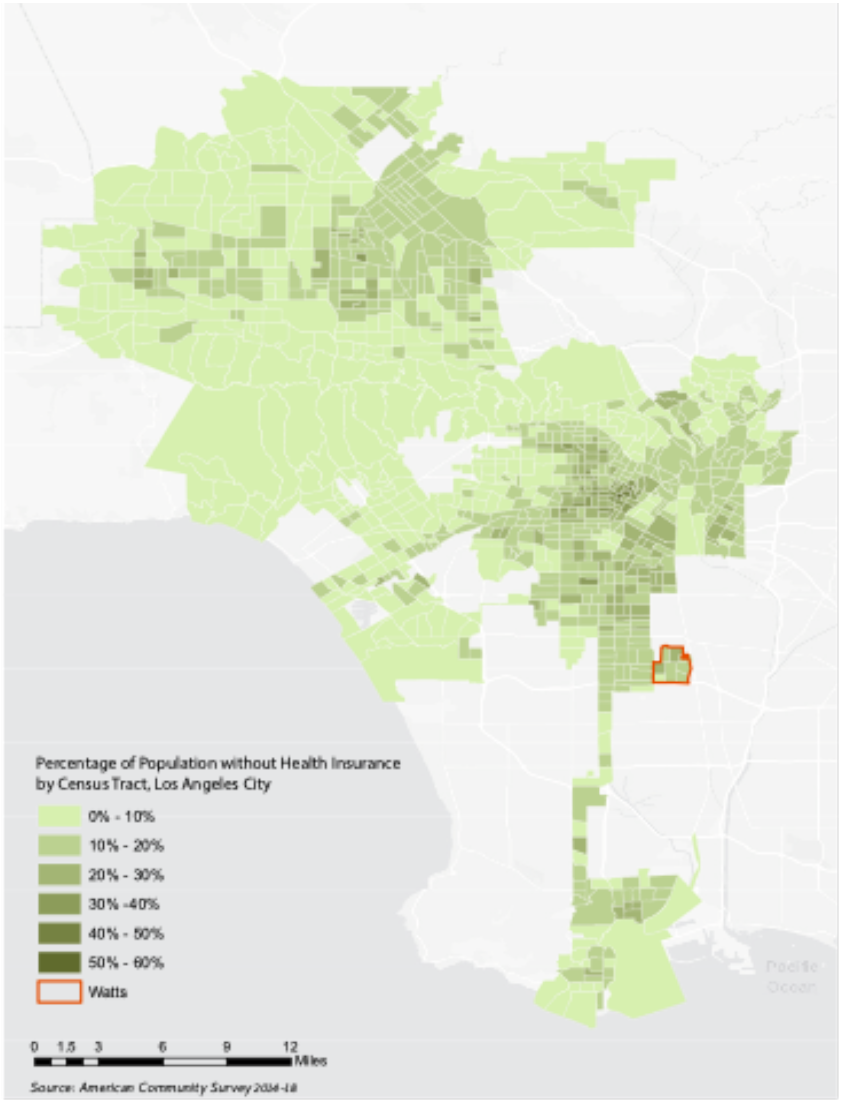


Figure 3-4b. Percent Population without Health Insurance, LA City

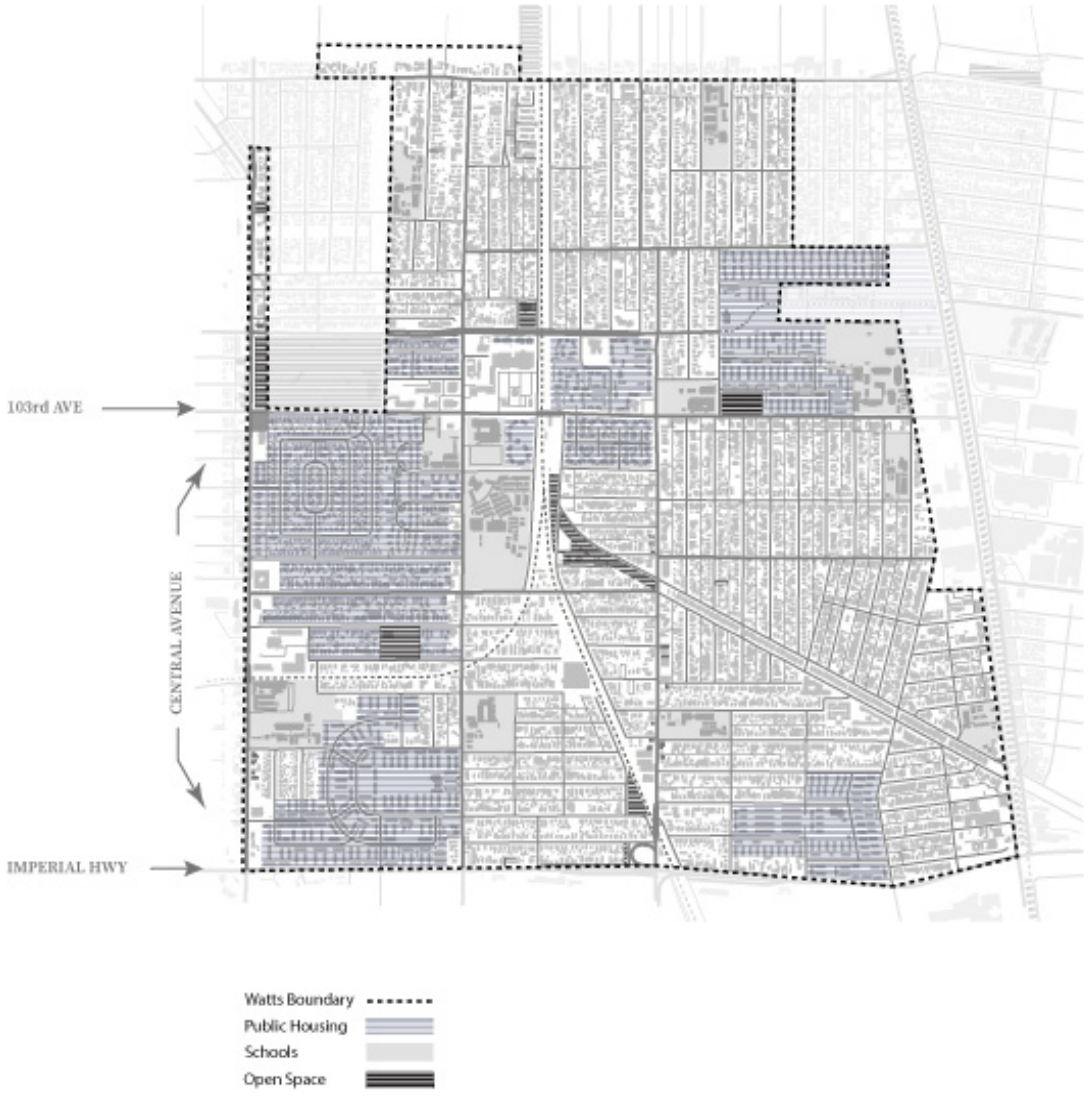


Figure 3-5. Watts, Los Angeles

Appendix 1. Semi-Structured Interview Instrument

Interview objective: To determine how resilience is understood by different actors in LA, to find out whether resilience is a useful framework for addressing perceived strengths and weaknesses in LA, and to determine how well community-based organizations and residents think resilience addresses equity.

1. What does resilience mean to you/your organization?

2. What criteria might you use to evaluate resilience, or the resilience of different systems, in LA?

   Follow-up: What aspects of LA do you consider resilient?

3. What are some of the challenges of living in LA?

   Follow-up: Why do these challenges exist? How did they come about?

4. How does your organization deal with the challenges you identified?

   Follow-up: Are there existing social networks or entities in LA that you think should be supported in helping to strengthen the city's resilience?

5. How do you think the resilience strategies outlined in LA's resilience plan address, or fall short of addressing, these challenges?

   Follow-up: What is the best way for the city to address these issues?

6. What physical transformations do you think are necessary in order to address the resilience goals stated in your city's resilience plan?

   Follow-up: Do you think these suggested urban changes sufficient in dealing with the issues you've identified in your city?

   Follow-up: If these challenges are not able to be addressed by yourself or other community members directly, who should be responsible for addressing them?

7. How equitable do you think the LA resilience plan is in regards to its possible impacts on various neighborhoods/communities?

   Follow-up: How important do you think it is to consider long-standing discriminatory practices in determining the scale and scope of projects in your community that are meant to increase community resilience?

8. Is there anything you've thought about during this interview that I didn't directly ask about but you'd like to share?

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Chapter 4. Resilience Design as Practice: Equity, Stewardship, and Access

Introduction

In the face of unpredictable and extreme weather events resulting from climate change, design proposals increasingly reimagine large-scale urban landscapes as critical infrastructures: systems that are critical in mitigating and adapting to climate threats. Such design proposals include not only visions of physical futures but also accompanying regulatory and social tools and policies that need to be in place in order to better prepare communities for a climate risk future. In this article I analyze the proposals of the Resilient by Design project in California's Bay Area, a 2018 competition supported by The Rockefeller Foundation, with a specific focus on the intersection of design, equity, and scale. I discuss how urban designers envision future resilient landscapes, and examine the implications of those visions for questions of equity.

Though design proposals are not realized in space, I insist on their value in providing insights because the images of urban futures they represent embody larger principles surrounding social relations to the environment. Resilience designs are able to generate or inform public discourse around our future resilient landscapes. In this sense, design representations are more than passive images, and instead are active tools for reconfiguring socio-environmental relations in space. Proposals to transform the built environment, whether they are eventually realized or not, are directed by social values and collective visions of the proper way to engage with and manage the environment. This is a particularly critical project to pay close attention to in the face of climate change insofar as climate change implicates questions of equity and design, and of the entanglement of the two, in fundamental ways.

Uneven socio-ecological transformations are inscribed in urban space and are political processes that intersect with race, gender, and class (Braun 2005). Geographers have consistently called attention to the fact that urban development is the result of uneven power relations, but also that this unevenness is embedded in space - its infrastructures, materials, and built environment: “cities have been produced through racialized logics that have been engineered into their building blocks, facades, plumes of dust, streams, forests, and air circulation” (Heynen 2016). Can design, inherently an act that transforms the materiality and space of cities, address historic and entrenched inequalities that contribute to uneven climate change risks and vulnerabilities? If so, how does it do so? What aspects of equity is it willing to discuss and bring to light, and what sorts of transformations does it propose for an equitable climate future? What, exactly, is the nature of the resilient landscapes it envisions that will mitigate climate risks, and which populations does it pay close attention to in that visioning process?

Design proposals that do not foreground the systems that brought about unequal exposure to risk and vulnerabilities in the first place will entrench and perpetuate inequalities. The question of whether design can move resilience in a direction that offers alternative pathways forward, and that shifts power relationships towards marginalized populations, is therefore an important one to answer. In analyzing the Resilient by Design proposals I draw insights into the nature of resilience design and climate change, with implications for how future resilient landscapes are envisioned and legitimized. In this sense the nine proposals, though not yet fully implemented, yield power by directing how resilient futures are envisioned, understood, and framed through design.

Design and Resilience

Worsening climate change impacts on natural and social environments call for spatial design responses to address environmental risks (Wilson and Piper 2010), from stormwater (Marlow et al. 2013, Fletcher et al. 2015) to rising sea levels, and from extreme heat mitigation strategies to the rehabilitation of ecological processes (Farr 2008). Where traditional approaches to urban development sought to stabilize environmental conditions (Ahern 2011), climate change unpredictability requires design that is adaptable and can incorporate ongoing change (Felson et al. 2013). It also requires design at multiple scales, from the individual household and site to the region, while acknowledging the interdependencies among these varying scales.

Resilience design has emerged as a way to address social-ecological systems by responding to their non-linear nature through adaptive measures (Wilkinson 2011). On the one hand, ecological considerations have gained prominence in adaptation and mitigation strategies for urban processes in relation to climate change (Evans 2011, Davoudi and Mehmood 2010). Social resilience, on the other hand, can be defined as the ability of groups or communities to cope with a disturbance's stress (Adger 2000). The devastating impacts of climate change on social life has led to the prominence of socio-ecological resilience as a framework for proposing urban system transformations that can better withstand those impacts.

While ecological resilience emphasizes a transformation of a systems underlying processes and attributes when facing a disturbance, the term continues to be broadly used to describe a return to a previous state rather than a focus on its adaptive or transformative potential (Cote and Nightingale 2012). Despite these divergent frameworks, the overarching idea that social and environmental systems are interdependent has been influential in adaptation design. Framed by the research questions of this study, I discuss the literature surrounding the design of

socio-ecological resilience and its implications on questions of equity. This discussion aims to analyze the nature of future resilient landscapes, how social resilience is understood in relationship to those landscapes, and how designers propose to make urban regions in communities of intersecting vulnerabilities more resilient to future extreme weather and ongoing social and environmental injustices.

Eco-Based Approaches to Resilience Urban Design

Climate change concerns fuel contemporary urban environmental transformations, from restoration projects to coastal fortifications, making ecology one of the most critical disciplines for making future alternatives visible. Ecology is the study of relationships between living organisms and their environments, and identifies systems across scales to examine the relationships between and within the agents that comprise these systems. The term ecology today is used expansively, co-opted across different disciplines and practices to the point that it has lost much of its original rigor. It is used as a paradigm for social structures, urban processes and sites of various scales, as well as for socio-environmental interactions, and is used as a tool for marketing and accreditation, among other (Hight 2013).

The concept of ecology permeates disciplines outside of the natural sciences. It is as tied up with political struggles, economic and energy questions (Odum 1992), and social issues as it with environmental ones (Guattari 2000). Though the framework of ecology within the natural sciences already addresses the management and planning of the environment (Holling 1978), it is only in the past two decades or so that ecology intersected with urban design and landscape architecture discussions directly (Reed and Lister 2013). The ecological idea that systems are dynamic and governed by uncertainty and instability increasingly drives design concepts. At

times this is explicit, but more often it is only implied in design solutions, regardless of whether those designs are architectural or urban.

Recent catastrophic events have yielded a series of relatively high-profile design proposals at the regional scale, notably those as a response to Hurricane Sandy in New York, particularly the Rebuild by Design proposals, and those responding to Hurricane Katrina in New Orleans (Fields 2009). Such proposals foreground ecological processes as part of urbanization. In privileging ecological thinking, design proposals also change how landscapes are traditionally known and understood by recasting them as moving, evolving and shifting in relationship to the ecological changes accelerated by climate change. It is within this context, one of urgency felt by the unpredictable and extreme effects of climate change, that urban places are increasingly seen as infrastructures that incorporate socio-ecological processes in their making (Parrot and Meyer 2012).

This turn to urban-landscape-as-critical-infrastructure in terms of climate change points to the belief that urban space plays a critical role in mitigating extreme weather events and adapting to future unpredictability posed by climate change (Braun 2014). Ecological systems embedded in urban environments capitalize on environmental processes at the scale of the urban in an effort to mitigate climate risks, such as by designing the direction of water and its infrastructure. These are neither entirely green nor strictly gray categories (Wachsmuth and Angelo 2018). Instead, this sort of ordering project in design represents a conceptual shift from creating isolated architectural objects to modulating flows within larger urban ecological systems (Braun 2014).

For these reasons, resilience design proposals that offer strategies for mitigating and adapting to climate change in urban spaces look at the urban as critical infrastructure comprised

of different scales and ongoing ecological and social processes in flux. Since design is fundamentally a spatial discipline, research work needs to evaluate the ways in which ecology is deployed in resilience design proposals in order to normalize, contest, and direct conversations on socio-environmental relationships, and to understand how these proposals reveal, disguise, or otherwise address equity. Though urban design research has highlighted the integration of resilience, ecology, and adaptive management strategies with design (Ahern, Cilliers, and Niemelä 2014), less studied are the implications of this integration for question of economic and social resilience, for labor, and for advocating for shifting power relations particularly for disadvantaged communities of color. In other words, can design that offers redirecting waste, remediating soil, and retaining water also direct the impact of these ecological processes on larger economic, labor, and political systems? Where and how we expand or alter the physical space of cities reflects environmental values, and those values are contingent, contested, and entangled with equity.

Design and Equity

To understand the ways in which design can promote and advance, or hinder, equity requires that we first identify the various framings of of equity and justice, which center around distribution, participation, and representation. These are frameworks that do not work in isolation, each one contributing to an environmental justice analysis in different ways depending on the specific context at hand (Schlosberg 2004). An entitlement claim for the right to clean water, for example, also invokes the question of the distribution of environmental harms that polluted the water in a specific location, and the process by which that environmental harm was enabled.

Distributional justice questions whether people have equal access to amenities and resources, and implicitly relies on the utilitarian principle in which a just system is one in which the greatest good reaches the greatest number of people (Simon 2004). Given limited environmental resources, for example, utilitarianism asks what the aggregate good will be, requiring that cost and benefits be weighed in order to make a determination. Procedural justice is concerned primarily with the nature of the decision-making process: who is involved, who is represented, and who counts (Schlosberg 2004). First and foremost procedural justice requires an open process for how decisions are reached, specifically one that incorporates the community who will be affected by the result of that decision. It expands the idea of justice to include open and equitable access to information that is required in order to reach informed decisions, and equipping communities with the tools necessary to obtain, understand, and apply that knowledge (Heiman 1996).

Regardless of the specific justice framework in question, the persistent underlying theme in them is that people ought to be active managers of the environments in which they live, referred to as self-determination (Schlosberg 2004). Scholars point to the need to involve local communities in adapting to climate unpredictability and weather extremes: as a way to foster design innovation, experimentation, and to promote transdisciplinary knowledge (Ahern, Cilliers, and Niemelä 2014), as a way to avoid perpetuating socio-spatial inequalities (Anguelovski et al. 2016), and as a way to build social connections and resilience, as well as policies and institutions for climate change adaptation (Dodman and Satterthwaite 2008).

Climate change is particularly complex in terms of procedural justice insofar as not every individual in a region is vulnerable to different climate risks in similar ways. Coastal communities may be exposed to sea level rise while inland communities in the same region, and

under the same jurisdiction, to increasing extreme heat events. Within each of these communities, low-income populations are consistently exposed more than their middle and higher-income counterparts. Decisions that lead to climate change take place at different levels and across jurisdictions, from individual consumption behaviors to national environmental and energy laws, requiring a cross-scalar political commitment and sustained stakeholder engagement driven by local contexts (Carmin et al 2013). Both state and non-state actors are necessary for generating and facilitating adaptation actions (Broto 2017; Arao et al 2016), but who is represented at each of these levels of decision-making is not entirely clear, and remains contested.

In this context, design disciplines can perpetuate or exacerbate inequalities by making proposals that are either not driven by, and do not represent, community needs or the needs of those most vulnerable, or propose interventions that don't take account of structural and historic inequalities by responding to those inequalities in ways that can empower community members towards self-determination. In resilience literature, specifically, scholars are wary of a framework that purports to return communities back to a business-as-usual state in the face of a climate disturbance, when it is that very state that created climate risks, structurally upheld them, and inequitably dealt them to vulnerable populations (Fainstein 2015; Vale 2015; Davoudi et al 2012).

Planning and designing for climate change may lead to transformations that produce ecological enclaves, or sites that are better equipped to deal with climate change risks than others (Hodson and Marvin 2010), leading some scholars to argue that adaptation efforts can align with investment and growth to mask inequalities (Anguelovski et al 2014). This, in turn, has led some scholars to argue that in order to better prepare societies and environments for climate change

risks we ought to pursue large-scale transformative measures that involve addressing socio-spatial inequalities (Pelling et al 2015).

One of the goals in this study is to determine whether visions of future resilient landscapes address these concerns. What is the nature of resilience design? Does resilience design pay attention to structural and historically upheld inequalities in the communities in which these proposals take place? In what ways do they do so and in what ways do they fall short of doing so, and what are the associated implications for equity? What are the opportunities, when it comes to resilience design, to rethink and redistribute power relations? These are critical questions for design disciplines in large part because of the power of their visions to steer not only conversations about, but also the implementation of, certain proposals over others in pursuing climate just futures.

Research Design

For this study I analyzed the Resilient by Design proposals for the Bay Area, a competition funded by the Rockefeller Foundation that took place in 2018. The competition was modeled after the Rebuild by Design one that propelled a number of resilience projects for New York after Hurricane Sandy. Resilient by Design involved soliciting initial interdisciplinary team responses to the Bay Area, after which the competition organizers selected nine teams to move forward. The next phase required visiting various neighborhoods around the Bay Area and conducting initial research that led to preliminary proposals by each team on areas they were interested in working with. The final phase involved the submission of a comprehensive resilience design proposal for a neighborhood or region in the Bay Area.

The content analysis part of this research involved parsing through each of the proposals and drawing out specific themes. The proposals from each of the nine teams takes several forms: the primary and most comprehensive document analyzed were the official resilience reports posted on the Resilient by Design competition website after the completion of the competition; secondary sources of analysis included images and reports documented on the lead team members websites, which were either architecture or landscape architecture firms; additional sources that were incorporated in this analysis included a series of roundtable discussions between various teams that were conducted virtually and were posted online by the Resilient by Design competition organizers, as well as semi-structured interviews with four of the teams.

The specific themes that guided this research included the following: how the plans approached resilience (i.e. how resilience was framed and the strategies proposed to achieve it) and how the plans approached equity (i.e. in what ways each plan incorporated equity into their processes and proposals). From this analysis a third theme emerged, that of stewardship, based on its prevalence as a strategy in each of the plans. In terms of resilience, and supported by a review of resilience literature, I categorized strategies within each design proposal as either social, ecological, or socio-ecological in nature. Based on an initial assessment of these approaches to resilience in the plans, I then further refined the ecological resilience categories as either ecological restoration, green infrastructure, or grey infrastructure.

I documented and analyzed the visions each plan put forth for an equitable climate-resilient future, as well as the strategies proposed to achieve those visions. After assessing how the plans incorporated equity frameworks in their proposals, I also documented the nature of the relationship between each team and the communities their plans served. In other words, I was interested in the nature and extent to which procedural justice allowed for community-driven

proposals. Finally, I extended the analysis of equity to also include strategies that were not reflected directly in vision statements, such as those that involved providing affordable housing, public space, and employment opportunities.

Based on this research work on equity specifically, the theme of stewardship emerged as fundamental to each plan's resilience proposals. This led to an effort to analyze the ways in which stewardship is taken up in each plan - specifically, how stewardship is defined and framed in terms of resilience, and documenting the associated strategies deployed to implement stewardship-driven projects. I analyzed these approaches to stewardship through an equity framework since stewardship often relies on the unpaid labor of community members, a critical consideration in proposals that center on transforming vulnerable landscapes into ecologically-driven resilient ones.

This research is also based on a series of semi-structured interviews conducted virtually with members of four of the teams. Interviewees were asked to reflect on the process by which they selected neighborhoods or regions to work with, the nature of their relationship with those communities, and various stakeholder influence over the strategies incorporated in the plans (see Appendix 1).

Finally, this study also draws from a series of recorded videos posted online by the competition organizers that involved roundtable discussions between team members on specific themes, such as the role of design in climate adaptation and resiliency. These roundtable discussions were conducted two years after the competition launch, and called for team members to reflect on their previous and ongoing work with the communities they served as well as on resilience design more broadly.

Previous studies on resilience planning have focused on resilience plans that did not involve design proposals, and whose authors were not involved in design disciplines, such as urban or environmental design and landscape architecture. Resilience plans that have been analyzed are plans that do not propose resilience design in a specific location or region, but instead focus on guidelines to promote environmental and social resilience at the urban scale (i.e. Lambrou and Loukaitou-Sideris 2021, Meerow et al. 2019, Woodruff et al. 2018, and Gupta et al. 2016).

The study does not claim to be a comprehensive approach to design and resilience, in large part because the plans are specific to the Bay Area and are funded by the Rockefeller Foundation. Instead, I propose that through looking at these nine resilience design plans more carefully, we may draw conclusions on the ways resilience is framed by designers working in space and across social and environmental disciplines. The plans are not a reaction to a disaster that has already occurred, but envision resilient landscapes towards future climate risk. As such the visions are speculative but also generative, and they both draw from and frame larger discussions surrounding the nature of resilience design and equity. I am, however, admittedly silent on the question of implementation and the politics of actualizing these design proposals, and recognize that even the most equitable of proposals that make claims of environmental and social responsibility can exacerbate social inequalities when implemented.

Discussion

The Resilient by Design competition resulted in nine resilience design proposals for different geographic areas in the Bay Area. The competition, funded by the Rockefeller Foundation, began with a broad call for interdisciplinary teams to respond to the specific Bay

Area region on broad terms, though related to climate change, driven by the interests of each team. From this process nine interdisciplinary teams were selected to continue to the official first phase of the competition, which involved touring ten counties around the Bay Area to familiarize team members with specific areas first-hand. Teams were then expected to select a specific neighborhood or region to work in for the next, and final, phase of the process, which resulted in a resilience design proposal for their selected area.

The selected regionals are predominantly Latinx and working-class communities, and they were selected by the teams in collaboration with the competition organizers (see Figures 4-1 through 4-6). Selected communities and regions that were selected by the teams all share similar climate vulnerabilities that center primarily on water issues: degraded watersheds, sea level rise, toxicity, and associated low water quality, habitat loss, and erosion.

Socio-ecological Resilience

Given the direct physical relationship to the San Francisco Bay that all of the communities involved in these proposals have, it's not surprising that all of the plans give significant attention to ecological restoration as a means to provide environmental resilience and security (see Table 1). Each proposal references restoring wetlands, marshland, and creeks, and several proposals further explicitly address wildlife habitat and species connectivity as an integral part of these restoration efforts. These ecological restoration aspects of the proposals, such as softening shorelines, daylighting creeks, and restoring wetlands and marshes, are efforts that encompass large-scale urban landscapes and related bodies of water. Over the last few decades a number of large-scale reclamation projects implemented around the globe envision the regional landscape, and the ecological processes that comprise it, as the primary mediator for the

urban (Lister 2013). Similarly, the *Resilient by Design* proposals envision reconnecting disparate and disconnected ecosystems, such as creeks, marshes, and wetlands, into a continuous landscape.

The proposals also, however, include distributed green infrastructure projects that take the form of green roofs, rain gardens, and other green infrastructure projects on distinct sites which collectively can act as a mitigating measure for floods while also helping to manage stormwater. Taken collectively, the design proposals replace the idea of infrastructure that acts as a reliable and consistent purveyor of resources, including water, electricity, food, and waste for the idea of infrastructure that accommodates adaptation and flexibility, feedback loops, self-management and reorganization, and is able to persist in a climate-risk future. All nine proposals envision a combination of green, blue, and grey infrastructure that can adapt to a changing climate and extreme weather events.

Importantly, these landscapes are visible and public. Ecosystem processes that might otherwise only be accessible to environmental scientists become public space, are incorporated into the performance of urban landscapes, and are made visible in order to mitigate weather extremes, while creating a place of identity. All of the *Resilient by Design* proposals discuss explicitly the need to involve people from impacted communities in the restoration processes at hand. Social benefits are not only addressed by layering recreational activities, such as walking and biking trails, on top of restored watersheds and coastal landscapes, but these critical landscapes also become sources of knowledge and opportunities for education for those directly impacted by their restoration.

Most notably, the *People's Plan* team working in North Richmond foregrounds the transfer of knowledge from soft/green infrastructure restoration projects to other projects and

processes that would empower people and promote social resilience. Towards that end, the *People's Plan* proposal emphasized the need to not only involve community members in restoring degraded landscapes but to provide ongoing technical expertise and education opportunities in order to strengthen within the community their ability to collectively interpret and solve future climate-related challenges, such as flooding or storm surges. Here, ecological and social resilience build on each other.

Another form that socio-ecological resilience takes in the proposals is through recommendations to establish various social institutions, groups, and networks that can have an ongoing and direct relationship to the neighborhood's changing ecology. The *Estuary Commons* proposal, for example, suggests that a Joint Powers Authority be established across different cities connected through a concern over shared climate change impacts. Such an authority would manage adaptation projects on a collective regional, rather than individual city, basis. *Unlock Alameda Creek* proposes that a multiple agencies be involved in ongoing engagement with key stakeholders, including landowners and operators, for the short and long-term planning of the regional baylands. In addition to enhancing the connectivity of environmental systems and the ecological functions across jurisdictions, the *Grand Bayway* proposal also emphasizes that plan implementations should foreground the regional workforce.

The design strategies that the plans offer, in other words, highlight the need for multi-jurisdictional and cross-scalar collaborations and partnerships that address urban and environmental processes as one, mutually constituted. Urbanization is not simply meant to be supported by environmental processes; implied in the proposals is the recognition that eco-based design strategies must frame urban processes as inseparable from ecological ones. It is not surprising, then, to see that the plans emphasize affordable housing units, investment in schools,

and requirement for local hiring practices amid eco-based proposals for stormwater, air, reservoirs, and soft infrastructures for rising sea levels.

Social resilience is not officially defined in any of the design proposals, though its definition is implied through design idea on how to strengthen social ties. All the plans address social resilience in different ways that range from recommendations to create resilience hubs (i.e. *Our Home*), building existing community-based organizational capacity (i.e. *Estuary Commons*), and managing the future of vacant parcels through community land trusts (i.e. *Elevate San Rafael*). The plans as a whole do not, however, offer concrete proposals that are based on an on-the-ground assessment of existing social networks and community groups or organizations. This is the case even for those design teams who worked with local community members directly throughout the design process. Resilience plans that not only propose social resilience but also build on existing community knowledge and resources could identify existing community members, collective skills, and knowledge that should be involved in future adaptation and mitigation projects. The design process could become a tool by which to promote collaborative networking relationships that can survive the publication of the resilience plans.

The *People's Plan* proposal, for example, worked exclusively with CBOs and community members to generate a process and methodology for equitable and sustainable community development that focused on using the community's assets to build local solutions to local challenges. The *Our Home* team, also particularly successful in building social resilience, created a Citizen's Advisory Board that is comprised of community members, institutional actors, and environmental experts and advocates, which continued to meet well after the end of the competition. The majority of the proposals, however, aimed to support the community in generating design ideas but it is not clear whether these collaborations continued beyond the

publication of the final design reports. As one member of the *Estuary Commons* team noted, given the few months the teams had to prepare design proposals that would address historic and ongoing systemic environmental and social inequalities, "we simply didn't have enough time to work with organizations and community members to build the kind and depth of understanding needed to do the kind of work we were trying to do" (Anonymous, personal communication, August 17, 2020).

How well social resilience was addressed in the final design proposals tended to be a function of how well the design team integrated, worked with, and supported the efforts of local community members. All of the plans, on the other hand, were much more directly engaged with design proposals that addressed ecological resilience, work that developed through collaborations with engineers, hydrologists, and landscape architects. Where social resilience was presented as separate from environmental resilience, such as in instances where access to housing or financial empowerment was not framed as dependent on eco-based design proposals such as a restoring eroded coastal landscapes or daylighting creeks, equity was referenced generically. Those plans that specifically foregrounded equity were the same plans that drew out the interdependency of social and ecological resilience.

Resilience Design and Equity

By focusing on disadvantaged communities in the Bay Area, and populations within them that are particularly vulnerable to climate risks, the plans implicitly take on equity in a central way, working with and offering design roadmaps and visions for resilient and climate-just futures. More concretely, each of the nine proposals envisions what an equitable climate-resilient future entails, though specific visions of equity vary substantially from plan to plan (see Table

2). At times equity is framed as access to renewed, resilient landscapes by community members - given the lack of access to open space and clean air that these communities face, ensuring that the resilient landscapes proposed have physical access points for community members is, indeed, a matter of equity.

All but two of the plans include affordable housing as a fundamental part of an equitable climate-resilient future. A number of plans offer concrete steps on how to build affordable housing and open space, such as through active and ongoing engagement with community members on how to best address underutilized land, through building community land trusts, and through advocacy and training at various institutional scales and agencies. Despite the emphasis on affordable housing, only one-third of the plans acknowledge gentrification and displacement as issues that need to be addressed alongside proposals for affordable housing, open space, new infrastructures, and habitat and watershed restorations.

Access to employment opportunities and careers, along with access to financial capital and wealth-building opportunities, are given rare attention in the plans. Though jobs are referenced, such references are in light of employment opportunities that are far enough away to provide a mobility burden for residents. An exception is the *Islais Hyper-Creek* plan in which equity was specifically framed as a function of access to affordable housing and to economic opportunities. Specifically, the plan calls for migrating to 'clean' technologies and energy sources that can be coupled with youth through education, building a long-term local workforce that can participate actively in a green transition economy.

The *Our Home* proposal is another exception worth highlighting here in that it pays substantial attention on how to create opportunities for North Richmond residents to acces financial capital, and provides concrete steps that build on the work of community-based

organizations in this neighborhood on how to achieve such access. These steps, which include generating shared homeownership opportunities and offering policies for local hiring practices, also aim to mitigate existing vulnerabilities faced by residents, from increased asthma rates to poverty. Access to homeownership, for example, is presented not only as an affordability issue but also as a means for wealth-building, while shared bicycles can reduce carbon emissions while allowing for greater mobility access.

Though each of the plans references equity and community engagement as necessary parts of the process for achieving an equitable resilience future, only four of the plans noted that their team members collaborated with community partners to gather input or to co-create a framework for generating and assessing resilience design strategies. It is unclear whether, or to what extent, the remaining five teams collaborated with community stakeholders, and what the nature of that collaboration was. To what degree, then, are the plans a result of a process that not only gives voice to communities but asks of them to envision and to author their future resilience? More pressingly, to what degree do the plans recognize that marginalized populations' exposure to climatic, environmental, and social risks is not a matter of individual choice but of historic and structural forces that persist and are supported by current policies? To overcome this exposure to risk, then, would require a shift in not only voice but in the power to enact resilient and climate just futures that communities envision.

Transformative Resilience

According to several individuals interviewed for this research, each from different teams, during the initial phase teams were told not to interface yet with community representatives or organizations, and were driven to different neighborhoods around the Bay Area on buses.

Because of this lack of transparency and communication, residents were confused and upset, particularly when seeing a large number of white people touring and taking notes in communities of color around the Bay Area (Anonymous, personal communication, August 7, 2020). In the second phase of the competition, once teams chose a specific geographic area to work in, team members were encouraged to make connections with residents and organizations working in the communities chosen for their proposals. However, the competition organizers did not facilitate those relationships, nor did they reach out to any of the communities before the competition launch to solicit interest or feedback, or to foster connections with residents and community organizations (Anonymous, personal communication, July 24, 2020).

The implication of this is that equity concerns are minimized insofar as procedural justice does not guide the design process. Procedural justice has long been established as a fundamental component of working towards an equitable outcome insofar as its focus on representation and recognition aims to overcome unequal power in decision-making processes that perpetuate inequitable outcomes (Fraser 1997, Young 1990). It is also especially critical for responding to climate change in that it enables people, especially those that are marginalized and especially vulnerable to climate risks, to collectively generate and enact decisions over how they and their communities will adapt (Adger et al. 2011).

This effort involves a capabilities approach, drawing out and emphasizing existing knowledge, capacities, and experiences of the communities engaged in local climate adaptation as a foundation for responding to climate risks (Schlosberg 2012). Four interviewees in this study, each of whom belonged to a different team, reinforced the need for working with communities to draw out networks, connections, and capabilities. Each agreed this was not enabled by the Resilient by Design process, in part because they were not given enough time to

engage with the communities before the final design product was to be delivered, and in part because they were not given enough funds to pay team members and community members for the time needed to engage with community members.

One team member, in particular, questioned the lack of attention the Resilient by Design process gave to the infrastructure needed for social resilience: "everyone talks about ecology and economy, but what did Resilient by Design do to strengthen the social dimensions of communities and organizations, to understand what their goals are and who they speak for, and to ensure that the competition resulted in a community-organizing model that could last beyond the Resilient by Design process, a community that has power?" (Anonymous, personal communication, July 21, 2020). Echoing this loss of opportunity in designing an enduring social resilience proposal, one team member acknowledged two years after the competition end that "that project sort of ended and we're busy working on other things, and it's been difficult to stay involved and engaged and in touch in a way that I was hoping could be helpful with those communities, to follow their leads and help them get where they want to go" (Conger 2020).

Despite these immense restrictions, it is clear, based on interviews and on the content of published plans, that teams were aware of the need to work closely with community stakeholders and made great efforts to engage as many organizations and representatives as they could. In these resilience plans equity is recognized as a distributional concern over communities' exposure to short and long-term climate risks, but also as a procedural issue that is mitigated through the efforts outlined in each plan that describe the ways in which community members were engaged in the design process. But the efficacy of these processes remains elusive. While procedural justice in climate adaptation is a critical foundation for an equitable outcome, and though public participation efforts can focus on being inclusive of marginalized and vulnerable

populations, these processes continue to be less than influential in giving those same populations political power to enact and shape the climate adaptation decisions they make (Moser 2013). With this in mind, I ask how resilience design takes on the question of equity beyond the timeline of the Resilient by Design project: What does it mean to design for resilience beyond access to resilient landscapes? Can resilience design proposals move beyond questions of access to affordable housing and open space, and instead also jumpstart a process that shifts the power of decision-making to community members in a way that can persist into the future? Can resilience design provide a roadmap for how to implement the product of these visioning processes?

There are the beginnings of such aspirations in some of the plans. The *Our Home* group worked with local residents and CBOs to create a Citizens Advisory Board, mentioned earlier in this article, to become the leading entity driving the Resilient by Design effort, as well as the North Richmond Living Levee group, a working group responsible for addressing wastewater and shoreline management. According to an interview with one of the team architects, throughout the process the team members, in partnership with these newly-formed organizations and existing ones, worked on funding mechanisms that could resist gentrification. A member of a prominent CBO explained in an interview that they continue to work with the *Our Home* design team members, collaborating on future financing opportunities for implementing the visions outlined in the plan.

The *Estuary Commons* team also worked extensively to build relationship with CBOs, residents, and agencies to implement adaptation strategies. Their work highlighted community-led investments as pathways for socioeconomic equity, acknowledging the responsibility of designers to shift the conversation surrounding equitable design to incorporate longer-term

implementation strategies that could help shift power relations on behalf of vulnerable populations. In an interview with the team's members it became clear that "everyone understood that the issues of finance and governance need to lead - we can find solutions to the landscape problems but we won't be able to do any of that unless we address underlying structures." One of the drawbacks of the Resilient by Design process that they, and two other teams, described was that the process of pairing the design group with the community they designed for did not allow for a co-creative process to take place. In part this had to do, all teams agreed, with the time restriction given to the designers and in part with the lack of funding for community members to participate in the design process.

Also framing equity as an issue beyond access to housing and open space was *The People's Plan* team, whose members worked on strengthening community advocacy through ecoliteracy, with the long-term vision of empowering individuals to take ownership of implementing their vision of a climate-just future framed by self-determination. Promoting advocacy took the form of system thinking and building capacity training, while ecoliteracy was driven by permaculture tenets: ethical boundaries, integrated functions, pattern to details, small and slow solutions, and diversity and redundancy (*The People's Plan* 14).

The People's Plan proposal does not involve design in the traditional architectural or urban design sense of formulating a vision for a specific place or region. Instead, the plan proposes a living document as a framework, or container, that can be adapted to the specific aspirations of a community that has been denied access to general or specific planning as a result of structural discrimination and oppression (*The People's Plan* 14). According to an interview with one of the leading members of the team, the *Resilient by Design* organizers questioned repeatedly who the designers on the team were and where the design was. The team explained to

the competition organizers that *The People's Plan* was a process that the community of Marin City owned, and that after the competition close the organizers need to continue funding and supporting this effort, though such an effort was not made.

Equity is referenced in each of the plans either directly, through statements that foreground its importance in conceiving of climate just and resilient futures, or indirectly, through strategies proposed that promote equitable access to housing and amenities. However, despite the fact that inequalities in these communities are a result of ongoing and structural discrimination, only one-third of the plans acknowledge structural racism or discrimination as a fundamental aspect of the resulting social and environmental injustices faced by the communities in which the proposals take place. One of the team members of the *Our Home* team, whose plan identified racial segregation as a fundamental factor in lingering environmental and social injustices that continue in North Richmond, explained in an interview that the team kept returning to the question of whether resilience design continues to ask communities of color to continue enduring these inequalities (Anonymous, personal communication, July 24, 2020). The plans that did take on racism and discrimination directly used the resilience design proposal to expand how design could address equity, and were very specific in their steps to achieve it. Beyond questions of access, the plans that did not take on issues of racism and discrimination directly did not capitalize on the power of design to lay the foundation for uplifting vulnerable communities in ways that allow for ongoing and persistent self-determination.

Resilience Labor and Stewardship

The labor that is involved with implementing and maintaining resilient landscapes, whether such landscapes are driven by the design of ecosystems, housing, recreational spaces, or

some combination of these, is an aspect of the resilience plans that received the least attention despite its centrality in questions of equity. All nine plans reference stewardship either directly or indirectly, and several plans foreground its importance in ongoing resilience work (see Table 3). None of the proposals, however, take on the question of stewardship and labor in terms of enacting or hindering equity. Though some proposals reference education as a way to increase green jobs, stewardship of surrounding landscapes and proposed ecosystem revitalizations is presented as distinct and separate from work involving a green energy transition.

The importance of stewarding the restoration and ongoing maintenance of resilient landscapes is clear. The *Common Ground* proposal explains the importance of stewardship as such: "Research in environmental psychology confirms that when we make connections to place we feel motivated to get involved with current predica-ments. We develop a sense of agency and meaning that helps us become stewards actively involved in future thinking and place-making" (*Common Ground*, 19). Indeed, much research has shown that there is a correlation between knowledge of ones local environment and a sense of place and identity (Berkes and Folke 1998; Asah and Blahna 2012; Tidball et. al. 2010).

What, in this context, becomes of working-class communities that cannot participate in such knowledge-making because of social factors such as language barriers, citizenship status, and financial restrictions? What of communities that bear the brunt of environmental degradation and climate risks such as sea level rise, and that then can do little to shepherd the restoration of ecosystems in their surrounding landscapes? The resilience design proposals reference or outright promote stewardship of local environmental features such as creeks and rivers, and new resources such as trees and community gardens, but fail to allow the question of labor to complicate what such stewardship entails.

Accessing funds for the lengthy stewardship process that involves education, engagement, design, implementation and ongoing maintenance is critical if resilience planning is to be equitable. It is a particularly difficult task, however, when proposals involve nature-based solutions and green, as opposed to hardened and highly-engineered, infrastructure, even if there is significant overlap between these two. We may think of caring for creeks and bioswales as work that requires knowledge and labor that is less specialized than the knowledge and labor required for pipes and channels, but the stewardship of nature is so difficult precisely because it lacks reliability and predictability given extreme weather events caused by climate change: "the biggest bottleneck in the resiliency pipeline is reluctance among local governments, land mangers, and grantees to back projects that have no clear strategy for covering the long-term expenses of nature-based infrastructure like rain gardens, urban forests, and complete streets" (McGlynn 2020).

In an effort to officially integrate labor in both the implementation and maintenance of resilience projects, the watershed planner for the Contra Costa County Watershed Program explained in an interview that, with the support of the Watershed Project group, a series of Green Benefits Districts (GBD) are being proposed for North Richmond. A GBD would have a board of governance that is comprised of, and represents, community needs as opposed to those of the county, and would fund labor for people who live in a certain neighborhood to maintain resilience projects. Funds at the county level that would otherwise go towards education, engagement, and maintenance would be given, instead, to the GBDs for the education, engagement, and maintenance of localized resilience efforts.

For a just transition to take place the question of labor cannot focus solely on green jobs but on the redistributive potential of work. Much of the push for just labor movements is

influenced by the frontline communities who experience highly disproportionate exposure to environmental toxicities and ongoing disinvestment, compounded by the systemic inequities that the racial, gender, ethnic minorities comprising those communities experience. Redistributive outcomes could include high wage jobs for the maintenance of green infrastructure and other nature-based landscapes, a strengthening of public ownership that opens paths for BIPOC communities, and carbon taxes that redistribute capital in a way that allows frontline and fenceline communities to take the lead on how those funds are implemented (Aronoff 2018).

These are endeavors that ought to be integrated with design projects. A project involving flood mitigation strategies, for example, would necessarily be limited unless the process through which the design strategies were developed also enabled new collaborations among stakeholders, addressed equitable labor for both implementation and maintenance work, and attempted to challenge ownership schemes. Centralizing labor within mitigation and adaptation strategies moves such projects from reactive to transformative by attempting to re-organize the relationship between capital, nature, and state (Stevis and Felli 2015).

The *Resilient by Design* plans as one such transformative path forward do little to negotiate this relationship, often sidelining labor, and associated questions of education and mobility, as a separate equity issue to address from environmental and climate-related work. Just transitions, on the other hand, hold promise for a transformative resilience by using labor, education, and ownership as the framework for negotiating socio-environmental shifts spurred on by climate change. Rather than ecological solutions submitted by design teams onto which labor must then plug into, design proposals can enable just transitions by foregrounding a democratic process driven by labor, ownership, and mobility.

Conclusion

This research into the content of the design plans resulting from the *Resilient by Design* competition in the Bay Area was driven by the question of whose resilience is being addressed and in what ways does resilience design engage with the implications of a climate-just future. How, exactly, resilient futures are envisioned, understood, and framed through design is a critical question as the design disciplines, and societies at large, continue to deal with climate change. In this research I looked at how resilience design purports to mitigate climate risks ecologically and socially, and outlined the implications of resilient landscapes for equity.

The environmental implications of climate change, particularly in terms of sea level rise, are central to each of the resilience design plans. Adaptation and mitigation measures took the form of green and gray infrastructure projects at different scales, from distributed to centralized and interconnected systems. Significant attention was given to restoration efforts, also at different scales, from household to region. Social resilience was also addressed in the plans, with suggested policies ranging from access to housing and open space to job training in green energy. Where social resilience was directly tied to ecological resilience, design proposals foregrounded equity concerns more concretely.

As evidenced by these resilience plans, designers take on equity in different ways. The proposals are complex, touching on a number of aspects on what constitutes a climate just future and always returning to the question of equity. Equity, however, is framed as either access to resilient landscapes, mobility, and housing or addressed through a participatory design process that led to final resilience proposals. Very few plans take on how to shift decision-making and implementation of resilient landscapes to community members, and how to make that power shift outlast the end of the competition timeline.

Much of my critique here rests on the assumption that designers are in a position to address questions of equity, not simply in terms of envisioning who can access basic housing and living needs, resilient landscapes, knowledge, and economic opportunities, but in terms of proposing designs that shift power relations. For this reason, design proposals that envision climate just futures need to take on the question of labor, of the work involved in generating these future visions of resilient landscapes, implementing them, and maintaining them.

To be clear, environmental knowledge and stewardship are valuable. How landscapes are narrated, from creeks and watersheds to urban infrastructures, changes how those landscapes are understood and, in turn, informs how we relate to those landscapes. Environmental psychologists have long argued that our distance from the natural resources we draw our energy from, the very landscapes that sustain our ways of life, enable us to exploit those landscapes (Birkeland 2008; Patterson and Williams 2005; Cheng et. al. 2003; Kruger and Jakes 2003; Kaltenborn 1998). But stewardship is neither a panacea nor a stand-in for the difficult and necessary questions surrounding environmental labor and the kind of change that climate change demands.

Promoting stewardship may present itself as a mode of public engagement and participatory reclamation processes, but it often disguises the labor involved in landscape restoration projects under the auspices of resilience design. Centralizing equity in restorative landscape proposals means recognizing that images of urban landscape futures that are capable of absorbing sea level rise and storm surges are the end-result of a long and laborious process. In that process the burden of labor can, and often does, shift to communities already facing social and environmental burdens. The point is not to abandon visioning and implementing resilience design, but to reflect on and recognize the work it asks of people in its promise to remake our relationships to landscapes in the era of climate change.

Whether design should be involved in addressing social and environmental inequities is not in question - the resilience design proposals discussed here do just that. The question is what the nature of that involvement is, or what it could be. Where teams were willing to alter their position of authority, insofar as they were chosen by the competition organizers to lead this design effort, beyond incorporating community feedback into design frameworks, design proposals provided a roadmap for equity that could outlast the publication of the proposals. In other words, the proposals that deemphasized design-as-site or design-as-landscape did so by focusing on design-as-process that could in turn institute new, and reinforce existing, social and environmental relations. Corresponding strategies involved opening new paths of communication among stakeholders, new paths for wealth accumulation, and otherwise generating authority among community members across policy-making and governance levels at different scales.

Figure 4-1. Resilient by Design Project Outlines

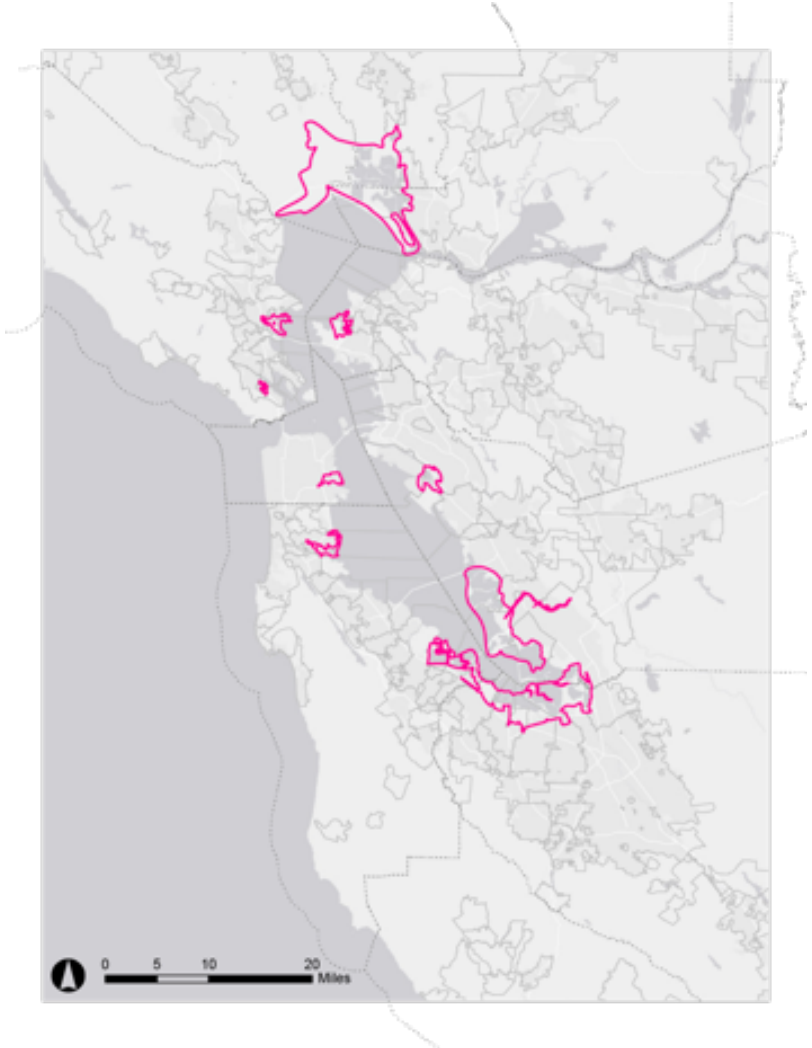


Figure 4-2. Resilient by Design Project Outlines and Education Attainment

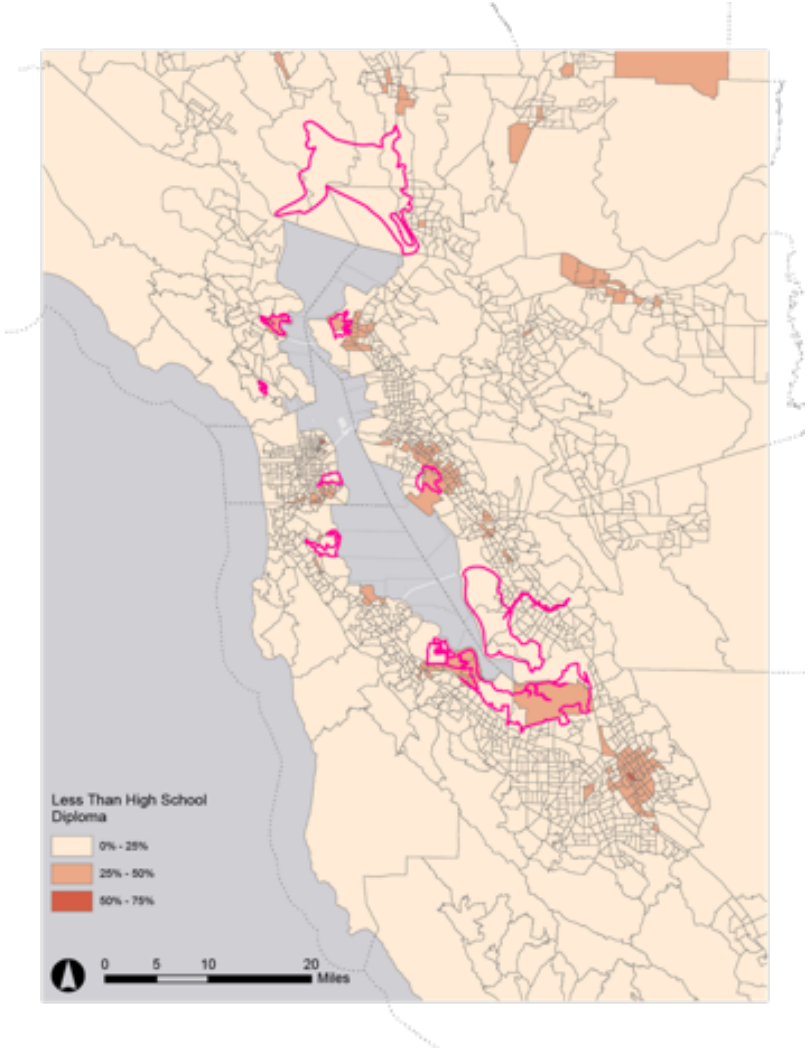


Figure 4-3. Resilient by Design Project Outlines and Unemployment Rate

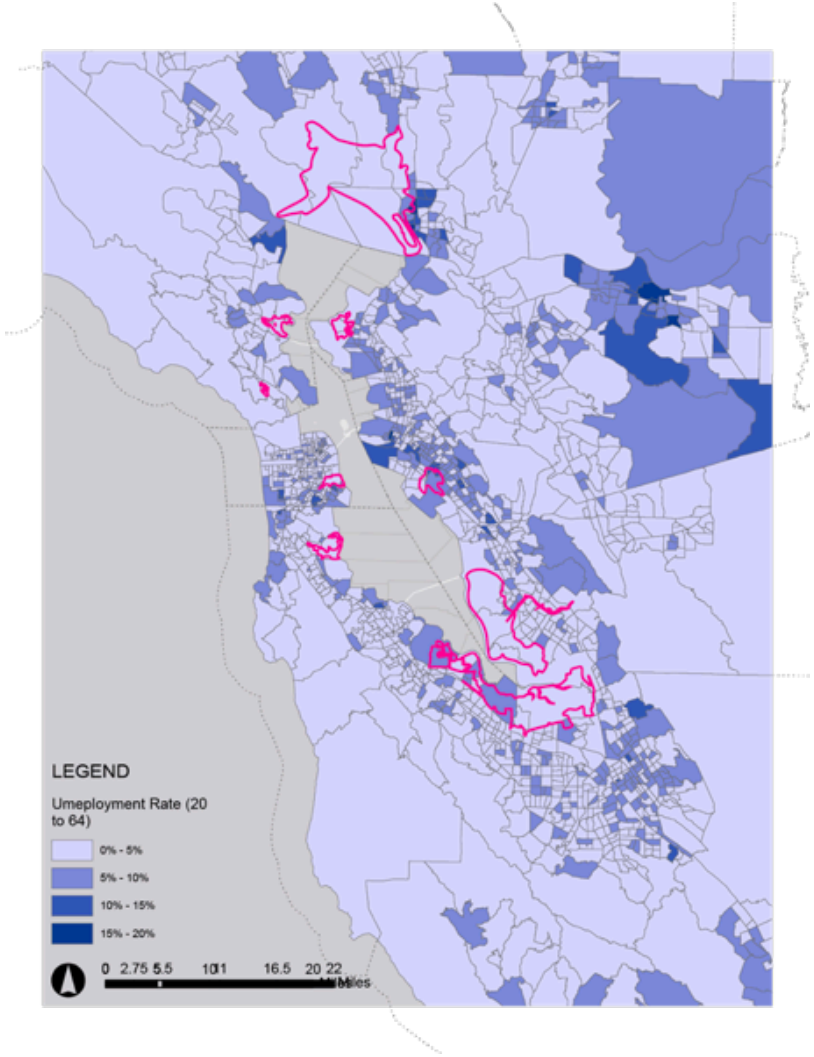


Figure 4-4. Resilient by Design Project Outlines and Renter-Occupied Households

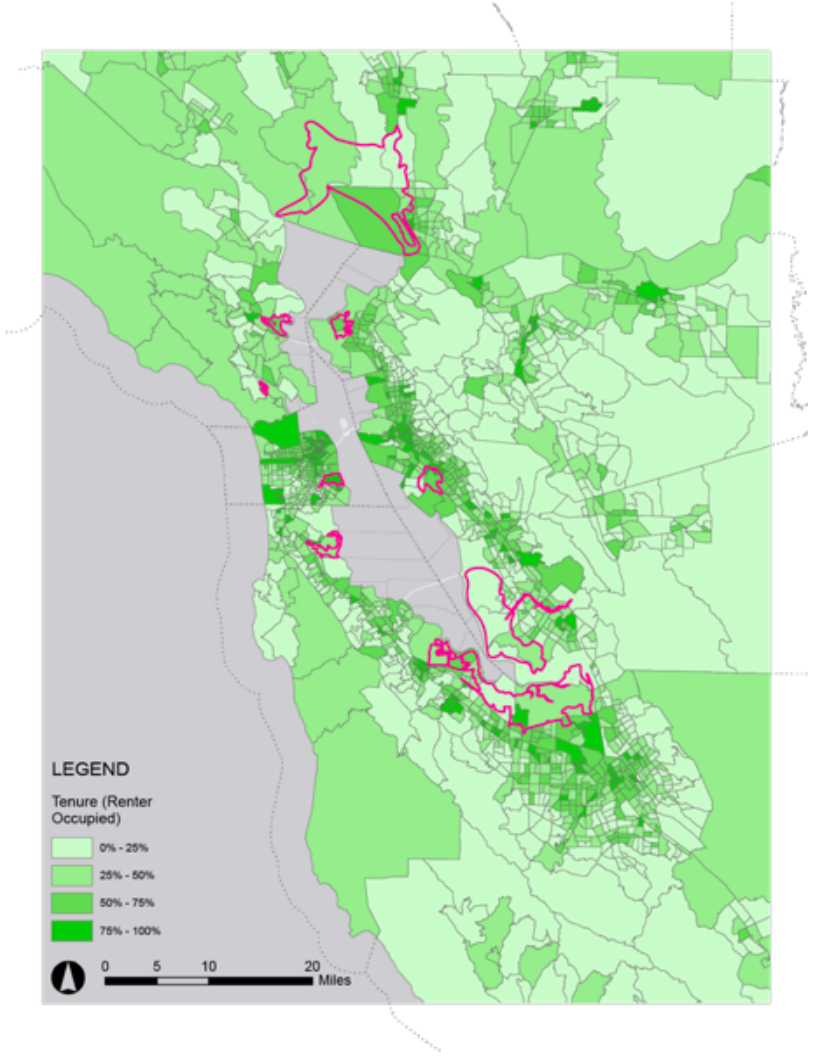


Figure 4-5. Resilient by Design Project Outlines and Latinx Populations

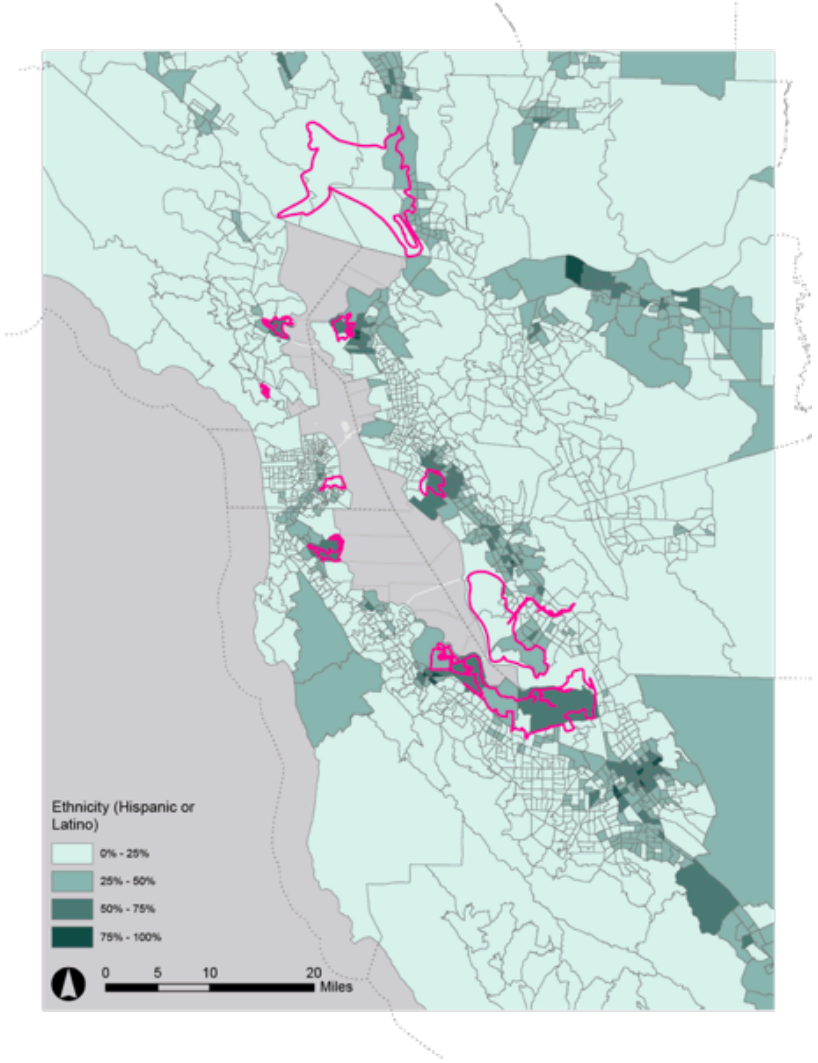
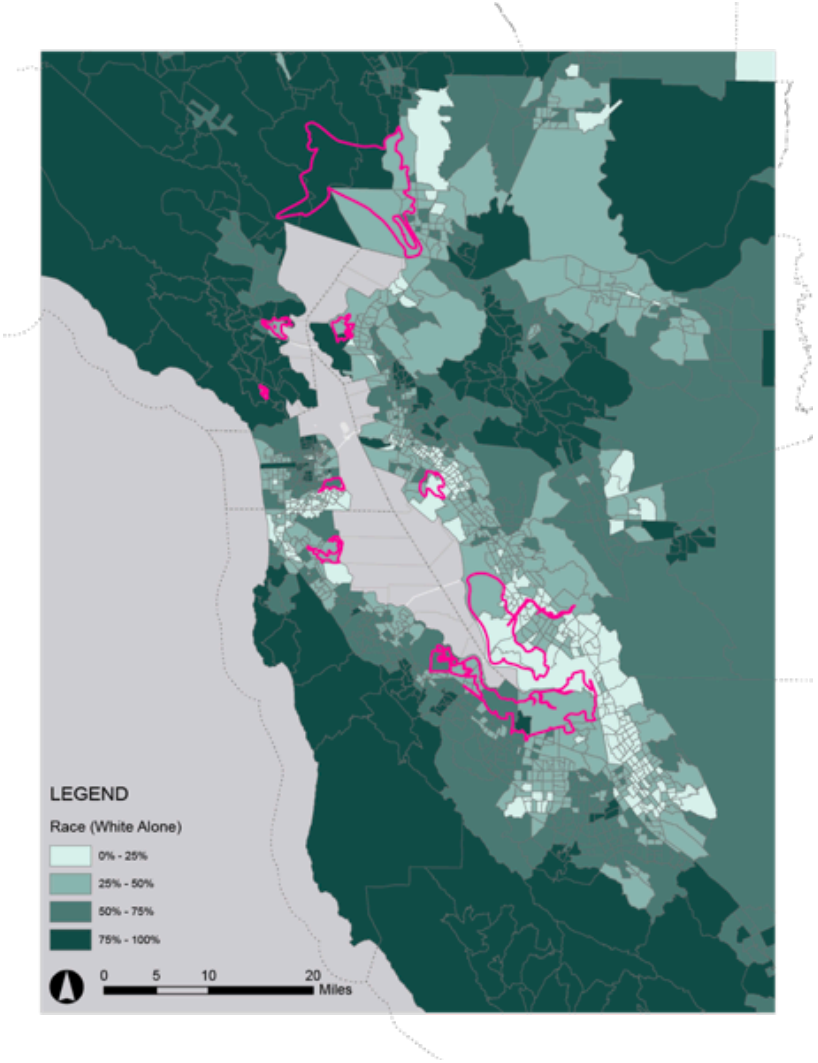
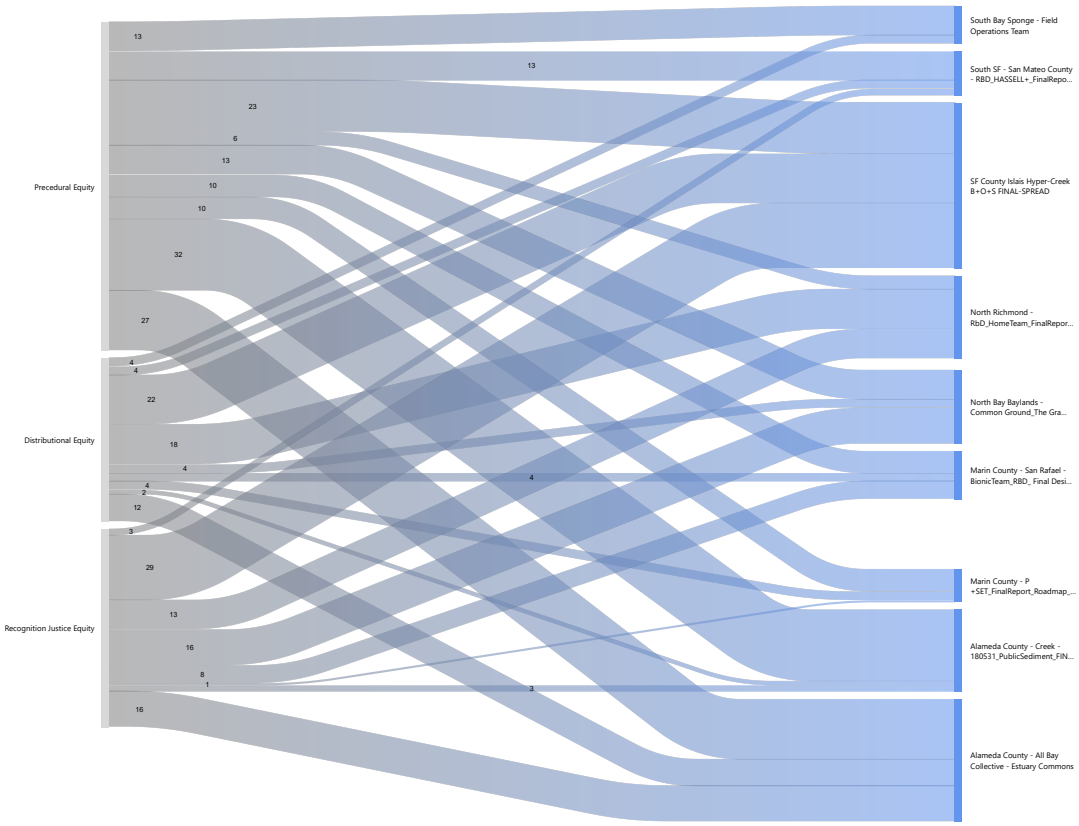
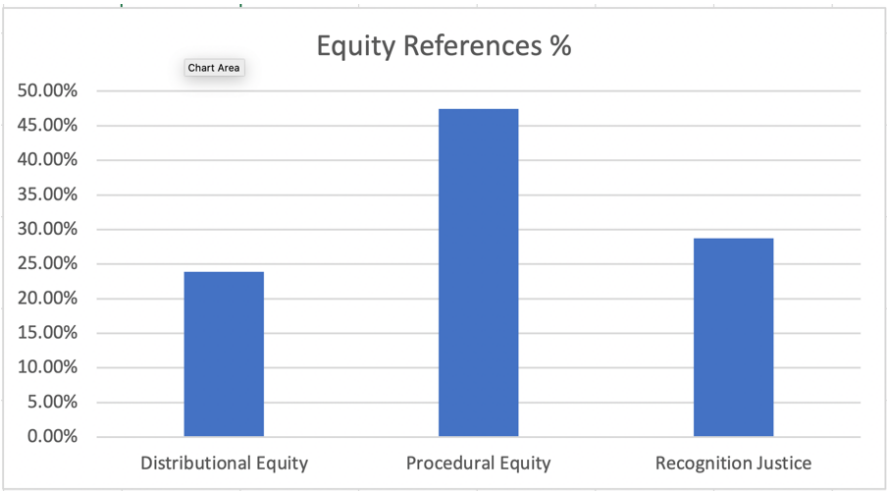


Figure 4-6. Resilient by Design Project Outlines and White Populations

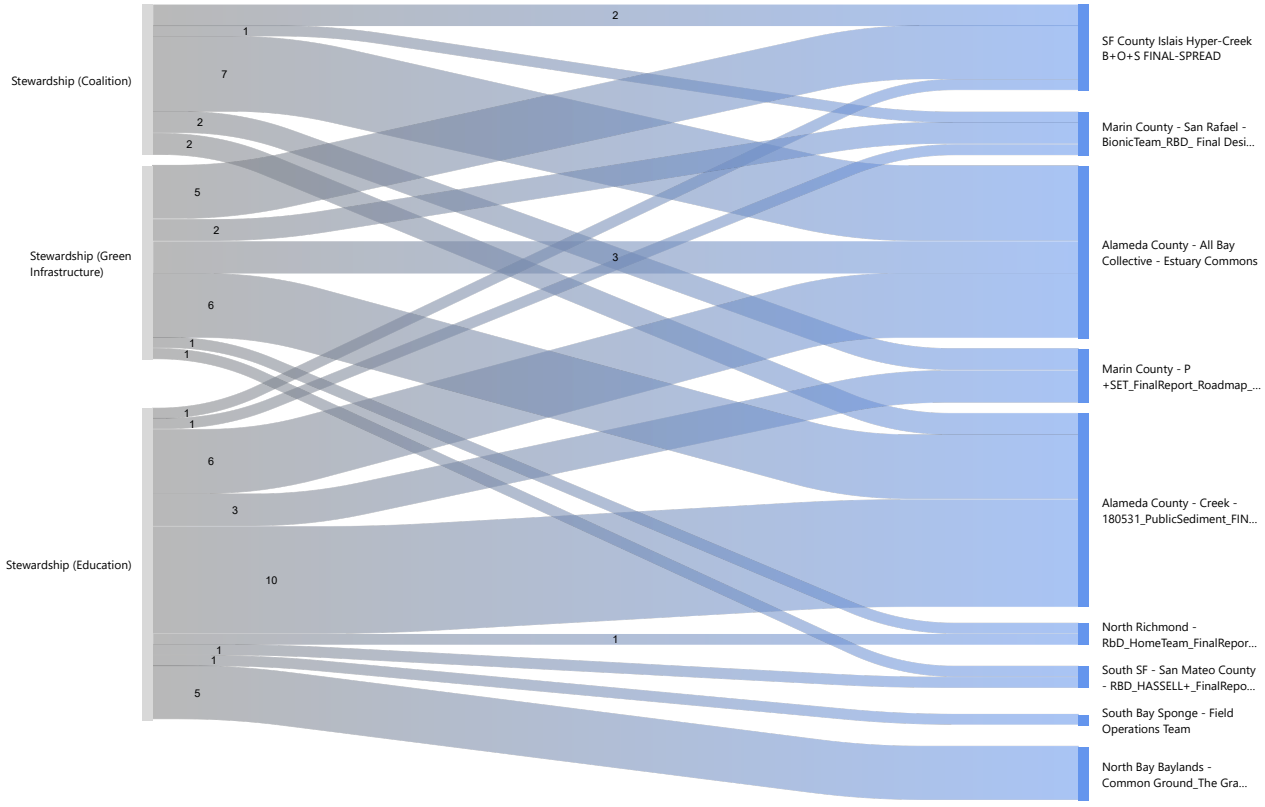


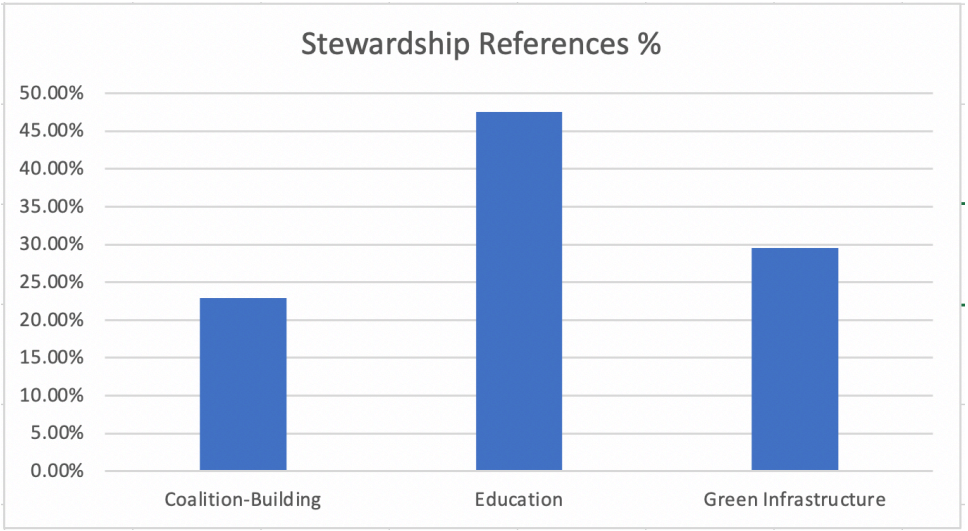
Graph 1. Equity References in Resilience by Design Proposals





Graph 2. Stewardship References in Resilience by Design Proposals





Appendix 1. Semi-Structured Interview Instrument

Interview objective: To understand how resilience is framed and understood by the teams and community-based organizations that were part of the Resilient by Design competition in and for the Bay Area; to understand how the design process was similar and different for each team, with particular emphasis on the nature of engagement with stakeholders; and to understand the impact the design proposals had for each community after the competition ended.

- The Resilient by Design process foregrounds the idea of resilience. But this is a broad term that means different things to different people. Is the term *resilience* something you defined for yourselves? To what extent was the term relevant or important to you and the work you do?

- Resilient by Design discusses community engagement as a big component of the design process.
    - How did you, and your organization, engage with the various members of each team? With community members? How often did you meet with them?
    - [for CBOs] Did you feel like you were part of the leadership of the group? Or more of a consultant role?
        - Follow-up: Do you feel you got the support you were hoping for from Resilient by Design?
        - Follow-up: Did you get compensated for your time in being part of this process?

- [for Design Teams] Did you reach out to CBOs? To what extent did they participate in the design process?
    - Follow-up: Did you have to establish relationships with CBOs within the design competition timeframe? Did the CBOs know if your intent beforehand (were they briefed by Res by Design?)

- Was the link between adaptation design and gentrification discussed by the competition organizers or by the team members you worked with?
    - Follow-up: What policies, if any, do you think should have been focused on in order to mitigate climate gentrification?

- What projects came out of the competition that you may be working on now?
    - Follow-up: What, if any, funding streams were identified for the community to continue working on the issues that matter to you?

- What were some of the strengths in this competition, from your point of view? Weaknesses?
    - Follow-up: What were you hoping to gain from the competition that you may not have gained? And conversely, what did you gain that you didn't expect? Something that may have been a surprising outcome?

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Chapter 5. Conclusion: Resilience Matters

Future resilience visions touch on a number of conversations, notably those in policy, planning and design. Imaginaries abound, forging alignment among disciplines as we formulate alternative pathways for a just and equitable post-carbon future. The three main papers that comprise this dissertation contribute to these conversations in distinct ways and at different scales. In terms of policy, I offered a systematic assessment of resilience across US cities and analyzed the implications of resilience, as taken up in those plans, for questions of equity, governance, and participation. The ways in which resilience scales down and is appropriated, contested, and absorbed at the neighborhood level was the topic of the second part of this dissertation, where I look specifically at South Los Angeles as a case study for understanding the important question of implementation. Finally, how resilience is wrapped up in design, or in the visioning process, of post-carbon and climate-proof futures, is addressed in the last major chapter of this dissertation.

Design for transitions, specifically, joins design with activists, radical planning, and reflective practice. Recently, and within the framework of resilience, a climate-proof resilient future is slowly being taken up as a way to address ethnic and racial minority rights in the decarbonization process. In many ways, these efforts are demanded by communities themselves rather than given in design and planning documents. In the Watts neighborhood of South LA, for example, community members continue to actively advocate for more holistic approaches to the projects conceived of by planners at the city level that are slated for implementation in their streets and public spaces. Where planners advocate for an expanded tree canopy, for example, community residents point to the need to direct such efforts with safe routes to school and with micro-business economic development opportunities.

The idea of *green jobs* and *nature-based solutions* belies the complexity of an equitable post-carbon future. New jobs in industries that help societies move away from fossil fuel dependence is one manifestation of greening the labor force, but equally critical considerations involve designing new social structures and physical systems that enable decarbonization, supporting movements to help promote a post-carbon future, and enabling economic mobility for traditionally marginalized groups. The point is not to abandon questions of participation, stewardship, and labor in this process, but to centralize and reconcile the work it asks of populations when envisioning and materializing processes of just transitions.

Rather than limit discussions surrounding just transitions to funding low-carbon initiatives while remaining entrenched in traditional economic frameworks, the goal is to instead lead by foregrounding the transformative potential of just transitions for our current social and environmental sytems. When integrated with design proposals, such endeavors have the potential to not only meet environmental demands but to also question ownership models and enable alternative participation efforts that are embedded in, and driven by, specific populations and geographies at stake.