

## FROM RISK TO RESILIENCE

Examining environmental justice indicators in Los Angeles' most climate vulnerable community



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## **Cover Image**

“Have we forgotten that we are spiritual beings having a human experience?  
In a universe created in harmony, conflict is a creation of your own mind.  
You have all that you need within, what are you waiting for?  
**FREE YOUR MIND!”**

“The Elixir”  
Patrick Henry Johnson  
2011  
4313 Crenshaw Blvd

## List of Abbreviations

ACS — American Community Survey  
ASTHO — Association of State and Territorial Health Officials  
CCPVST — Climate Change Population Vulnerability Screening Tool  
CEHTP — California Environmental Health Tracking Program  
CA — California  
CADPH — California Department of Public Health  
CBPR — Community-based participatory research  
CCPVST — Climate Change Population Vulnerability Screening Tool  
CEC — California Energy Commission  
CD — City Council Districts  
CDC — Center for Disease Control  
CHC — Community Health Councils  
CSD — Baldwin Hills Community Standards District  
CDE — Chronic disease exacerbations  
DCP — Los Angeles Department of City Planning  
GBHA — Greater Baldwin Hills Alliance  
GHG — Greenhouse gas  
GRZ — Gang Reduction Zone  
HKZ — Healthy Kids Zone  
ECWANDC — Empowerment Congress West Area Neighborhood Development Council  
LA — Los Angeles  
LADOT — Los Angeles Department of Transportation  
LAPD — Los Angeles Police Department  
LAFD — Los Angeles Fire Department  
MdlT — Mujeres de la Tierra  
“Metro” — Los Angeles Metropolitan Transit Authority  
PLUM — Planning and Land Use Management Committee  
PERE — Program for Environmental and Regional Equity, USC Dornsife College  
PoP — Percentage of Population  
SCAQM — South Coast Air Quality Management District  
“The County” — Los Angeles County  
“The Plan” — West Adams-Baldwin Hills-Leimert New Community Plan  
“The Tract” — Census tract 06037236202 (2362.02)  
UHI — Urban heat island

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## Introduction

Climate change is a lens through which we can view suffering, struggle and injustice. It is a phenomenon that will have direct environmental impacts as well as a variety of downstream effects. All phenomena – social, economic, environmental or otherwise – affect communities in different ways. Researchers, governments and civil society at large are grappling with the questions and risks posed by industrial-strength environmental alteration. One branch seeks to mitigate the looming and increasingly apparent effects of climate change, while another seeks to predict the impacts of climate change in order to adapt systems and infrastructure accordingly.

People around the world are working to mitigate risk and improve resilience in the face of climatic variance. A wealth of literature, supported by a growing body of empirical evidence, asserts that climate change will cause disproportionate harm to poor countries. This insight into the unequal impact of environmental degradation has led to heated debates in international emission mitigation convening's, such as during the United Nations-sponsored conferences in Kyoto in 1997 and Paris in 2015. Representatives of lower-income nations continue to challenge the macro-inequity of climate change: they are the smallest emissions contributors yet they will be hardest hit by climate impacts. Though a landmark agreement was made at the COP21 conference in Paris, the climate change discussion still largely revolves around measurements of climate change at the countrywide level.

In the United States (US), the conversation around climate change is largely political and abstract. Congress debates power plant emission policies, environmentalists block oil-rigs from heading to the Arctic and scientists publish articles on terrestrial space-time climatology. Overall, the discussion is disconnected from people's lives. However, based on every business-as-usual scenario, climate change will have significant impacts on everyday life.

There is a strong correlation between life expectancy and place of birth in the US. In the US county with the highest life expectancy, men live 15.5 years and women live 11.7 years longer than men and women in the county with the lowest life expectancy (Graham 2013). Anthony Iton, Senior Vice President of Healthy Communities for The California Endowment, said, "I can pretty much predict your life expectancy by where you live" (Graham 2013). A mass of research highlights the connection between inequality and geography in the US — that is to say, *Place Matters* (Dreier et al 2014). Climate change will only increase the significance of place. In a recent talk at Occidental College, Angela Davis highlighted the "intersectionality of struggle." The struggle is widespread across the US, particularly in low-income communities of color. Climate change is predicted to exacerbate existing struggles, and therefore, it is important to look at the intersectionality of this phenomenon.

Climate change is a global environmental phenomenon, but the impacts are decidedly local. Climate impacts are place-specific; therefore, it is rational to take a place-specific approach to understanding them. The role of research, policy and community organizing, then, is to expose local impacts and problems posed by climate change. The role of researchers, policy makers and community members, then, is to enact local solutions to these local problems.

Within the formal US political structure, municipalities are the most local governing body. Therefore, cities have been tasked with creating effective climate adaptation strategies. In

theory, cities have the potential to develop place specific policies and infrastructure that will improve climate resilience. For years, many European cities have been researching and adopting adaptation plans. US municipalities, however, are just beginning to think about adapting to a new climate reality. But even within cities there are huge health disparities, income gaps and place specific struggles.

Ultimately, all phenomena are experienced at the community, household and individual level. Individuals, their families and their communities are the ones who must deal with the reality of global climate change. If climate change is predicted to exacerbate existing struggles and inequality, then the most important and rational focus is on the community-level. Vulnerability, simply put, is elevated risk to harm. It's inverse, resilience, simply put, is protection against harm. The ultimate goal of climate adaptation, then, is to minimize vulnerability and maximize resilience.

Beginning in 2007, researchers collaborated with community members to create a tool to better understand the geography of environmental racism. In a cross-disciplinary effort, Manuel Pastor of USC, Rachel Morello-Frosch of UC Berkeley and James Sadd of Occidental College collaborated to create the Environmental Justice Screening Method (EJSM). In 2012, the California Department of Public Health led the development of the Climate Change Population Vulnerability Screening Tool (CCPVST) that identified the most climate vulnerable areas in Los Angeles and Fresno counties. In 2015, the EJSM team adopted seven climate vulnerability indicators into their screening method, acknowledging that climate change is an issue of and inextricability linked to environmental justice.

The CCPVST identified census tract 2362.02 (The Tract) as the most climate vulnerable tract in Los Angeles (LA) County. The CCPVST measured vulnerability using nine quantitative indicators: air conditioning (AC) ownership; land cover characteristics (tree canopy and impervious surfaces); access to transportation (transit and household car access); and social vulnerabilities (elderly and living alone). But what does climate vulnerability mean for the lives and livelihoods of the people who live in this area?

The goal of my research is to try to understand what climate vulnerability means, how it occurs and what can be done about it in LA's most climate vulnerable community. To expand the scope of my research I investigated all 32 EJSM indicators, comparing The Tract data to The County's tract average. I chose to conduct a 'second-generation vulnerability assessment,' a research approach that uses mixed methods in order to measure adaptive capacity, based on the theory of Füssel and Klein (2006). To uncover the cause and impact of vulnerability, I decided to interview both community members and municipal government officials. I also attended a number of public meetings and logged hours of field work in order to gain as thorough an understanding of this community — past, present and future — as possible. The following is a statement of personal motivation, a review of relevant literature, background about the community, an explanation of methods, a description of findings and proposed recommendations.

## *Personal Motivation*

Aristotle proposed three forms of argument: ethos, logos and pathos. Ethos appeals to culture, logos appeals to logic and pathos appeals to emotion. Though academia requires the strict application of logos, my passion for this project derives from pathos and ethos.

Last spring I studied abroad in Nepal. One of my teachers, friends and mentors abroad was a man named Phurwa Dhondup. Phurwa, a gentle, playful young man, was born in the remote western Himalayan village of Dho, in the Tarap Valley of the Nepali Dolpa district. Phurwa was in the first graduating class of the Crystal Mountain School (CMS), founded by French philanthropists in 2001. Phurwa went on to leave his village for the first time to embark on a journey to Kathmandu, where he eventually earned a college degree and a teaching position with SIT World Learning.

I grew close with Phurwa, and when it came time to choose a location for my Independent Study Project (ISP) — a month long research endeavor — I had a strong desire to go to Dho, Phurwa's home. Phurwa connected me with the Snow Leopard Residence: a hostel where students who graduate from the CMS live while pursuing their secondary and postsecondary education. There I was introduced to Dorje, Sonam and a group of other students. Dorje and Sonam graduated from the CMS in 7th grade and then left for Kathmandu; they were now in 12th grade, about to graduate secondary school. Dorje and Sonam hadn't been home in 5 years since they left Dho. The timing just so happened that I was invited to join them on their long-awaited, 5-day-long journey back home.

Before we left, I had a discussion with the students at SLR, all of them natives of the Tarap Valley. I wanted to know what would be a good topic to study while I was in their home. At first it was hard to get them to talk about where they were from, but then we hit a topic that got everyone talking: the weather. Although none of them had been home in years, they had all heard that the past few years had been remarkably dry in the summer and disturbingly cold in the winter. They had heard stories of avalanches and water shortages making life difficult back home. They were all curious, and nervous, to see what things would be like when they returned home.

A few weeks later, we took the long, grueling and astoundingly beautiful walk up to Dho. Situated 4,000 meters above sea level near the Nepal-Tibet border, only one crop grows in Upper Dolpo — barley. The primary source of sustenance is yak and di (female yak), which produce di butter, cheese, meat and fur for warmth. A host of other animals have helped Dolpopas survive and thrive in harsh, high elevation conditions since the 8th century CE: goats, sheep, donkeys, horses, cows and dzos (yak-cow hybrids). I was invited to stay in the home of Dorje with his older his sister Wangmo and their grandmother Ebee.

While in Dho, I spent most of my days talking with community members. I had read scientific papers about the shifting climate of the Himalayas, but I wanted to understand the lived-experience of climate change. With the help of my host siblings Wangmo and Dorje, I was able to conduct over 60 interviews. Though climate change was the focus of my study, it was merely a lens through which I could understand the history, culture and modern context of the Tarap Valley. I compiled my findings in a paper titled "Existential Avalanche: The Lived

Experience of Climate Change in Dolpo, Nepal.” I am eternally grateful for all of the people who shared their experience, insight, home, horse, tea and food with me, and I hope to one day repay the living kindness I was shown.

What I learned and observed in Dolpo was alarming and tragic. Precipitation patterns had become erratic, avalanches more frequent, snow leopard attacks more common and winters harsher; life in general had become more difficult. I left Dolpo feeling worried and a bit confused. Climate change is really happening in parts of the world, and it is having very real impacts. But in the US and in much of the ‘developed’ world, climate change is merely a buzzword and a topic of future concern.

I did not intend to pursue a research project about climate change in LA. To be honest, the topic felt too large and overwhelming to think about any more. I wanted to deal with a more socially accepted, equity-focused topic like affordable housing or public transportation. Cities across the country are facing a housing crisis, and I wanted to help solve it. Climate change is too abstract, too futuristic to study in the US, I thought.

But then I stumbled upon the climate change population vulnerability findings while researching solar potential in Los Angeles (LA). I saw that they had identified the most climate vulnerable area of LA, and I got curious. I searched the census tract, and found that it was located in southwest Los Angeles. I found that the community was 99 percent people of color and mostly low income. I found that, at least by initial demographic analysis, this area was already suffering tremendously from social and economic inequality.

Having already observed the devastation brought on by climate change, I had to dig deeper. In Dolpo, I had come too late. I only had the opportunity to observe the struggle and suffering created by this global catastrophe. But in LA, I might have an opportunity to prevent, or at least understand, the additional burden that climate change will place on this community and others like it. It started with curiosity and morphed into a moral obligation. It started with logos and cemented itself in pathos. As for ethos, well, I’ll leave that to the community.



## Literature Review

The following is a review of the literature on climate vulnerability and adaptation at both the municipal and community level. Climate change is an inherently interdisciplinary subject and the emerging literature on vulnerability and adaptive capacity does not fit neatly into conventional disciplines. Within this evolving realm of research, literature is primarily found in the fields of public health, geography, sociology, economics, disaster risk management, urban governance, regional planning, climatology and the natural sciences. My project sits at the intersection of the institutional approach and the community approach within adaptive capacity theory. In Los Angeles, my research complements existing vulnerability and climate justice research. My research is also cutting edge -- it is the first community-level adaptive capacity assessment that has ever been conducted in the United States.

I begin this literature review by outlining the global discussions on climate justice, vulnerability and adaptive capacity. Next I examine the national debate through the environmental justice and climate gap literature, tying them to discussions on vulnerability, Hurricane Katrina and the Black Lives Matter movement. Environmental justice research deals with systemic racism, therefore it is necessary to examine the major disaster (Katrina) and the major social movement (BLM) in the modern US, both of which are inextricably linked to race. Next I examine the role of cities and institutions, particularly as they pertain to vulnerability and adaptive capacity. Finally, I review the role of communities in the literature, again with a focus on vulnerability and adaptive capacity research. I conclude by exploring gaps in the literature and situating my research. Throughout this literature review, I pay special attention to theoretical frameworks, research methodologies and key findings.

Climate change is a global issue. Across the world, poor people are most vulnerable to the direct and downstream impacts. International academia is grappling questions around humanity's ability to live on an altered planet. In the US, climate change is predicted to most severely impact poor communities of color. Cities will face a unique host of climate challenges and are grappling with questions of vulnerability and adaptation. Ultimately, impacts will be felt at the community level and the adaptive capacity of vulnerable communities is key. In Los Angeles, the most climate vulnerable areas have been identified, but no one has investigated the adaptive capacity of the communities living in these areas. By critically examining vulnerability and adaptive capacity at both the municipal and community level, this review of the literature informs my research design and exposes gaps in existing knowledge.

### *Global Issue*

The United Nations Framework Convention on Climate Change (2015), also known as COP21, brought leaders together in Paris from around the world. Upon returning home from COP21, President Obama said he observed an “unprecedented mobilization of the world's community” (“President Obama on Impact of Climate Change” 2015). In Los Angeles, the National Nurses United union organized a rally thousands strong to demand action at COP21 that directly relates to public health in southern California (“Big Climate Change Rally Today in Los Angeles” 2015). Climate change is the world's issue and international academia is rigorously interrogating the implications of environmental social and economic phenomena.

## *Climate Justice*

Climate change places the greatest burden on the world's' poor (UNHABITAT 2011). According to the most recent Intergovernmental Panel on Climate Change (IPCC) report, “Risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development” (IPCC 2014). Climate justice theory and the parallel movement draw from the scientific evidence of unequal climate impacts (e.g., Audet 2013; Barrett 2013; Schlosberg 2012). Public health is of particular importance in this domain; for example, in the island nation of Vanuatu, climate change will increase the risk of certain diseases, especially in poor communities (Spickett, Katscherian, and McIver 2013). Climate justice shifts the focus from nations to marginalized communities who will suffer the most from the direct (i.e. natural disasters) and downstream (i.e. food cost increases) impacts of climate change.

The academic discussion of climate justice complements a growing international movement that calls for equity in response to climate change (e.g., Barker, Scrieciu, and Taylor 2008; Joshi 2014). Climate justice asserts, with extensive evidence, that climate change will not just affect poor nations, but poor, disenfranchised people in every nation. In LA, a climate justice movement has emerged to address the inequities of climate impacts. In order to understand the inequities, it is fundamental to understand the nature, severity and geography of climate impacts – a body of literature known as vulnerability assessments.

## *Vulnerability Assessments*

Vulnerability is a cross-disciplinary theoretical concept. The emergence of vulnerability as a major theme in climate change literature can be traced back to theoretical constructions in human ecology and social geography (Adger 2006). Though it has a range of definitions, within the domain of climate change and disaster risk literature, vulnerability is generally defined as the degree to which a population is susceptible to environmental stress and climatic extremes (Adger 2006; Fussel and Klein 2006). Investigating vulnerability illuminates existing social inequities and emerging ecological risks. In LA, vulnerability research has identified the most climate vulnerable communities. To test vulnerability theory, various methods of assessment were developed.

Climate change vulnerability and adaptation research can be broken into four general categories of assessment: impact, vulnerability, adaptive capacity and adaptation policy (Füssel and Klein 2006; Lynch et al. 2008). For a visual representation of the conceptual evolution — from impact assessment to adaptation policy assessment — see **Figures 1** and **2**. Using elaborate computer models, impact assessments measure the potential effects of various climate change scenarios. Vulnerability assessments evaluate predicted climate impacts on particular populations. Adaptive capacity assessments analyze a particular population's ability to adapt to the impacts of climate change. Finally, adaptation policy assessments focus on providing relevant information to decision makers on the effectiveness policies that increase resilience and reduce the adverse effects of climate change. (Füssel and Klein 2006; Lynch et al. 2008)

Figure 1 — Conceptual framework for climate impact assessments (*Füssel and Klein*)

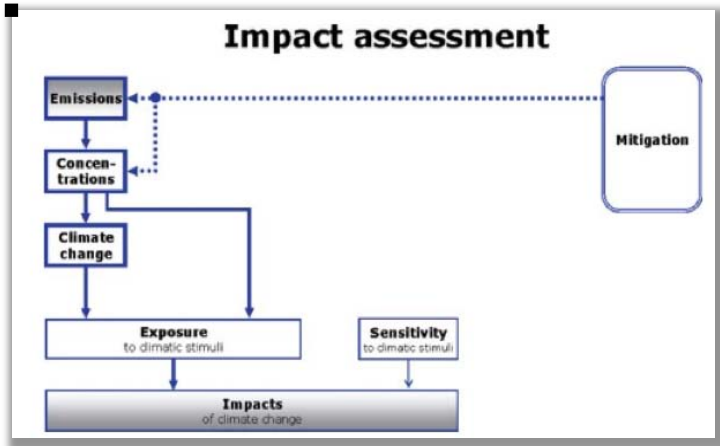


Figure 2 — Conceptual framework for adaptation policy assessments (*Füssel and Klein*)

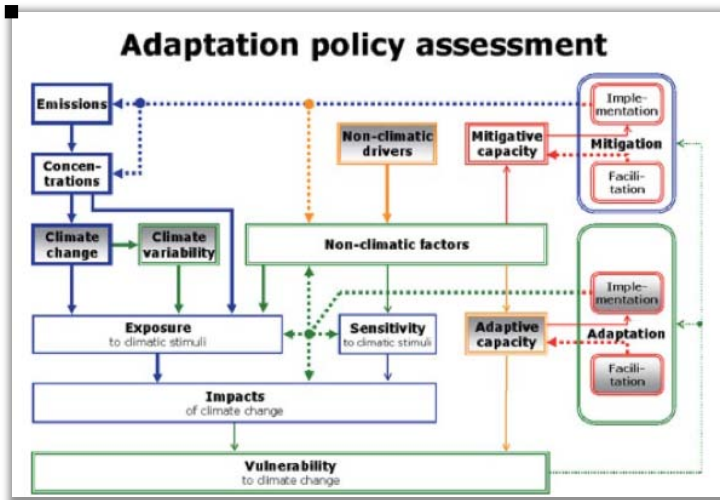
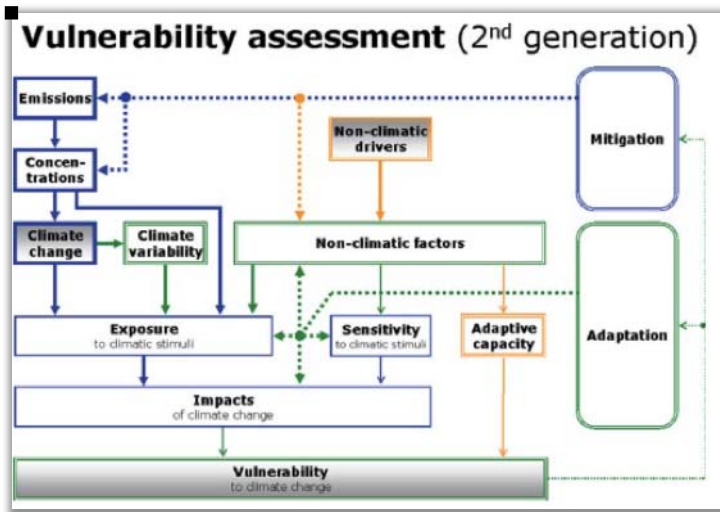


Figure 3 — Conceptual framework for 2<sup>nd</sup> gen vulnerability assessments (*Füssel and Klein*)



In LA, impact assessments are well documented (Climate Resolve n.d. e.g., Berg et al. 2014). LA specific vulnerability assessments are also numerous (Shonkoff et al. 2011; Shonkoff et al. 2009; Kersten et al. 2012; DeShazo et al. 2014). My research will take the adaptive capacity approach and model a second-generation vulnerability assessment (see **Figure 3**). Thus far, no LA-specific research has taken the second-generation vulnerability assessment approach. My research will inform policy and will pave the way for a future adaptation policy assessment. Without my initial community-level research on adaptive capacity, an investigation into effective policy development is not possible.

When to Füssel and Klein wrote their influential piece on climate vulnerability in 2006, they only categorized two studies as second-generation vulnerability assessments. One, a second-generation vulnerability assessment in northern coastal Vietnam by Adger (1999), found that baseline social vulnerability is largely determined by pre-existing economic conditions. The other study by Cohen et al. (2000) found that in the Columbia River Basin of Canada, despite high levels of development, climate vulnerability was still high and adapting power production, fishery practices and agricultural systems was identified as being vitally important (Cohen et al. 2000). Most research focuses on either vulnerability or adaptive capacity, but, like my study, these papers focused on both. In general, vulnerability is tested across disciplines using a range of methodological approaches. The majority of vulnerability research takes place in Scandinavia, Canada and low-income nations. When examined at an international scale, low-income nations are seen as most vulnerable. However, the local nature of climate impacts has prompted a growing number of researchers to focus on vulnerable communities in middle- and high-income nations as well (Adger et al. 2009; Easterling, Hurd and Smith 2004). Given the vast social inequities within high-income nations, researchers are beginning to investigate the vulnerability of communities within each country (Moser 2010). According to the theoretical framework provided Füssel and Klein (2006) and Lynch et al. (2008), after vulnerability has been adequately assessed, an investigation of adaptive capacity is a logical and necessary next step. Overall, climate change adaptation and vulnerability are related because “adaptation is facilitated by reducing vulnerability” (Kelly and Adger 2000). Second-generation vulnerability assessments are unique in their focus on the adaptive capacity of a population — an area with a rich body of literature.

### *Adaptive Capacity*

The aim of climate adaptation is to avoid social, environmental, economic, health and human calamities, and, if possible, to leverage climatic changes for equitable economic benefits. There are two major categories in climate change research and policy: mitigation and adaptation. Mitigation and adaptation – the fundamental concepts behind climate change discussions – are often seen as competing interests, but in fact they can serve as complementary ideals. Mitigation is the process of cutting emissions to slow climate change, whereas adaptation is the process of adjusting to an altered environment. Adaptation research is difficult because it deals with an unpredictable future. The overarching goal of adaptation thinking is to understand how humanity can thrive and avoid catastrophe in an altered climate.

Adaptation has the potential to inspire multi-dimensional achievements. In light of the new United Nations Sustainable Development Goals (UNSDG), international academics and government officials are beginning to see “Planning for adaptation to the adverse effects of a

changing climate [as] a vital part of sustainable development” (Wamsler and Brink 2014b). Adaptive capacity is a term that refers to a population's ability to reduce risk, improve resilience and thrive in an altered environment. Adaptive capacity theory assumes that if populations can ‘adapt’ their built environment, planning mechanisms and social systems before major changes take place, there is potential to reduce risk, avoid disaster and even reap benefits from a new climate reality.

The field of adaptive capacity research has grown significantly in the past decade. A variety of methods are used to analyze adaptive capacity, but the primary focus is on qualitative methods, such as case studies, stakeholder interviews and policy assessments. Though improving adaptive capacity is acknowledged as a prerequisite for climate resilience, the unpredictable and futuristic nature of the phenomena makes it difficult to study. Baard (2015) argues that anticipatory adaptation is plagued by both empirical and normative problems. From the empirical perspective, computer models can *predict* likely effects of climate change, but it is impossible to know the exact time, location and nature of specific impacts (Baard 2015). Normative uncertainties lie in the distribution of burdens imposed by adaptation action, which could be placed unequally on vulnerable populations (Baard 2015). Adaptive capacity research in the US is severely limited; in LA, no adaptive capacity-specific research has ever been conducted.

### *National Debate*

The United States faces a unique host of challenges related to climate change — political, social and ecological. Politically, the US must deal with a majority in congress that opposes climate action. Socially, the US is plagued with rampant inequality. Ecologically, the US is susceptible to wide breadth of climate impacts. In comparison to other nations, the US is seen as lacking competence in understanding and addressing climate vulnerability (Hurd and Smith 2004). A review of the climate vulnerability literature in the US found that municipalities are ill equipped to deal with climate change and that policy-relevant scientific research on vulnerability in the US is inadequate (Moser 2009). In LA, as well as throughout the US, probable climate impacts are well understood, but the implications of those impacts is not well understood.

### *Environmental Justice*

On October 27, 1991 the historic First National People of Color Environmental Leadership Summit took place in Washington, DC (Bullard and Lewis 1996). Leaders at the Summit discussed environmental racism and radioactive colonialism; these were not theoretical posits, but rather the daily experience of many people of color struggling to survive in the US (Bullard and Lewis 1996). Toxic pollutants were killing children in communities of color and the government sanctioned this racist placement of health hazards (Bullard and Lewis 1996). From this summit, a movement and parallel academic branch was born: environmental justice. A large body of environmental justice research supports the claim that socially marginalized communities – communities of color and poor communities – encounter the highest levels of exposure to environmental health hazards (e.g., Schlosberg 2007; Morello-Frosch et al. 2011; Freudenberg, Pastor, and Israel 2011). Now, 24 years later, a supplementary movement has evolved to tackle the justice issues posed by climate change.

## *The Climate Gap*

Vulnerability to climate change often correlates geographically with poor communities of color. Researchers in LA coined a climate justice theory specific to the US known as the climate gap theory. Developed by researchers from USC, Occidental, Berkeley and Columbia, the theory postulates that climate change will most severely impact poor people and people of color in the US (Shonkoff et al. 2011; Shonkoff et al. 2009; Kersten et al. 2012). Using data from nine California counties, the inaugural study titled “The Climate Gap: Inequalities in How Climate Change Hurts Americans and How to Close the Gap,” found that in a business as usual emissions scenario, communities of color and poor communities will breathe even dirtier air, pay more for basic necessities, have fewer job opportunities and suffer most during extreme heat waves (Shonkoff et al. 2011). The second study, “Minding the Climate Gap: What’s at Stake if California’s Climate Law isn’t Done Right and Right Away,” examined California Climate Law AB32 and its potential impact on people of color in the state, who, in comparison to whites, experience over seventy percent more exposure to dangerous pollution from major greenhouse gas polluters (Shonkoff et al. 2009). Using 12 case studies across California, the third and latest study in the series titled “Facing the Climate Gap: How Environmental Justice Communities are Leading the Way to a More Sustainable and Equitable California,” showcases the efforts of 18 community organizations in the fight for environmental justice and shows that while communities most impacted by the climate gap are creating real solutions, institutional support is needed to bolster their efforts (Kersten et al. 2012). My research draws from various aspects of the climate gap theory and research methodology; however, my research is unique in the concentrated focus on the vulnerable community in Los Angeles.

## *Vulnerability in the United States*

Climate gap and related vulnerability research in the US supports the findings of environmental justice research domestically and the climate justice research internationally: marginalized, disenfranchised people are most vulnerable to the impacts of climate change. Specifically, climate change will impact natural resources, economic systems and social conditions that disproportionately favor the upper class, which in the US is mostly white. For example, climate change will have significant effects on water tables, but some populations are more directly reliant on the existing water table than others. In tribal lands across the US, water availability is directly linked to livelihood. In a study on water resources on tribal land of American Indians and Alaska Natives, Cozzetto et al. (2013) concluded that climate change will not only affect tribal economies and politics, but it will also impact cultural and spiritual life, thus making these communities vulnerable in a myriad of ways. In the Pacific Northwest, the impact of climate change on the water table has already altered the migration patterns of salmon — the primary source of tribal sustenance in the region ad infinitum (Cozzetto et al. 2013).

## *Hurricane Katrina, Hurricane Sandy and the Black Lives Matter Movement*

On August 29, 2005 the Gulf Coast states (Louisiana, Mississippi and Alabama) were hit with the most devastating natural disaster in US history. Two Gulf Coast natives — Robert Doyle Bullard, the ‘father of environmental justice,’ and Beverly Wright, a leading environmental justice scholar — wrote a powerful book titled *Race, Place, and Environmental Justice After Hurricane Katrina: Struggles to Reclaim, Rebuild, and Revitalize New Orleans and*

*the Gulf Coast* (2010). The thesis of the book is, “The differential effects of this disaster were neither natural nor accidental. Moreover, race seems to be the most significant predictor of disparities that are tied to an existing system of privilege for some and discrimination against others” (Bullard and Wright 2010). A large body of literature supports their thesis (e.g., Keithy and Rombough 2007; Lavell and Feagin 2006; Forman and Lewis 2006; Watkins and Hagelman 2011). A decade later, some communities have bounced back by leading their own resilience efforts. Morello-Frosch et al. (2011) found that in post-Katrina New Orleans, community-based environmental justice organizing created a labor-environment coalition that: constructed a model neighborhood; exposed noxious point source polluters; and contested the re-opening of public schools on contaminated land. In sum, Hurricane Katrina exhibits the real world implications of the climate gap, proving that the poorest, most vulnerable, disenfranchised populations suffer the greatest loss. In order to avoid repeating past wrongs, it is important to understand the conditions that led to racial disparities in disaster impacts.

In the case of Hurricane Katrina and other recent disasters, disenfranchised populations, particularly Black communities, suffered most. When Hurricane Sandy hit the Atlantic coast in 2012, public housing projects with predominantly Black residents went without water, heat and electricity for weeks (Klein 2015). While basic utilities were restored to wealthier, whiter communities, the public housing projects that had been officially neglected for decades were left to struggle for themselves in cold, wet, dark, pest-infested, overcrowded conditions. To many, this was yet another example among an abundance of evidence that proves the US government does not care about Black people.

According to Pew Research Center data, a profound shift toward racial pessimism took place after Hurricane Katrina, most starkly among Black Americans (Bouie 2015). When images of Black residents stranded on roofs flooded the media and the media portrayed them as ‘refugees,’ Black Americans observed the lack of government support for Black lives. As Elizabeth C. Yeampierre wrote in a recent article in *The Guardian*, “At a time when police abuse is more visible than ever... and our communities continue to get hit time and time again by climate catastrophe, we can’t afford to choose between a Black Lives Matter protest and a climate justice forum, because our survival depends on both of them” (Yeampierre 2015). The injustice in the US is stark and pressing, and unfortunately, disasters “exacerbate the risk and accelerated the pace of injustice” (Bullard and Wright 2010). Though normally seen as distinct, the Black Lives Matter and climate justice movements are in fact complementary. In LA, the Black Lives Matter movement is flourishing under the leadership of Melina Abdullah and other prominent Black women, particularly lead by a number of Black women who identify as artists and/or queer. The climate justice movement in LA, however, is much less well known. In any struggle for justice, an important question to ask is whose role is it to enact justice? In the climate justice and adaptation literature, many think cities are the responsible party best suited to find equitable solutions and enact adaptation policies.

### *Urban Leadership*

In this section, I will situate the work that cities are doing to address climate at the institutional level. Most adaptive capacity research focuses on the role that municipalities, governments and institutions can play in reducing vulnerability because many academics believe that local governments are best suited to take on adaptation measures (e.g., Pasquini et al. 2015).



International climate adaptation plans exist, but they have not yet made their way into urban planning practice (Wamsler 2014). Many cities now have climate change agendas, but the majority leave out adaptation thinking and focus solely on mitigation efforts (Baynham and Stevens 2014; Jones 2012; Robinson and Gore 2005). In many European municipalities, adaptive capacity is a major focus, constantly being analyzed and improved (Wamsler and Brink 2014; Storbjörk and Hjerpe 2014; Pruneau et al. 2013). The work of other municipalities could very well inform the future policies in LA.

Cities in the US are severely lacking in adaptation planning capacity compared to cities in Europe — European municipal adaptive action, however, is still flawed in some areas. Through interviews with municipal planners and an evaluation of policy documents in Sweden, a study found that in the complex realm of spatial planning, short-term economic policies often overshadow long-term adaptation measures (Dymen and Langlais 2013). Using a back-casting experimental case study method, Carlsson-Kanyama et al. (2013) found that effective adaptation action must overcome barriers across different levels of decision-making, especially in the areas of water, energy, the built environment and social services. In municipalities in Denmark, adaptation remains locked in the technical domain — for example, within water management departments — and therefore it excludes citizens in the decision making process (Hedensted Lund et al. 2012). In Norway, an analysis of municipalities found that although adaptation competes with other non-mandatory issues and in spite of having no federal adaptation directive, adaptation policy development and implementation is well underway in eight leading Norwegian municipalities (Dannevig et al. 2012).

Politics also play a major role in adaptation implementation, though this is much more difficult to study. Storbjörk and Hjerpe (2014) found that in European municipalities, adaptation planning was coerced by the perceived economic attractiveness of an area: if an area was seen as blighted, adaptation rhetoric was used as an excuse to avoid development, but if an area was seen as potentially profitable, adaptation rhetoric was used to spur development. Planning is an inherently political process and largely a values driven endeavor, so adaptive planning is susceptible to this type of coercion. Using Rotterdam and Amsterdam, Netherlands as case studies, Uittenbroek et al. (2014) argue that there are two types of political approaches to adaptation: the *dedicated approach*, which requires political commitments, agenda setting and swift implementation, versus the *mainstreaming approach*, in which climate adaptation piggybacks on existing policy directives. Researchers in Sweden used Local Agenda 21 — a highly effective mitigation policy — as a case study to evaluate the shortcomings of current municipal adaptation effects; they found that approaches that combine both top-down (federal government to municipalities) and bottom-up (citizens to municipalities) strategies are most effective (Wamsler and Brink 2014).

Climate change impacts can also be quantified through the traditional economic measurements of costs and benefits. Yohe and Schlesinger (2002) found that although it is often framed in context of disaster risk management, climate adaptation is economically strategic — improving municipal adaptive capacity reduces long-term costs and identifies potential benefits. Overall, LA can learn a great deal from examining the effectiveness of policies in leading European municipalities.



The US is similar to many lower-income nations in that both are in the early stages of adaptation policy development. In an attempt to create a Municipal Adaptation Plan (MAP) for the city of Cape Town, South Africa, Mukheibir and Ziervogel (2007) found that resource management and infrastructure planning departments must act quickly to prepare for the systemic changes brought by increased droughts, floods, heat waves and precipitation irregularity; this will require cross-sectorial collaboration, however, which is a major barrier. Through data collected from 47 interviews with government actors in eight municipalities in the Western Cape Province, another study in South Africa concluded that individual-level, institutional and socio-cultural barriers were the major roadblocks to mainstreaming adaptation in local governments (Pasquini et al. 2015). In rapidly growing cities in India, climate change adaptation is low on the agenda of local governments who are struggling to develop basic infrastructure such as clean water systems, waste facilities and adequate housing; however, as Sharma and Tomar (2010) argue, adaptation policy actually fits within the sustainable development framework and provides opportunity for co-benefits in terms of development and health outcomes. The existing research in lower-income nations highlights the potential co-benefits that municipalities in the US, particularly in LA, could achieve by taking adaptive action.

In North America, Canada has taken a keen interest in municipal adaptive capacity thinking, while the US is limited in existing adaptive capacity work. A survey of Canadian employees in coastal municipalities found that participants were ‘competent’ in the areas of planning, communication, problem solving and vulnerability analysis, but were lacking adaptation knowledge, solution development and hope (Pruneau et al. 2013). To develop and evaluate tools and policies to adapt to the urban heat island (UHI) effect, Richardson et al. (2015) mapped human health risks and developed site-specific actions for those areas most at risk in Montreal, Canada. The adaptation plan developed for Saint Michel (the Montreal neighborhood found most vulnerable to UHI impacts) focuses on strategies related to biomass (i.e. increase the number of trees), albedo (i.e. lightening surfaces) and thermal mass (i.e. improving building performance) (Richardson et al. 2015).

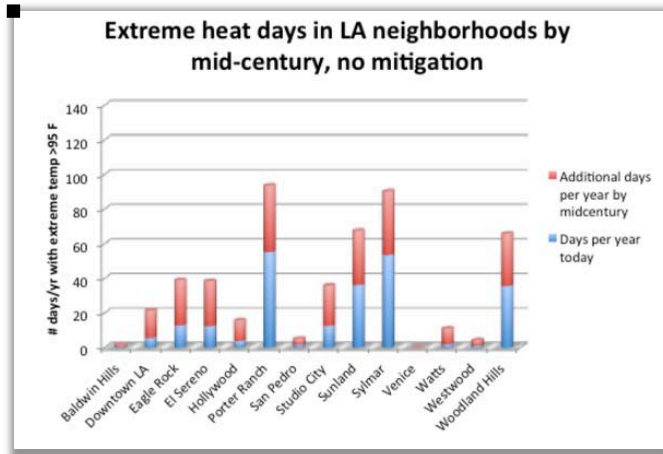
As indicated above, institutional adaptive capacity research primarily focuses on cities in Scandinavia, Canada and low-income nations. But if poverty is an indicator of vulnerability, then the United States – which is home to an estimated 46.7 million poor people (US Census Bureau) – should receive significant attention in adaptation research. Though limited, there is an emerging body of literature that focuses on municipal adaptive capacity in the United States. Mendez (2015) examined California institutional climate action plans and found that linking climate planning with public health is key to achieving co-benefits toward climate justice. Moser and Luers (2008) found that in California coastal managers were lacking an ‘analytic capacity’ which severely limits their ability to take adaptive action. A case study of the Iowa Pilot Project determined that adaptation actions coordinated across levels and sectors of government are most likely to curb calamitous flood impacts in the state (Verchick and Hall 2011). In an investigation of the adaptive capacities of 14 small coastal cities and towns in Massachusetts, Hamin et al. (2014) found that adaptation planning is in the very early stages and is challenged by strong private property interests. In a case study of adaptation to sea level rise in the coastal US, Yohe and Schlesinger (2002) argue that it would be economically prudent to implement adaptive action in U.S. coastal towns, especially since these areas are often wealthy and poses a relatively

high adaptive capacity; however, research is still limited in assessing the most beneficial adaptation policies and more geographically focused economic research must be done.

Some research supports the view that climate change is “both a problem and an opportunity for communities” (Wamslaer 2014). A case study of the King County Climate Plan found that this innovative regional plan produced multidimensional impacts. For example, in an effort to reduce vulnerability, the county invested in a community center in a poor community of color, thus improving the adaptive capacity of the area while simultaneously addressing regional resource distribution inequality (Saavedra and Budd 2009). In the US, adaptive capacity research and understanding is relatively limited.

In Los Angeles, aside from the *Climate Gap* series, climate change research has primarily focused on the regional environmental impact of climate change. Dr. Hall and his UCLA research team have conducted extensive research on the impact of climate change on southern California. Researchers at UCLA “down-scaled over 20 global climate models to better understand the local impacts of a changing climate” and the findings for temperature change in Los Angeles were significant (“Temperature Study” 2014). While the team has published and made public a wealth of important literature on changing patterns of precipitation, snowpack, floods, wildfires, sea level rise and temperature, the studies are done at a regional scale and do little to inform community impacts and vulnerability. The closest Hall et al. come to a community specific finding is a quantitative analysis of extreme heat days in LA neighborhoods (see **Figure 4**)

**Figure 4** — Extreme heat in LA (*Hall et al. 2010*)



The Climate Gap reports take a critical look at climate change impacts on both health and micro-economies. The first report, “The Climate Gap” (2009) asserts that climate change will most severely impact poor people and people of color in the US, with empirical evidence derived from California climate studies:

While the catastrophic potential of climate change is well documented, the story of the climate gap – the often unequal impact the climate crisis has on people of color and the poor in the United States – is just starting to be told... Without proactive policies to address these equity concerns, climate change will likely reinforce and amplify current as well as future socioeconomic disparities, leaving low-income, minority, and politically marginalized groups with fewer economic opportunities and more environmental and health burdens. (Shonkoff et al. 2011)

The report provides a mass of evidence on how climate related impacts, such as heat waves, will particularly impact people of color. The second report “Minding the Climate Gap” examines the California Global Warming Solutions Act of 2006, AB 23. The report concludes that while AB 23 is effective for curbing global emissions, it does not account for equity. The Bill establishes a carbon trading system where market forces dictate which sources cut emissions; however, the report argues that emissions cuts need to be focused on highly toxic point source polluters in low-income communities and communities of color where they cause the greatest harm to public health. The third and latest report, “Facing the Climate Gap,” highlights the efforts of frontline communities that are already increasing resilience and taking environmental justice into their own hands. Shonkoff et al. (2009) also found a “a negative correlation between poverty and tree cover in four urban areas of California.” My study takes the thinking of all three Climate Gap reports — environmental racism, policy evaluation and community organizing — with a particular focus on Los Angeles’ most climate vulnerable community.

### *Community Significance*

The climate gap theory bridges the environmental justice framework and climate vulnerability theory by emphasizing the civil rights, public health and social equity dimensions of climate phenomena (Shonkoff et al. 2011; Shonkoff et al. 2009; Kersten et al. 2012). Within the vulnerability and adaptive capacity literature, there is a branch that emphasizes community-based participatory research (CBPR) and participatory planning. The emphasis draws from a rich body of environmental justice research that focuses on CBPR (e.g., Sadd et al. 2014). Without a community-based approach, some argue, climate change vulnerability assessments and subsequent policies can completely gloss-over the concerns and assets of the most vulnerable communities. Rossignol et al. (2015) criticizes vulnerability assessments as a whole for being too technocratic and instead proposes a participatory research approach that can effectively guide equitable policy decisions. CBPR in theory enables participatory planning and policy development. However, there are necessary prerequisites to participation that must be met first. For example in Bangladesh, the absence of a stable democracy inhibits any form of participatory planning and the country subsequently suffers from lackluster, top-down climate change planning (Huq and Khan 2006). Though the United States touts a stable democracy, participatory planning is still a distant ideal.

Some studies argue that communities, households and individuals are the major players in reducing vulnerability, which is contrary to the conventional view that reducing vulnerability is a task for governments (e.g., Wamsler and Lawson 2012). International and economic development literature elucidates the importance of focusing analysis on poor people rather than poor countries; this framework applies in the context of climate change, which should focus on analysis of vulnerable communities instead of vulnerable countries (Kates 2000). While some argue in favor of the validity of CBPR and others in favor of scientific analysis, Kelly and Adger (2000) insist that when dealing with a complex phenomenon like climate change, a diversity of research approaches is important; however, they also concluded that any effective policy will focus on empowering, not just identifying, vulnerable populations. Overall, research shows that utilizing and enhancing community capacity is a powerful way to reduce vulnerability and improve environmental health outcomes (Freudenberg, Pastor, and Israel 2011). Monetary and temporal constraints limit my research from taking a CBPR approach, however, this research will acutely focus on the community perspective and community-institutional barriers.

Over the past 165,000 years, Homo sapiens have constantly been adapting to changing environments. The difference now is that the environment is changing at an unprecedented rate; therefore adaptation will have to go beyond our natural pace of adjustment. In order for policies to be effective, some argue, they must go beyond the conventional realm of urban planning and utilize local knowledge, skills and assets (Birkmann et al. 2010). In an adaptation policy analysis of nine cities across the world, a study found that bridges between ‘expert’ and ‘local’ knowledge, as well as bridges between ‘formal’ and ‘informal’ action, best improves adaptive capacities (Birkmann 2010). Wamsler and Lawson (2012) found that in the slums of San Salvador in El Salvador, residents were constantly innovating through environmental adaptation; conversely, residents in Manchester relied heavily on government, and in the case of a major flood, residents were entirely unprepared for the disaster and thus incurred major damages. Using a conceptual econometric framework to evaluate the intersection of social inequality, climate change and adaption in the Yangtze River Delta of China, Ten et al. (2015) found that at the household level, social inequality is significantly associated with climate change experience and adaptation choice. Takao (2012) argues that while mitigation efforts must stem from a national level, impacts of climate change are felt locally, and therefore improving community level adaptive capacity is most important in adaptation efforts. A study in Japan found that medium-sized municipalities have the most potential to take a participatory approach to adaptation and subsequently, communities in those areas have the highest capacity to adapt (Takao 2012). Urban residents all possess some capacity to cope and adapt; therefore, in a review of individual practices, Wamsler and Brink (2014) conclude that in the grand scheme, “it is crucial to support the ability of urban communities to negotiate their needs and rights in order to increase the flexibility and inclusiveness of these systems.” Since climate impacts will be felt on a local level, it is important to focus on how local communities can adapt to a rapidly changing environment. In LA, where poor communities of color already face environmental health hazards, state-sanctioned violence and official neglect, it is imperative to focus on the community.

### *Gaps in the Literature*

The climate justice and adaptive capacity discussions are disconnected. It is important to connect the climate justice movement with the adaptive capacity literature because without it, adaption measures could further harm disenfranchised communities. Adaptive capacity research is important because it evaluates the ability of vulnerable communities to survive and thrive in the future. Unfortunately, adaptive capacity research is locked in the jargon of European environmentalists, futurists and urbanists, who are disconnected from the social inequities in the US and the rest of the world. Most research to date on urban climate vulnerability and adaptive capacity focuses on Scandinavian municipalities and low-income nations. My research will be a cutting-edge study because it will utilize both climate justice thinking and adaptive capacity methodology.

Though there is an extensive body of environmental justice and vulnerability research in United States, it does not address the important question of adaptive capacity. Research is increasingly uncovering the most climate vulnerable populations in the US and, not surprisingly, many the most vulnerable populations are poor, inner-city communities of color. In order to avoid another devastating event like Hurricane Katrina, the US must identify vulnerable populations and work to improve their adaptive capacity. As a relatively new cross-disciplinary

field, adaptive capacity researchers use a range of methods, but overall most take the adaptive institutions approach. Scholars using the adaptive institutions approach assert that municipal governments are the key decision-makers in adaptation policy and drivers of effective adaptation plans. This side assumes it is most important to study the adaptive capacity of municipal governments, departments and staff-members. However, this argument is weakened by its acceptance of the local nature of climate impacts and social determinants of vulnerability. To again use Hurricane Katrina as an example, the Hurricane was felt across a vast region, however the impacts were community specific.

Those using the adaptive community approach draw from this community-specific-impact line of thinking. Researchers in this field use climate and environmental justice thinking, in which disparate health outcomes are found in communities of color in the US, as well as poor communities around the world. In order to make climate adaptation equitable and effective, they argue, reliance cannot be placed on a benevolent government that has long proved bias against race and income; rather, we must empower communities to act for themselves. Unfortunately, the adaptive community approach is limited in the scope of community decision-making power and access to resources, especially related to big decisions about the built environment. The adaptive institutions and adaptive community approaches have distinct advantages and drawbacks, which is why my research will utilize a dual-approach.

In LA, highly vulnerable communities have been identified, but no one has conducted a deeper analysis of vulnerability within these communities. The EJSM and CCPVST identify vulnerable census tracts, but that the analysis is contained to a quantitative, County-wide scope. This begs the question, what are the specific characteristics that make this community vulnerable? If we can get at the root of what makes these communities vulnerable, than we can make effective change; the ability to make changes that improve community resilience is also known as adaptive capacity. But at what level is adaptation taking place? How do different adaptation efforts interact? Who has the decision making power to make effective vulnerability reductions? Do communities and the City have complementary or competing interests when it comes to adaptation policies and planning?

Currently, there is no adaptive capacity research focused on LA. Using the adaptive institutions approach, I will analyze the adaptive capacity of the City of Los Angeles, as well as relevant City departments and staff members. This will provide critical information on how the city operates in terms of adaptation planning and policy. The adaptive communities approach will complement and may even contradict the institutions approach findings. This approach will assess the adaptive capacity of the two most vulnerable communities. This research will identify assets and local approaches to improving resilience. Overall, vulnerability studies and adaptive capacity research help understand the challenges we are slated to face in the future, as well as inequities and ecological risks that already exist. By understanding these complex phenomena, we can make informed decisions that ideally lead to more resilient communities and a more just city. In order to effectively understand the vulnerability of communities and adaptability of a city, a mixed-methods approach is important.

## Methodology

Methods		
<b>Quantitative</b>		
	<b>Data Collection and Analysis</b>	EJSM data
		CCPVST data
		Census data
<b>Qualitative</b>		
	<b>Semi-Structure Stakeholder Interviews</b>	Community leaders
		Government officials
	<b>Participant Observation</b>	Pedestrian, bicycle and volunteer field observations of the built environment
		Public meeting attendance

My study utilizes a mixed-methods approach. The primary methods used for qualitative analysis were semi-structured stakeholder interviews (with community leaders and government officials) and participant observation (though public meeting attendance and pedestrian-level built-environment field observations). Data from cumulative CCPVST and EJSM indicators, as well as relevant census data, was collected for quantitative analysis (see **Findings – Tables**).

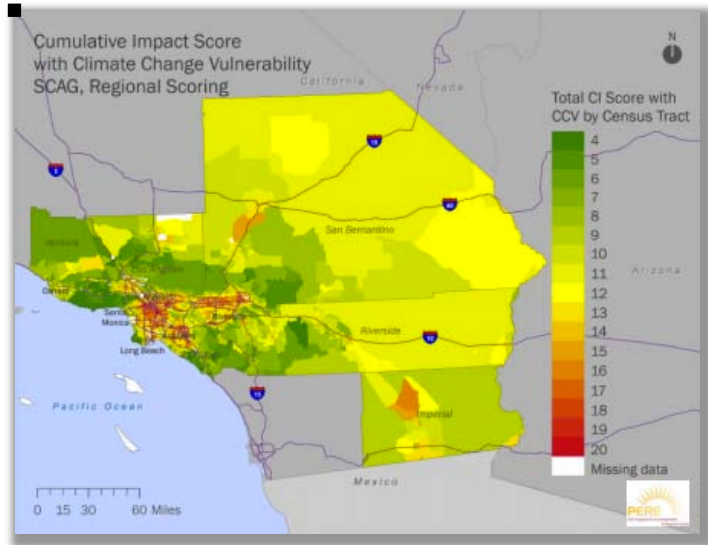
A study conducted by the California Department of Public Health’s (CADPH) Environmental Health Tracking Program (CEHTP) identified the most climate vulnerable areas of Los Angeles and Fresno counties. The Climate Change Population Vulnerability Screening Tool (CCPVST) identifies vulnerability using the following metrics: air conditioning (AC) ownership; land cover characteristics (tree canopy and impervious surfaces); access to transportation (transit and household car access); and social vulnerabilities (elderly and living alone). (see **Appendix 1**)

The study found that Tract 2362.02 was the most vulnerable tract in LA County, scoring a high of 3.78 out of 5. The CCPVST tool was “developed in accordance with” the Environmental Justice Screening Method (EJSM) developed by Sadd et al. which “maps cumulative impacts using a set of 23 health, environmental, and social indicators” (“CCPVST” 2011). In 2015, Sadd et al. adopted seven climate indicators into the EJSM, four of which overlap with the CCPVST. **Figure 5** is a map of environmental justice and climate vulnerability in LA County produced using the new EJSM indicators.

This map shows general geographic patterns of environmental injustice and climate vulnerability, but it lacks spatial specificity. General county trends can be gleaned from this map, but not much else. I chose to investigate the area identified as LA County’s most vulnerable census tract in order to gain a better understanding of what climate vulnerability means, how it occurs and what can be done about it. Overall, between the CCPVST and the EJSM, I examine climate vulnerability using 12 different indicators (see **Findings – Tables**). The cumulative lists of indicators were examined through semi-structured stakeholder interviews, public meeting attendance, field observations and quantitative data analysis.



**Figure 5 — Environmental injustice in LA County (EJSM 2016)**



According to the heavily cited article by Füssel and Klein (2006), a ‘first-generation vulnerability assessment’ is defined as quantitative, regional-scale research that seeks to determine levels of vulnerability by measuring exposure, sensitivity and potential climate change impacts. A ‘second-generation vulnerability assessment’ focuses more on societies ability to adapt by responding to the given risks-factors. However, “Second-generation vulnerability assessments are not yet commonplace, in absence of a clear methodology. More than first-generation assessments they require the involvement of social scientists in a multidisciplinary research group. In addition, second-generation assessments require a stronger involvement of stakeholders and, focusing more on adaptive capacity, rely more heavily on qualitative data” (Füssel and Klein 2006),

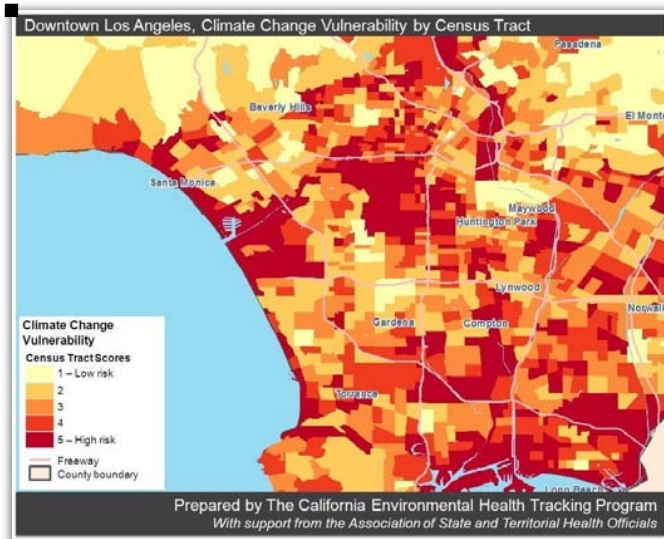
Through my interpretation of Füssel and Klein’s (2006) categorization, CCPVST and the EJSM both qualify as a first generation vulnerability studies because they both rely exclusively on quantitative data and focuses on the regional, county level. My research is thus a ‘second generation vulnerability assessment’ focused on Los Angeles’ most climate vulnerable community. My study qualifies as a second-generation vulnerability study because of my use of mixed methods; I utilize stakeholder interviews, participant observation and tract-level quantitative data to analyze ‘adaptive capacity’ at both the localized (community) and institutional (city) level.

Füssel and Klein (2006) state that, as of yet, no clear methodology exists for conducting second-generation vulnerability assessments: research studies that focus on assessing adaptive capacity. A diversity of methodological approaches for conducting adaptive capacity research has been identified through a careful review of the literature. In order to most accurately analyze community level adaptive capacity, a mixed-methods approach was chosen for this study.

The quantitative portion of this research was focused on collecting tract-specific data. **Figures 5** and **6** show the final map output of the EJSM and the CCPVST, respectively. While useful tools for policymakers, the maps are too regional for community-level significance. The CCPVST identified tract 2632.02, a community in southwest LA, as the most climate vulnerable

(see **Figure 7**). The goal of this research is to determine, at the community level, what makes this area vulnerable to climate change and what can be done to increase resilience. Professor Sadd assisted me in the collection of EJSM indicator data at the census tract level. The CCPVST team also assisted me in collecting tract-specific data from their nine original climate indicators. For each of the 32 EJSM indicators and the nine CCPVST indicators, I collected data specific to The Tract. For each indicator, I also collected the LA County tract average. This assessment overall provides clear information on the factors that make the community in The Tract in southwest LA hyper-vulnerable to climate impacts and associated environmental justice health risks. The information allowed me to do a comparative data analysis between The Tract and The County and it highlighted the specific indicators that make the Tract most vulnerable. Additionally, more general census data and demographic information was collected using Social Explorer, the American Community Survey and the American Fact Finder in order to gain a statistical understanding of The Tract community before delving into the qualitative research. The final data is presented in tables in the Findings section.

**Figure 6 — Climate Change Population Vulnerability Screening Tool (CADPH 2012)**



**Figure 7 — Most Vulnerable Tracts in LA (CADPH 2012)**

Community Vulnerability to Climate Change in the City of Los Angeles			
Zip code(s) for which the census tract (in parentheses) falls within		Level*	Scores (on a scale of 1-3.778 with 3.778 being the most vulnerable)
90016 and 90008 (06037236202)		Top tier	3.778
90016 and 90008 (06037236202)		Top tier	3.778
90016 and 90008 (06037236201)		Top tier	3.750
90016 and 90008 (06037236201)		Top tier	3.750
90019 (06037212900)		Top tier	3.444
90731 (06037297120)		Top tier	3.444
90007 (06037221900)		Top tier	3.444
90731 (06037297600)		Top tier	3.375
90291 (06037273500)		Top tier	3.375
90744 and 90813 (06037294700)		Top tier	3.375

\*Relative to other census tracts in California

Interviews were the primary means of data collection. Questions were developed to inform a deeper understanding of the lived experience and possible action around each CCPVST and EJSM indicators. In total, eight semi-structured interviews were conducted with community leaders. Community leaders were initially identified through the Empowerment Congress West



Area Neighborhood Development Council (ECWANDC). I reached out to all the board members and received responses from two. Those two informants connected me with other community leaders and interviews organically continued using this social network referral strategy. I also introduced myself and requested interviews with two other community leaders at two separate public meetings.

I also conducted semi-structured interviews with four government officials. Though I reached out to over 40 government officials, I received a low response rate. Interviews were carried out with one official representative from each of the following government agencies: the City of LA Housing and Community Investment Department; South Coast Air Quality Management District; California Department of Public Health; and Los Angeles County Department of Regional Planning. Correspondence with and email information was shared with the Director of Public Engagement for Office of Los Angeles Mayor Eric Garcetti, the Chief Sustainability Officer of the Los Angeles Department of Recreation and Parks and the Community Planner for the West Adams-Baldwin Hills-Leimert Community Plan from the Los Angeles Department of City Planning, but formal interviews with these three informants did not come to fruition.

I also utilized participant observation. I attended four public meetings that greatly informed my research: a gentrification round table hosted by the Association of Black Social Workers; an emergency meeting on the Wal-Mart closure hosted by the ECWANDC; an Inglewood Oil Fields meeting hosted by Community Standards District; and a West Adams-Baldwin Hills-Leimert New Community Plan meeting hosted by the City Planning Commission. Recordings and notes were taken through all four of these meeting, and public comment provided the bulk of relevant information. I also spent three days in the field, logging a total of 10 field hours: biking around The Tract and on major thoroughfares observing the built environment; volunteering with Mujeres de la Tierra at Kenneth Hahn Regional Park; and volunteering at the Crenshaw Farmers Market at the Baldwin Hills-Crenshaw Plaza. I attempted to get a tour of the Inglewood Oil Field, but none was granted.

The focus of my research is on a particularly vulnerable community. Unfortunately, due to the monetary and temporal constraints of this study, a community-based participatory research (CBPR) approach cannot be taken and a survey of residents was not conducted. Though CBPR and resident evaluations are one of the most effective ways to gauge local adaptive capacity, this was not within the scope of my research.

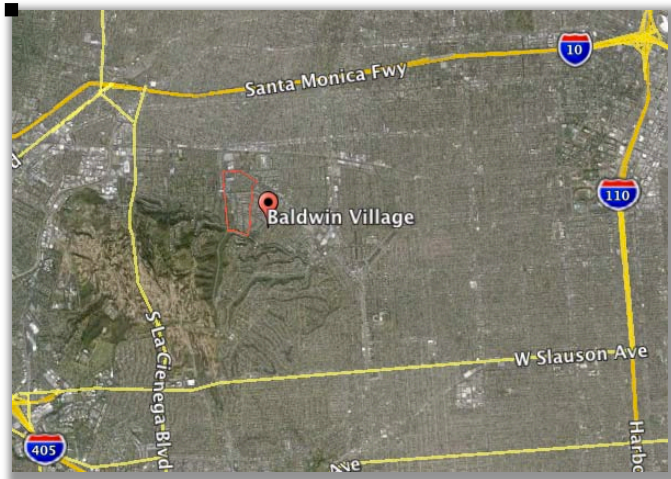
## Background

\* Note that “The Tract” refers to the geographic area encompassed in US census tract 2362.02, whereas “the community” refers to the people living in and around that census tract and “the area” refers to the surrounding geographic area encompassed by the 90016 and 90008 zip codes.

### *History and Context: The Tract, The Jungle and the surrounding area*

The Tract is located at the intersection of the loosely defined neighborhoods of Crenshaw and Baldwin Hills. Part of The Tract contains part of the neighborhood known as The Jungle (officially known as Baldwin Village after the City attempted to rebrand the neighborhood in 1990). Part of The Tract is located in the 90008 zip code area to the north, while the other part is located in the adjacent 90008 zip code area to the south. The Tract is located within the boundaries of the Empowerment Congress West Area Neighborhood Development Council (ECWANDC). The Tract is located within the jurisdiction of Los Angeles City Council District 10 (CD10), but since CD8 contains most of the 90008 zip code area, it is also referenced. The Tract falls within the West Adams-Baldwin Hills-Leimert Community Plan Area (The Plan Area) from the Los Angeles Department of City Planning. The Tract is located within the City of Los Angeles (LA), Los Angeles County (LA County) and the State of California (CA). Finally, The Tract is located within the 37<sup>th</sup> California Congressional District. The Tract is the focus area; the peripheral zip code and Plan areas are relevant for neighborhood analysis, while the County- and City-wide data are relevant for comparison. **Figure 8** shows a satellite view of The Tract outlined in red, bounded by freeways for geographic context.

**Figure 8 — The Tract** (*Google Earth*)



From the early 1900s to the late 1960s, this residential area was restricted to people of color — 100 percent of the population was white. In the 1960s when racial covenants and redlining were outlawed, people of color, more specifically Blacks and African-Americans, started to move into this quaint neighborhood. Within a decade, nearly every white family had moved out — a phenomenon known as white flight. This led to disinvestment, a situation where the tax base of the city evaporates and inner city neighborhoods lose city services. Rampant poverty, the crack-cocaine epidemic and mass incarceration propelled by Reagan's War on Drugs combined with the physical nature of the neighborhood made the The Jungle ripe for the

evolution of gangs. According to Social Explorer census data, the percentage of the population in The Tract that identified as Black or African American was 0 percent 1960, 81 percent in 1970, 93 percent in 1980, 75 percent in 1990 and 59 percent in 2000. A Google Maps street view image (**Figure 9**) shows lack of tree canopy coverage inside of a typical Baldwin Village complex.

**Figure 9 — The Jungle** (*Google Maps Street View*)



Author Rachel Howzell Hall wrote an article titled “Growing up in the Baldwin Village ‘Jungle.’” The Jungle, as she describes it, is a grouping of apartment complexes on Santo Tomas Drive, an area that is partially contained in The Tract. Howzell Hall described the industrial strength presence of LAPD helicopters — otherwise known as “ghetto birds” — in The Jungle:

I wrote in my journal every night, and began to see my parents, to see me, and also, note my surroundings. “The police helicopter was looking for someone and we didn’t hardly hear the television” (My journal, August 1982)... Pop-pop-pop. Somebody shooting again. Crawl over to the television or the stereo, twist the knob until the sounds of “Dance Fever” or Earth, Wind & Fire overtook the noise of angry men in the twisty, dead-end streets below us. But then, nothing—not Denny Terio, not Philip Bailey—competed with the ghetto birds. Helicopters, lots of them, often pulled my gaze away from those houses. Cops in the sky. Almost always at night, the police helicopters roared by with bright lights that ripped through bedroom curtains and past the squeezed-shut eyelids of men, women, and children. And they’d come so low, I imagined feeling the chop of the blades against my numb cheeks. My stomach vibrated with the rumbling, and my heart skipped and I forgot to breathe as sirens wailed so loud and so close and swirling blue and red lights reflected off my bedroom’s yellow and green floral wallpaper and I prayed for it to be over... Drugs and gangs—and the Los Angeles Police Department—had finally hijacked Santo Tomas Drive. (Howzell Hall 2016)

Howzell Hall’s childhood memories serve as evidence for the prevalence of LAPD forces in this community. Though her journal entry was written in 1982, there is still a significant police presence in the area.

In November 2008, the LAPD named The Jungle — the area between La Brea Ave and Crenshaw Blvd, south of Rodeo Rd and north of Santo Tomas Dr — a Gang Reduction Zone (GRZ) (LA Times 2008). The entirety of the Tract Area is encompassed within this LAPD GRZ. According to an LA Times article:

The area’s name came from the lush plantings of the pool apartments but has come to signify the gang warfare that emerged from the tropical facades. Although city officials re-christened it

Baldwin Village years ago, many residents still call it the Jungle — P. Stone Jungle, as it has been ruled by the Black P. Stones, a sect of the Bloods, for more than three decades. The gated courtyards and carports of some 560 apartment buildings present a maze into which gangbangers can slip, and the area has some of the highest crime in the city. For years, the P. Stones have been at war with the Latino 18th Street gang to the north. As casualties mounted, LAPD assigned Whiteman and two other gang-detail officers to the area in 2004. The next year, the FBI and LAPD swept through the area with federal drug indictments for 16 P. Stone leaders. And the year after that, the city attorney filed a gang injunction against the P. Stones, prohibiting them from congregating in public. (LA Times 2008)

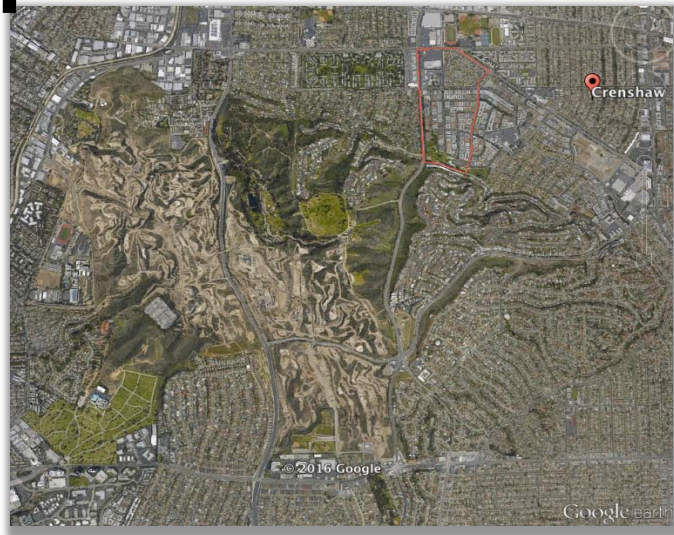
The designation as a GRZ and the P. Stones gang injunction gives LAPD the authority to arrest anyone they please. In 2011, nearly 1,000 LAPD and FBI officers swarmed The Jungle and made over 50 arrests; this was the second major raid of the Black P. Stones (LA Weekly 2011). Frequent arrests, police abuse, drug use and gun violence have downstream public health impacts associated with trauma (Graham 2013).

Despite being a small geographic area, The Jungle makes a few notable appearances in popular culture. The film *Training Day*, starring Denzel Washington, was filmed in The Jungle and the tense final scene takes place on Santo Tomas Drive. The Jungle is also the setting for the music video of the 2010 hit single “Hard in Da Paint” by the rapper Waka Flocka. The music video has 26 million views on YouTube and the artist is well known internationally. The video is shot in The Jungle and features a lot of community members dancing in the streets. Toward the three-minute mark of the video, a large number of LAPD cars, officers and a helicopter enter the scene. The music stops and the screen reads: “Due to the Los Angeles Gang Injunction, this production was shut down... but they didn’t stop the movement.” A few publicly available videos document police-community interactions in The Jungle. In one video in particular, an officer is questioning a young man and accusing him of being a gang member affiliated with the Black P Stones (Streetgangs 2009). The video takes place at Jim Gilliam Rec Center, and a number of community members defend the young man’s innocence and criticize the officer for attempting to convict him.

### *Background on the Inglewood Oil Fields*

The land area directly to the west of The Tract is dominated by two major land masses — the Inglewood Oil Fields and Kenneth Hahn Regional Park — which will be discussed in detail in Findings. **Figure 10**, a satellite image, shows The Tract outlined in red, Hahn Park in green and the Oil Fields in brown. Covering over 1,000 acres of land, the Inglewood Oil Field (IOF) is the largest urban oil field in the country. In 1924, oil was discovered in the Baldwin Hills. That same year, Standard Oil Company began drilling and produced around 145 barrels of oil per day. In the 1920’s, fields in Los Angeles region produced nearly one quarter of the world’s oil supply. Over the nearly century-long history of the Inglewood Oil Field, 1,600 wells have been drilled, producing around 400 billion total barrels of oil. The fields are currently operated by Freeport-McMoRan Oil & Gas (FMOG) and an estimated 1,463 active wells produce between 2.5 and 3.1 million barrels of oil per year. (Inglewood Oil Field nd)

**Figure 10 — The Tract, Kenneth Hahn Park and the Inglewood Oil Fields** (*Google Earth*)



The 1,463 active wells in the IOF make up 28% of total wells in LA County (Liberty Hill 2015). According to the report “Drilling Down: oil extraction in urban Los Angeles,” within 1500 feet of the Inglewood Oil Field, 79 percent of the population are people of color, 55 percent are living in poverty and 30 percent have less than a high school diploma (Liberty Hill 2015). According to the “Drilling Down” report:

Residents in Los Angeles communities living near oil wells routinely report symptoms of dizziness, nosebleeds, headaches, and exacerbated asthma... There is a growing literature linking unconventional oil and gas drilling with increased air pollution, water contamination, noise pollution, and stress. Environmental Justice... communities often suffer from the cumulative effects of poverty, lack of access to adequate health care, and illnesses that can leave individuals more vulnerable to the toxic effects of pollution... In the Los Angeles area, poor air quality is an ongoing problem for low-income communities of color, who are disproportionately exposed to air toxics. (Liberty Hill 2015)

In 2006, Culver City residents had to be evacuated on two separate occasions for noxious odors produced by the IOF. Plains Exploration & Production (PXP), the IOF operator at the time, said this was a “once-in-a-lifetime event” and that the odors were “nonhazardous,” which really only meant non-explosive. At the same time, PXP released plans to drill 1,000 new wells over the coming decades; previously, community members made a plan to turn the area into One Big Park. The Greater Baldwin Hills Alliance (GBHA) was formed “to represent the 50,000 households living immediately adjacent to the oil field.” GBHA included Community Health Councils, the City Project, neighborhood associations and block clubs. Pushed by the GBHA, LA County eventually prohibited new drilling and developed an ordinance to better regulate the IOF. (Liberty Hill 2015)

In 2008, after a number of public meetings and hours of public comment, the Los Angeles County Board of Supervisors adopted the Baldwin Hills Community Standards District (CSD). The CSD provided community protection carrying the force of law. It limited new drilling to 600 wells and “required a landscaping plan, the formation of a community advisory board and multi-agency coordination council, and the installation of new air quality equipment among more than 62 pages of regulations.” Four lawsuits were filed due to shortcomings of the

CSD, which resulted in “significantly strengthened restrictions by further reducing the number of new wells allowed, increasing air quality monitoring, setting more stringent noise limits, and requiring recurring health and environmental justice assessments.” With these provisions, The CSD is now seen as “a model approach for how health-protective and community-responsive mechanisms can be required of oil operations.” Studies showed that the PXP expansion plans would have “worst-case health risk associated with future operations exceeded applicable health risk criteria for individual cancer risk and acute non-cancer risk,” however, with the CDS regulations in place, “health risk impacts would be considered to be less than significant.” (“Drilling Down” 2015)

### *Background on development and the New Community Plan*

New developments are on the horizon for The Tract and surrounding area. The Baldwin-Hills Crenshaw Plaza is a historic community hub that has recently received attention and large investments (LA Times 2015). Marlton Square off MLK Jr Blvd was formerly an apartment complex; after decades of development woes, Kaiser Permanente has purchased the land and is constructing a large new healthcare facility (Sharp 2014 b). New Metro light rail lines – specifically the Metro Expo Line (opened in 2012) and Crenshaw/LAX Line (construction started, opens in 2019) – are ushering new development interest and community fears. New developments and Metro expansion are discussed in detail in the Findings section.

The Tract and peripheral area fall under purview of the West Adams-Baldwin Hills-Leimert Community Plan (The Plan), which has not been updated in over 30 years. The Plan will make a number of zoning changes in the surrounding area, but none directly in The Tract. The stated goal of the plan is “to shape positive community change by harmonizing the Plan Area’s unique character through encouraging sustainable land use patterns as introduced through citywide policies and regional initiatives.” The Plan continues to acknowledge the cultural and historical significance of this place: “The Baldwin Hills neighborhoods stretching from Leimert Park to Culver City, for instance, are collectively identified as the largest geographically contiguous, middle and upper-income African-American area in the United States” (“Draft Plan” 2012). The Plan is discussed in detail in the Findings and Recommendations sections.



## Findings

I investigated LA County’s most climate vulnerable tract area (tract 2362.02, as identified by the CCPVST) in order to gain a better understanding of what climate vulnerability means, how it occurs and what can be done about it. Over the course of eight interviews with community members, four interviews with government officials, attendance of four public meetings and three days of field observation, I found the following. The tables below will be referenced throughout the Findings section. The tables were created using data collected with the help of principal investigators from the EJSM and CCPVST and compiled by the author. For justification of the CCPVST and EJSM indicators, see **Appendix 1**.

### Tables

<b>Climate Change Population Vulnerability Screening Tool</b>	<b>The Tract (2362.02)</b>	<b>Rank compared to LA County (1 = low; 5 = high)</b>
Households without a car	60%	5
Households elderly (over 65) living alone	10%	5
Unique transit routes	0	3
A/C ownership (percent of households)	1%	5
Tree canopy coverage (average percent of land coverage)	0%	2
Impervious surface coverage (average percent of land coverage)	73%	5
Sea-rise risk	0	1
Flood risk	1.51	4
Fire risk	2.45	4
* CCPVST acquired data, compiled by McChesney		

<b>Climate Vulnerability Indicators (EJSM)</b>	<b>The Tract (2362.02)</b>	<b>LA County (average)</b>
No vehicle	32%	10%
Elderly (over 65) living alone	3.1%	2.6%
Tree canopy coverage (as a percentage of total land coverage)	2.4%	2.2%
Impervious surface coverage (as a percentage of total land coverage)	76%	59%
Max temperature change	79%	84%
Average maximum temperature	299.5	301.5
Warm nights change	95%	86%
* EJSM acquired data, compiled by McChesney		

<b>Social and Health Vulnerability Indicators (EJSM)</b>	<b>The Tract (2362.02)</b>	<b>LA County (average)</b>
Population density (per square mile)	6192	4187
Non-Anglo (PoP)	99%	72%
Renters (PoP)	98%	50%
Linguistic isolation (percent of households with no English speakers)	20%	14%
Poverty (twice the federal level)	27%	60%
Less than highschool education (percent of population)	38%	25%
Median home value	\$123,100	\$454,578
Adverse births (PoP)	17%	12%
Young people under the age of 5 (PoP)	10%	6%
Elderly people over the age of 65 (PoP)	10%	16%
Voter turnout (PoP)	48%	58%
* EJSM acquired data, compiled by McChesney		



<b>Hazard Proximity and Land Use Indicators (EJSM)</b>	<b>The Tract (2362.02)</b>	<b>LA County (average)</b>
Population with sensitive land uses	0.20	0.5
Hazardous site	0.0	0.47
Population with sensitive land use and hazardous site	0.20	0.52
Population with close proximity to hazardous site	0.28	1.03
Population with close proximity to hazardous site and with sensitive land use	0.48	1.09
Population with traffic proximity	0.16	0.20
Population with close proximity to hazardous site, sensitive land uses and traffic	0.64	1.29
* EJSM acquired data, compiled by McChesney		

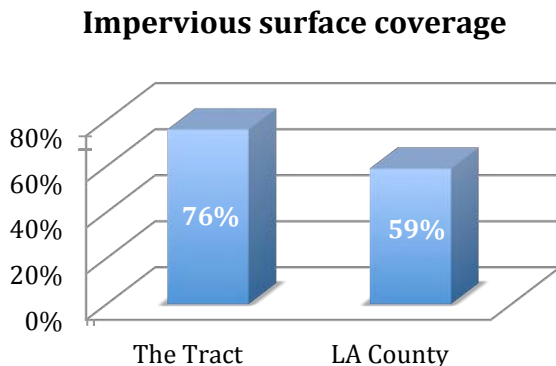
<b>Health Risk and Exposure Indicators (EJSM)</b>	<b>The Tract (2362.02)</b>	<b>LA County (average)</b>
Particulate matter (PM25)	11.6	11.6
Ozone	0.01	0.07
Pesticides	0.0	6.4
Toxic concentration	2,233	4,610
Cancer risk	0.001	0.001
Respiratory hazard	4.7	5.3
* EJSM acquired data, compiled by McChesney		

## *Ecological Vulnerability: Historical Disinvestment in the Built Environment*

- 76% of land coverage is impervious, while only 2% is tree canopy
- “I don’t understand why there aren’t more trees”
- “People don’t have AC because we get a nice cool breeze from the ocean, so we don’t really need them here.”

### *Impervious surface coverage*

□



Impervious surfaces cover over three quarters of the total landmass in The Tract, while The County tract average closer to one half. Impervious surfaces retain heat and exacerbate the threat of heat waves through what is known as the “urban heat island effect” (UHI). The disparity can be partly explained by two existing features of the built environment: first, a large plot of commercial land that sits in the northwestern corner of the tract where two major thoroughfares, La Brea and Rodeo, meet; second, the nature of high density of multi-family unit apartment buildings that make up the residential community. Impervious surfaces dominate the general landscape of the surrounding area as well; the many multi-lane thoroughfares and the Inglewood Oil Fields significantly add to the degree of impervious surface coverage in the area.

### *Inglewood Oil Fields*

Compacted urban soils are considered a highly impervious surface. Urban oil fields are one example of impervious soil. Covering over 1,000 acres of land, the Inglewood Oil Field (IOF) is the largest urban oil field in the country. In 2008, community members came together to sue the Inglewood Oil Field, and eventually, the Baldwin Hills Community Standards District (CSD) was born. Community members continue to meet monthly at the Kenneth Hahn Community Center for CSD meetings. The oil field has been restricted to a size that is justifiable by science and law, 1,000 acres, but community members still feel that the IOF is detrimental to the community. At the CSD meetings, a spectrum of land value ideologies is undeniably apparent:



While the oil companies perpetually want to expand drilling and subsequent profiting, the community leaders want to abolish extraction entirely and reclaim the land as public space.

The CSD meeting is a metaphor for the current confinement of the IOF — community leaders want to further regulate and eventually eliminate the oil field, while the IOF operators, Freeport Marine Oil & Gas (FMOG) and PxP before them, are engaged in a adamant defense of their economic liberty. The County is the intermediary between these two opposing forces. One County attorney has attended almost every single CSD meetings for the past eight years, and he said that the same arguments have arisen at every meeting.

FMOG rejected my request for a tour of the IOF and was unresponsive to my requests for an interview. Community members continue to experience the visual and olfactory impact of living proximate to a massive oil field. Community members and visitors alike have the opportunity to see the sprawling fields and inhale the fumes from the vistas of Kenneth Hahn Regional Park. As a giant impervious surface — not to mention the GHG emission impact — the IOF is a significant driver of climate vulnerability in the area. Community members and activists categorize the IOF with other health disparities in the built environment. “I live in the 90008 zip code... we are located next to the largest urban oil fields in the country, the area is park poor, and also has very few supermarkets and access to fresh vegetables,” said Irma Munoz, Founder and Director of Mujeres de la Tierra, a community organization focused on environmental health. While the community at large hopes for the expansion of Kenneth Hahn for creation of One Big Park, the oil company hopes to drill 1,000 new wells. At the present moment, the ambitions of both sides have been quelled, and the IOF sits in a state of perpetual drilling confined to current boundaries.

### *Tree canopy coverage*

Tree canopy only covers between 0 percent (according to CCPVST data) and 2.4 percent (according to EJSM data) of total landmass in The Tract. Of that small percentage, most trees are concentrated in the southern corner of The Tract on the grounds of the Jim Gilliam Recreation Complex. As a raw percentage, The Tract surface coverage is about the same as the median LA County tract rate; however, the County average is dismally low and the percentage for The Tract needs to be interrogated further. There are a number of factors and hypothesis that contribute to the lack of tree canopy coverage in The Tract and surrounding area.

Overall, there are many documented and hypothesized reasons why there is a severe lack of trees in the area. Metro, LAPD and the Endeavour Space Shuttle parade may all have had a

hand in tree trimming and removal in southwest LA. Desires for view preservation and a history of government disinvestment in the area may also explain the lack of tree growth in the area. The general lack of trees in the area is hard to explain, even for longtime residents such as the Empowerment Congress West Area Neighborhood Development Council (ECWANDC) Co-Chair, Yvonne Ellett: “I don’t understand why there aren’t more trees, [especially] in Leimert Park north of King to Rodeo... [Trees] should [at least] line our two major thoroughfares.” Ellett also pointed out that as financial and development interests in the area increase, so too do tree plantings: “You can always tell when there’s a new resident because there is a tree planted in the yard.”

Due to climate change, the instance and severity of heat waves are going to increase. In areas that lack tree canopy coverage and contain high rates of impervious surface coverage, the UHI effect will be severe. According to the Climate Gap, heat waves and UHIs disproportionately affect poor communities and communities of color (Shonkoff et al. 2011). Planting trees and other plant life is the single greatest way to reduce the health risks associated with UHIs. Community Health Councils (CHC) is aware of the tree disparity in Baldwin Village and plans to plant more trees in the area.

### *Temperature change*

According to EJSM data, The Tract is relatively less vulnerable to temperature change. However, it is important to keep in mind that the UHI effect is not accounted for in this calculation, likely making The Tract seem less vulnerable than it actually is; because the UHI effect increases the severity of heat waves and ground temperature more generally, the focus area is still vulnerable to temperature change.

Nighttime temperatures provide potential refuge from extreme daytime heat. Interestingly, The Tract was found to have a projected change in degree-days of warm nights (66°F or hotter) from 2050 to 2059 above the LA County tract median. During heat waves, this could potentially prove fatal. Heat stroke and dehydration can take effect in at night if temperatures don’t decrease.

The Projected max monthly temperature in The Tract from 2050 to 2059 is about equal to the LA County median. The average max temperature may be kept at bay by the ocean winds blown in from the Pacific. Residents in the area value “the nice cool breeze from the ocean” (Warren), which may prove to be an important geographic feature as temperatures increase over time. Though average maximum temperature is not high for the County, it will likely have a greater impact in the area, due to the degree of impervious surface coverage, which will increase the impact of the UHI effect.

Projected maximum monthly temperature changes from 2050 to 2059 in The Tract are below the median maximum temperature changes predicted for all tracts in LA County. The close proximity of The Tract to the Pacific Ocean may help keep temperatures down in a changing climate. Generally, tracts in The Valley are most vulnerable to temperature change. Again, however, the UHI effect is not included in this calculation, and if the impervious surface coverage remains relatively constant, marginal temperature increases will be magnified.

### *Air conditioning ownership*

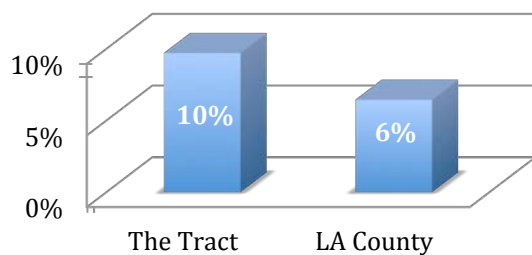
According to CCPVST data, only 1 percent of households in The Tract own an air conditioning (AC) unit, a low number for LA County. Owning a central air conditioner reduces, if not completely eliminates the risk of heat waves. Specifically in The Tract, AC ownership is severely limited. This may be partly due to the coastal proximity of the area and partly because of financial limitations. According to Edmond Warren, Treasure of the ECWANDC, “People don’t have AC because we get a nice cool breeze from the ocean, so we don’t really need them here. Plus they’re expensive. I mean, whose responsibility would it be, the landlord or the tenant? That’s a big investment for the building owner.” The perception of cool ocean winds, though accurate, is potentially troublesome if people assume they do not need AC, or, even more dangerous, if people think the breeze will protect them from heat waves.

Private residences are not the only way to access AC. Public spaces are commonly used as locations for respite from extreme heat. The Jim Gilliam Recreation Center is an asset in the community — a public facility with air conditioning, a senior citizen center and childcare center. Warren observed, “People went to the mall when the last heat wave hit. The [ECWA] Neighborhood Council encourages people to go there during hot conditions.” The mall Warren refers to is the Baldwin Hills Crenshaw Plaza; although it is a privately owned piece of property, it is considered an important community space. According to Ellett, “it was the first mall of its kind in California.” It has changed significantly over the years, going through numerous ups and downs that reflect the circumstances of the surrounding communities. In 2004, new capital partners bought the mall and now plans to create new retail, market-rate housing, office space and a hotel are underway. The Crenshaw Plaza, regardless of expansion plans, will continue to be an air conditioned community resource for local residents, an especially important one during heat waves, which will increase significantly due to climate change.

### *Sensitive populations*

□

#### **Children under the age of 5**



Very young and elderly populations are hyper-vulnerable to a variety of health risks. This includes environmental health stresses that will increase in severity due to climate change. The percent of children under the age of five in The Tract is higher than that of The County; for people over the age of 65, The Tract percentage is 6 percent less. Overall, 22 percent of Tract residents are in vulnerable age groups.

The percentage of residents in The Tract that are elderly and living alone is high for the county, making up 3.1 percent of the population. Those that are over the age of 65 are especially vulnerable to extreme weather — such as heat waves or other disasters, such as floods — because of increased health risks associated with old age; if elderly people live alone, they may also lack access mobility and on-call healthcare assistance. In the dense courtyard style apartments of The Jungle, elderly people living alone might be looked after by their neighbors; the population density is 30,226 people per square mile in The Tract. Overall, it hard to predict if the elderly people living alone in The Jungle will survive during future heat waves.

10 percent of The Tract population is children under five, compared to the six percent LA County tract average. Children, like elders, have increased health risks associated with heat waves and natural disasters. Ecological vulnerability is high in The Tract overall and disproportionately high for the estimated 619 children in The Tract under the age of five.

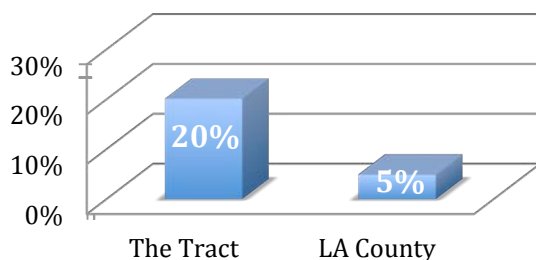
Community Health Councils is a prominent community organization working to improve health conditions for people in the area. CHC has a particular emphasis on improving the health of young people. CHC is pushing The City to adopt a Healthy Kid Zone (HKZ) in the area, which will, in the words of CHC Policy Analyst Robert Baird, “improve adjacent areas around schools to creates healthier environments and more safe, walkable routes to school.” A HKZ designation would allow the area to gain preference points in applying for federal block grants to improve infrastructure around schools in South LA. In The Tract, a HKZ designation may slightly decrease ecological vulnerability for young children.

17 percent of Tract residents are born with adverse birth effects — such as low birth weights and other indicators of heightened health risks — compared to 10 percent County-wide. This is another indicator of heightened ecological vulnerability because people born with health defects often have heightened health risks as adults. Many birth defects, such as congenital heart defects or sickle-cell disease, will increase the risk of fatality in a disaster, such as an extreme heat event.

*Sensitive land uses*

□

**Population with sensitive land uses**



20 percent of the population is associated with sensitive land uses compared to the five percent County tract average. Sensitive land uses, as defined by the EJSM, included childcare facilities, healthcare facilities, schools, urban parks and playgrounds and senior residential

buildings. The Jim Gilliam Senior Center and Childcare Center could both be considered sensitive facilities. Dorsey High, Audubon Middle Schools and a plethora of childcare facilities in the area also qualify as sensitive facilities. Jim Gilliam Park also qualifies. These facilities are all sensitive to environmental risks because of the concentration of vulnerable people in these facilities.

### *Natural disaster risk*

Wildfire and flood risk in The Tract are both relatively high, scoring four out of five in the CCPVST. Sea level rise risk in the tract is low. Many downstream effects of sea-level rise could affect The Tract Population, but these are much more difficult to predict and measure.

### *Systemic Vulnerability: Top-Down Decision Making*

- “I know that as part of the gang crackdown, LAPD cut down a lot of trees for helicopter visibility reasons.”
- “Metro has just cut down a lot of trees on Crenshaw Blvd. When I drive down the street now it feels different, it feels naked.”
- “We are located next to the largest urban oil fields in the country, the area is park poor, and also has very few supermarkets and access to fresh vegetables.”

In The Tract and surrounding area, government officials often make macro-level decisions that negatively impact the community.

### *LAPD*

Some claim the Los Angeles Police Department (LAPD) is responsible for cutting down a number of trees in the area. Supposedly at the height of the War on Drugs, LAPD used tree trimming as a strategy for improving aerial gang surveillance. “I know that as part of the gang crackdown, LAPD cut down a lot of trees for helicopter visibility reasons,” Warren said. No further evidence of LAPD tree cutting was found, but helicopter and police presence in the area is a well-documented fact. The claim that LAPD has cut down trees in The Jungle reflects the larger theme of top-down decision making impacted the community.

According to Ellett, 95 percent of apartments in Baldwin Village are rent stabilized. Recently, management companies have begun to purchase the apartment complexes and some have started to renovate buildings.

Depending on who you talk to you will get different ideas about Baldwin Village. There have been a lot of changes since Expo Line opened. It used to be called The Jungle because of the way things were in the old apartment buildings... If there were ever street-trees, many were removed. Legacy foliage was removed but is being replaced as rising housing prices have made renovations monetarily worthwhile. A lot of the complexes are owned by management groups now. (Ellett)

Ellett’s analysis points out the monetary value of aesthetic. The poor residents of The Jungle were deprived of street trees, maybe even robbed of them, but as property values increase and old residents are displaced, the number of trees increases proportionally. **Figure 11** shows a man in The Jungle sitting on a stonewall under the shade of an apartment complex balcony; the image illustrated the lack of shade and tree canopy in The Jungle. The street is lined with some palm



trees, but they provide little shade from what appears to be a blistering sun. With limited shade and air conditioning, people struggle to find respite from the sun in extreme weather events.

**Figure 11 — Searching for shade in The Jungle** (*Google Maps Street View*)



### *LA Metro*

In 2008, Los Angeles County voters approved Measure R, the half-cent sales for public transit investments. On January 21, 2014, LA Metro broke ground on construction of the two billion dollar Crenshaw/LAX Transit Project, one of 12 major projects funded by Measure R (metro.net nd.). According to LA Metro the project will serve the Crenshaw District and stops are planned for three locations in the area: Expo/Crenshaw, Martin Luther King Jr. and Leimert Park. Construction of the Leimert Park station adjacent to the historic Leimert Park Village and Plaza has resulted in multiple road closures on Crenshaw Blvd — an important business, traffic and pedestrian corridor — for periods up to a month long. In addition to the disturbances and road closures caused by construction, local residents are critical of the tree cutting Metro has conducted.

Crenshaw Blvd is an important community corridor. Some residents are upset about Metro’s decision to cut down some large old trees on Crenshaw for construction purposes: “Metro has just cut down a lot of trees on Crenshaw Blvd. When I drive down the street now it feels different, it feels naked. I think they are replacing the trees 2 to 1 or something, but they won’t be able to replace those trees” said Warren. This falls within the theme of top-down decision making by a major government agency, again seen through the lens of tree cutting.

Warren described the trees as large and beautiful, a sort of urban ecological miracle that is hard to come across in south LA. Baird of CHC shared a similar sentiment about tree replacement:

Metro has committed to three to one tree replacement, but more important than the ratio is the quality of the trees. If the tree is young, it can take twenty years to fully develop, in the meantime

it won't be providing canopy coverage and could easily die in the process. We are in charge of holding Metro and the City accountable.

Metro likely cut the trees out of necessity for construction reasons, but the community concern about the loss of precious trees is warranted. The major thoroughfares — Crenshaw being one of them — are severely lacking in tree coverage. Even if not for reasons related to the UHI effect or climate change vulnerability, even the ascetic benefit of trees makes their removal cause for community concern. But Metro has only cut down a handful of trees, and that happened within the past year, so overall this does little to explain why trees are severely lacking in the area.

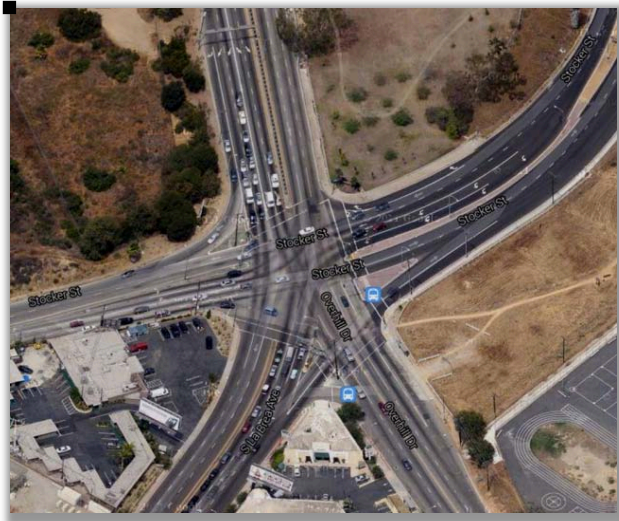
### *Spatial Vulnerability: Local Burden for City Benefits*

- “Our major thoroughfares make us look like a war zone, you just drive through it and you think you’re in the ghetto. The aesthetics here drive me crazy.”
- “We’re working to gain benefits and reduce impacts of new transit stations.”
- “The King Memorial Trees were planted in the early 90’s in commemoration of Dr. Martin Luther King... A few had to be cut down... so the space shuttle could be whisked to the Science Center.”

### *Major thoroughfares*

The 90008 and 90016 area of southwest Los Angeles contains some of the city's most used residential thoroughfares. Crenshaw Blvd, MLK Jr. Blvd, La Cienega Blvd, La Brea Ave, Slauson Ave, Rodeo Rd and Stocker St are the major thoroughfares in the area, ranging from four to eight lanes wide. All seven of these thoroughfares are at grade roads that run through commercial corridors and adjacent residential neighborhoods. Though many other parts of LA deal with the air, noise and light pollution associated with elevated freeways, residents in this area have to maneuver these highly trafficked thoroughways in a very direct way, such as having to walk across a six lane Blvd to get to the grocery store. **Figure 12** shows an intersection commonly referred to as “5 Points” where La Brea, Stocker and Overhill Dr meet.

**Figure 12 — 5 Points** (*La Brea Corridor Planning Study*)



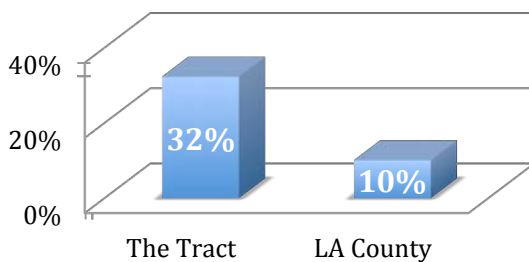
Dorothy Pirtle, a Leimert Park native and Program Assistant at the California Small Business Development Center said, “The thing that’s striking is that all our major thoroughfares are ugly, [which is] not indicative of the beauty of the people and housing here.” Ellett shared a similar sentiment: “our major thoroughfares make us look like a war zone, you just drive through it and you think you’re in the ghetto. The aesthetics here drive me crazy.” There are a myriad of fast food restaurants and general lack of greenery along major thoroughfares in the area; however, off the major roads, the area is more residential and ascetically pleasing.

The Tract is tucked in between three busy streets: La Brea to the west, Rodeo to the north and MLK to the northeast. Overall, the large commercial corner — home to a McDonalds, Ralphs, Metro PCS, Dollar Tree and Chevron — covers roughly one fifth of The Tract’s total landmass. The roads and commercial corner contribute significantly to impervious surface coverage. Overall, the major thoroughfares in the area exhibit a city benefit and local burden; the city benefits from fast moving multi-lane roads, while residents suffer from pollution and ascetic blight.

*Mobility*

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**Households with no vehicle**



A high 32 percent of households in The Tract do not own a car, compared to the 10 percent LA County tract average. Again, this exacerbates the health risks of extreme weather events. For instance, the Baldwin Hills-Crenshaw Plaza is a destination where community members go to escape the heat; however, the one-and-a-half-mile walk from The Tract to The Plaza might be dangerous, even potentially fatal, during a heat wave. For an area with a median household income of \$24,375 (2010 census), car ownership may not be financially feasible for many families.

Community Health Councils (CHC) pushed for expanded transit access in South LA; eventually the Expo Line was built, and now LAX/Crenshaw Line is under construction. However, as research has shown, improved transit access often brings economic activity that can lead to the displacement of low-income residents and small businesses. ACT-LA is a county-wide coalition fighting for equity in transit-oriented development. CHC is a member of the ACT-LA coalition, and the organization is actively “working to gain benefits and reduce impacts of new transit stations” said Baird. The implications of the new Crenshaw/LAX Line and the expanding Expo line are discussed further in the Economic Vulnerability section.

Another indicator of transit access is bicycle infrastructure and ridership. Out of the estimated 2,014 workers 16 years and over in The Tract, only 7 reported using a bicycle to commute to work (ACS). There is a general lack of bicycle lanes in The Tract and the surrounding area. There are Class II bike lanes on Coliseum and MLK, but there are no bike lanes whatsoever on La Brea, Stocker, La Cienega or Rodeo. A study found that while one percent of Los Angeles City residents bike to work, zero percent of residents in the West Adams - Baldwin Hills - Leimert Plan Area bike to work (“Draft Plan” 2012). This disparity might partly be explained by the lack of protected bicycle lanes along the busy major thoroughfares in the Plan Area. Overall, access to varying transportation options is not only an important economic and social asset, but it is also an important when it comes to environmental and climate risks. In terms of mobility, the area is burdened with low vehicle ownership and limited bicycle lanes; while the City expands public transit options in the area, it is yet to be seen whether the news stations will benefit existing residents or propel their displacement.

### *Endeavour Space Shuttle*

On October 12, 2012, the Endeavour space shuttle pattered its way down Martin Luther King Jr Blvd, eventually finding its permanent home at the California Science Center. Before the arrival of the Endeavor — a retired historic spacecraft — the City and the Science Center announced that 400 trees would have to be cut down in Inglewood and South LA in order to make room for the space shuttle to travel to its destination from LAX (LA Times 2012). In the end, some historic trees were saved, but many were cut down in the already tree poor region of South LA. According to Ellett:

The King Memorial Trees were planted in the early 90's in commemoration of Dr. Martin Luther King. The Trees begin just east of Rodeo and continue all the way to Central Avenue. Those between Crenshaw and Figueroa were threatened to be chopped down so the space shuttle could be whisked to the Science Center. We helped save them. A few had to be cut down and were replaced 4:1 throughout our area, setting precedence for future tree cutting. Metro has to replace any cut-down trees at 4:1 also. (Ellett)

In the end, it is difficult to know how many trees were cut down and how many were trimmed, as well as if the Science Center kept their promise to replace trees 4:1, including five years of maintenance and other community benefits. Regardless of the expediency of the route, it is not fair that the Endeavour traveled through tree poor South LA, cutting down historic trees in its path. This is another example of the City at-large benefiting while South LA community members bare the burden.

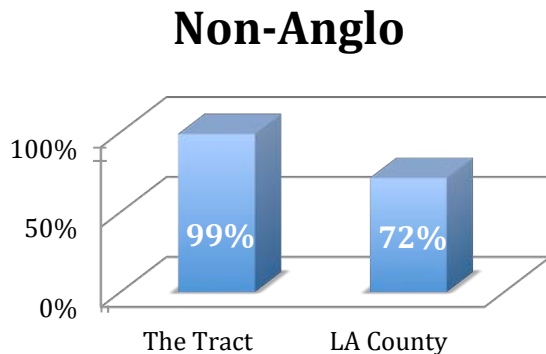
### *Social Vulnerability: Resisting Displacement*

- 99% of residents in The Tract identify as Non-Anglo, 98% of residents are renters and the median home value in The Tract is only 20% of the LA County median
- “South LA has a long history of not getting equitable access to [City] initiatives. I’m not sure whether that is because of racism, lack of political will, or other factors.”
- “Before we never saw any Caucasians in this area, now around my neighborhood we are starting to see some Caucasian runners in the morning, and we’ve never seen that before.”

At a Gentrification Roundtable discussion hosted by the Association of Black Social Workers, Councilmember Marqueece Harris Dawson told community members, “it is important that we make the distinction between race gentrification and class gentrification.” The Councilmember continued to explain that both were happening in the area, but that they have to be understood and combatted in different ways. While the former is a social phenomenon, the later is an economic phenomenon. Both types of gentrification are happening in the area, and both have different implications.

### *Race and ethnicity*

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99 percent of the population in The Tract identify as non-Anglo, compared to 72 percent County-wide. The surrounding region of southwest LA — including the neighborhoods of Leimert Park, Baldwin Hills, Crenshaw and West Adams — has been described as the most economically diverse black enclave in the county and even as “Black cultural Mecca” (Ellett). When the courts finally outlawed restrictive housing covenants in the 1960s, people of color were finally able to buy houses in more desirable parts of the city. Fearing a drop in property values, and oftentimes coupled with a fear and disdain of people of color, a phenomenon known as *white flight* took place when whites migrated out of the city and moved into the suburbs. The result was a period of rich cultural expression in communities primarily occupied by people of color; however, white flight diminished the tax base and the city pulled many public services, particularly in communities of color. After decades of disinvestment, there is now a massive migration back into cities, which is leading to the displacement of families and entire communities; not surprisingly, low income communities and communities of color are most likely to suffer from this social and economic phenomenon known as gentrification.

According to the 2010 census, there are 6,192 people living in The Tract, with a high population density of 30,226 people per square mile. According to 2010 census data, 50 percent of residents (3,038 people) in The Tract identify as African-American or Black only. For comparison, 69.9 percent of residents in the 90008 zip code (including parts of Baldwin Hills, Crenshaw, Leimert Park and View Park-Windsor Hills) and 38 percent of residents in the 90016 zip code (including parts of Baldwin Hills, Crenshaw, West Adams and Mid City) identify as African-American or Black only. 47 percent of residents (2,934 people) in The Tract identify as Hispanic or Latino, of any race. 23 percent of 90008 residents and 53 percent of 90016 residents identify as Hispanic or Latino of any race. Combined, 97 percent of residents in The Tract identify as either AA/Black or Hispanic/Latino. According to the EJSM calculation, 99 percent



of residents in The Tract identify as “Non-Anglo,” compared to the 72 percent County tract average.

Again, climate change is a lens through which we can expose and understand preexisting inequities. As Baird of CHC noted: “South LA has a long history of not getting equitable access to [City] initiatives. I’m not sure whether that is because of racism, lack of political will, or other factors, but as a City we are starting to pivot toward more equitable, community focused programs to make up for generations of neglect.” The result of white flight, public disinvestment and political neglect in South LA has resulted in — among many other inequities — disproportionate climate vulnerability. Being black doesn’t make you susceptible to climate change, but decades of spatial racism has resulted in living conditions in black neighborhoods that make the people living in those neighborhoods particularly vulnerable. But people of color in The Tract and the surrounding area are not only vulnerable to climate change, they are also vulnerable to social and economic change.

If the first half of the 20<sup>th</sup> century is marked by racial segregation, the 1960s by white flight and the 1970s to the 1990s by disinvestment, then the 2000s are marked by gentrification. As Councilmember Harris-Dawson went on to explain, race gentrification is the very visible form of displacement where whites (most often) come into an area and displace people of color by occupying rental units at higher rates and buying newly remodeled houses (in southwest LA, this is primarily Black and A-A people, and secondarily, Latino and Hispanic people).

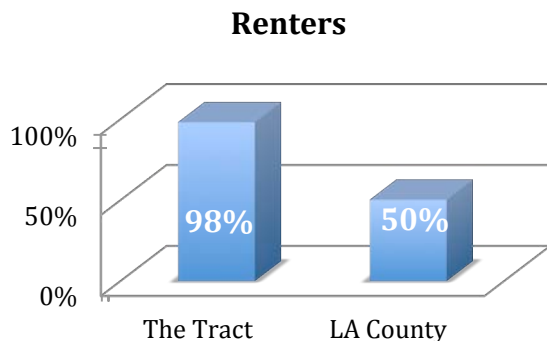
Race gentrification is visible and overt, especially in an area where upwards of 99 percent of the population are people of color. Warren explained his first experience with this: “Before we never saw any Caucasians in this area, now around my neighborhood we are starting to see some Caucasian runners in the morning, and we’ve never seen that before.” For the first time since white flight in the 1960s, white people are starting to venture back into South LA. The implications of this are significant, especially when we are discussing an area that some value as “Black cultural Mecca.” Displacement of poor people is one thing, but displacement of a cultural hub, an artists haven and a historic identity is something else entirely.

Linguistic isolation is also high in The Tract: 20 percent of the population is linguistically isolated compared to the 14 percent LA County tract average. Linguistic isolation can increase vulnerability because it complicates response and recovery from disaster. The EJSM indicator only calculates linguistic isolation, but other types of isolation are hard to quantify — such as distrust of public agencies — may also be present in the community.

Considering 40 percent of the population in The Tract is foreign born (ACS 2014 estimate), the relatively high rate of linguistic isolation is not surprising. Being foreign born can exacerbate forms of social vulnerability. For example, many foreign born people are also undocumented. This creates a myriad of difficulties related to navigating the social sphere. In the event of a natural disaster, for example, an undocumented family will have more difficulty finding government assistance and insurance reimbursement than families with full citizenship status.

## Class and income

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According to EJSM calculations, only 27 percent of Tract residents are living in poverty, while the County tract average is 60 percent. However, according to the American Community Survey (ACS) five-year estimates, the median household income for The Tract is only \$23,517 — a low for LA County (\$55,870 average) and for the City (\$49,682 average). The average household size in The Tract is 2.7 persons; the federal poverty level (FPL) is \$16,020 for a two-person household, \$20,160 for a three-person household and \$24,300 for a four person household. But the FPL does not account for the high cost of living in California and Los Angeles, so a higher proportion of community members are likely living in conditions of poverty. For comparison, the median household income (according to the same ACS 2014 5-year-estimates) for the 90008 area is \$36,180 and for the 90016 area is \$38,050. Judging by median household income, The Tract is quite poor in comparison to the surrounding zip codes, city and county.

Regardless of how you measure it, there is a significant degree of poverty in The Tract. In regards to climate change, lacking economic means increases vulnerability. In the case of natural disasters, poor people have a harder time evacuating, as was the tragic case in Hurricane Katrina. The direct environmental effects (such as higher levels of ozone) and downstream economic effects (such as the increased cost of food) of climate change will also disproportionately affect poor people. Poor people who are already disproportionately impacted by environmental and economic stress will be increasingly be overburdened in a business as usual scenario.

According to EJSM data, 98 percent of residents in The Tract rent their home compared to the countywide tract average of 50 percent. Renting a home increases social and environmental vulnerability. In poor neighborhoods and overcrowded apartment complexes especially, landlords often neglect buildings and resident needs. For example, landlords in poor areas often allow pests, plumbing, fire, earthquake, toxins and other hazards run unchecked. Rental units also often lack amenities such as air conditioning. According to Baird from CHC, 95 percent of apartments in The Jungle are rent stabilized: “As they start to renovate these apartments [in The Jungle], what is the new landscape going to look like? Right now it’s not in the best shape. Earthquake ordinance and energy efficiency costs are going to be passed on to tenants.” Baird and CHC are urging The City’s Affordable Housing Working Group to secure protections for rent-stabilized units in the area, as they fear gentrification is on the horizon.



Renting also makes families vulnerable to social risks, such as displacement through gentrification. Certain conditions in the area make it especially vulnerable to gentrification: new rail stations, increasing developer interest, high rentership rates and low home values. Community members at the Wal-Mart closure meeting expressed their fear of displacement:

We are part of the decision making process. We need to organize. When the light rail gets finished being built, we will be at risk of displacement. It comes down to power. We need to continue building community power. We need to look at the whole picture.

The community is in the process of organizing to fight against powerful economic and social forces. At the Gentrification Roundtable, emphasis was placed on property ownership. Simply put, if you own your home or business, no one can evict you from it; but this is a much more nuanced strategy that requires further examination.

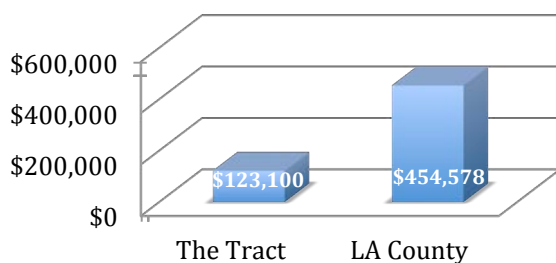
Organizing is also an important factor in resisting unlawful evictions and luxury developments. In Pirtle’s view, “We don’t need to commit our entire life to this fight, but we do need to commit to our community.” Pirtle thinks that the Wal-Mart closure was a catalyzing moment, the energy from which needs to be channeled strategically; in other words, “We need to strike while the fire is still hot” (Pirtle). Ellett was also fearful and optimistic about the changes coming to the area and the rest of the City:

All of our housing stock is old. As the train rolls through and area becomes more popular, we will likely lose a lot to small lot sub-divisions. As the city looks for more options for housings, most of our major thoroughfares will likely get taller and the landscape here over the next twenty years will change dramatically. As people come from the suburbs into city, it’s going to be sad to see Los Angeles as we know it disappear. Two decades from now it is not going to look like this anymore — we will do our best to preserve it, but it’s a modern city that needs to get more modern. Sometimes you just need to let stuff go, but sometimes you need to fight. It’s sad but exciting. I love my area. (Ellett)

Community organizers and many residents in the area know that a development boom and potential gentrification are on the horizon; many believe that this is an opportunity for the community to steer it’s own ship. “Local residents, families and stakeholders are the in the best position to decide what is good for them, their children and their neighborhood,” Muñoz said. There are programs such as the ‘Keep Your Home CA’ program from the LA County Department of Neighborhood Housing Services, but thus far government has been unsuccessful in stopping the massive wave of gentrification and displacement across communities of color in Los Angeles.

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**Median home value**



The median home value in The Tract is only \$123,100 compared to the County-wide tract average of \$545,578. Low home values also increase vulnerability to gentrification. This has happened across the City, the country and the world, where developers seize cheap land, demolish existing buildings and build new market-rate and luxury units, office and retail space, and hotels. There is also a smaller scale phenomenon of buying cheap properties and selling them for profit known as “house-flipping.” In buildings, especially in rent stabilized units, landlords will also evict tenants illegally in order to rent the unit for a higher price or sell the property to a developer. The area, according to Warren, is also a hidden gem: “This is a prime area of the city. It’s close to everything, we get a nice breeze from the ocean, we have some of the best views in the city, rich culture, good food. Yeah we have our problems, but I think this place is a well kept secret.” Unfortunately, the well-kept secrets in LA are being rapidly exposed to a volatile housing market. According to Ellett, “Housing prices are rising astronomically.”

48 percent of residents in The Tract voted in the 2012 election, which is low compared to the countywide tract average of 58 percent. Educational attainment is often associated with voter participation, and is also another indicator of spatial equity. 32 percent of The Tract population has less than a high school diploma, compared to 16 percent countywide. In The Tract, nearly four times as many people over the age of 25 have less than a high school diploma compared to those who have at least a bachelor’s degree. Education correlates with social, geographic and economic mobility. In a business as usual climate change scenario, especially in an area designated as the most climate vulnerable, mobility is an important adaptation method.

Susan Miller Dorsey High School is a LAUSD public math and science charter high school. Dorsey High is located across the street from The Tract on Rodeo Road. The graduation rate at Dorsey is 74 percent, compared to 84 percent in California, 83 percent in LA County and 68 percent within LAUSD. Dorsey is the only LAUSD public high school in the 90016 area. Some new, smaller charter high schools popped up in the area, but graduation rates at these schools are not publicly available. Overall, access to quality education in the tract is limited, which increases social vulnerability.

Class gentrification is oftentimes more nuanced and less visible than race gentrification. Councilmember Harris-Dawson used himself and his wife as an example of class gentrification — they were a married couple with college degrees buying a house from a woman who had a much lower income than they did. Over the course of a decade, he noted, the whole block was transformed from black working-class families to black professional families. Class gentrification is also taking hold in the area. By some estimations, property values are “skyrocketing” (Ellett). The Expo and Crenshaw/LAX Rail Lines are one factor that is exposing newcomers to the beauty of the area and its real estate potential. According to Ellett:

Everyone sees the benefit of the train. Wow, it is going to be something in 2019, could be the new LA Live! But life as we know it will be completely altered forever. Suddenly we will be on the map. With every Metro project comes gentrification. There’s fear, a lot of fear. Several huge pieces of property [are] planned [for development]. If Metro is as friendly as they are making themselves out to be, then this is a really great opportunity moving forward. But dollars coming in means more construction and rising property values... What's going to happen to us then? (Ellett)

Unfortunately, those with enough wealth to own their home or business are the only ones safe from the tide of class gentrification.

## *Economic Vulnerability: The Struggle for Autonomy*

- “African American unemployment is double that of the national average. 500 people went out of work over King Weekend. That is unacceptable and we need to do something about this.”
- “Everything we do we have to think about our children. What do we want to see in our community? Where do we want to see it? We need to make tangible changes that are not only reactionary, but revolutionary.”
- “We thought, why don’t we take an existing model that needs improvement? The purpose of this is to provide an opportunity for women — those who want to start an independent micro-enterprise — to train them on how to [run a small business].”

Another way to measure vulnerability and poverty is through unemployment ratings. 12.7 percent of The Tract population is unemployed compared to 7.6 percent citywide and 7.1 countywide. Unemployment, like other social indicators, is associated with various negative health outcomes. The unemployment rate in The Tract is nearly double that of the County and significantly higher than the surrounding area (8.1 percent in 90008 and 8.2 percent in 90016). Due to the unexpected Wal-Mart closure, unemployment has increased in the community.

### *Wal-Mart closure*

Over the Dr. Rev. Martin Luther King Jr. Day weekend in 2016, the Wal-Mart at the Baldwin Hills-Crenshaw Plaza unexpectedly shut down. Around 500 people, mostly local black residents, were employed by the Crenshaw Wal-Mart; overnight, all 500 community members suddenly lost their jobs. The ECWANDC called a special Economic Committee meeting to discuss the dramatic occurrence. On 21 January 2016, over 100 local residents and a number of public officials packed the Vision Theater in Leimert Park to talk about the implications of the Wal-Mart closure. Hours of public comment took place and some of the most powerful comments reflect the severity of the occurrence:

African American unemployment is double that of the national average. 500 people went out of work over King Weekend. That is unacceptable and we need to do something about this.

We must pull together, unify and get the people back to work!

We need to not just be reactionary, but also take action. With MLK’s birthday and everything going on, we have to stand up and show them we have a voice too.

For the 500 people who lost their job overnight, this was a moment of anger and sadness; however, for the community-at-large, this was a rallying call, a spark for a movement and a chance for collective contemplation.

Many at the meeting were critical of Wal-Mart’s 10-year reign in the area, particularly questioning how the store got there in the first place and how they treated their employees:

I was born and raised here. This is the 3rd store to leave this location. 15 years ago, they were the only ones who would come in here. Target, Trader Joe’s and other stores all refused to come. We have suffered from institutionalized racism. We are trying to get one store to figure out 400 years

of racism. We need to make sure we are framing the conversation correctly. We need you all to follow this all the way through. We cannot do this by ourselves, we need y'all. Our money, our views matter. — Jamal Jones, ECWANDC Area 3 Representative

We should have held [Wal-Mart] accountable for the way they treated our people.

[Walmart's] style is to slash, burn and dump. The City Council is responsible for breaking ordinances to allow Wal-Mart to come here in the first place.

Though Wal-Mart was a large employer in the area, most employees were part-time and lacked benefits. Wal-Mart also had a large impact on local businesses; particularly in Leimert Park, many small businesses went bankrupt after Wal-Mart opened. Wal-Mart is banned in the City of Los Angeles, but the company lobbied successfully to build in Crenshaw and Chinatown; then, seemingly out of nowhere, Wal-Mart abandoned the stores they worked so hard to erect. This Wal-Mart was also noted by some at the meeting as being one of the most profitable in California. There are a few theories of why Wal-Mart left this potentially profitable location, but the evidence is inconclusive.

Now there is a massive vacant building where Wal-Mart once stood on the central commercial corner on MLK and Crenshaw. The positive side of this event is that now the community has a chance to contribute in the process of filling this vacant space. Residents are hopeful that this new business will bring with community benefits and protections:

If we work together and communicate well, we can continue this dialogue and improve our community. The future plan [for the Wal-Mart site] needs to think about a CBA. This is a way to take an intergovernmental approach to implement things like a living wage, local hire and job training programs.

The place where Wal-Mart was is a prime location — we wouldn't want Wal-Mart there anyway. Instead of shopping in a giant corporation and sending our money to Arkansas, we should invest and spend our money in local business so our money stays in the community.

We need to put a plan together for what we would like to see in this space, something that will benefit the community.

Everything we do we have to think about our children. What do we want to see in our community? Where do we want to see it? We need to make tangible changes that are not only reactionary, but revolutionary.

The community has high hopes for the Wal-Mart replacement. Community leaders understand that organizing is key and that the anger over Wal-Mart's disrespect of the community ought to be leveraged for making positive change.

In the wake of the Wal-Mart closure, the Los Angeles Department of Workforce Development, along with The Mayor's Office, CD8, CD10 and ECWANDC came together to host a job fair. The job fair brought together businesses to offer positions to laid off Wal-Mart workers, and it also offered job re-training programs for those in need. An anonymous commentator was skeptical of the job fair, however, and saw it more as a political play than an effective strategy to regain lost jobs and improve job security in the community.

### *Local hire*

Other large projects also have the potential to bring new jobs into the area. According to their website, in 2012, LA Metro:

Became the nation's first transit agency to adopt a Project Labor Agreement (PLA) with national targeted hiring goals for federally funded, Federal Transit Administration (FTA) approved projects valued over \$2.5 million. The historic PLA will not only provide construction employment and training opportunities to many who reside along the Crenshaw/LAX Transit Project alignment, it will help build the workforce of tomorrow. (metro.net)

Congressperson Karen Bass, Representative of the 37th California Congressional District and founder of Community Coalition, was instrumental in the push for local hire for the Crenshaw/LAX line construction project. This is a significant opportunity to bring high quality jobs and job training programs into an area that suffers higher than average rates of unemployment.

Other local hire projects are also arriving in the community. According to Ellett, the new Kaiser Permanente project has also signed a project labor agreement; Ellett reported that the construction project is above quota on local hire and African-American hire, but below on female hire. According to Ellett, the developers of The Plaza are also considering a local hire union contract.

### *La Paleteras*

Mujeres de la Tierra (MdIT, “women of the earth” in English) is an “environmental equity” focused community organization in South LA. Founded by Irma Muñoz, MdIT is “an avant-garde environmental non-profit focused on healing la madre tierra and redefining the traditional ‘green’ dialogue in Los Angeles.” Rather than local hire, the La Paletera program of MdIT focuses on culturally relevant employment programs. The La Paletera program is result of feedback received from women in the community. The MdIT survey found that the vast majority of women in the community (80 to 90 percent) want three things: a small plot of land to grow vegetables; a safe place for their kids to play; and a part time flexible job or their own small business.

A paletero is a street vendor of helados or paletas (“ice-cream” in English); the occupation originated in Mexico. There are many paleteros in Los Angeles, but most sell unhealthy, sugar-based processed ice-cream and the majority of vendors are male. Muñoz said that traditionally, paletas were made from fresh fruit, vegetables and water with little or no added sugar. Now, MdIT is reviving paleta vending, particularly for low income mothers, “We thought, why don’t we take an existing model that needs improvement? The purpose of this is to provide an opportunity for women — those who want to start an independent micro-enterprise — to train them on how to do that” (Muñoz).

Since street vending is illegal in the City of Los Angeles, MdIT is starting the La Paletera program in unincorporated parts of the County, particularly along the LA River. Muñoz said most of the initial paleteras are poor immigrant women that need an income. With this program, women can receive training and a micro-loan to start earning a decent wage on their own terms.

As a longtime resident of Crenshaw, Muñoz understands that you “cannot separate the green conversation on conservation” from the conversation on “basic human needs” and “economic empowerment.” Though the La Paletera de Los Angeles program is in its early stages, Muñoz is happy to report that customers love the new alternative to processed popsicles — fresh, hand-made, all-organic healthy paleta ice-cream sticks.

### *Structural Vulnerability: Conflicting Visions of Development*

- “The New Plan ... falls short in addressing the over concentration of fast food restaurants, prioritizing the development of new park space, enforcing efforts to make the community more pedestrian, transit and bike-friendly, and establishing safeguards to protect the character of our communities.”
- “It’s up to each of us to decide what our dream is. We need MLK and Crenshaw to be a destination. 50 years from now, this will be the most beautiful place to be.”
- “Height increases will destroy the character of our historic neighborhood.”

Like many other low-income areas of Los Angeles, developers see southwest LA as a highly profitable area. According to a number of informants, outside developers are buying up small businesses in Leimert Park Village, large lots along Crenshaw Blvd and apartment complexes in The Jungle. The City Planning Department is tasked with regulating developments in the City, and aside from the General Plan, community plans can shape place-specific regulations and visions of future development.

### *New Community Plan*

The New Community Plan will steer development and impact the community for decades to come. At the latest meeting in City Hall, the City Planning Commission (CPC) voted to adopt The Plan; Ruben Caldwell, the Community Planner in charge of The Plan, explained the goals and purview of The Plan at this public meeting:

[The Plan Area] is considered a park poor area; 70 percent of open space [in The Plan Area] is in Kenneth Hahn Park. Unfortunately there is not much city owned property [in The Plan Area] to increase open space... [The Plan] provides access and linkage into the state recreation area and pocket parks ... [through] incorporating mobility elements and other streetscape plans.

Caldwell understands the lack of greenspace and the disproportionate impervious surface coverage in the area, but he is ultimately limited by the lack publicly owned land in The Plan Area. At the CPC meeting, many residents voiced their opinions about zoning changes presented in The Plan. In The Tract, zoning for the new The Plan and the old zoning are nearly identical (see **Appendix 2**).

A letter written on behalf of the Community Health Council (CHC) to the CPC also highlights the shortcomings of The Plan:

While the New Plan includes many provisions that will enhance the quality of life for South LA residents, it falls short in addressing the over concentration of fast food restaurants, prioritizing the development of new park space, enforcing efforts to make the community more pedestrian, transit and bike-friendly, and establishing safeguards to protect the character of our communities. Although the Los Angeles Department of City Planning (DCP) staff report’s recommendations

attempt to address a portion of these issues, additional changes must be made to the plan to adequately achieve the stated goals. (CHC)

Community organizations (such as CHC), community members (such as those at the CPC meeting) and city officials (such as Caldwell) all acknowledge the unhealthy land use conditions in the area — the difficult part is coming up with a plan that will address these issues.

The Plan designates the intersection of La Brea and Rodeo as a “Community Center — Transit Oriented Development Area, Commercial Node.” Rather than increasing tree canopy coverage around this tree sparse intersection, The Plan promotes increased development in this highly commercialized area. While it is rhetorically designated as a friendly “Community Center,” the area is in fact a crowded multilane intersection dominated by corporations such as McDonalds, KFC, Del Taco and Chevron.

The Plan seems to further designate the intersection for intense commercial activity and ‘in-fill’ development. The Plan does not, however, acknowledge that this is the most climate vulnerable area in LA County and that provisions must be taken to reduce health risks associated with such vulnerability. For Pirtle, future thinking is important: “It’s up to each of us to decide what our dream is. We need MLK and Crenshaw to be a destination. 50 years from now, this will be the most beautiful place to be.” Community Plans have the potential to help steer a vision for the future of the area, but they can also accelerate gentrification and interfere with the culture of the community.

### *View Preservation*

One hypothesis cited in interviews with community members for the low number of trees in the area is the appreciation of stunning views and contempt for view blocking. Especially in Baldwin Hills Estates and other neighborhoods with a high topography, the views are astoundingly beautiful. With views all the way from the Pacific Ocean to the San Gabriel Mountains and from Santa Monica to downtown Los Angeles, residents at high elevations in this part of southwest LA have incredible vistas, some of which can be observed by the public at Kenneth Hahn Regional Park. According to Ellett, “Trees are chopped down for view preservation.” Many community members value the views as an essential quality of the neighborhood, a significant reason why it is a good place to live. Some see the view as a way to draw economic activity to the area. At the The Plan meeting, a community member gave public comment on proposed zoning height increases, “Height increases will destroy the character of our historic neighborhood.” Another community member echoed this sentiment, “Height district two is way beyond the height and scope of the community.” But there are many low lying areas that lack views and tree canopy coverage, including The Jungle, which is relatively flat and viewless.

### *La Brea Corridor*

The La Brea Corridor Planning Study (2014), conducted by the nonprofit North East Trees and supported by Baldwin Hills Parklands and California Natural Resources Agency, examined existing concerns and possible interventions for La Brea Ave. The focus area runs adjacent to The Tract on S La Brea Ave, from Stocker St to Exposition Blvd. La Brea has nearly no sidewalks, no crosswalks, no stop lights, no stop signs, no bike paths, no street trees and no



landscaping. The La Brea study recommends streetscape improvements echoed by the CHC and other community members, particularly relating to pedestrian safety improvements and tree planting. (See **Appendix 3**)

### *Resilience: Leveraging Community Assets*

- The Jim Gilliam Recreation Complex is an air conditioned, publicly funded facility in The Jungle that provides free social services for children and elders
- 70 percent of open space [in The Plan Area] is in Kenneth Hahn Park
- The community is home to a rich network of community organization, including but not limited to: Community Health Councils; Mujeres de la Tierra; The City Project; The Baldwin Hills Conservancy; Save Leimert Park; and Community Coalition

### *Community Spaces*

The Jim Gilliam Recreation Complex is most notable public space in The Jungle. The Gilliam Complex not only contains an auditorium, barbecue pits, baseball diamond, basketball courts, children's play area, community room, football field, weight gym, soccer field, tennis courts, jogging path, kitchens, paddle tennis courts, putting greens and a stage, but it also provides a myriad of facilities, services and programs for the community. The Gilliam Child Care Center is a licensed preschool facility that offers a full day kindergarten program. According to an employee, the Child Care Center offers “subsidised programs — such as computer classes — free breakfast, snacks and reduced fare lunch, and early childhood education programs.” The Child Care Center, an air conditioned public facility, is a great asset that reduces vulnerability for persons under the age of 5 in the community.

The Gilliam Complex also contains a Senior Citizen Center. The Senior Citizen Center is also an air-conditioned, public facility open daily. According to a Senior Citizen Center employee, “We have line dancing, exercises classes, a weight room program, lunch [weekdays for \$.125], and several clubs that meet here. We also have in-house events and trips all the time, at least one every month.” Undoubtedly, the Senior Citizen Center is also a great asset that reduces vulnerability for persons over the age of 65 in the community.

Kenneth Hahn Regional Park is also a tremendous community asset. Kenneth Hahn, the legendary LA County Supervisor, established the Park in 1984 to replace parts of the Inglewood Oil Field that were no longer drilling. The 401-acre Park is one of the largest in the LA metropolitan area and contains a hummingbird garden, marvelous views, exercise equipment, playgrounds, kiddie pools, fishing ponds and walking, hiking, jogging and bike paths. 70 percent of open space [in The Plan Area] is in Kenneth Hahn Park (“Draft Plan” 2012). (California State Parks 2012)

The Crenshaw-Baldwin Hills Plaza is another great community resource. Multiple informants noted the mall as a community asset, a place where people go to gather, shop and escape from the heat. The mall has been through many ups and downs, and is slated for a big overhaul in the coming years. The Crenshaw Farmers market is also hosted in the Plaza courtyard, and, from firsthand experience, it is one of the best in Los Angeles.

Dorsey High School is another asset identified by residents. Though its academic track record is mixed, the building has received major funding and renovations in recent years thanks to efforts of students and the Community Coalition. The high school is said to have some phenomenal, dedicated teachers from the community, as well as one of the best basketball programs in the City.

### *Community Organizations*

There are a number of community organizations and nonprofits that are fighting for equity and improved quality of life in and around the community. These include, but are not limited to: Community Health Councils; Mujeres de la Tierra; The City Project; The Baldwin Hills Conservancy; Save Leimert Park; Community Coalition; and a number of small business development, public health and affordable housing organizations.

### *Community Culture*

The ethos of the community may be its greatest asset. The area has been described as “Black Cultural Mecca” and the most economically diverse black enclave in the county. The history of the area is rich, with decades long traditions of art and activism. The involvement of community members in public meetings and the fervor of their comments speak to the passion people have about their community and the future of it.

## Recommendations

### *Community Recommendations*

- Plant trees to reduce the urban heat island effect
- Organize to resist evictions, displacement and gentrification
- Establish a community support system for the most vulnerable — the elderly living alone and children under the age of five — to eliminate fatalities during extreme weather events

Historically, this community has been marginalized by the society and disenfranchised by government. In the 16th century, it was Spanish exploration of Tongva land. In the 18th century, it was forced assimilation of the Tongva people into the Mexican pueblo culture. In the 19th century, it was the seizure of Mexican land by the US government. In the early 20th century, it was redlining to racially segregate neighborhoods. In the 1960s, it was ‘white flight.’ In the 1980s it was public disinvestment in the inner-city and the criminalization of poverty. Now, market and societal forces are propelling gentrification, once again banishing the residents of this land.

With the racist history of this neighborhood in particular, it is my recommendation that the community take matters into their own hands as much as possible. Climate change and gentrification are daunting challenges, but I believe the community is best suited to overcome these challenges. For residents of the Tract to achieve resilience — economic, environmental and political — the community must come together and envision the type of community they want to live in. Luckily, this has already begun.

One particular recommendation is for community members to plant trees. There are many non-profit and government programs that provide free trees so that all the community has to do is plant them. Though trees require water, maintenance and care, the benefit of street trees is significant. Street trees create shade, thus decreasing health risks associated with UHIs. Street trees can also capture carbon and improve air quality. Street trees beautify the neighborhood which has potential physiological benefits. Planting trees also has the potential to be a catalyzing action for the community, propelling further cohesion and organizing.

Next I recommend continued involvement in community affairs in order to fight the looming wave of gentrification and resist displacement. Gentrification is not an omni-powerful social-economic force; people can fight it. However, it takes a cohesive, organized front to resist profit driven market forces. Organizations like the Association of Black Social Works, the City Project, Mujeres de la Tierra, Community Health Councils, Community Coalition, ACT LA and others are organizing around gentrification and tenant’s rights, particularly in South LA. The Empowerment Congress West Area Neighborhood Development Council is also engaging the community in gentrification-related discussions.

Developers have an interest in The Tract because the area is 98 percent renters and the home values are ¼ of the County average. Developers often buy up old, cheap properties, and then they evict the existing residents, build a new market-rate development and acquire a large profit. In The Jungle, there is potential to do this with hundreds of low-rise, high density apartment complexes. The community needs to learn, stand and act together in order to

understand how developers can be combatted and tenant-rights can be exercised. There are laws in place protecting tenants, rent-stabilized units and historic buildings; there are also laws that limit the legality of evictions. One strategy is to track all parcels that file for Ellis Act; this is publicly available information on Zimas which indicates if a developer is planning to evict tenants in order to build a new development. Oftentimes, however, communities are caught by surprise, and entire buildings are evicted overnight without anyone ever getting the chance to talk to their neighbor and organize resistance.

98 percent of residents in The Tract are renters. In LA, most people spend a large portion of their income on rent; however, there is always potential to pool resources in order to buy the property that they are renting. In cities across the US, including some parts of LA, communities have come together and established a land trust. If everyone pools their money together, possibly in conjunction with nonprofit or foundation funding, residents can buy the property from the owner and take control of their own housing future. This process is often referred to as social housing or a community land trust, though the two models differ slightly. While developing social housing or establishing a land trust is a difficult and lofty goal, it is one of the only ways to protect against predatory market forces.

My final community recommendation is more directly related to climate change: to establish a community watch and support system for the most vulnerable populations — the elderly living alone and children under the age of five. In the case of a heat wave, which will increase in strength and severity in the future, elderly people living alone and children are most likely to die. Especially in The Tract community where only one percent of residents have AC, it is crucial to have a support system for the most vulnerable community members. The establishment of an informal check up system may already be in place, but it is very important to ensure that someone is checking up on the very young and elderly in extreme heat events. Simply providing them with mobility assistance in getting to public facilities with air conditioning, such as the Jim Gilliam Recreation Complex or the Crenshaw-Baldwin Hills Plaza mall, is all it takes.

### *Policy Recommendations*

- Incorporate climate change and gentrification thinking into the language and zoning of The New Community Plan; specifically, abandon height increases and requirement greenspace and affordable units for new developments
- Adopt the recommendations of the La Brea Corridor Planning Study; specifically, create bike lanes, cross walks and a greenbelt on La Brea Ave
- Prioritize Vision Zero pedestrian safety investments on La Brea, Rodeo and MLK
- Prioritize AB 32 resources in environmental justice communities like The Jungle
- Adopt a Healthy Kids Zone in South LA

Policy makers have an opportunity to achieve multi-dimensional, combined equity-environmental accomplishments through smart adaptation policy development. In contrast, policy makers could also exacerbate existing inequities and climate risk if policy is not carefully developed and informed by community needs and opinions.

The West Adams-Baldwin Hills-Leimert Community Plan has the potential to shape the future of the Plan Area. Considering climate change and gentrification are two phenomena to which the Plan Area is especially vulnerable, The Plan needs to incorporate this type of thinking into the language and zoning of the final Plan document. At the public hearing at the City Planning Commission, over 20 community members showed up to the three hour meeting at City Hall to voice their concern. The primary complaint about the plan was the proposed zoning height increases. Community members view height increases as oppositional to community values. While the City has an agenda to accommodate development, it is ultimately the role of elected and appointed public officials to act in the interest of the community. The community does not want height increases in The Plan, therefore height increases should not be granted. Height increases have the potential to incentivize developers to build new housing units, which in a housing shortage, is seen as a benefit to the region. However, almost all new residential developments in LA are market rate, and since a large portion of the community relies on rent-stabilization, these will not be accessible units to current community members. Height increases will likely bring in new market-rate developments along the major corridors in the Plan Area; while new developments aren't inherently bad, recent history has shown that new market rate developments bring in new more affluent, whiter residents — a process known as gentrification. It is my recommendation that the City not adopt zoning height increases where community members have consistently resisted this change.

It is also my recommendation that the City and Department of Transportation adopt the recommendations of the La Brea Corridor Planning Study headed by Baldwin Hills Park Lands and North East Trees. The Le Brea Study proposed interventions to improve the streetscape include: bike infrastructure; enhanced safety measures; green alleys; improved crossings; open space connections; stormwater BMPs; streetscape improvements; traffic calming; pedestrian and bike trails; and the addition of a public entrance to Kenneth Hahn region park from the existing utilities road that intersects with La Brea. The study promoted the development of a greenbelt on La Brea, which they define as “a network of greenspaces and greenways — greenspace along a corridor — that surround and connect to urban communities.” The study promotes the use of green infrastructure, such as “vegetation, soils, and natural processes” intended to “manage water and create healthier urban environments.” According to the study, transforming La Brea into a greenbelt will produce a myriad of benefits: improves quality of life; improves air and water quality; protects important habitats; provides corridors for people and wildlife; crime rates are lower on trails than in any other environment; increases property values; provides a safe and inexpensive avenue for regular exercise; and trails and greenways are hands-on environmental classrooms. I recommend that the City, specifically LADOT and Department of Street Services, immediately invest in bicycle, pedestrian and streetscape improvements, followed by the production of a long-term plan for traffic calming and pedestrian improvements along La Brea, Stocker, Crenshaw and Rodeo.

I also support the adoption Vision Zero policies around the Tract. According to Vision Zero, an LADOT initiative to reduce the number of traffic fatalities, “Over 65% of all severe and fatal traffic collisions involving people walking occur on just 6% of our City streets.” Of those 6 percent designated as a part of the High Injury Network, three flank The Tract: La Brea Ave (from Coliseum St to Pico Blvd), Rodeo Rd (from La Brea Ave to MLK Jr Blvd) and Milk Jr Blvd (from Rodeo to Crenshaw Ave). The Tract is essentially surrounded by the most dangerous

streets in LA. I recommend that LA focus resources here in this historically disinvested community.

I also support the recommendations of Pastor et al. (2010) in “Minding the Climate Gap,” which examines the equity implications for California’s Global Warming Solutions Act: AB 32. The study recommends that AB 32 and future climate change policies prioritize reductions at hazardous point-source polluters in densely populated areas, rather than the blind carbon market approach of AB 32. Research shows that the greatest public health impacts can be achieved by cutting toxic emissions from point-source polluters in low-income communities of color (Morello-Frosch et al. 2010). While regulating overall emissions is important from a mitigation standpoint, reducing pollution at the most toxic facilities is most important from a health equity standpoint. In a carbon trading system, the polluter is not important, just the overall cap on emissions. This framework neglects the place specific impact of climate change, environmental racism and general health disparities. If California, or any other governing body for that matter, wants to create effective climate change laws, they must incorporate equity-oriented and place-based thinking into policy.

Finally, I support the further development and adoption of a Healthy Kids Zone (HKZ) in South LA. The HKZ program is spearheaded by Community Health Councils, funded by the Centers for Disease Control and Prevention (CDC) and supported by the LA County Department of Public Health, Los Angeles Unified School District and City of Los Angeles. HKZs will be designated areas that promote healthy communities around select LAUSD schools by prioritizing resources for these schools that improve access to healthy food, pedestrian safety, clean environments and equitable park space. I recommend that the City support CHC with resources while allowing the well-established community organization to spearhead the implementation of a pilot project.

### *Radical Recommendations*

- Adopt a three-fold, comprehensive housing policy in LA to quell the wave of luxury development and gentrification: rent control, inclusionary zoning and building protection
- Shut down the Inglewood Oil Field and establish One Big Park and Park to Playa
- Legalize street vending

LA needs to adopt a three-fold housing policy before all poor people and people of color are pushed out of the City. As we are in a development boom period, I suggest a policy similar to that recently proposed by Mayor Bill de Blasio of New York City, who proposed 25 percent of all new residential units must be affordable. I suggest increasing the requirement to 30 percent and breaking affordability down into three categories, providing 10 percent for each type of residents: extremely low income, very low income and moderately low income. A significant percentage of all new development construction jobs should also be given to local residents, especially women.

Development of housing does not counteract displacement, even if new developments contain affordable units. The second tear of the housing policy I recommend is more stringent rent-control. For those living in LA without rent stabilized apartments, which is most of the

renting population, landlords can spike rents overnight. In order to protect tenants against unfair price hikes and economic evictions, the City needs to adopt a new rent control policy.

Third, the City needs to protect existing buildings. In many buildings, when the land becomes profitable, tenants are evicted or priced out of a building, then the landlord sells the property, a developer purchases it, demolishes it, and builds a new mixed-use, market rate development. The City needs to also adopt more stringent protections of existing buildings to stop the demolition of previously affordable units and perfectly livable complexes.

The County should take a more radical stance and find a way to shut down the Inglewood Oil Field. For decades, the community had suffered the health impacts of living next to the largest urban oil field in the country. The era of oil is over, and the government should support the community in their decades-long call to expand Kenneth Hahn Regional Park. Ultimately, government agencies should support the long-term Park to Playa and One Big Park visions that will increase equity and environmental health in the area. Oil fields are inherently toxic, and as Angela Davis said, “If the system cannot be fixed, it has to be abolished.”

To make up for oil reduction, the City should begin a free and subsidized solar panel program. Heat waves are increasing in magnitude and severity and many poor communities do not have air conditioning. The City should contract a solar company and air conditioning company to target the communities most vulnerable to climate change and provide them with free or subsidized solar panels and air conditioning units. The increased production and use of solar panels will also help the City increase their clean energy grid outlined in the Sustainable City pLAN.

The City should also legalize street vending. Street vendors employ themselves in the area and create a sense of community, yet the City continues to criminalize them. The La Paletera program started by Mujeres de la Tierra promotes economic development, women's empowerment, entrepreneurship and healthy eating — it is contradictory for the City to criminalize this program and other hard working street vendors.

Finally, LAPD and the City should formally end the gang injunction, helicopter surveillance, the criminalization of poverty, the war on drugs, the school to prison pipeline and mass incarceration. Also, the City attorney needs to persecute police who kill civilians and provide meaningful reparations for families who have suffered from police brutality.

### *Suggestions for Further Research*

The next step is to do a community survey in The Tract. This area has been identified as most climate vulnerable though a regional qualitative study, and now that finding has been validated by my mixed-methods, neighborhood level analysis. I recommend that future research be conducted at the household level through a community needs, assets and quality of life survey.

This type of research, however, must come from the community. Seeing as it is unlikely that a research survey will organically arise from The Tract, a Community Based Participatory Research (CBPR) approach is best. While a researcher may spark the initial research interest and start the research process, the actual survey development and administration should all be



conducted by community members. In short, I recommend the facilitation of a process whereby community members create and carry out a survey.

This community based participatory research will further inform policy makers as to the needs, assets, quality of life and perceptions of the community and individuals. This area has been identified as the most climate vulnerable, and I have found evidence of the intersectionality of vulnerability in the community; however, prior to adaptation policy development and analysis, further input from the community must take place.

## Conclusion

Spatial inequity, environmental racism and climate vulnerability are prevalent for communities in The Tract and the surrounding area. The ideal is the inverse of the current circumstances: spatial equity, environmental justice and climate resilience. According to Davis, “justice is that which helps us build a more compassionate society.” To understand the struggle, we must understand how various aspects of vulnerability intersect — ultimately, this can lead us to a more just, compassionate society. By focusing on local problems, we can begin to form local solutions.

The result of colonization, redlining, white flight, disinvestment and political neglect in South LA has resulted in — among many other inequities — disproportionate climate vulnerability. Being a person of color doesn’t make you susceptible to climate change, however, decades of spatial racism in LA has produced living conditions that indicate higher climate vulnerability in communities of color.

California faces many climate change impacts such increases in heat waves, wildfires, flooding and water scarcity. Changes, especially in large urban areas like LA, will impact air quality, water availability and health equity. The fact the climate change impacts will be unevenly distributed is well researched and documented. Climate Gap research found that in California, climate change will disproportionately impact poor communities and communities of color. While research has identified vulnerable areas, little to no research has been conducted in the communities identified as most vulnerable to climate impacts.

The Tract is situated in an area that has a history of being marginalized, disenfranchised, disinvested and criminalized. This research exposes some of the historical actors, events and phenomena that lead this area to have high levels of vulnerability. But vulnerability is a fluid concept. Once vulnerability is understood in all its facets, community and government can come together to achieve common goal — resilience.

## Appendices

### Appendix 1 — Justification of Indicators

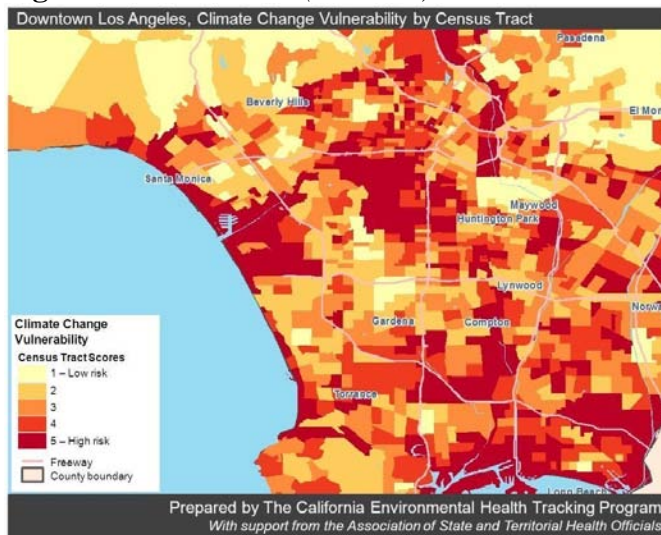
#### Climate Change Population Vulnerability Screening Tool

In 2012, the Association of State and Territorial Health Officials (ASTHO) prepared the Climate Change Population Vulnerability Screening Tool (CCPVST) in collaboration with the California Environmental Health Tracking Program (CEHTP) for the California Department of Public Health (CADPH). The study quantified climate change vulnerability using the following metrics: air conditioning ownership; land cover characteristics — tree canopy and impervious surfaces; access to transportation — transit and household car access; and social vulnerabilities — elderly and living alone. The study identified the census tracts 06037236202 (The Tract) and 06037236201 as the two most vulnerable census tracts in Los Angeles County, the former scoring a full 3.778 out of 3.778 (see **Figure a**). **Figure b** shows geospatial vulnerability across LA County (CADPH 2012).

**Figure a — The most climate vulnerable tracts in LA (CADPH)**

Community Vulnerability to Climate Change in the City of Los Angeles			
Zip code(s) for which the census tract (in parentheses) falls within	Level*	Scores (on a scale of 1-3.778 with 3.778 being the most vulnerable)	
90016 and 90008 (06037236202)	Top tier	3.778	
90016 and 90008 (06037236202)	Top tier	3.778	
90016 and 90008 (06037236201)	Top tier	3.750	
90016 and 90008 (06037236201)	Top tier	3.750	
90019 (06037212900)	Top tier	3.444	
90731 (06037297120)	Top tier	3.444	
90007 (06037221900)	Top tier	3.444	
90731 (06037297600)	Top tier	3.375	
90291 (06037273500)	Top tier	3.375	
90744 and 90813 (06037294700)	Top tier	3.375	

**Figure b — CCPVST (CADPH)**



**Figure a** shows that tracts in the 90008 and 90016 were the top four highest scoring tracts. Upon further investigation, however, that the top four tracts are really only two tracts

repeated, likely a computing error of the final publication. The study used 2000 census data, and since the 2010 census, the 06037236201 census tract has been split into two new census tracts. In this study, census tract 06037236202 is used for quantitative data analysis, while the area loosely encompassed by the zip codes 90008 and 90016 is used for a wider qualitative analysis. **Figure c** shows the racial breakdown of the CCPVST findings. The black population were found overall to live in areas with conditions that make them most vulnerable to climate change. 27 percent of blacks scored the highest five out of five on the climate change vulnerability score, whereas only 16 percent of whites did; 28 percent of whites scored the lowest one out of five score, while only 12 percent of blacks did.

**Figure c — Racial breakdown of CCPVST findings (CCPVST 2012)**

Table 2. Proportion of population by race by climate change vulnerability score, Los Angeles County

Climate Change Vulnerability	Proportion of black population (%)	Proportion of Latino population (%)	Proportion of white population (%)	Proportion of total population (%)
1	12	17	28	22
2	22	26	25	25
3	20	21	18	19
4	19	18	14	16
5	27	18	16	18
<b>Total</b>	100	100	100	100

Max Richardson, Senior Policy Manager for the California Environmental Health Monitoring Program, California Department of Public Health, was co-author of the CCPVST. “Our intent was to test the water” Richardson said about the Screening Tool. “The goal was to use data that were publicly available, then publicly display the data and process it at a sub-county level.” The following are justification, description and rationale behind the choice of climate vulnerability indicators:

The indicators chosen are consistent with the expected climate change impacts in California—including increased extreme heat events, increased flooding, and more frequent and intense wildfires. We developed... population vulnerability to climate change, using [9] indicators to supplement the existing categories of the EJSM. Our methodology was developed in accordance with the methods used by Sadd et al... The climate change population vulnerability indicator... data were compiled from various sources, and all data were publicly accessible online with the exception of data on AC prevalence. Data points were summarized at the census tract level, using tract boundaries from year 2000 Census data. Each discrete indicator for each county was ranked into quintiles and scored 1 (low vulnerability) to 5 (high vulnerability). A final score was created by averaging across indicator rankings for each county, then re-scoring from 1 to 5.

Specific explanations and justifications of each indicator are below:

Land cover characteristics (impervious and tree canopy coverage):

Urban heat islands (UHIs) develop in areas where buildings, roads, and other impervious surfaces replace land and vegetative cover. UHIs increase peak energy demand, contribute to air pollution and GHG emissions, and diminish water quality. UHIs can increase daytime temperatures 1–3°C and nighttime temperatures up to 12°C. Increasing tree and vegetative cover, promoting green roofs, and innovative infrastructure (such as cool pavements or permeable surfaces) can diminish the impacts of UHIs, reduce GHG emissions, and reduce water runoff. Minority and low-income communities often live in neighborhoods with greater exposure to heat stress. This is in part due to higher densities of settlement and increased impervious surfaces, diminished vegetative cover, and a lack of open space. Diminished green space in urban areas reduces a community’s adaptive capacity to climate change. (CCPVST 2012)

### Air conditioning ownership:

Heat waves are one of the more certain impacts of climate change, and will likely increase in California. In the 2006 heat wave in California, 16,166 excess emergency department visits and 1,182 excess hospitalizations occurred statewide. Air conditioning is an important protective factor during heat waves. Low-income households and communities of color—populations that already face greater health risks—often have diminished access to air conditioning, as a basic adaptation tool for climate change. Adults over 50 years of age are at increased risk for mortality during heat waves, and children may be at increased risk for morbidity due to a decreased capacity to thermoregulate. (CCPVST 2012)

### Elderly living alone:

The proportion of elderly living alone highlights a community vulnerable to extreme weather events—particularly heat—and other emergencies. Chronic disease exacerbations (CDE) account for one of the largest patient populations during natural disasters, and medical complications can arise from the inability to deliver basic medical services. Heat waves can exacerbate chronic illnesses, such as cardiovascular and respiratory diseases. Furthermore, existing chronic diseases can increase susceptibility to heat-related illnesses. Disease outbreaks related to flooding may pose particular risks to immunocompromised individuals. Individuals with limited mobility, pregnant women, the elderly (who often have multiple chronic conditions and comorbidities), individuals with low socioeconomic status, and individuals without insurance may be at increased risk during disasters or other emergency events. Reducing basic human vulnerabilities will be a core strategy to minimizing climate change risk. (CCPVST 2012)

### Transportation access (unique transit stops):

Transportation access is a critical tool during heat waves and other extreme weather events, allowing individuals to commute to cooling stations or other safe areas. In addition, transportation access is a critical component in emergency preparedness, and as witnessed with Hurricane Katrina, emergency transportation is often least accessible to low-income minority communities. Access to public transit and household vehicles are each indicators of a household's overall mobility. Minority and low-income populations are less likely to own cars and far more reliant on public transportation for everyday activities, including school and work. And a widening spatial gap between where people live and where people work, and the inability to get to work, impedes socioeconomic progress in many communities of color. Public transit generally receives only 20 cents for every 80 cents earmarked for highways, and many states use gas tax revenue only for highway funding, resulting in the disinvestment in transit systems in many urban communities. The transportation sector also generates one-third of U.S. emissions. Improving public transit and land use patterns that support transit use and access will be essential for climate change mitigation, and will also reap other health benefits, including decreases in pollution and automobile collisions, as well as increases in physical activity. Nighttime temperatures are critical for cooling during prolonged heat waves. (CCPVST 2012)

### Flooding:

Flooding will likely increase in California due to climate change as a result of melting snowpack and earlier water runoff. Flood risks can be compounded by impervious surfaces and wildfires—each of which exacerbate water runoff. In addition, sea rise will contribute to coastal flooding. Flooding has a direct health impact for communities at immediate risk during a flood, and can also impact the safety of food and water supplies for a wider region. Flooding can place individuals at risk of residential displacement, drowning, injury, illness and infections, carbon monoxide poisoning, mold exposure, food and water contamination, and hypothermia. Equity issues are of

importance in all disaster scenarios, as socially and economically vulnerable populations—including elderly, children, and immune-compromised individuals—often have less capacity to “anticipate, cope with, resist, and recover” from environmental hazards. Racial and ethnic disparities play a role in all major stages of a disaster, including preparedness, communication and response, physical and psychological impact, emergency response, recovery, and reconstruction. (CCPVST 2012)

### Wildfires:

Climate change is expected to increase the frequency of wildfires in California. Health effects from wildfire include mortality, respiratory illness and eye irritations associated with smoke, displacement from one’s home, and increased risk for erosion, flooding, and landslides. Individuals with pre-existing respiratory illnesses are at the greatest risk for adverse health impacts associated with wildfires. In addition, populations living in urban-wildfire boundaries are at increased risk for wildfire injury. Overall, a community’s adaptive capacity will impact their ability to respond and recover to disasters such as wildfires. (CCPVST 2012)

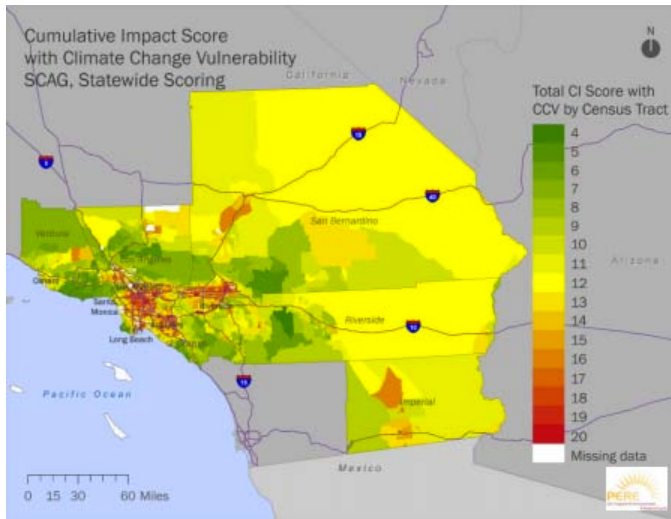
### Other high risk populations:

Chronic disease exacerbations (CDE) account for one of the largest patient populations during natural disasters, and medical complications can arise from the inability to deliver basic medical services. Heat waves can exasperate chronic illnesses, such as cardiovascular and respiratory diseases. Furthermore, existing chronic diseases can increase susceptibility to heat-related illnesses. Disease outbreaks related to flooding may pose particular risks to immunocompromised individuals. Individuals with limited mobility, pregnant women, the elderly (who often have multiple chronic conditions and comorbidities), individuals with low socioeconomic status, and individuals without insurance may be at increased risk during disasters or other emergency events. Reducing basic human vulnerabilities will be a core strategy to minimizing climate change risk. (CCPVST 2012)

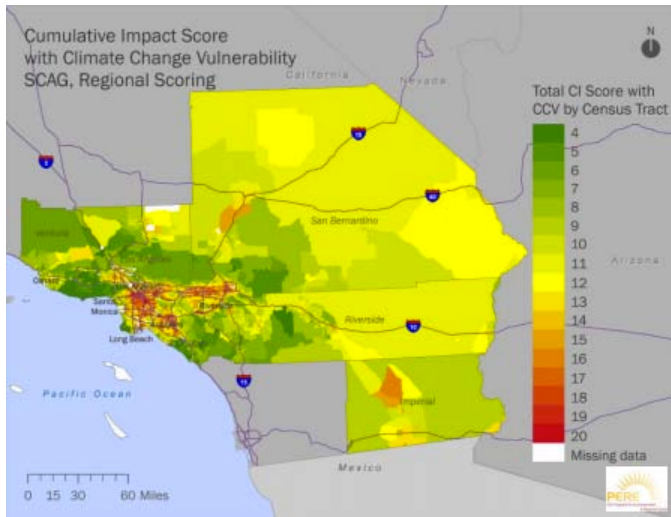
### *Environmental Justice Screening Method*

CEHTP collaborated with county and state health departments, as well as the authors of the Environmental Justice Screening Method (EJSM), to create the CCPVST methodology. The EJSM is a groundbreaking research study used to identify environmental health risk using a set of indicators that are categorized into four layers: sensitive land uses; hazard proximity metrics — polluting facilities; health risks and exposure metrics; social and health vulnerability metrics. In January 2016, the authors of the EJSM incorporated a fourth layer—climate change vulnerability — to accompany the existing layers. The six indicators they chose are not identical, but similar to the nine used for the CCPVST. The six climate change indicators are: tree canopy coverage; impervious surface coverage; projected temperature; temperature changes; projected increase in warm nights; percent elderly living alone; and percent car ownership. The EJSM authors, it should be noted, are also the authors of the Climate Gap studies, and Dr. Prof. James Sadd assisted in the qualitative portion of this study. An explanation and justification of all 32 EJSM indicators can be found on the USS Program for Environmental and Regional Justice [website](#). **Figures d** through **g** are maps of environmental justice and climate vulnerability in LA County produced using the new EJSM indicators.

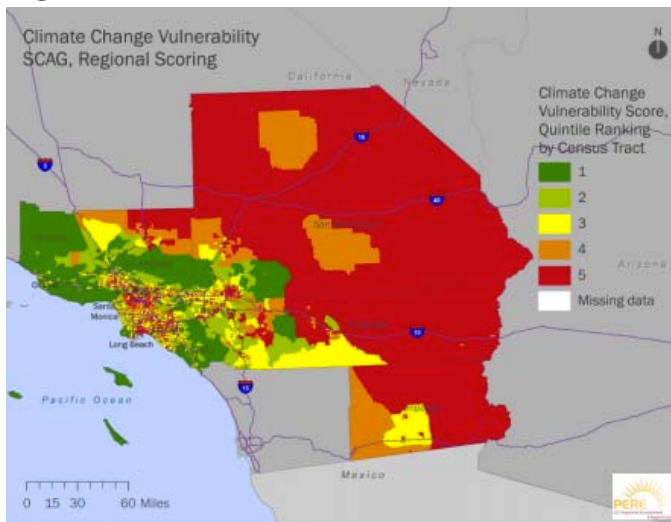
**Figure d** — *EJSM*



**Figure e** — *EJSM*

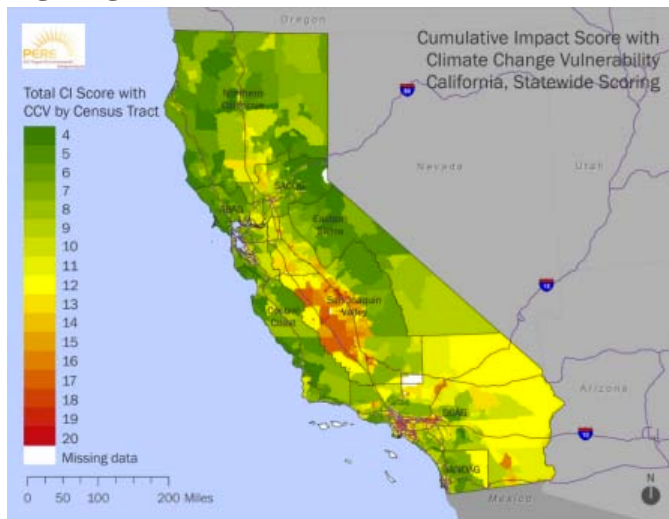


**Figure f** — *EJSM*





**Figure g — EJSM**



The maps show general geographic patterns of vulnerability, but they lack spatial specificity. General state and county trends can be gleaned from these maps, but not much else. I chose to investigate LA County’s most vulnerable tract area (2362.02 — as identified by the CCPVST) in order to gain a better understanding of what climate vulnerability means, how it occurs and what can be done about it. Overall, between the CCPVST and the EJSM, I examine climate vulnerability using 14 indicators. The cumulative list of indicators were examined through semi-structured stakeholder interviews, public meeting attendance, field observations and quantitative data analysis.

### *Appendix 2 — The New Community Plan*

The Tract and peripheral area fall under purview of the West Adams-Baldwin Hills-Leimert New Community Plan (The Plan). The Plan has not been updated in over 30 years. The Plan will make a number of zoning changes in the surrounding area, but none directly in The Tract. The Plan is one of 35 community plans undergoing an update from the City of Los Angeles Department of City Planning. The Plan, last updated in the 1990s, will set new development standards, policies and goals for residential, commercial and industrial land use regulations within Community Plan Area (see **Figure h** and **i**). 13 square miles and 182,600 people are encompassed within The Plan Area (5 percent of the city’s total population), significant portions of CD10 and CD8, and a minute fraction of CD 5. Phase I outreach of The Plan began in 2006, and finally, after a decade of conversations and planning, The Plan is in the Adoption Phase: in April 2013, the Plan was modified and approved by the South Los Angeles Area Planning Commission (APC); in April 2013 and again in February 2016, The Plan was modified and adopted by the City Planning Commission (CPC); next, The Plan must be adopted by the Planning and Land Use Management Committee (PLUM); finally, the City Council must vote to approve the Plan, thus cementing the Plan into law. (“Plan Draft” 2012)

The stated goal of the plan is “to shape positive community change by harmonizing the Plan Area’s unique character through encouraging sustainable land use patterns as introduced through citywide policies and regional initiatives.” The introduction to the draft Plan highlights the cultural, historic and racial significance of the Plan Area:





and the old zoning are nearly identical: the areas with existing apartment complexes are designated as high-density, multi-family residential; the La Brea-Rodeo intersection parcel is designated as large commercial; the south end is designated as a park and recreation area; and the blue percent to the east is the existing elementary school. The La Brea-Rodeo intersection is designated as a “Mixed Use Node” in another map.

**Figure j — Existing zoning** (Zimas 2016); **Figure k — Proposed zoning** (Draft Plan 2012)



### Appendix 3 — The La Brea Corridor Planning Study

The La Brea Corridor Planning Study (2014, see **Figure m**), sponsored by the Baldwin Hills Conservancy, proposed streetscape improvements, including the creation of: bike infrastructure; enhanced safety measures; green alleys; improved crossings; open space connections; stormwater BMPs; streetscape improvements; traffic calming; pedestrian and bike trails; and the addition of a public entrance to Kenneth Hahn region park from the existing utilities road that intersects with La Brea. The study promoted the development of a greenbelt on La Brea, which they define as “a network of greenspaces and greenways — greenspace along a corridor — that surround and connect to urban communities.” The study promotes the use of green infrastructure, such as “vegetation, soils, and natural processes” intended to “manage water and create healthier urban environments.” According to the study, transforming La Brea into a greenbelt will produce a myriad of benefits: improves quality of life; improves air and water quality; protects important habitats; provides corridors for people and wildlife; crime rates are lower on trails than in any other environment; increases property values; provides a safe and inexpensive avenue for regular exercise; and trails and greenways are hands-on environmental classrooms. The research and recommendations of the La Brea study echo similar findings of the One Big Park (see **Figure n**), and Park to Playa initiatives, which are discussed in greater detail in the Inglewood Oil Field section. **Figure 0** exhibits the lack of bike and pedestrian infrastructure along the six-lane La Brea Ave.

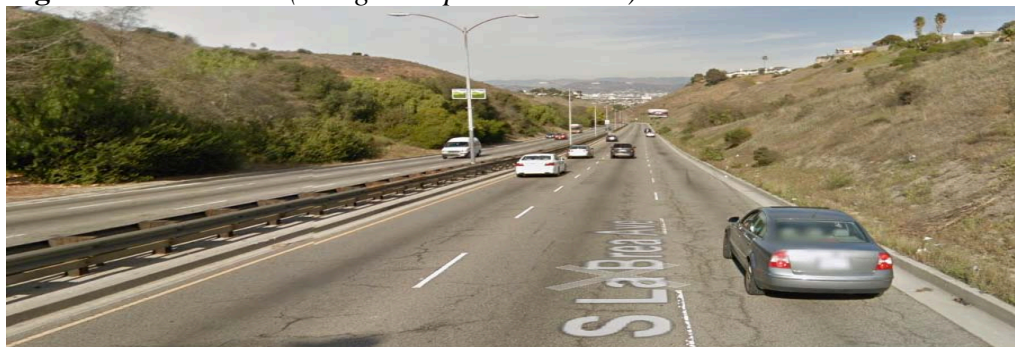
**Figure l — Study purview** (*La Brea Corridor Planning Study*)



**Figure m — One Big Park** (*La Brea Corridor Planning Study*)



**Figure n — La Brea** (*Google Maps Street View*)



## Interviews

1. **Edmund Warren**, Treasure, Empowerment Congress West Area Neighborhood Development Council, Jim Gilliam Rec Center Director Youth Development  
*January 11, 8:00am, ECWANDC headquarters, 3701 Stocker Street 106*
2. **Farrah Parker**, Housing and Community Investment Department, City of Los Angeles  
*January 13, 1:30pm, phone interview*
3. **Yvonne Ellett**, Co-Chair Empowerment Congress West Area Neighborhood Development Council, *January 13, 9:00pm, phone interview*
4. **Derrick Alatorre**, Assistant Deputy Executive Officer, Legislative and Public Affairs, South Coast Air Quality Management District  
*January 14, 2:00pm, phone interview*
5. **Robert Baird**, Policy Analyst, Community Health Councils  
*January 15, 2016, 8:30am, Cafe de Leche, 5000 York Boulevard*
6. **Max Richardson**, Senior Policy Manager, California Environmental Health Monitoring Program, California Department of Public Health  
*January 19, 1:00pm, phone interview*
7. **Irma Muñoz**, Founder and Director, Mujeres de la Tierra  
*January 20, 10:30am, phone interview*
8. **Dorothy Pirtle**, Program Assistant, California Small Business Development Center  
*January 21, 9:00pm, The World Stage, 4344 Degnan Boulevard*
9. **Timothy Stapleton**, AICP, Zoning Enforcement West, Los Angeles County Department of Regional Planning, *January 28, 9:30am, phone interview*
10. **Gwendowyn Flynn**, Nutrition Resource Policy Director, Community Health Councils  
*January 29, 2:00pm, phone interview*
11. **Anonymous**, Jim Gilliam Senior Citizen Center  
*February 29, 1:15pm, phone interview*
12. **Anonymous**, Jim Gilliam Child Care Center  
*February 29, 1:30pm, phone interview*

## Correspondence

1. **Melina Abdullah**, Chair of Pan-African Studies, Cal State LA; Co-founder, Black Lives Matter
2. **Gabrielle Horton**, Director of Public Engagement, South LA, Office of Los Angeles Mayor Eric Garcetti
3. **Matthew Rudnick**, Chief Sustainability Officer, Los Angeles Department of Recreation and Parks
4. **Ruben Caldwell**, Community Planner, West Adams-Baldwin Hills-Leimert Community Plan, Los Angeles Department of City Planning
5. **Captain**, Baldwin Hills/Crenshaw Fire Station, Los Angeles Fire Department
6. **Robert Garcia**, Founding Director, The City Project

## Public Meetings

1. ECWANDC Special Economic Empowerment Committee Meeting on the Wal-Mart Closure  
*January 21, 7:00pm, The Vision Theatre, 3341 W 43rd Place*
2. West Adams-Baldwin Hills-Leimert New Community Plan, City Planning Commission Adoption Hearing, *February 11, 8:30am, City Hall, 200 N Spring Street*
3. Gentrification Round Table Discussion, Association of Black Social Workers  
*February 20, 12:00pm, ABSW headquarters, 710 S Western Ave*
4. Baldwin Hills Community Standards District meeting, Inglewood Oil Fields  
*February 25, 7:00pm, Kenneth Hahn Regional Park Community Center, 4100 S La Cienega Blvd*

## Field Observations

1. *January 11, 8:00am*  
*Bus, bike and pedestrian observations*
2. *January 16, 9:00am*  
*Volunteer, MLK day of service, Mujeres de la Tierra, Kenneth Hahn Regional Park*
3. *February 20, 9:00am*  
*Volunteer, Crenshaw Farmers Market, Baldwin Hills-Crenshaw Plaza*



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