CITY OF LOS ANGELES

CLIMATE VULNERABILITY ASSESSMENT

DRAFT REPORT – October 15, 2024

TABLE OF CONTENTS

1. LAND ACKNOWLEDGEMENT

We acknowledge that the City of Los Angeles is situated in the ancestral and unceded lands, of the Gabrielino-Tongva Indian Tribe, also known as Yaavitam, the Kizh Nation Gabrieleño Band Of Mission Indians, the Fernandeño Tataviam Band of Mission Indians, the San Fernando Band of Mission Indians, and the Chumash, among others. We acknowledge their elders, past, present, and future, for their cultural resilience. They are the original caretakers of this land, with Los Angeles being the home to the second largest community of Native Americans in the U.S. Native American tribes are sovereign nations and our ongoing relationship with each tribe requires the utmost respect, mutual understanding and sensitivity.

2. CVA SUMMARY

This chapter provides a summary of the report, including summaries for each hazard assessment and potential mitigation measures. The goal of these summaries is to provide a quick overview of key outcomes from the CVA. These resources should be used to educate stakeholders on climate hazards and potential mitigation strategies.

List of Summaries:

1.1. Executive Summary

[Sections 1.2 through 1.7 will be one-page fact sheets that mostly consist of graphics and are not included in this draft. They will be included in the final draft and serve as summaries of content within the report.]

1.2. Extreme Heat
1.3. Extreme Precipitation and Flooding
1.4. Drought
1.5. Wildfire
1.6. Sea Level Rise
1.7. Climate-related Public Health

2.1. Executive Summary

Background and Summary: The City of Los Angeles Department of City Planning (LACP), in partnership with the Climate Emergency Mobilization Office (CEMO) and Emergency Management Department (EMD), led a Climate Vulnerability Assessment (CVA). A CVA looks at physical and social vulnerability to expected climate change impacts. The impacts focused on for this process were extreme heat, extreme precipitation and flooding, wildfires, drought, sea level rise, and climate-related public health. The outcomes included strategies to reduce climate hazard impacts, referred to as mitigations, that were created from input from community-based organizations (CBOs). The goal is to address vulnerability to climate change. The CVA is an important step to ensure the City can adapt and be resilient to the impacts of climate change with a strong focus on climate equity.

Assessment Overview: The CVA included a Climate Hazard Assessment. This is a technical analysis using available data to understand existing and projected climate hazards. The assessment identified risks and areas affected by these hazards throughout Los Angeles. The second part was a social vulnerability assessment. This assessment examined vulnerabilities and adaptive capacity of communities and populations across the City experiencing and projected to experience climate hazards. Factors that can make impacts worse, or stressors, were examined, including pollution, smoke, preexisting health conditions, economic and social disparities, and the built environment.

What are current City climate efforts, and how does this work align with those efforts?: In June 2024, EMD updated the City's Local Hazard Mitigation Plan (LHMP), which includes mapping projected climate hazards and analyzing impacts. CEMO is leading the development of the City's heat action plan to coordinate ways to adapt to extreme heat. The CVA coordinated with EMD and CEMO on recommendations to be incorporated into ongoing and future climate mitigation efforts. Other departments have various climate planning efforts regarding infrastructure and operations that are ongoing or being reviewed to identify department actions that can be part of a larger citywide resilience effort.

Mitigation and Adaptation: The community engagement process was at the core of the CVA process to ensure communities most affected by climate hazards and stressors informed and guided community-driven solutions. Outreach focused on populations living in South Los Angeles, Northeast Los Angeles, Harbor Gateway and Wilmington, Central City, Central City North, and the North San Fernando Valley, which include areas of the City with significant populations of vulnerable people. These areas face hardships due to issues related to pollution, economic challenges, and Though many potential climate hazards exist, the CVA focused on mitigating the hazards with the highest risk of severe impacts. Best practices and community input led to the recommendations on equitable climate adaptation strategies and implementation actions to prioritize these vulnerable people and communities in this report.

Extreme Heat

Extreme heat is defined as an extended period of at least two to three days of above-average temperatures and humidity and a threshold of 95.2 degrees Fahrenheit, or 35.1 degrees Celsius, based on 30-year averages. All areas of the City are likely to experience impacts.

Impact: Heat can severely harm people's health and affect their ability to work, go places, and perform daily activities. Air quality harmed by fumes, smoke, and pollution combine with heat to make health issues worse.	Recommended mitigations: • *Increase the amount of green space and tree canopy in areas impacted by the urban heat island effect.* • *Use a variety of approaches to reduce the heat impacts on people who are vulnerable and are unable to remain indoors to conduct. necessary daily activities (e.g., outdoor workers, transit users, etc).* • *Encourage use of building design elements to cool buildings using traditional methods.* • *Enhance tree care through expanding tree maintenance programs and public education campaigns around valuing trees and maintenance.*

Extreme Precipitation and Flooding

Extreme precipitation and flooding includes heavy rainfall in a short period that threatens flooding and the resulting temporary overflow of excess water in normally dry urban areas.

Impact: Heavy precipitation events flood streets and other parts of communities as drains get clogged and rainfall overwhelms drains. The ability to safely evacuate was a concern in many communities.	Recommended mitigations: • *Make improvements to stormwater systems to mitigate flooding and major rainfall events.* • *Provide more tools for community members to prepare for, respond to, and recover from flooding.* • *Use natural and new constructed infrastructure to reduce the amount of flooding in densely populated urban areas.* • *Reduce the potential public health impacts from flooding through awareness and reduced exposure.* • *Use types of surfaces and paving that allows water to drain into the soil and reduces runoff.*

Drought

Drought is defined as a period of abnormally dry weather and little precipitation that causes water shortages and/or affects everyday life. All areas of the City are likely to experience impacts.

Impact: Drought can increase the cost of water, and many communities worry about future shortages. Drought makes wildfire a higher risk, too.	Recommended mitigations: • *Modify drought management approaches and water billing policies to reduce impacts from drought on low-income and vulnerable people.* • *Upgrade water collection and stormwater infrastructure to replenish groundwater and recycle water.* • *Provide education and support for water conservation and landscaping techniques that retain water.*

Wildfire

Wildfire was defined as uncontrolled fire occurring on undeveloped land that requires extinguishing. Wildfires become a hazard when they threaten people, buildings, and assets, and wildfire smoke presents serious public health risks.

Impact: Wildfires create smoke that makes health issues worse. Many Communities were concerned about fire impacts related to unhoused people.	Recommended mitigations: • *Reduce the risk of wildfire impacts on structures, people and infrastructure.* • *Help people connect with information to reduce exposure to harmful air from natural and human-caused sources of air pollution.* • *Use a variety of approaches to reduce the number of fires caused by people.* • *Work with communities to reduce the risk and impacts of wildfire.*

Sea Level Rise

Sea level rise was defined as the increase in the ocean's surface height relative to the height of nearby land due to the effects of global warming.

Impact: Though communities are not yet experiencing impacts, individuals understand future impacts could include displacement of people and damage to land and property.	Recommended mitigations: • *Invest in strategic relocation of coastal infrastructure in the near term to avoid damage and disruption from sea level rise.* • *Update any plans, policies, procedures that could directly assist with responding to impacts from sea level rise.* • *Additional nature-based solutions are needed to mitigate sea level rise.* • *Limit new development in coastal areas anticipated to be impacted by sea level rise.*

Climate-related Public Health

Climate-related public health was defined as organized community efforts aimed at the prevention of disease and the promotion of health through the mitigation of climate impacts, such as heat-related illnesses prevention and addressing climate-related diseases.

Impacts: Individuals with few resources and facing existing health issues are greatly affected by heat, wildfire, flooding, and other climate events. Their health worsens or the events confine them to their homes. Events that cause a loss of power affect public health.	Recommended mitigations: • *Create backup power solutions, preferably using renewable energy, to provide power to vulnerable people during a loss of power.* • *Reduce air quality issues through use of community tools such as localized air quality monitoring, nature-based mitigation solutions, and community-based enforcement.* • *Work with communities and transit users to reduce exposure to heat throughout the transit journey(e.g., waiting, pathways from home to transit stops)*

	• *Increase the overall amount of community green space to be more equitable when compared to other neighborhoods across the City.* • *Use a coordinated set of targeted actions to clean up trash and reduce littering to prevent the incidence of vermin, insects, odors, etc. that could potentially impact public health.*

Cross-Cutting Issues

These issues are related to multiple hazards and require a broad set of cross-cutting strategies.

Impacts: The identified factors that required cross-cutting mitigations were pavement as a factor for heat and stormwater, availability of climate data, and the need for additional resilience hubs.	Recommended mitigations: • Increase permeable surfaces *on public and private lands.* • *Use available options at all scales to collect climate data.* • *Work with communities to add more resilience hubs where needed.*

Future Steps

These outcomes show how Angelenos are likely to be affected by climate change and provide some recommendations on pathways to adapting and mitigating these impacts. The next step is to use these outcomes in future plans and take action to continue addressing the impacts of climate change on Los Angeles and the diverse communities within it.

3. PROJECT APPROACH AND OUTREACH: A COMMUNITY-DRIVEN PROCESS

The City of Los Angeles' Climate Vulnerability Assessment (CVA) is an evaluation of the City's physical and social vulnerabilities to climate change hazards. There are significant disparities in health, equity, and the built environment across the City's communities. These can worsen the vulnerabilities Angelenos face from climate impacts.

The lived experience of communities across Los Angeles (LA) confirms climate has changed and is creating challenges beyond what people have previously lived through. Climate change combined with social and economic factors are increasingly affecting the health and way of life for all Angelenos. Communities are increasingly experiencing extreme weather and climatic events that put varied levels of stress on everyone. Hot, dry weather, combined with the area's fire-prone natural landscape, can make wildfires more severe and air quality worse. This can turn everyday tasks into potentially life-threatening experiences for vulnerable communities. Pavement and buildings absorb heat in urban areas, making parts of the City feel hotter than others. Changes in precipitation patterns and heavy rains can soak the soil and overwhelm the City's aged and impermeable infrastructure, with too much paving leading to increased flooding hazard. Across all hazards, there are public health considerations that can make impacts worse, especially for those populations with less access to resources. Power outages caused by an increased demand on the city's infrastructure affect residents, businesses, and the operations and services of other critical infrastructure. If people must evacuate, this can disrupt communities and critical social networks, make the region's housing shortage worse, and increase the cost of housing. Each event creates additional social, health, and economic consequences.

In the future, our health, natural resources, and the facilities and infrastructure that provide critical services are expected to be affected more often. Based on the best data available, increases in extreme heat and the length of heat waves are expected to create health issues for the most vulnerable, including children, older adults, unhoused people, and those with health conditions. Though it is difficult to predict the full scale of these impacts, it is certain that demands to have access to cool buildings and shaded outdoor spaces during high heat days will increase, which can overwhelm energy systems. People who work outdoors or spend time outdoors when going about their daily lives will face the impacts of heat more frequently. Sea level rise and inland flooding pose risks for communities in terms of human life, homes, buildings, infrastructure, and other public and private assets from water damage, landslides, coastal erosion, and other forms of damage. Prolonged periods of drought threaten our water and food supply and rich biodiversity.

Taking steps to address climate hazard exposure and improve resilience is essential. Resilience projects take time and effort at all levels of a city — from individuals to different government agencies and elected officials — so it is important to act and continue moving forward at all levels. As the City works to achieve climate resilience, it must center those who are more severely affected by the consequences of climate change and past inequitable decisions that compound the hardships experienced by the City's diverse communities. Understanding these vulnerabilities to climate hazards

can help the City prioritize climate adaptation and resilience interventions that can reduce the impact to the Los Angeles region. Community knowledge and lived experience combined with data tell a story and create the context about how these events affect people and inform how to face these challenges. By comprehensively identifying physical and social vulnerabilities, the CVA provides a starting point and pathways to more effectively plan and assist communities and Angelenos to become more resilient amid climate change. The complex issues surrounding climate hazard risks and hazards can be addressed using community-based mitigation strategies informed by the lived experience of community members.

3.1. Purpose and Approach

Global temperatures are rising, and people feel the impacts in their everyday lives. Over time, these impacts will continue to damage the land, water, ecosystems, and life. Extreme weather events are happening more frequently, and climate hazards are becoming more intense and widespread across California and Los Angeles. These changes and how they affect the everyday lives of Californians continue to drive state, county, and local governments and community partners to focus on climate change adaptation and mitigation in their planning efforts. California has consistently been a national leader in developing effective climate policy and planning, producing a variety of guidance and tools to help local governments and communities prepare for and adapt to climate change. The City of Los Angeles has worked on increasing the resilience of communities through various programs, projects, plans, and processes over the past several decades such as the Green New Deal and the Resilient Los Angeles (Resilient LA) Plan. The approach used for this CVA was intended to bring many of those efforts together with new information and new recommendations to meet current and future climate change impacts.

3.1.1. Purpose

The CVA and its recommendations provide strategies to augment existing and future City climate-related efforts. It also aims to identify mitigation and adaptation approaches for the existing climate hazards and exposure risks to future projected risks and vulnerabilities.

The City of Los Angeles has advanced climate and resilience planning efforts through the work of several departments and agencies. The Green New Deal and Resilient LA Plan includes a series of targets and strategies across different sectors and departments to reduce greenhouse gas (GHG) emissions, consistent with the Paris Agreement. The Resilient LA Plan details how individual and regional partners can work collectively to protect themselves against climate events while addressing chronic regional stresses. The Emergency Management Department (EMD) maintains the Local Hazard Mitigation Plan (LHMP). The LHMP guides the City in reducing risks from disasters to people, property, the economy, and the environment and includes the City's official compilation of disaster area maps. The City of Los Angeles Department of City Planning (LACP) maintains the General Plan's Safety Element. This document offers a high-level overview of how the City plans for disasters and references readers to other implementation documents. The adopted Safety Element, available on the LACP

website, details the City's approach to climate change planning to date, including descriptions of the planning efforts above and many more from other City departments. The 2021 Safety Element Update brought the City into compliance with recent state legislative updates.

To comply with Senate Bill (SB) 379 and reduce duplication across documents, the LHMP was integrated as a component of the City's General Plan, serving as the City's official vulnerability assessment. The 2018 LHMP was updated in early 2024. The LHMP should be considered a separate but related project to this CVA. The LHMP is on a five-year update cycle and should use CVA recommendations during the next LHMP update. Also, the City will be developing a Heat Action and Resilience Plan (HARP) pursuant to City Council ordinance. The City's Climate Emergency Mobilization Office (CEMO) will seek to align the HARP with the above cited network of plans to maximize City resources and align efforts to achieve the greatest outcomes in reducing the disparities and impacts of climate hazards in Los Angeles.

The City has identified the need to go beyond the requirements in the state statute to elevate the priority of climate vulnerability planning. This CVA ensured adaptation planning efforts centered on the needs and voices of communities most historically disinvested, pollution burdened, and affected by climate change. This CVA is intended to help address the root causes of these disparities and stressors in conjunction with known climate hazards. For the purpose of this CVA, disadvantaged communities refers to communities that are disproportionately burdened by multiple sources of pollution and with population characteristics that make them more sensitive to hazards and pollution (California Environmental Protection Agency [CalEPA]). Within Los Angeles, nearly 50% of census tracts are considered disadvantaged using the CalEnviroScreen 4.0 methodology. Nearly 25% of all disadvantaged census tracts in California fall within the City boundary. In addition, the Federal Emergency Management Agency's (FEMA's) National Risk Index (NRI) ranks natural hazard risk based on how one area compares to another with 0 indicating that all other cities have a higher risk and 100 indicating that all other cities have a lower risk. The NRI gives the City of Los Angeles a score of 100, which means that 100% of other cities have a lower physical vulnerability. Heat domes and extreme heat can stagnate air pollution, creating greater risks to vulnerable areas with health disparities, leading to excess deaths and hospitalizations. The population density in Los Angeles combined with health disparities led FEMA to rate the Los Angeles region at highest risk for extreme heat. The results of this CVA highlighted the areas of the City that most need to be engaged. These areas were also identified as priority communities for the community engagement process for this CVA. These areas included neighborhoods and communities within South and Southeast Los Angeles, Boyle Heights, Northeast Los Angeles, Harbor Gateway and Wilmington, Central City, Central City North, and the North San Fernando Valley.

What is a Climate Vulnerability Assessment (CVA)?

A Climate Vulnerability Assessment (CVA) typically examines physical and social vulnerability of communities to the anticipated climate changes of extreme heat, extreme precipitation and flooding, wildfire, sea level rise, public health, and drought, but it also considers climate hazard adaptations needed to address these identified vulnerabilities. The City's CVA builds on other regional efforts such

as the Los Angeles County CVA and the Fernandeño Tataviam Band of Mission Indians (FTBMI) Tribal Climate Resilience Plan. This CVA examined primary and secondary impacts on Angelenos, including overall public health and health disparities, to identify equity implications. Public input from community partners included how climate affects pollution-burdened areas of Los Angeles and how vulnerabilities are experienced in daily life. The CVA is intended to inform and provide crucial guidance for all future climate-related plans across the City.

3.1.2. Approach

The CVA includes a technical analysis of projected climate hazards and an integrated social vulnerability analysis that meaningfully engages the vulnerable communities that have been determined through this process. The analysis provides a greater understanding of the risks posed by climate change hazards on the built environment and shapes recommendations to improve climate resilience toward a climate-adapted Los Angeles. The focus is on the integration of social vulnerability and technical analysis to provide recommendations with supporting best practice examples, data, and research that prioritize the most at-risk areas of the City.

The CVA's approach is intended to foster a sense of accuracy, transparency, and ownership within the City's communities, which can lead to broad-based support and facilitate implementation. The CVA approach was designed to accomplish the following:

- Engage with stakeholders to articulate local community needs and exposure to climate hazards.
- Identify mitigation measures to address local needs and reduce hazards
- Devise strategies for implementing plan recommendations.
- Describe a vision for protecting community assets.
- Identify opportunities that support resiliency goals.

Gathering Data

The CVA used a combination of existing research, climate change projections, census data, feedback from City departments and agencies, and verified information through community input to inform its findings. The first step in conducting a comprehensive climate vulnerability assessment is to review and synthesize existing data The CVA builds upon the best available climate research and assessments to evaluate vulnerability and recommend options for mitigating climate impacts. The physical vulnerability assessment enhanced the understanding of the impacts of climate change on buildings, infrastructure, and other assets. Therefore, data and plans related to these elements were collected and reviewed for use in that assessment. The social vulnerability assessment focused on disadvantaged communities and climate-related public health priorities by conducting a literature review of relevant information, plans, reports, and data and gap analysis. The CVA process also overlapped with the most recent update of the City's LHMP.

The FTBMI Climate Resilience Plan and the Los Angeles County CVA were reviewed as an important part of the data-gathering phase. The geographical scope of the CVA overlaps with the FTBMI land boundary and provides an initial look into climate change impacts across tribal territory, specifically heat, flooding, drought, and wildfire. The Los Angeles County CVA relies on the partnership of individual cities and utilizes the same data sources as the City's CVA. . The Los Angeles County CVA region encompasses the City of Los Angeles, but does not provide recommended mitigation strategies. The development of community-driven mitigation strategies, priorities, and best practices is an important component of the City's CVA. Key climate hazard takeaways from the Los Angeles County CVA are:

- *HEAT: The countywide max temperature will increase by an average of 5.4°F to a midcentury average of 98.6°F.*
- *FLOODING: Extreme precipitation is projected to get more severe with periods of high-volume rainfall and inland flooding.*
- *DROUGHT: Over the Southwest United States, climate models project more than a 65% increase of severe drought conditions between midcentury and the end of the century.*
- *WILDFIRE: An additional 2.2 hectares, or approximately 5.4 acres,[1] Los Angeles County land is projected to burn each year by midcentury.*

The project team reviewed available datasets and reports that determined the degree of severity of specific climate hazards resulting from climate change in the coming decades. The team also reviewed City policies, plans, climate hazard studies and documents, and geographic data sources to complete the data collection and data review. A reference list with a summary of documents and data sources was developed and can be found in Appendix XX.

Climate Hazard Assessment

The CVA assessed climate hazard distribution across the City geography now and through the end of this century. Key findings from the assessment were used to develop community engagement activities to discuss climate impacts among community members. Once the data was identified and sourced, a physical asset inventory of Climate Resilience Assets was created (see Appendix XX) and included General Building Stock from the LHMP. This inventory can inform adaptation processes such as a Climate Action Plan.

Current risk conditions were assessed for the following hazards:

- Extreme Heat
- Extreme Precipitation and Flooding
- Drought
- Wildfire
- Sea Level Rise
- Climate-related Public Health

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[1] This fact of "2.2 hectares" was directly from the Los Angeles County CVA based on their calculations. A hectare is a metric unit of square measure of land equal to 2.471 acres or 10,000 square meters.

The physical and social vulnerability analysis used a combination of existing research, climate change projections, census data, stakeholder feedback, and community input to develop CVA outcomes. However, there are gaps and limitations in that data. Major gaps include missing data associated with climate hazards, namely inland flooding and extreme precipitation. Though inland flooding data via historical FEMA floodplain maps is available, projections of flood risk are not available. The University of California, Irvine (UCI) contributed valuable flood modeling to this process to add greater detail. Extreme climate event data is available based on precipitation averages but not for most other hazards or has been forecast at a county level. There is not enough data to effectively capture the extreme events that characterize climate change's impact on most climate hazards with a high level of certainty. This CVA process recognized that future efforts will be needed to improve data on all climate hazards to fully understand risks to inform updates to future climate assessments and adaptation plans.

Outcomes

The outcomes of the assessment process combined results from the community engagement process, which are discussed in the next section, with data and information from existing plans and policies to help inform and guide decision-making and capital project planning to address vulnerabilities. This report was designed to be accessible to the diverse community members within Los Angeles and be accompanied by multiple electronic web-based methods on the City's website for conveying information, educating end users, and fostering action. These strategies and the prioritized issues are integrated into an Implementation Action Plan (IAP), which is a road map for future collaboration and action.

3.2. Community Partners

As part of the CVA, the City prioritized the meaningful engagement of disproportionately pollution-burdened and vulnerable communities to understand their experience of climate change hazards. This process informed the mitigation strategies documented and recommended in Chapter XX of this CVA. Engagement was conducted through the Community Partners Program (CPP), which activated six CBOs across the City with experience in priority communities.

3.2.1. Outreach

Given the disproportionate impacts of climate change effects on low-income and disadvantaged communities, the primary goal of the CPP was to develop a complete understanding of the risks posed by climate change hazards in these priority communities. The meaningful engagement of vulnerable communities via trusted channels and a thoughtful communication strategy allowed for the development of the proposed climate hazard mitigation strategies to be centered in equity and environmental justice.

Outreach formed detailed and contextual accounts in English and Spanish of how target demographics/geographical areas in Los Angeles currently and historically experience climate change effects. These accounts then informed specific mitigation recommendations grounded in real experiences summarized in multiple sections within Appendix XX. Objectives for the CPP included:

- Engaging with a cross-section of affected communities across LA.
- Providing involvement strategies and education in languages that resonate with target communities.
- Using a diverse array of engagement tools and communication channels to attract participation in a variety of ways.
- Providing technical data and important information in a user-friendly and engaging manner.

Priority communities were identified through a technical geographic analysis of climate risk in the City and using a variety of social demographic factors. Priority geographic focus areas initially identified included South and Southeast Los Angeles, Boyle Heights, Northeast Los Angeles, Harbor Gateway and Wilmington, and the North San Fernando Valley. Some social demographics considered included low-income communities of color, Lesbian, Gay, Bisexual, Transgender, Queer or Questioning, Intersex, Asexual or Ally, and Additional Identities (LGBTQIA+) individuals, unhoused people, outdoor workers such as street vendors, and monolingual non-English speakers.

Potential partner CBOs were then proposed that serve or work within the various priority communities identified. The goal of CBO selection was to partner with CBOs that had a variety of climate-focused experience, expertise, and community engagement so that, on aggregate, they encompassed a majority of the social and physical vulnerabilities identified by the City and technical risk assessments. Community Partners were selected based on their geographic area of service, expertise and experience working on climate hazards and their established relationship with the vulnerable communities.

This list of CBOs was then evaluated against criteria developed by the project team to allow for a holistic comparison between them; this evaluation method created flexibility in assessing how CBOs could best fit into the program. A full list of criteria with additional detail about this process can be found in Appendix XX "Community Engagement Report" (Pages 3-4). Based on the CBO criteria, the following six CBOs were selected and agreed to take part in the CPP:

Fernandeño Tataviam Band of Mission Indians (FTBMI): FTBMI is the historic tribe of the northern Los Angeles County ancestral villages from the San Fernando, Santa Clarita, eastern Simi and Antelope valleys. FTBMI is a native sovereign nation with numerous programs and departments to address disparities and equity in its community.

Pacoima Beautiful: Pacoima Beautiful is an environmental justice organization in the Northeast San Fernando Valley striving to create a safer and cleaner community.

Promesa Boyle Heights/Proyecto Pastoral: Promesa Boyle Heights is a capacity building organization in Boyle Heights that seeks to strengthen community leadership and improve opportunities for students and families.

Rising Communities: Rising Communities is a social justice organization promoting health and positive well-being in under-resourced communities across Southeast Los Angeles.

Strength Based Community Change (SBCC): SBCC is an organization addressing community activation, economic vitality, capacity building, environmental health, and youth development in Wilmington, Watts, and Harbor Gateway.

Strategic Concepts in Organizing and Political Education (SCOPE) LA: SCOPE is a social and economic justice organization in South Los Angeles working on capacity building among low-income, immigrant, woman, femme, black, and brown communities.

3.2.2. Strategic Collaboration with Focused Engagement

[Insert graphic - CVA timeline]

The CPP was split into four phases of engagement across five months:

Phase 1: Orientation and Training (February - March 2024). The City oriented the CBOs with the project and upcoming expectations and responsibilities.

Phase 2: Lived Experiences (April-June 2024). CBOs held several outreach activities to review climate / hazard data with their community and gather input on lived experiences of climate change hazards.

Phase 3: Mitigation Strategies (July - August 2024). The City and CBOs reviewed lived experiences, and CBOs led additional outreach and brainstorming activities on how to mitigate and adapt to climate impacts.

Phase 4: Draft CVA Report (September 2024). The draft CVA report was completed and distributed to CBO partners and other local organizations/groups for review.

During the outreach activities within Phases 1 through 4 that took place over six months time (April to September), more than 1,000 people participated in 37 events. These events took the form of meetings, focus groups, canvassing, and community workshops. Participants provided more than 800 total comments. Of those, over 400 comments were provided in Spanish. The geographies reached through this outreach included participants from the following areas:

- Boyle Heights
- Northeast Los Angeles
- Pacoima/Northeast Valley
- South Los Angeles
- Southeast Los Angeles
- Wilmington/Harbor Gateway

Once completed, a draft of the CVA report was released for public review and feedback. This was followed by a citywide informational webinar. Examples of the tools and resources the CVA Community Partners were provided for engagement can be found in Appendix XX.

3.2.3. Strategic Collaboration with Focused Engagement

Additional outreach occurred with service providers and other community organizations and vulnerable populations. They learned about the CVA process and the opportunity to shape mitigation strategies for their community. This targeted outreach focused on ensuring that all the vulnerable populations the climate data identified were included in the meaningful engagement and co-designing of the CVA. Some of these strategic collaborations included unhoused service providers, outdoor worker focus groups, Anahwacalmecac - an indigenous charter school, as well as the Gabrielino - Shoshone Tribal Nations. Additionally, another example of a community organization that provided input in this strategic collaboration was an organization called North East Trees that focuses on environmental justice through urban forestry, nature-based solutions, and other forms of community action.

3.2.4. Community Profiles

City Profile

Los Angeles comprises nearly 498 square miles. The unique topography and historical development patterns leave much of the City vulnerable to climate hazards that are expected to become worse over time. Climate vulnerability is compounded by health disparities, uneven pollution patterns, characteristics of urban environments, lack of tree canopy and shade equity, and significant social vulnerability. Because of the City's unique topography, several climate hazards pose increased levels of risk. Cascading impacts of climate hazards could make a typical weather event worse because of the notable vulnerabilities present within the profiles of some Los Angeles communities.

The City is home to nearly 4 million people with dramatically different built environments and access to resources. Because of the large population and land area, Los Angeles includes a wide range of diverse communities with different interests and needs regarding climate change. The Health Atlas for the City of Los Angeles (2021) provided "a data-driven snapshot of health conditions and outcomes in the City of Los Angeles" and underscored how where Angelenos live often influences their health and well-being. In the CVA, this data was combined with climate hazard risks to understand how vulnerable people across the City's diverse communities could be affected by climate change. Community input was not intended to be comprehensive. Instead, outreach was intended to take a snapshot of lived experiences from some communities that would generally represent how the everyday human needs may be affected by climate change across the communities.

In general, the Los Angeles area has a mild climate characterized by warm, dry summers and cool, wet winters. Temperature and precipitation vary considerably with elevation, topography, and distance from the Pacific Ocean. A storm producing moderate rainfall on the coast (1 inch during a 24-hour period) may produce very heavy rainfall in the mountains (10 to 20 inches during the same 24-hour period). Changing environmental conditions because of climate change have caused variations in these average climate and rainfall conditions, exacerbating natural hazards and causing several notable cascading impacts detailed in this CVA.

The population of Los Angeles is concentrated in urban centers, which are interspersed by low-density residential neighborhoods. Much of the City is built within old floodplains or adjacent to the Pacific Ocean. Development in the hills and mountainous areas is challenging because of steep slopes,

landslide areas, and unpredictable bedrock. Vulnerability to fires and flooding has increased as development has encroached into remaining open spaces. Concentrated development and infrastructure have increased the vulnerability of greater numbers of people, businesses, and facilities to seismic, fire, and flood events while providing greater resources for responding to such events. According to LADCP data, there are 739,644 buildings in the planning area. Analysis indicates a total replacement value of $781.6 billion for these buildings. Residential buildings make up 93.5% of the total number of buildings and 78% of the total replacement cost value.

Population and Community Characteristics

The City of Los Angeles is the most populous city in California, with an estimated population of 3,870,946, according to 2020 decennial U.S. census data. The California Department of Finance estimates the City's population as of January 1, 2023, to be 3,766,109. The vulnerability assessments included in Chapter 3 of this plan use the 2020 U.S. census population.

[Insert graphic - Demographic table/graphic]

The City's General Plan and zoning code guide local development. The Land Use Element of the General Plan defines 35 Community Plan Areas (CPAs) for guidance of the physical development of neighborhoods. Community Plans for each CPA include guidance and policies for land use and implementation actions that complement the strategies included in this CVA. There are 114 official neighborhoods for the purpose of planning, but some communities may recognize some portions of these areas with separate identities as part of their lived experience. From the General Plan, these neighborhoods are grouped into the following CPAs:

Metro Geographic Area (Central / East):

1. Boyle Heights
2. Central City
3. Central City North
4. Hollywood
5. Northeast Los Angeles
6. Silver Lake/Echo Park
7. Westlake
8. Wilshire

South Geographic Area:

9. South Central Los Angeles
10. Southeast Los Angeles
11. West Adams/Baldwin Hills/Leimert Park

Valley Geographic Area:

12. Arleta/Pacoima

13. Canoga Park/Winnetka/Woodland Hills
14. Chatsworth/Porter Ranch
15. Encino/Tarzana
16. Granada Hills/Knollwood
17. Mission Hills/Panorama City/North Hills
18. North Hollywood
19. Northridge
20. Reseda/West Van Nuys
21. Sherman Oaks/Studio City/Toluca Lake
22. Sun Valley
23. Sunland/Tujunga/Shadow Hills/Lakeview Terrace
24. Sylmar
25. Van Nuys/North Sherman Oaks

West/Coastal Geographic Area:

26. Bel Air/Beverly Crest
27. Brentwood/Pacific Palisades
28. Harbor Gateway
29. Palms/Mar Vista/Del Rey
30. San Pedro
31. Venice
32. West Los Angeles
33. Westchester/Playa del Rey
34. Westwood
35. Wilmington/Harbor City

[Insert graphic - Community Plan Area map]

Some communities stretch across larger geographies because of the natural movement of people and because what is now recognized as Los Angeles is the traditional homeland of Indigenous people. The FTBMI is a native sovereign nation in Los Angeles County and eastern Ventura County. The citizens of the FTBMI are the people of northern Los Angeles County. The FTBMI consists of more than 900 tribal citizens who descend from the Fernandeño historical tribe. Many people from tribal nations outside the Los Angeles region have relocated to this area as it has developed, with 28,732 identifying as American Indian and Alaska Native in the 2020 census.

The City of Los Angeles developed the Community Health and Equity Index to examine the spatial relationship between vulnerable populations, social and economic factors, mortality, morbidity, the physical environment, pollution, and crime and to identify the areas of the City burdened with the most adverse conditions. Some populations are at greater risk from climate change because of these factors. People living near or below the poverty line, the unhoused, the elderly, individuals with disabilities, women, children, ethnic minorities, and renters can experience more severe effects from disasters than the general population. These socially vulnerable populations may vary from the general population in a variety of ways:

- Risk perception
- Living conditions
- Access to information before, during, and after a hazard occurrence
- Capabilities during an incident
- Access to resources for post-disaster recovery

Indicators of social vulnerability — such as disability, age, poverty, and minority race and ethnicity — often overlap spatially and often in areas most at risk from natural hazards. Human-caused hazards may also present additional challenges for the socially vulnerable, depending on the severity, extent, location, and other elements of the hazard event. A full discussion of vulnerable populations will be provided in Chapter 3.

The Plan for a Healthy Los Angeles serves as the Health Element for the General Plan. Combined with the 2021 Health Atlas, these two resources provided a data-driven basis for the CVA by summarizing key health issues and outcomes. These plans helped to inform outreach for the CVA. For the purpose of this CVA, it is important to bring attention to some key public health facts related to the profiles of people living in the communities and neighborhoods across LA. When people are already vulnerable, it is important to underline stressors that can make impacts from climate change an additional burden. Starting on Page 13 of the Plan for a Healthy Los Angeles, there is a list of important public health facts that directly relate to the CVA (sources with each refer to the Health Atlas where they were originally sourced):

- Over 20% of adults and 25% of children in Los Angeles were obese in 2007.
- Over 10% of adults in some neighborhoods are living with diabetes. Coronary heart disease and respiratory illness are leading causes of death throughout the City. Though chronic health conditions are a citywide problem, the Health Atlas found that many of the low-income communities face disproportionately higher rates of poor health outcomes and greater obstacles to achieving good health, highlighting the need for policies to improve opportunities and quality of life in the most underserved communities. The data illustrates that poor health outcomes are highly concentrated in a few communities. Geographic location is such an important indicator of health that a Brentwood resident can expect to live 12 years longer than a resident from Watts.
- Residents in affluent neighborhoods such as Bel Air/Beverly Crest and Brentwood/Pacific Palisades make more than 12 times the per capita income of residents in the poorest neighborhoods such as Boyle Heights and South Los Angeles. (Chapter 4: Economic Conditions)
- Over 90% of adults in several west Los Angeles neighborhoods have a high school diploma, compared with less than 50% in neighborhoods such as Boyle Heights, South Los Angeles, and Arleta/Pacoima. (Chapter 5: Education)
- Over 30% of children in South Los Angeles, Southeast Los Angeles, Boyle Heights, and neighborhoods near the Port of Los Angeles are obese, compared with less than 12% of children in Bel Air/Beverly Crest and Brentwood/Pacific Palisades. (Chapter 6: Health Conditions)
- Residents in Westlake and Southeast Los Angeles have less than half an acre of park space available per 1,000 residents, significantly lower than the City average of 8.9 acres. (Chapter 7: Land Use)
- Pedestrians and cyclists represented over 50% of the City's traffic fatalities in 2010. (Chapter 8: Transportation)

- Less than 10% of adults in South Los Angeles and in some communities near the Port of Los Angeles report eating the recommended five servings of fruits and vegetables a day. (Chapter 9: Food Systems)
- Average annual homicide rates in some higher income neighborhoods were nearly zero, compared with more than 20 homicides per 100,000 residents in Southeast Los Angeles, South Los Angeles, and West Adams/Baldwin Hills/Leimert Park. (Chapter 10: Crime)
- Over 60% of residents in areas around South Los Angeles are cost-burdened by housing, paying more than 30% of their income on housing costs. (Chapter 11: Housing)
- Over 20 ZIP codes in Los Angeles are within the state's 10% most polluted communities. (Chapter 12: Environmental Health)
- Less than 50% of adults in South and Southwest Health Districts reported achieving sufficient emotional and social support, compared with a countywide average of 64% and averages in the West and Northeast Health Districts of more than 80%.

The concentration of economic factors and health issues results in great disparities among many communities in Los Angeles. However, Angelenos are constantly developing ways to adapt to the multiple challenges they face and have valuable insights on ways to adapt to climate change. This CVA recognizes that climate data does not always consider the context of daily life exposures and their impacts. This is why lived experiences were gathered throughout the community engagement process and serve as the basis of CVA recommendations in this report. Social vulnerability and physical vulnerability to climate change with the context of these community characteristics will be discussed within the context of climate impacts in Chapter 3.

4. LIVED EXPERIENCE WITH CLIMATE IMPACTS: A VULNERABILITY ASSESSMENT

4.1. Vulnerability

Everyone is affected by climate change — but not equally. The likelihood that a person, place, or thing will be harmed is called VULNERABILITY. What makes something more likely to experience harm depends on internal and external factors. These factors are also called SENSITIVITY and EXPOSURE.

- **VULNERABILITY** is the likelihood of being harmed.
- **EXPOSURE** is the physical contact or intersection with a hazard
- **SENSITIVITY** is the capacity to return to daily life or function when conditions change.

[Insert Graphic: Vulnerability Framework]

For example, a person who lives in an area EXPOSED to flooding is more likely to be affected by a flood when it occurs. Flooding may damage their home, vehicle, and other property or close roads and transit routes they use to commute to work. However, if that person has a limited income, they may be unable to afford to find alternative means or replace the damaged property, and may also be faced with missing work, resulting in the loss of money to pay for basic necessities such as rent or groceries. This person is more SENSITIVE to flooding compared with someone who can afford to do these things.

As the climate changes, so too does the likelihood of a person experiencing drought, extreme heat, extreme precipitation and flooding, and wildfire. With rising temperatures, precipitation rates, and sea levels, these events are expected to become more frequent and severe, increasing overall exposure. Individuals and communities will become more sensitive as people and communities are affected by future events over time. Certain characteristics, such as race, gender, and language accessibility, can also make it harder to return to how things were before such an event. Barriers created by these characteristics contribute to social vulnerability, which refers to the demographic and socioeconomic factors that adversely affect communities that encounter hazards and other community-level stressors (CDC 2024). Understanding exposure and sensitivity are critical to adapting to a future in which all people are expected to be more vulnerable because of increases in hazard frequency and intensity.

Every community consists of a network of assets that serve its residents' fundamental needs. For the purposes of this assessment, these assets are called RESILIENCE ASSETS. When working properly, resilience assets work together to enable all other aspects of society to function.

- **RESILIENCE ASSETS** are the services, capabilities, and physical assets used every day to support a community's ongoing fundamental needs and can absorb disturbances while adapting to stress and change.

The assessment organizes resilience assets into specific categories aligned with the Community Lifelines framework developed by FEMA. This framework emphasizes vital community functions

crucial for human health and safety as well as economic stability. Categorizing resilience assets in this manner allows for a thorough evaluation that considers the interconnected nature of these assets.

- **COMMUNICATIONS** includes assets that allow people to exchange information with each other.
  o **Examples:** Communication towers, responder communications, alerts, warnings, and messaging systems, finance, and 911 and dispatch services.

- **ENERGY** includes assets that power homes, businesses, hospitals, and other essential services.
  o **Examples:** Power grids and fuel supplies.
- **FOOD, HYDRATION, SHELTER** includes assets that provide for basic human needs.
  o **Examples:** Food and water suppliers, shelter locations, and agriculture.
- **HAZARDOUS MATERIAL** includes assets that protect people from environmental risks through safe handling and disposal of potentially harmful substances
  o **Examples:** Hazardous materials facilities, HAZMAT, pollutant, and contaminant control.
- **HEALTH AND MEDICAL** includes assets that take care of community well-being through disease prevention and emergency response.
  o **Examples:** Medical care, public health, patient movement, medical supply chain, and fatality management.
- **SAFETY AND SECURITY** includes assets that protect communities and the things people care about from potential harm or damage.
  o **Examples:** Law enforcement, security, fire services, search and rescue services, government services, and community safety (including dams).
- **TRANSPORTATION** includes assets that allow people to move throughout a city to access jobs, education, health care, and other everyday activities.
  o **Examples:** Highway, roadway, and motor vehicle networks; mass transit; railways; aviation; and maritime facilities.
- **WATER SYSTEMS** include facilities that provide clean water for drinking, agriculture, sanitation and public health, and safety, such as firefighting.
  o **Examples:** Potable water and wastewater infrastructure.

4.2. Climate Change

Plenty of data shows the climate is changing. Since 1895, the six hottest years recorded in California have all occurred since 2014 (Frankson, et al. 2022). From 1960 to 1990, the average maximum temperature for any given day was 74.2 degrees Fahrenheit. By 2050, the annual average maximum daily temperature will rise 3.7 to 4.6 degrees Fahrenheit compared with present conditions. By 2100, it will be 4.8 to 7.9 degrees higher (Cal-Adapt 2019). From day to day, these changes may seem minor. On a long-term and persistent scale, rising temperatures pave the way for a domino effect to occur that affects everyone in multiple ways.

[Insert Graphic: 1-CalAdapt-AvgMaxTemp.png]

4.2.1. Future Conditions and Impacts

As temperatures continue to rise, changes to the water cycle and other environmental conditions, such as soil moisture, are triggered. The impacts of global warming have altered the earth's climate. In many instances, the changes lead to conditions of increased number of and length of storms, increased risk to sea level rise, flooding, drought, wildfires, human health impacts that people are not prepared for based on how everything has been done in the past. Future conditions will affect the way residents build, generate power, and commute as well as every aspect of everyday life. The following section summarizes how climate change is anticipated to affect the City and how frequently and to what severity the City will be impacted by drought, extreme heat, extreme precipitation and flooding, sea level rise, and wildfire.

Drought

DROUGHT is a period of abnormally dry weather and little precipitation that causes water shortages that affect everyday life. Drought reduces the amount of water available for human consumption, watering crops and green spaces, maintaining personal hygiene, and supporting recreation and wildlife habitats, among other impacts. Because droughts affect regions and widespread areas, the entire City is considered exposed to drought for this assessment.

A drought can occur naturally because of precipitation patterns and social factors, such as increased water use. However, climate change greatly influences how frequently a drought may form as well as how severe it will be. Since 2000, Los Angeles has experienced more intense and prolonged droughts. Climate projections show droughts will occur more often and increase in length and severity because of hotter temperatures and changes to seasonal precipitation trends.

[Insert Graphic: 2-USDM-Los-Angeles-Co-Historical]

In recent decades, the City has experienced increasingly frequent and intense drought conditions and dry spells. These events include, but are not limited to, the following recorded droughts (City of Los Angeles 2024):

- **2020-present:** The California Department of Water Resources reported the 2020-22 water year was the driest on record since 1924. A state of emergency was declared, requiring local water supplies to implement contingency plans and prepare for potential prolonged dry conditions.
- **2012-16:** California experienced its driest three consecutive years, resulting in a state of emergency declaration. As the drought worsened, the State Water Resources Control Board implemented mandatory water reductions.
- **2007-09:** In spring 2008, California recorded its driest spring and lowest snowmelt runoff on record. A state of emergency was declared, and the largest court-ordered water restriction at the time was implemented.
- **1987-92:** For four years, California received precipitation well below average. Los Angeles adopted ordinances to promote more water-efficient development.
- **1976-77:** Lack of rainfall during the winters of 1976 and 1977 led to widespread water shortages and severe water conservation measures throughout the state. A federal disaster declaration was declared, but it did not apply to Los Angeles County.

Droughts in California have been driven by warmer winter temperatures. Early snowmelt reduces the amount of snowpack in the mountains and how much snow is left to melt in the spring. Cities and farms rely on spring snowmelt to provide water during the typically dry summer months (Frankson, et al. 2022). This change matters because nearly two-thirds of Los Angeles' water supplies come from the Eastern Sierra's snowpack when it melts into runoff (LADWP n.d.). Warming winters put this source of water at risk. By the late century, the Sierra Nevada snowpack will be from 48% to 65% smaller compared with historical averages (California Department of Water Resources 2022).

Rising temperatures accelerate how quickly precipitation evaporates into the atmosphere. That process is called evapotranspiration. Higher temperatures cause less water to be absorbed by soil, vegetation, streams, and other water bodies. In turn, this worsens dry conditions (Frankson, et al. 2022). By midcentury to the late century, this process is projected to fall by 23%, resulting in a decrease equal to 2 inches' worth of water removed from the environment (Cal-Adapt 2019).

[Insert Graphic: 3-USGS-Evapotranspiration]

Extreme Heat

EXTREME HEAT is at least two to three days with temperatures and humidity levels that exceed seasonal averages. For this assessment, an extreme heat event is any day when the maximum air temperatures exceed 95.2 degrees Fahrenheit, which is hotter than 98% of daily maximum temperatures recorded from 1961 to 1990 (Cal-Adapt 2019).

Major cities across the United States, including Los Angeles, are experiencing more frequent, prolonged, and intense extreme heat events (EPA 2022). Heat waves lasting longer than six days were not observed until 1956, when the first six-day heat wave was recorded. Heat waves began to regularly occur in the 1970s (Tamrazian, et al. 2008).

Urban areas, such as Los Angeles, are more likely to experience extreme heat events because of the URBAN HEAT ISLAND EFFECT. The urban heat island effect is when densely developed areas with more buildings and paved roads and fewer green spaces are hotter than surrounding rural or suburban areas. This happens because the materials used to build homes, roads, and other development such as concrete, asphalt, and glass, absorb and trap more heat. Natural landscapes such as grass, trees, and native vegetation tend to not absorb as much heat. This heat is then slowly released over time, making it feel much hotter than surrounding areas. Heat domes and extreme heat can stagnate air pollution, creating greater risks to vulnerable areas with health disparities, leading to excess deaths and hospitalizations. As heat stagnates, this leads to greater excess deaths and hospitalizations in those communities exposed to air pollution.

UCLA performed a study of these impacts using data on excess ER visits during periods of extreme heat. A 2022 study by UCLA found that extreme heat led to more than 1,500 excess emergency room visits per "heat day" in Los Angeles County based on data from multiple years. The researchers found that there was a clear disparity between neighborhoods. Areas with higher incomes and more green space experienced fewer visits. Neighborhoods with fewer green spaces and more pavement had

higher occurrences of underlying health issues. For example, the study found that the West Adams neighborhood in South Los Angeles averaged excess emergency room visits at a rate four times that of the Westside neighborhood of Rancho Park. UCLA's study documented the combined impacts of extreme heat and social vulnerability on community health.

[Insert Graphic: 4-EPA-ClimateCentral-UHI-English / 4-EPA-ClimateCentral-UHI-Spanish]

As everyday temperatures rise, extreme heat events become more likely. From 1961 to 1990, Los Angeles experienced an average of two extreme heat days. By 2050, there may be nine to 14 extreme heat days each year. By 2100, it may rise to 15 to 30 days annually (Cal-Adapt 2019). In the past, these types of events would last around two days. By 2050, the average extreme heat event may last four to five days (Cal-Adapt 2019). By 2100, a typical extreme heat event could span five to eight days.

These types of extreme heat days threaten health and well-being, but some people and neighborhoods are more vulnerable than others. Any extreme heat day that results in negative public health impacts is called a HEAT HEALTH EVENT (HHE). By midcentury, Los Angeles will experience 24 HHEs on average every year. By the end of this century, 36 HHEs each year may be more typical (CHAT 2024). Out of the 35 CPAs, five are especially vulnerable to HHEs, including Boyle Heights, Southeast Los Angeles, South Los Angeles, Wilmington, and Northeast Los Angeles.

Extreme heat also affects how efficiently or effectively infrastructure functions. Some types of facilities are especially vulnerable to damage if they are not built to withstand such hot temperatures. Other facilities, such as health and medical, may be pushed to their capacity limits or may be vulnerable to secondary impacts, such as power outages. Under 2% of Los Angeles' resilience assets are exposed to extreme heat. Compared with areas that have fewer exposed assets, these neighborhoods and their residents may be more likely to experience impacts such as power outages, strained community health centers, and even complications with transportation networks.

[Insert Map: 5-CityLA_CVA_ExtremeHeat_071624]

Extreme Precipitation and Flooding

EXTREME PRECIPITATION refers to heavy rainfall in a short period. In urban areas, buildings, highways, and other paved surfaces reduce the ground's ability to absorb rainfall, causing more water to enter the storm drainage system. This is known as storm runoff. When precipitation falls faster than it can be absorbed by the ground or drainage systems, it results in FLOODING. Flooding is the temporary overflow of excess water from rainfall or waterbodies onto typically dry land. For this assessment, an extreme precipitation event is any two-day period that records at least 1.38 inches of precipitation. That type of rainfall event is greater than 95% of totals recorded during two-day precipitation events from 1961 to 1990 (Cal-Adapt 2019).

The warmer the air is, the more water it holds. More moisture in the atmosphere means more precipitation. These changes will intensify seasonal patterns. The spring and summer months will receive less precipitation, whereas fall and winter months will receive more. From 1950 to 2013, Los

Angeles County received 2.14 inches of rain from April to September and 14.26 inches from October to March (NOAA 2024). The forecasts for 2100 indicate Los Angeles County will receive 7% to 16% less rainfall during the spring and summer and 4% to 5% more during the fall and winter (NOAA 2024).

More precipitation during the fall and winter months may seem beneficial because of the City's reliance on the Eastern Sierra snowpack. However, as temperatures rise, precipitation will fall as rain rather than snow that can later melt to provide water during the dry season. As winter precipitation shifts from snow to rain, more water will flow into downstream areas and urban centers, making floods more likely. The forecasts for 2100 indicate the Sierra Nevada will produce 50% more runoff compared with rates recorded from 1996 to 2005 (Huang, et al. 2020).

This assessment focuses on five flood events based upon different amounts of rain over a 24-hour period and how frequent storms with that amount of rain happen within a watershed. These events represent different intensities of flooding events, which is important to understand at what point communities will be exposed to flooding.

- A **10-YEAR ANNUAL CHANCE FLOOD** has a 10% chance of occurring or being exceeded each year. This type of storm would be an above-average storm such as a heavy summer thunderstorm, which could produce about an inch or more of rain in one hour that results in flooding. This is the most common and least intense event of the flood events in this assessment.

- A **50-YEAR ANNUAL CHANCE FLOOD** has a 2% chance of occurring or being exceeded each year. An example of this type of event would be a flood caused by above-average precipitation from a large storm such as a tropical storm or a similar type of storm that rains heavily over several days, which could be about 2 inches or more of rain in one hour that results in flooding. This is the second highest potential chance of flood and a higher intensity event than a 10-year flood but is less intense than a 100-year flood.

- A **100-YEAR ANNUAL CHANCE FLOOD** has a 1% chance of occurring or being exceeded each year. An example of this type of event would be a flood caused by high rates of precipitation from a larger storm such as a tropical storm or a similar type of storm that rains heavily over several days, which could be about 2 inches or more of rain in one hour that results in flooding. This has a lower potential chance of flood than a 50-year flood and would be more intense than a 50-year flood but is less intense than a 500-year flood.

- A **500-YEAR ANNUAL CHANCE FLOOD** has a 0.2% chance of occurring or being exceeded each year. The event could have about 3 inches or more of rain in one hour that results in flooding. For example, Hurricane Hillary dropped 4 inches of rain in an hour and was nearly a 500-year storm in 2023. This is the least common and most intense event of the flood events in this assessment.

[Insert Graphic: 6-SCDMT-Floodplain]

The majority of Los Angeles is not at risk of flooding; however, some areas, such as coastal communities and those containing rivers, lakes, and other waterbodies, face more exposure. CPAs to the north, including Chatsworth/Porter Ranch and Granada Hills/Knollwood, have some exposure to the 10-year flood. Coastal areas tend to have higher exposure to the 100-year flood, such as Los Angeles International Airport, Venice, Westchester/Playa del Ray, San Pedro, the Port of Los Angeles,

and Wilmington/Harbor City. Areas that may be exposed to the most extreme event, the 500-year flood, are concentrated in some of the most highly developed areas, including South Los Angeles, Westlake, Central City, Central City North, the Port of Los Angeles, Westchester/Playa del Rey, Venice, and Los Angeles International Airport.

[Insert Map: 7-CityLA_CVA_Flood_071524]

Sea Level Rise

Sᴇᴀ ʟᴇᴠᴇʟ ʀɪsᴇ is the increase in the ocean's surface height compared with the height of nearby land. Coastal low-lying areas are exposed to sea level rise, but it also raises water levels in tidal and upstream waterbodies, increasing the exposure of inland communities to flooding.

[Insert Graphic: 8-USGS-Santa-Barbara-SLR-Diagram]

Sea levels rise because of a combination of global and local factors that are intensified by climate change. Globally, as air temperatures warm, the ocean must absorb more heat. As ocean waters warm, they take up more space and begin encroaching onto land, this is also referred to as ᴛʜᴇʀᴍᴀʟ ᴇxᴘᴀɴsɪᴏɴ (NASA 2020). At the local level, changes to wind patterns and land elevation along the coast can also influence how much sea levels rise at any location.

Los Angeles could experience 1 foot to 2.6 feet of sea level rise by 2050 and 2.2 feet to 6.4 feet of sea level rise by 2080 (OEHHA 2022). As sea level rise continues in Los Angeles, coastal flooding, beach erosion, bluff retreat, loss of ecosystems, salinization of soils, ground and surface water, and impeded drainage will increase, threatening lives, property, and critical infrastructure.

Rising sea levels bring about more floodwaters during floods, which means any associated waves and erosion will be more forceful, destructive, and farther reaching. Sea level rise also risks saltwater intrusion into water supplies and leads to higher groundwater, which can lead to more intense flooding during high tide or intense precipitation. The assessment focuses on two scenarios: 1 meter and 1.41 meters of sea level rise.

- **1-Mᴇᴛᴇʀ Sᴇᴀ Lᴇᴠᴇʟ Rɪsᴇ ᴡɪᴛʜ 100-ʏᴇᴀʀ Sᴛᴏʀᴍ** is the extent of flooding during a 100-year storm if sea levels were to rise by 1 meter (about 3.2 feet).
- **1.41-Mᴇᴛᴇʀ Sᴇᴀ Lᴇᴠᴇʟ Rɪsᴇ ᴡɪᴛʜ 100-ʏᴇᴀʀ Sᴛᴏʀᴍ** is the extent of flooding during a 100-year storm if sea levels were to rise by 1.41 meters (about 4.6 feet).

Coastal communities are the most vulnerable to sea level rise. With just 1 meter of sea level rise, CPAs such as the Port of Los Angeles, Venice, and Wilmington-Harbor City will become more exposed to flooding from a 100-year storm. Population exposure is limited (under 0.1% of all City residents), but some neighborhoods have a large share of their buildings and resilience assets exposed.

More than a third (35%) of the buildings in the Port of Los Angeles are exposed under the 1-meter sea level rise scenario; more than 40% are exposed under the 1.41-meter scenario. Of all exposed buildings, more than half are commercial structures, and roughly a third are industrial. Few residential neighborhoods are affected by either scenario, except for the Venice Coastal Zone. Under the 1.41-meter sea level rise scenario, nearly 11% of residents and 10% of all structures are exposed to a

100-year storm. The overwhelming majority of those exposed structures are residential and are primarily households with higher incomes.

Furthermore, homeless encampments frequently occur along the oceanfront walk and near the beachfront and commercial centers on Lincoln Ave, but can also be found throughout the Venice Community Planning Area. Encampments within the hazard areas identified in the Venice Coastal Zone SLR Vulnerability Assessment cause concern for the safety of these populations. Hazards can appear suddenly and without notice, such as a tide gate failure, or can be forecasted, such as a large storm. Evacuations and emergency sheltering can be difficult and costly for the community and vulnerable populations should, therefore, be considered in development adaptation strategies or emergency response plans.

Sea level rise can also pose threats to community resilience assets and infrastructure. Nearly 3% of all resilience assets, a subset of all City assets, are exposed to sea level rise, more than half of which are in Wilmington-Harbor City. Many of these are energy assets that power homes, businesses, hospitals, and other essential services. If these are repeatedly damaged by sea level rise, impacts may be felt throughout the region.

[Insert Map: 9-CityLA_CVA_SLR_071524]

Wildfire

A **WILDFIRE** is uncontrolled fire on undeveloped land that requires extinguishing that can occur in various settings, including urban areas. Wildfires can be ignited by natural forces such as lightning or by human activity such as smoking, campfires, equipment use, and arson. Wildfires can threaten people, buildings, and assets, and wildfire smoke presents serious public health risks including respiratory impacts. The potential for significant damage to life and property exists in areas designated as **WILDLAND/URBAN INTERFACE AREAS.** This is known as the WUI and indicates where development is adjacent to densely vegetated areas. Densely vegetated areas near development provide a higher opportunity for wildfires to occur in urban settings due to limited access and amount of vegetation in a relatively small area..

The three key factors that influence wildfire severity are fuel, weather, and topography.

- **FUEL** may include living and dead vegetation on the ground, along the surface as brush and small trees, and above the ground in tree canopies. Lighter fuels such as grasses, leaves, and needles quickly expel moisture and burn rapidly, while heavier fuels such as tree branches, logs, and trunks take longer to warm and ignite. Trees killed or defoliated by forest insects and diseases are more susceptible to wildfire.

- **WEATHER** includes temperature, relative humidity, wind speed and direction, and precipitation amount and duration. Strong, dry winds, such as Santa Ana winds, can carry a spark so a fire spreads much more quickly. Such winds generally reach peak velocities during the night and early morning. Moisture in vegetation and soils due to precipitation influences how much fuel is available and how quickly it can ignite.

- **TOPOGRAPHY** includes slope and elevation. These factors matter for wildfires because it is related to how precipitation and wind move through an area. Natural barriers, such as lakes, can also prevent fires from spreading. Certain landforms are more vulnerable than others. For example, fires spread more rapidly when moving uphill versus downhill.

All these factors are influenced by climate change, as are many others. As temperatures rise, evapotranspiration accelerates. This means the water in the earth, plants, and other surfaces turns into vapor and is absorbed into the atmosphere. This leads to drier soils and vegetation in a landscape more prone to wildfire (Frankson, et al. 2022). The spring and summer months are when Los Angeles has the least precipitation, and forecasts predict even less in the coming decades. The ideal conditions for wildfires to catch and spread will become more common throughout the year. This increases community exposure to wildfire conditions.

Many of Los Angeles' central and northern neighborhoods face severe wildfire exposure. These include Brentwood/Pacific Palisades, Bel Air/Beverly Crest, Toluca Lake/Cahuenga Pass, Hollywood, Silver Lake/Echo Park/Elysian Valley, Northeast Los Angeles, Central City, Central City North, Canoga Park/Winnetka/Woodland Hills/West Hills, Chatsworth/Porter Range, Northridge, Granada Hills/Knollwood, Sylmar, Arleta/Pacoima, and Sunland/Tujunga/Lake View Terrace/Shadow Hills/East La Tuna Canyon. There are also small areas of isolated wildfire risk, including South Los Angeles and Westchester/Playa del Raya. This risk may elevate the risk of neighboring communities if conditions become severe enough.

[Insert Map: 10-CityLA_CVA_Wildfire_071524]

4.2.2. Lived Experience of Climate Impacts

The City knows that communities of color, low-income communities, tribal nations and communities and First Nations have carried, and are likely to continue to carry, most of the burdens of pollution and climate change (California Natural Resources Agency; California Ocean Protection Council 2018). It is difficult to capture these impacts in a way that can be shown in a table or map that reflects the lived experiences for these communities. This assessment focused on elevating these impacts not reflected in the data by working with CBOs and tribes that work with the City's stakeholders that are most exposed to these climate hazards.

This assessment also analyzes how climate change will affect areas that have been identified as particularly sensitive to potential impacts. Social vulnerability is most often associated with the following nine demographic factors that indicate an individual's sensitivity to climate change or hazards:

- **CHILDREN UNDER 5 YEARS OF AGE** may be unable to protect themselves during a disaster because they lack the necessary resources, knowledge, or life experiences to effectively cope with the situation.

- **ADULTS OVER 65 YEARS OF AGE** may require financial support, transportation, medical care, or assistance with ordinary daily activities, especially during disasters. They are more likely to also have underlying or preexisting conditions that affect their vision, hearing, and/or mobility;

others may be more likely to experience mental impairment or dementia and more likely to be in assisted-living facilities where they rely heavily on health care aides.

- **PEOPLE OF COLOR** have historically endured social and economic marginalization and discrimination preventing them from obtaining jobs or loans to purchase homes or start businesses. This type of discrimination can affect multiple generations because it severely limits their ability to build wealth that can be passed on to their descendants.

- **LIMITED ENGLISH-SPEAKING HOUSEHOLDS** may receive information about how to protect themselves from certain hazards or warnings to evacuate, but if they are unable to interpret them, they remain vulnerable. These households may rely on relatives, especially school-age children, and neighborhoods for this type of information.

- **PEOPLE WITH DISABILITIES** or other access and functional needs may have difficulty evacuating or relocating to safer locations than the general population.

- **HOUSEHOLDS BELOW THE POVERTY LEVEL** have limited funds to spare if they are affected by a hazard. If these residents must evacuate or relocate temporarily, it may be difficult for them to afford paying for alternative shelter, such as a short-term lease or hotel room, if they cannot access a shelter. Economically disadvantaged neighborhoods are also likely to have relatively poor infrastructure and facilities, which exacerbate the disaster consequences for community members.

- **RENTERS** have limited control over repairs and improvements to their homes. Some may be renting because they cannot afford to purchase or own a house. If they need to evacuate, renters may struggle to find temporary shelter, whether because of limited availability or funds, especially if housing costs rise after a disaster. People who rent usually cannot implement improvements or mitigation measures to their home to better protect their home, property, and families without the support and financial backing of property owners.

- **LESBIAN, GAY, BISEXUAL, TRANSGENDER, QUEER OR QUESTIONING, INTERSEX, ASEXUAL OR ALLY, AND ADDITIONAL IDENTITIES (LGBTQIA+)** Individuals have unique needs with regard to climate hazards. LGBTQIA+ individuals face worse displacement conditions compared to cisgender, heterosexual individuals. Highest among LGBTQIA+ people of color. Disaster preparedness and response entities need to better understand and address the systemic and contextual factors that contribute to disparate rates of displacement of LGBTQIA+ individuals. Senate Bill 990 signed by Governor Newsom in September 2024 requires that disaster plans, including climate-induced disasters, in the state of California ensure that LGBTQIA+ individuals are accounted for as a vulnerable population.

- **OUTDOOR WORKERS** have limited working conditions directly caused by climate change due to exposure to elements and limited control over their employer's work safety policies. Outdoor workers who are self-employed have especially limited ways to reduce their exposure or mitigate impacts because they cannot modify the public spaces they work in alone. Additionally, the need for income means that they frequently work in hot conditions that they would otherwise avoid if they could take the day off. All these impacts can have long-term health effects.

- **UNHOUSED INDIVIDUALS** who do not have a permanent residence and do not earn enough income to afford housing or face personal circumstances that create barriers to housing. Others suffer from mental health, substance abuse, or physical health issues that lead to living without housing. Without shelter, these populations are frequently directly exposed to all climate impacts, particularly heat and flood. Being unhoused also indicates a severe lack of resources to adapt to and recover from normal weather impacts. As climate change intensifies, it can lead to an increase in deaths from many causes but particularly heat.

The City of Los Angeles has differing levels of vulnerability and impacts from each climate hazard. Together, the CVA and the LHMP recognize climate hazards that pose the greatest risk to vulnerable communities. These tools guide the City's attention and resources accordingly to manage risk and address hazards. To be consistent across City plans, the CVA built on the outcomes of the LHMP update. The established LHMP ranking and weighting of hazards developed by City officials was adapted for use in the CVA process. The risk ranking includes social vulnerability assessment among the following factors:

- Probability of occurrence
- Impact on population
- Impact on property
- Impact on economy
- Adaptive capacity
- Climate Change

Hazards are ranked high, medium, and low. Ranking hazards with these factors produced the following table of results [The Social Vulnerability Assessment outcomes are still being finalized as on July 31, 2024, but will be included in the final draft].

[Insert Graphic - CVA Ranking Table]

[Additional text will be drafted to speak to the table that will be inserted above.] For more detail on how this ranking was completed, see Appendix XX - Social Vulnerability Assessment.

Using this ranking and weighting framework, the hazards receiving the highest rankings are those that have the greatest projected impacts due to climate change. Because these impacts will have a more severe impact on vulnerable populations, the City can prioritize mitigation actions to align with the highest ranked hazards. The vulnerability assessment in Chapter 3 discusses geographic areas that are at higher risk of particular climate hazards in combination with these rankings. These tools will help the City make effective use of resources so that CVA mitigations will have a positive effect on vulnerable communities who are on the front lines of these climate impacts.

Drought

Water is integral to life, meaning drought can seriously affect health, safety, and the surrounding environment. If costs increase, then households with limited incomes may reduce how much water

they consume, increasing their risk of dehydration or sanitation. Drought can also affect air quality, compromise access to nutritious food, and increase likelihood of becoming sick (CDC 2020).

Prolonged droughts can also affect the local economy. If water restrictions are put in place, that may limit some businesses that rely on outdoor workers such as landscapers and the agriculture industry. Water restrictions can also affect recreational or outdoor activities such as splash pads, pools, and irrigation of parks, leading to a disruption of normal operations. For people employed in these industries, they may have to deal with secondary impacts, such as reduced wages or unemployment.

[CBO Quotes - to be formatted]
- "We are very stressed because we are worried about affording basic needs like water. In the summer, there are water limitations. We need more hydration stations. Food prices also go up during a drought." — Promesa BH, SBCC, SCOPE, Pacoima Beautiful, Rising Communities

- "There are significant water rate changes during a drought and landlords change water pressures. These impacts are not being felt by wealthier communities and businesses who don't conserve water or take responsibility." — Promesa BH, SBCC, SCOPE, Rising Communities

- "During droughts, people can't use water to cool down when it is very hot. There are no splash pads and there are restrictions on other water sources." — SBCC

Extreme Heat

Everyone is affected by extreme heat, but heat affects everyone differently depending on personal risk factors and health status. However, some people are more vulnerable than others. People with underlying medical conditions may be more sensitive to hotter temperatures because they are unable to regulate their body temperatures by sweating. Households that have limited incomes or rely on fixed incomes may not be able to afford purchasing an air conditioner, let alone running it. They may also be less willing to receive medical attention or health care because they cannot afford the out-of-pocket costs. Additionally, people who rent also tend to live in multifamily buildings, which are typically in more urbanized areas with less green space and more development, increasing the risk for urban heat islands to form (Pierce, Gabbe and Rosser 2022). Extreme heat also exacerbates negative and poor air quality. Those factors that make heat worse in urban areas place additional burdens on renters, people with underlying health conditions, and people without air conditioning.

Outdoor workers face greater exposure to heat than others because they may not be able to avoid heat. Their income is dependent on outdoor manual labor, and that creates higher risks for health emergencies during extreme heat events. Many of these jobs may not provide paid time off, making people less willing to miss work when outdoor working conditions are unsafe.

Areas exposed to extreme heat also tend to have lower Community Health and Equity Index scores. In particular, the CPAs that are expected to experience the highest temperatures and have the lowest community health scores include Northeast Los Angeles, Central City, Central City North, and Boyle Heights.

- "Community is observing a general trend against green space and towards more pavement and removing landscaping, especially in new developments like affordable housing projects. We need open space and green spaces instead of concrete everywhere, including schools, apartment complexes, and public spaces. At the very least, there should be groundcover and pavement that reduces or deflects heat." — Promesa BH, Pacoima Beautiful, SBCC

- "When turning on the AC during the summer, residents experience an increased financial strain due to high electricity bills." — Rising Communities, Promesa BH, Pacoima Beautiful, SBCC, SCOPE

[Insert Map: 11-CityLA_CVA_ExtremeHeat_withSVP_071624]

Extreme Precipitation and Flooding

Floods can disrupt everyday life by closing roads or transit routes, causing power outages or damage to communication towers, and displacing residents or damaging their property. People who have disabilities or have access and functional needs may face challenges if they need to evacuate or move to a higher place within their home to avoid floodwaters.

Some flood events can cause significant damage. Just 1 inch of flooding can cause thousands of dollars in damage and lead to mold or other health concerns (NLIHC & PAHRC 2021). For some households, repairing this type of damage may be impossible. People who have limited incomes or do not have a consistent roof over their heads may become displaced. They may be unable to return to where they were staying or to afford temporary shelter such as a hotel. Moreover, people who rent their home have limited control over improvements to the structure. They may have to seek temporary alternative shelter or have to wait for management to implement repairs from flood damage.

Areas exposed to extreme precipitation and flooding include South Los Angeles, Central City, and Central City North. Other areas with lower community health scores and flood exposure include Wilshire, Westlake, and Sun Valley/La Tuna Canyon.

[Insert Map: 12-CityLA_CVA_Flood_withSVP_071524]

- "Community covered by cement, so there are no places where water could go and be captured; we should have trees with root systems that can absorb high volumes of rain and that don't raise the sidewalks." — Promesa BH

- "Water accumulation leads to an increase in mosquitoes." — Promesa BH, SBCC

- "Increased precipitation damages infrastructure like house walls, causing mold." — SBCC

- "Sidewalks get flooded and back up storm drains so it is impossible to use the sidewalks. Trash buildup contributes to flooding by blocking the storm drains." — Promesa BH, SBCC

Sea Level Rise

The greatest threat of sea level rise is that it could make some areas uninhabitable if they were to become permanently inundated. Rising sea levels also cause floods and storms to reach farther inland, leading to more damage to buildings and infrastructure and carrying water that may be contaminated with toxins or pollutants into neighborhoods that had not been exposed. Because coastal communities tend to be more affluent areas that are not considered disadvantaged communities, the CVA did not focus on impacts in those areas. However, homeless encampments frequently occur along beach fronts and can also be found throughout the coastal communities. Encampments within the areas exposed to sea level rise are cause for concern for the safety of these populations. Hazards can appear suddenly and without notice, such as a tide gate failure, or can be forecasted, such as a large storm. Evacuations and emergency sheltering can be difficult and costly for the community and vulnerable populations should, therefore, be considered in development adaptation strategies or emergency response plans. The City's LHMP provides a more detailed analysis of impacts from sea level rise citywide as well as emergency response plans.

Additionally, low-income individuals are also more likely to be adversely affected because they have fewer financial resources to protect against and support recovery from these hazards (EPA 2021). For people with limited incomes or access to capital, they may be unable to afford the needed repairs or renovations to their homes to prevent these impacts. For people who rent, they may not be able to implement these kinds of changes without the support and financial backing of the property owners. Additionally, racial and ethnic wealth gaps, which are larger than income gaps and have stronger correlations with property value than income, leave many of these groups more likely to be excluded from protection decisions that consider economic factors (EPA 2021).

The majority of the City's socially vulnerable neighborhoods are not expected to be affected by sea level rise. However, the Wilmington-Harbor City CPA as well as individuals experiencing homelessness are expected to be affected by sea level rise and also exhibit lower Community Health and Equity Index scores compared with those of the rest of the City.

[Insert Map: 13-CityLA_CVA_SLR_withSVP_071524]

[CBO Quotes - to be formatted]

- "Sea level rise will flood coastal neighborhoods and push people inland to create a worse affordable housing shortage and higher prices." — SBCC
- "Sea level rise could take away the beaches where we go to play and cool off." — SBCC

Wildfire

Wildfires can damage homes and businesses, block roads and evacuation routes, cause power outages, interrupt utilities, and lead to public health problems, such as breathing, odor, and reduction in visibility caused by wildfire smoke. The most vulnerable populations are emergency responders and those closest to the flames. These individuals may be exposed to wildfire smoke containing particulate matter such as soot and tar; gasses such as carbon monoxide, carbon dioxide, and nitrogen oxides;

and toxic substances such as formaldehyde and benzene. People with underlying or preexisting health conditions, such as asthma, may be especially sensitive to wildfire smoke.

Additionally, people who have limited incomes or rent may not be able to mitigate their properties to reduce their risk to wildfires, such as through landscaping. They may be unable to pay for repairs incurred from these events, especially if they rent their home and have limited control over physical changes to the structure. Recent changes in wildfire scale and severity have also caused all types of housing and property insurance costs to dramatically increase, especially in areas with a higher risk of wildfire. For those with low or fixed incomes, the higher insurance costs are an additional burden and can lead to individuals canceling policies to save money. In some communities with high wildfire risk, insurance companies are no longer offering fire insurance policies. As a result, many people may not have the resources to fully recover from the losses suffered during a wildfire.

Many of the CPAs exposed to wildfire do not exhibit low Community Health and Equity Index scores. Those that are exposed and exhibit among the lowest Community Health and Equity Index scores include Silver Lake/Echo Park/Elysian Valley, Northeast Los Angeles, Central City, and Central City North.

[Insert Map: 14-CityLA_CVA_Wildfire_withSVP_071524]

[CBO Quotes - to be formatted]
- "FTBMI community members were significantly concerned with the impact wildfires were believed to have on tribal practices and expressed the need to protect the cultural and ecological heritage rooted in wildfire-risk land." — FTBMI Tribal Climate Resiliency Plan
- "Wildfires cause air pollution, which contribute to negative health effects." — SBCC

4.2.3. Overview of Cascading Impacts

Small shifts to the climate can pave the way for more intense and frequent impacts to Los Angeles communities. This type of chain reaction is also referred to as CASCADING IMPACTS.

As temperatures rise, changes to the local environment can make it more likely for certain hazards to form. Repeat damage can lead to long-term impacts. Damage can degrade wildlife habitats, water quality, and air quality. This creates new problems. For instance, with rising temperatures and less rain, plants and trees become drier and more likely to catch fire, making it easier for wildfires to ignite and spread.

As wildfires become more common and more intense, affected areas are repeatedly stripped of vegetation and topsoil. These materials act as sponges, absorbing precipitation and slowing runoff, mitigating the possibility of a flood. However, it can take up to five years for vegetation to be sufficiently restored after a wildfire (USACE n.d.). Before then, burned areas face an increased risk of flooding.

[Insert Graphic: 15-USACE-Flood-After-Fire]

Firefighting capabilities may be strained as water sources become limited or subject to restrictions as droughts become more intense and frequent. Firefighters may have to dedicate significant time and resources to bring water in from other areas of the state during an extreme drought (Western Fire Chiefs Association 2023).

Understanding cascading impacts underscores how climate change affects all Angelenos. Impacts to one area can spill over and put stress on adjacent communities over time. Some people have access to more resources than others. Location plays a big role as well; some people live in areas that are less exposed. An individual's health is a factor because some are less sensitive to these threats. Cascading impacts are like a domino effect. Climate change represents just the force knocking over the first block of many that causes a chain reaction. Existing models cannot anticipate exactly how or when climate change will affect Angelenos, which makes adaptation to this uncertain future even more important.

4.2.4. Why Is Adaptation Important?

Over time, the impacts of climate change will become more frequent and more intense. Adaptation will become more challenging and more expensive for people. Climate scientists expect more damage will be done to communities and ecosystems. Every day, people make decisions based on risk in daily life, business decisions, and government operations. These decisions happen on an individual level, but people also make these decisions on a broader scale that together can reduce impacts. Climate scientists expect it will take less effort and investment now to address climate impacts than after climate impacts occur. Mitigation and adaptation will benefit the most vulnerable, disadvantaged communities but also reduce the long-term damage and disruption to all Angelenos.

This CVA brought together the lived experience and data to understand the risks and potential consequences of climate impacts. Using this information as a starting point, it allowed community engagement to discuss potential solutions with the best information available. When people understand the risks, the City can make informed decisions on how to address future climate impacts. This process recognizes that some of the underlying issues in this study have been ongoing for years. The difference is this CVA highlights that climate change is likely to make these issues worse.

Effective mitigation action and adaptation on a citywide, communitywide, and individual basis will be necessary to avoid more costly and harmful impacts. This CVA presents a multipronged approach to recommendations of mitigations and other strategies at the City, department/agency, community and individual levels. This will require action on multiple levels, including individuals adjusting where they can, businesses exploring what they can do, and City departments using new mitigation techniques. The recommendations and multi-pronged approach in Chapter 4 are intended to provide guidance on how all stakeholders can move forward with the goal of making communities and the City as a whole more resilient to climate impacts.

5. LOCAL SOLUTIONS DESIGNED FOR ANGELENOS: RECOMMENDATIONS FOR IMPLEMENTATION

5.1. Community Solutions

The CVA is an evaluation of the City's physical and social vulnerabilities to climate change hazards. The CVA and its recommendations provide strategies to augment existing and future City climate-related efforts. It also aims to provide additional mitigation and adaptation approaches for the existing climate hazards and exposure risks to projected risks and vulnerabilities. The CVA identifies policies, mitigation strategies, work programs, and other recommendations that are limited to authorities that can be implemented under the jurisdiction of the City of Los Angeles (all departments) and does not prescribe actions of other agencies, such as the City's school districts.

Mitigation strategies, or community solutions to address the climate impacts as stated in Chapter 3, were developed from public input, best practices, and referencing City policies. These solutions look to address many of the previously identified issues categorized by climate hazards. The goal of the Phase 3 Outreach was to ask for input on mitigation strategies to address projected impacts of the climate hazards and what community priorities are for implementing these strategies. CBOs discussed mitigation ideas with community members and provided them to the City in July 2024. The mitigations that had the strongest relationship to the issues brought forward by communities and the vulnerability assessment were added to the list of community-created strategies (Appendix XX Mitigation Table).

The project team reviewed City policies, plans, climate hazard studies, and reports that related to climate impacts, equity, and infrastructure created by various City departments in the recent past. A review of best practices, mitigation strategies, and actions from other local jurisdictions as well as nationwide successful approaches were included in a list of best practices to complement the community-generated and existing City mitigation inventory. This provides an inventory of climate resilience and mitigation approaches that can serve as a starting point for further development of adaptation measures in future studies (Appendix XX Mitigation Table)

5.1.1. Mitigation Approach

The project team compiled the issues that arose across various priority communities and climate hazard impacted populations during the Phase 2 CBO input discussion sessions. These results and the path for creating mitigations were discussed with CBOs during a review session of Phase 2 of community engagement outcomes. The approach was based on each CBO meeting with community members to take the climate impact issues and develop solutions based on their lived experience with what has been tried and what resources would be needed to help individuals and communities adapt to climate change and to increase their resilience when an extreme event occurs. A community's lived

experience of past hazards and extreme weather events makes community members an expert on strategies and resources needed to help individuals and their communities be more resilient. Within the facilitation materials and resources provided to the community partners as reference materials, communities were provided with examples of mitigation strategies related to community input and intended to be used as a starting point for exploring community-inspired solutions. Community members were asked to think of a strategy as a path to a solution and an action as a step along that path. Community facilitators asked mitigation-specific questions for each hazard type to generate discussion and develop mitigations. This process led to community-inspired mitigation that should align with the climate-related impacts and issues that are of greatest concern to communities across Los Angeles.

The Implementation Process

This section organizes issues by the previously identified high-risk climate hazards to the City. Each issue lists at least one corresponding potential action to help mitigate the issue. A cross-cutting strategies section lists mitigation strategies that look to address multiple climate hazards. The mitigation strategies are a combination of existing City mitigation strategies or strategies identified by the CVA stakeholders through the public comment process. The information and strategies in the CVA can serve as a helpful tool in advancing other climate hazard efforts and work programs such as the HARP, a future Climate Action Plan, or serve as a basis for requesting funding, staffing and/or resources to support climate-related programs of other departments.

Each section is organized by hazard, starting with context for what concepts informed the community discussion followed by a narrative about the issues related to each hazard and recommended solutions. A full list of strategies produced by community input and existing City strategies and policies can be found in Appendix XX.

5.1.2. Whole Community-Based Implementation

Mitigating the impacts from climate change will take a multipronged, "whole community" approach from City departments, other organizations in the City and region, communities, CBOs, and individuals. The mitigation strategies discussed in this chapter will require participation and advocacy from all stakeholders that can play a role in mitigation. Several implementation programs presented as recommendations in this report will require various funding sources and types of implementation action to achieve.

City Department/Agency Implementation can include adjustments to policies, regulations, and operations to accommodate recommendations. Through the City of Los Angeles' City Budget process, City departments and agencies may request funding for the resources needed to implement the mitigation strategies. City plans such as the General Plan, CPA plans, and LHMP already include resilience strategies that complement the CVA.

Community-Based Implementation would involve other neighborhood groups initiating certain mitigation actions as they have done historically. At a community level, the strategies can become a

focal point to support grant applications, action, and community organizing for projects that can help reduce impacts from climate hazards and extreme events.

Tribes, and Service Providers, Other Community Partners are frequently working on multiple resilience and climate change actions that tie into the CVA. For example, the FTBMI has multiple initiatives that they are working on from their Climate Resilience Plan. Groups such as North East Trees are active with improving the tree canopy in LA. Service providers such as schools and public health organizations can play a role in many of the strategies and actions in this CVA.

Non-profit Organizations and Research Partners such as universities, researchers, and other research non-profits have historically played a significant role in understanding climate impacts and public health. These efforts must continue and involve the community in the process.

Individual Implementation involves people taking small actions and making small changes in their lives that can improve their ability to adapt to climate change. Recommendations include a role for individuals to participate in educational and outreach activities when they arise.

Other Governments such as regional governments, states, and Federal agencies can continue to make policies and provide funding to implement strategies. This CVA can serve as a guide to what kinds of policies and funding sources are needed based on community input.

5.2. Extreme Heat

The scientific consensus is that extreme heat is expected to be more severe and more frequent over time because of climate change, per the assessments in Chapter 3. Multiple resources describe mitigation approaches and policies at the federal, state, and local level. California's 2022 Extreme Heat Action Plan includes comprehensive strategies to mitigate extreme heat events. The CEMO has partnered with the University of California, Los Angeles (UCLA), Fernandeno Tataviam Band of Mission Indians (FTBMI), and other organizations and communities to study heat impacts and provide resources to communities to mitigate extreme heat. CEMO recently undertook community engagement for Los Angeles' first dedicated HARP that will complement the CVA and inform future resilience plans. The following are key concepts that community members kept in mind as they developed mitigation strategies for extreme heat:
- Natural and human-built methods for creating shade
- Expanding green infrastructure
- Reducing pavement or pavement temperature
- Ways to keep people cool on hot days
- Access to water and cooling resources
- Any other concepts around heat exposure that are important to individuals, outdoor workers, and the community

The strategies in the following sections were specifically related to the input received from the community. In addition, a variety of best practices can be used to reduce the heat within our buildings and in public spaces:

Indoor Space Cooling
- Air-conditioned public and semi-public buildings (e.g., community retail spaces, grocery stores)
- Air-conditioned public transport
- Insulated buildings that stay cool and repel heat
- Building orientation and design that reduces solar gain
- Heat pumps

Outdoor Public Space Cooling
- Making space for, planting, and maintaining tree species with large canopies in areas where they will shade pedestrians, transit users and/or buildings
- Covered walkways
- Solar canopies installed over pavement such as parking, streets, sidewalks, and other hardscapes
- Building design elements such as covered parking and covered walkways and outdoor amenity areas that create shade,preferable solar canopies that generate electricity
- Use of cool pavements through adding light-colored coatings
- Reducing use of pavements

Reducing Heat Absorption
- Increase building reflectivity though use of light-colored exterior materials
- All windows should include awnings and tinting to allow light but reduce unwanted passive heating
- All hardscapes — specifically walkways, sidewalks, and streets — should use light-colored paving or be green vegetated surfaces when possible to reduce UHI effects

Building on those best practices and public input, the strategies discussed in this section are intended to do the following:
- Reduce heat in urban areas
- Account for stressors that can make heat impacts worse (see Public Health section for additional strategies)
- Provide tools to help people avoid or minimize exposure to heat, including outdoor workers

5.2.1. Extreme Heat Issue 1

Issue EH1: Most of the study area is highly developed, with few tree canopies to offer shade.

Strategy EH1: Increase the amount of green space and tree canopy in areas affected by the urban heat island effect.

"Not having enough trees and shade along the sidewalks is really detrimental, especially to kids that walk to school." – Participant at SCOPE LA discussion.

One of the problems with trying to provide tree canopy is finding space in a city where trees can be planted and thrive. Trees need the right amount of space, water, and care to grow and provide shade. On public property such as parks, the City plants trees in groups where possible to significantly cool a larger area. In some parts of the U.S. and in other countries, heavily treed corridors provide a shady walking route across a neighborhood or city. Landscaping policies can improve tree planting on private property. Some cities have experimented with programs that assist residents in finding space on their property to plant trees with an emphasis on canopy trees. If a canopy tree can be planted on the property, the City could subsidize its cost and planting. The following actions were developed from community input and best practices to support this strategy:

- 1a. Increase green spaces such as parks, community gardens, and streetscaping with species that are well suited to provide relief in heat conditions, with an emphasis on native species where appropriate.
- 1b. Identify areas with high urban heat island effect and introduce high quality shade trees with large canopies and surfaces that would absorb or reflect heat and have lower surface temperatures (e.g., alternative pavement materials, green space).
- 1c. Strengthen existing and implement new policies that protect existing trees from removal and ensure new developments include adequate green space.
- 1d. Create planting locations that accommodate large stature, high shade producing tree species.

5.2.2. Extreme Heat Issue 2

Issue EH2: People who are especially vulnerable to extreme heat include those who work outside, suffer from chronic or preexisting health conditions, or do not have access to air conditioning.

Strategy EH2: Use a variety of approaches to reduce the heat impacts on people who are vulnerable and are unable to remain indoors to conduct necessary daily activities (e.g., outdoor workers, transit users).

"New cool pavement should be installed in the hotter areas that are most vulnerable in the city as priority" — Rising Communities; "There's a lot of food insecurities here in Boyle Heights and many families have to wait in line on the sidewalk … waiting in the heat with no shade and they are elderly in their 70s or 80s." — Promesa Boyle Heights
"Electricity bills are too expensive, especially during heat waves which can exceed 101 degrees. During these heat waves we cannot sleep or turn on the AC because the bill is so high." – SCOPE LA.

People frequently must be outside because of daily activities or the nature of their work without the choice to avoid the heat. It is critical to use effective techniques to cool parts of the urban area where people have to be outside. Approaches that can help outdoor workers include ordinances and creating spaces that are conducive to outdoor vending. For some industries, work hours can be shifted seasonally to avoid outdoor work during the hottest times of the day. This approach has been used for agricultural outdoor workers to reduce the risk of health impacts from heat. Similarly, this could be applied to schools particularly where school campuses have extensive pavement and nonpermeable surfaces and little to no shade. Many people make a living from selling outdoors at a stationary location. Some cities have created food truck parks that are well suited for the conditions in their city (e.g., Portland's use of vacant lots for "food truck pods"). By having a designated area and allowances for vendors to set up temporary cooling shades in areas that are on the north sides of buildings or under existing shade structures, vendors can have the assurance that, on a hot day, they can reduce their heat exposure and that of customers who may be going by foot or by bus to find a vendor. People who are waiting in line or on their way to work or school need more places where they can find relief from the heat. The following actions were developed from community input and best practices to support this strategy:

- 2a. Monitor vulnerable groups who are most at risk during heat waves.
- 2b. Install shelters, awnings, and umbrellas in public spaces, such as public transportation stops, to protect pedestrians.
- 2c. Educate communities about heat-related risks and preventive measures, such as avoiding outdoor activities during the hottest hours of the day and staying hydrated.
- 2d. Coordinate with stakeholders, community agencies, and partners to establish hydration stations and cooling centers strategically across urban areas during heat waves.
- 2e. Reduce factors that contribute heat into the air and worsen outdoor working conditions through policies and heat plans, while also ensuring that outdoor workers are provided heat protection supplies such as sunblock, hats, cooling sleeves, dry wick clothing, and cooling neck fans.
- 2f. Install more hydration stations and better signage/wayfinding of all hydration stations.
- 2g. Add cooling centers that ensure safe space for all populations including LGBTQIA+ individuals, hydration stations, and resilience hubs near the outdoor places where people work and shop.
- 2h. Create cool corridors using a combination of shaded walkways, shady tree-lined pedestrian corridors, cool roofs, and reflective or light-colored pavements to reduce heat as people travel to work, school, and home.

5.2.3. Extreme Heat Issue 3

Issue EH3: Buildings rely on power sources as the primary way to reduce heat.

Strategy EH3: Encourage use of building design elements to cool buildings using traditional methods.

"More shade would help people that pass through the area." – Outdoor worker canvassed by Pacoima Beautiful

Traditional building methods have been used for centuries to keep buildings and outdoor places cool in hot climates throughout the world. Historically, the use of earthen and adobe construction in the Southwest kept plazas and buildings cool on hot days when combined with design elements that created shade and kept roofs from retaining heat. Shade structures and tree planting can work well for the lower floors of a building, but shade devices can also be incentivized for the upper floors on these exposures through building elements such as upper-floor solar awnings and upper-floor exterior covered walkways.

Adopting cool-roof ordinances can be a successful program if it incorporates new construction and provides retrofits through incentives for existing buildings. For example, if the City pays for or provides the paint, the owner can provide the labor for the task. The owner will benefit with lower cooling costs and the community with fewer heat islands. A result of extreme heat and a contributor to the issue is air conditioning. The process takes heat from buildings and puts it back in the environment, resulting in raised temperatures and a vicious cycle. This "waste heat" can help produce smog when combined with pollution. Smog results in heat trapping. One way to slow this cycle is to create awareness for residents and businesses regarding establishing the minimum temperature that thermostats can be set for cooling. Many businesses have their thermostats set below the necessary temperature for comfort.

The following actions were developed from community input and best practices to support this strategy:
- 3a. New buildings should use traditional local methods of building for hot climates such as use of thick masonry walls, adobe, terracotta tile, permanent shaded arcades, and shaded interior courtyards that are also seismically reinforced.
- 3b. Increase the use of exterior window shades, wider eaves, living roofs, and light-colored exterior coverings and roofing materials to reduce exposure and retention of heat from sunlight.

5.2.4. Extreme Heat Issue 4

Issue EH4: Existing shade trees are not always preserved and sometimes damaged, removed, or used as places for dumping.

Strategy EH4: Enhance tree care through expanding tree maintenance programs and public education campaigns around valuing trees and maintenance.

"We need more trees and tree protection to keep people from cutting down the trees." – SBCC

"Some kind of signage on or around trees telling people to take care of them and not dump waste on them could help." – Outdoor worker canvassed by Pacoima Beautiful]

Multiple community comments talked about the importance of preserving the trees that have been planted in addition to planting more. The older a tree is, the larger a canopy it can provide to shade and cool public and private spaces. For various reasons, people remove trees or the conditions of the urban environment cause the trees to decline in health. Keeping trees watered, trash-free, and cared for may require community education, according to some community members. Also, there was a recognition that additional City resources would be needed to preserve existing trees. The following actions were developed from community input and best practices to support this strategy:

- 4a. Create and conduct a campaign to educate people on the importance of trees for reducing heat, responsible treatment and care of trees, and active City programs that manage and enhance the City's tree canopy.
- 4b. City departments should continue to work with community groups to enhance tree preservation practices and use community input to inform where tree canopy should be prioritized.

5.2.5. Extreme Heat Issue 5

Issue EH5: Splash pads, play areas, and schools are not always healthy places to be when there is extreme heat.

Strategy EH5: Upgrade facilities used for play and cooling off by adding shade, updated hydration stations, and cooler surfaces to replace pavement.

[CBO Quotes - to be formatted]

"Kids get heat stroke and pass out. They need more substantial shade in open areas or other options for exercising in cooler conditions" — Participant in Promesa Boyle Heights discussion; "Splash pads and pools are very helpful for the heat but they are usually in direct sunlight and so we need additional shade over the splash pads and pools." — Participant in Promesa Boyle Heights discussion

Many recreational spaces were not designed for the type of heat that climate change is creating. This can lead to dangerous levels of heat in play areas that include a lot of paved areas or are fully exposed to the sun. Community members recommended that areas designed for cooling such as splash pads and pools need shading and upgraded hydration stations to be effectively used when it gets hot.

The following actions were developed from community input and best practices to support this strategy:

- 5a. Add shade structures over splash pads, pools, and play areas at parks and schools to reduce the heat of pavement, playgrounds, and play equipment on hot days.

- 5b. Upgrade and add hydration stations in recreational areas where existing facilities may be old and worn out, nonfunctional, or lacking in number to handle the needs of the people who use them.

5.3. Extreme Precipitation and Flooding

Community members focused a lot on extreme rainfall and flooding because of their lived experience with the impacts on their daily lives and communities. Because much of the Los Angeles stormwater system was designed before extreme rainfall events became more frequent, many of the drains and pipes are overwhelmed during these events. Residents noted that trash and other items can clog these drains and lead to street flooding that interferes with daily life. The following are key concepts that community members kept in mind as they developed mitigation strategies for extreme precipitation and flooding:
- Increased precipitation and flooding can be interrelated, but not always. Precipitation leads to flooding only if the landscape and infrastructure cannot handle the quantity of water produced by increased precipitation.
- Nature-based solutions such as rainfall catchment and parks can capture the benefits of rainfall without leading to flooding.
- It is important to note that stormwater infrastructure can be designed to handle increased precipitation events. However, appropriate maintenance and reducing the amount of waste flowing into storm drains requires action from City departments, communities, and individuals to ensure the system works properly.
- In the past, stormwater infrastructure was designed to handle past flooding patterns, so there is a need to upgrade stormwater infrastructure and roads to prepare for future flooding.
- Flooding can happen in areas that are not within a mapped floodplain or flood hazard zone.
- There are many natural and human-made solutions to reducing impacts from flooding.

5.3.1. Extreme Precipitation and Flooding Issue 1

Issue PF1: During heavy rainfall, the stormwater conveyances, such as drains and pipes, fail.

Strategy PF1: Make improvements to stormwater systems to mitigate flooding and major rainfall events.

[CBO Quotes - to be formatted]
"Trash has impacts when there's heat and causes odors and causes flooding." — Participant at SBCC event

Community members had many common experiences with stormwater issues, and this led to a variety of solutions informed by their lived experience. The following actions were developed from community input and best practices to support this strategy:
- 1a. Perform a comprehensive inventory of repetitive flood-prone areas.

- 1b. Encourage local stormwater authorities to perform regular maintenance inspections, clear debris and sediment from stormwater infrastructure, and perform other preventive maintenance to prevent blockages.
- 1c. Expand stormwater capacity or upgrade aging infrastructure by adding drains and improving street draining systems in areas of frequent flooding to account for extreme weather events and changes in land use.
- 1d. Equip pump stations with backup power sources.
- 1e. Consider the potential for more frequent and intense rain events in plans, policies, and designs for new and existing stormwater systems.

5.3.2. Extreme Precipitation and Flooding Issue 2

Issue PF2: Sustained downpours and rising floodwaters cause severe damage, which leads to road closures and the displacement of residents.

Strategy PF2: Provide more tools for community members to prepare for, respond to, and recover from flooding.

[CBO Quotes - to be formatted]

Densely populated areas have a high risk for floods because of increased runoff. Most urban areas nationwide face this issue. The City of Los Angeles has identified many strategies to address this issue. Some of the solutions involve designing with nature to create new spaces for water to flow during high precipitation events to allow water to spread out and recharge groundwater. This will also require a reduction in paving, or depaving. This can have a secondary effect of reducing the urban heat island effect (see complementary strategies under 4.3 Extreme Heat). High floodwaters are unsafe and unsanitary, and potentially contain hazardous and biohazardous materials. The following actions were developed from community input and best practices to support this strategy:

- 2a. Encourage community members to adhere to evacuation orders, and ensure alternative transportation routes are accessible.
- 2b. Promptly provide disaster recovery assistance to residents.
- 2c. Educate homeowners in areas subject to frequent flooding on how they can protect their property.
- 2d. For disaster preparations, redirect public transit resources to help people evacuate because many of these community members rely on public transportation and have no other means to evacuate.
- 2e. We need more hubs to be cooling centers and/or other support centers for youths, LGBTQIA+ individuals, and elderly who are dealing with the climate impacts of heat, flooding/rain.

5.3.3. Extreme Precipitation and Flooding Issue 3

Issue PF3: Densely populated areas have a high risk for flash floods because of increased runoff.

Strategy PF3: Use natural and upgrade existing infrastructure to reduce the amount of flooding in densely populated urban areas.

[CBO Quotes - to be formatted]

Nature-based stormwater solutions can be effective methods for managing stormwater while adding green space. These approaches are designed to reduce flooding and surface runoff within an urban area. The key principle behind nature-based stormwater strategies is to maintain or use natural processes to collect, soak in, and filter stormwater runoff. Examples of nature-based solutions include green roofs, swales, permeable pavements, and bioretention systems. These approaches can also help with allowing for groundwater recharge. The following actions were developed from community input and best practices to support this strategy with priority given to the areas of greatest vulnerability and in need of upgrades to infrastructure:

- 3a. Provide structural forms of mitigation that divert floodwaters into conduits suited for controlled release outside the metropolitan area.
- 3b. Improve resilience against flooding by mandating techniques such as elevating structures, waterproofing roofs and foundations, and retrofitting existing buildings in flood-prone areas.
- 3c. Implement Low Impact Development (LID)/Green Infrastructure (GI) to provide stormwater storage and prevent runoff.
- 3d. Enhance floodplains to allow local streams and rivers to accommodate flows during storm events and capture stormwater for groundwater replenishment.
- 3e. Facilitate nature-based stormwater infrastructure that slows, spreads, and sinks rainfall during storm events (e.g., bioswales, rain gardens).
- 3f. Local capture of stormwater through nature-based solutions to enhance local water supply, reduce stress on aquatic ecosystems, and provide supplementary benefits such as shading, cooling, and habitat.
- 3g. Use the City's emergency alert system to text alerts of flooding or issue areas in multiple languages, including indigenous languages, to urban areas that frequently flood to spread early awareness of an expected flood.

5.3.4. Extreme Precipitation and Flooding Issue 4

Issue PF4: High floodwaters are unsafe and unsanitary, with potential to pollute waterways and soil with hazardous and biohazardous materials.

Strategy PF4: Reduce the potential public health impacts from flooding.

[CBO Quotes - to be formatted]

Rainfall washes the streets and urban areas, leading to bacteria, trash, and other unsafe water quality conditions. Therefore, it is important that people understand the hazards of floodwater in terms of water quality and that steps are taken to reduce the potential pollution and trash that can get washed into the environment, waterways, and the ocean. Policies that encourage low-impact development and green infrastructure can play a role in reducing impacts from flooding. The following actions were developed from community input and best practices to support this strategy:

- 4a. Ensure emergency response personnel are aware of risks associated with after-storm floodwaters and are trained to perform necessary rescues and environmental cleanup.
- 4b. Educate the public on health-related risks associated with contaminated floodwaters and what symptoms may require medical assistance. Use local authorities to instruct the community to avoid direct contact with floodwaters when unsafe.
- 4c. Use LID/GI wherever possible, and update as needed to maximize the ability to filter stormwater and reduce pollutants from entering waterways.
- 4d. Do more preclearing of storm drains by the City and coordinated community-based cleanup programs to remove trash and obstacles before a storm.

5.3.5. Extreme Precipitation and Flooding Issue 5

Issue PF5: Alternatives to traditional paving and land cover are needed to reduce flooding.

Strategy PF5: Use types of surfaces and paving that allow water to drain into the soil and reduce runoff.

[CBO Quotes - to be formatted]

As with previous strategies, any methods for reducing the amount of runoff that drains into stormwater systems help reduce the risk of flood. Paving and land cover that allow water to pass through are ideal for reducing runoff in urban environments. The following actions were developed from community input and best practices to support this strategy:

- 5a. Coverings for driveways and walkways should include gaps (permeable) so water can filter through and be designed to not move water directly into storm drains but into landscaped areas.
- 5b. Where possible, remove pavement when it is no longer necessary or functional and replace it with green space.
- 5c. Encourage use of larger, consolidated planting areas and use of native landscaping and vegetated drainage areas on private property instead of hard surfaces, astroturf, and other techniques that reduce runoff.

5.4. Drought

As discussed in Chapter 3, drought is a natural part of the California climate. The severity and frequency of droughts means strategies are needed to prepare for this trend to continue. The following are key concepts that community members kept in mind as they developed mitigation strategies for drought:

- Methods will need to balance using vegetation and water to cool spaces while using drought-tolerant and native plants to conserve water.
- Drought can reduce the availability of water and increase the cost of drinking water.
- Because water supplies may decrease due to climate change, consider the role of water conservation in preparing communities and individuals for more frequent drought.

5.4.1. Drought Issue 1

Issue DR1: Rising utility bills and water usage restrictions disproportionately affect low-income communities and vulnerable populations.

Strategy DR1: Modify drought management approaches and water billing policies to reduce impacts from drought on low-income and vulnerable people.

[CBO Quotes - to be formatted]

"There is a lot of stress, mental health issues, and worries with being able to afford to live. Water is a basic need and we need to be able to afford those basic needs." – Promesa Boyle Heights

Drought has a direct impact on available water supplies. Over time and in times of drought, water becomes more expensive and water bills can become a burden for low-income families. This has been a well-recognized problem, and actions are ongoing among multiple governments and entities to address this issue. The following actions were developed from community input and best practices to support this strategy:
- 1a. Ensure equitable distribution of water resources and prioritize essential needs during periods of drought and introduce a tiered pricing structure or other methods to incentivize water conservation.
- 1b. Engage community members of all socioeconomic statuses and businesses across the study area in the drought planning process, encouraging collective action to conserve water resources.
- 1c. Identify and connect stakeholders to emergency assistance programs to help vulnerable groups, including LGBTQIA+ individuals and low-income households. This may include providing access to water-saving technology or subsidies for water bills.
- 1d. Make regional power grid updates to minimize dependency on the water sector for power generation and reduce rising utility bills.
- 1e. Offer classes and implement drought planning processes, encouraging collective actions to conserve water resources such as how to irrigate urban farms, gardens, and landscaping more efficiently using rainwater.

5.4.2. Drought Issue 2

Issue DR2: Water shortages increase the vulnerability of critical infrastructure systems, businesses, and communities.

Strategy DR2: Upgrade water collection and stormwater infrastructure to replenish groundwater and recycle water.

"The City needs to monitor faucets in times of drought to check that the water system and pipes are maintained properly." – Promesa Boyle Heights

Water shortages are a constant concern for decision-makers, utility operators, water managers, and community members. Many actions are ongoing related to this issue. The following actions were developed from community input and best practices to support this strategy:
- 2a. Monitor groundwater to inform aquifer management and model projected water quality and quantity under potential drought conditions.
- 2b. Expand current water supply, and diversify sources including the capture, treatment, and reuse of wastewater as a water source and aggressive leak prevention actions.
- 2c. Increase water storage capacity.
- 2d. Explore options for safely using gray water for irrigation without worsening water quality in the environment.
- 2e. Build and upgrade water infrastructure with drought resilience in mind through reducing leaks in the piping and facilities.
- 2f. Supplementary water sources will be required to meet water needs in the region. Recycled water has great potential to meet this need given its year-round availability.
- 2g. Encourage water conservation and the diversification of water resources such as gray water and water recycling.

5.4.3. Drought Issue 3

Issue DR3: People don't have enough information or money to collect water and get it into the ground.

Strategy DR3: Provide education and support for water conservation and landscaping techniques that retain water.

"We would also benefit from educational classes on invasive species and planting species best practices that help regenerate the soil, create soil stabilization, absorb high rain events and also support biodiversity." - Promesa Boyle Heights

Community members expressed an interest in playing a role in conservation as a means of reducing the impact of drought. The following actions were developed from community input and best practices to support this strategy:

- 3a. Provide classes and training on the benefit of rainwater harvesting, green technology and water conservation and provide subsidized rain barrels.
- 3b. Direct people to information on native landscaping and soil techniques for soaking up water and keeping it in the soil so they can make these changes on private land where possible.

5.5. Wildfire

As mentioned in Chapter 3, wildfire is a natural part of the California climate, but increased wildfire risks due to climate change will require new adaptation strategies because of the severity of wildfire impacts. For this section, it is recognized that many of these strategies have some crossover with public health issues that will be discussed in Section 4.7. The following are key concepts that community members kept in mind as they developed mitigation strategies for wildfire:
- Wildfire is a part of natural processes, but human activities, including preparation, can reduce fire risks.
- Strategies can address the root causes of wildfire and prevent human behavior that starts fires and worsen impacts.
- When a fire happens, think about what can reduce impacts from fire or help people and your community recover more quickly.

5.5.1. Wildfire Issue 1

Issue WF1: Wildfires disrupt transportation and utilities such as water supply, communications, and electric and gas services.

Strategy WF1: Reduce the risk of wildfire impacts on structures, people, including the unhoused, and infrastructure.

[CBO Quotes - to be formatted]
"Fires affect public health and the cost of electricity, water, and gas bills." - SBCC

Community members had a significant number of comments regarding wildfire impacts on all aspects of their lived experience. Nearly every element of a city will experience impacts from buildings to the people in them. Therefore, a wide range of strategies were recommended. The following actions were developed from community input and best practices to support this strategy:
- 1a. Enforce zoning restrictions that prevent incompatible uses or new development in high wildfire risk areas.
- 1b. Ensure adequate road access for emergency vehicles and reliable water sources for firefighting.
- 1c. Hold tabletop exercises to identify courses of action to respond through contingency plans during a disruption of utility service.

- 1d. Strengthen power lines, utility poles, and communication networks in wildfire-prone areas to withstand fire impacts.
- 1e. Encourage communities to adhere to evacuation orders and ensure alternative transportation routes are accessible.
- 1f. Establish mutual aid agreements with neighboring utilities to share resources and personnel during emergencies.
- 1g. Assess critical infrastructure to determine where to install backup power at critical facilities to maintain essential services during power outages caused by wildfires.
- 1h. Create and maintain defensible space around structures and infrastructure.
- 1i. Make buildings less vulnerable to fire risk by limiting new development in the Wildland-Urban Interface (WUI) and requiring building codes that include use of fire-resistant materials in high hazard areas.

5.5.2. Wildfire Issue 2

Issue WF2: Smoke from wildfires contains particle pollutants and carbon monoxide that can be extremely harmful to the lungs.

Strategy WF2: Help people connect with information to reduce exposure to harmful air from natural and human-caused sources of air pollution.

[CBO Quotes - to be formatted]

"My asthma has become much worse and my family members are now getting asthma. The heat being emitted from the ground is making the air worse." – Promesa Boyle Heights

Community members discussed the need to connect with tools that can help them understand the level of air quality each day. The Centers for Disease Control and Prevention (CDC), National Oceanic and Atmospheric Administration (NOAA), and State of California have all recently released new online tools or updated existing tools to help people look up current air quality conditions using their phones. Some local emergency service providers are also offering methods for automatic notification on days with poor air quality. The California Department of Transportation (CalTrans) has a policy and practice of displaying air quality warnings on interstate message boards. Connecting community members with tools through public awareness campaigns and education can help people understand the risks on a particular day so they can take the right action for their situation. The following actions were developed from community input and best practices to support this strategy:
- 2a. Make available accessible platforms (e.g., websites or automated emergency alert texts/calls) where residents can check current air quality levels and receive advisories when air quality declines because of wildfires.
- 2b. Coordinate with public health agencies and health care providers to provide actionable guidelines for residents to follow during poor air quality and to respond to increases in respiratory illnesses and other health impacts related to wildfire smoke exposure.
- 2c. Equip cooling centers and resilience hubs with air filtering devices which allow them to be *Cleaner Air* shelters during bad air quality days.

5.5.3. Wildfire Issue 3

Issue WF3: The number of fires related to the unhoused population has been steadily climbing.

Strategy WF3: Use a variety of approaches to reduce the number of fires caused by people.

[CBO Quotes - to be formatted]

"Trash and encampments are a fire hazard and we have fire due to all the trash." – SBCC

In general, human activity is one of the most common causes of fire. Because of the large number of unhoused people in the Los Angeles area, there are many issues of concern for community members based on recent experience. When someone is living outdoors, they will frequently use fire as a way to keep warm or cook food. These fires create a risk of getting out of control when the vegetation is dry and fire risk is high. This can create a hazard for the people who start the fires and the surrounding community. The following actions were developed from community input and best practices to support this strategy:

- 3a. Conduct fire prevention education and community awareness outreach that provide the public, including unhoused individuals and LGBTQIA+ individuals, with fire safety practices and materials.
- 3b. Enhance safety for all residents by establishing a program to encourage safe and managed campsites free of flammable debris and equipped with fire-resistant shelters, fire pits, and access to water sources.

5.5.4. Wildfire Issue 4

Issue WF4: Wildfire impacts were a top concern for community members.

Strategy WF4: Work with communities to reduce the risk and impacts of wildfire.

[CBO Quotes - to be formatted]

"Drought creates a big fire hazard in my community." – SBCC

With wildfires a top concern for communities across the Los Angeles area, community members expressed an interest in being a part of the solution more generally. This can take many forms, including education regarding fire risk prevention and understanding how to do community projects to reduce local fire risk. The following actions were developed from community input and best practices to support this strategy:

- 4a. Enhance community engagement regarding wildfire risks, prevention, and evacuation as well as grants and other programs and resources available to communities in High Fire Hazard Severity Zones.

- 4b. Clear potential fuels on property such as dry underbrush, diseased trees, and invasive species and restore native habitat and riparian areas.
- 4c. Use indigenous and natural land management and fire prevention practices to reduce fire risk.
- 4d. Work with communities and fire officials to update wildfire, emergency response, and evacuation plans to address community needs, including BIPOC, Low - Income and LGBTQIA+ individuals, during fires and evacuations.

5.6. Sea Level Rise

Faced with sea level rise, coastal cities are developing responses to address local challenges, and will soon be required to have Local Coastal Plans as a result of the recently passed . Though a majority of the Los Angeles population lives inland, public input described a recognition that even though sea level rise is not a problem yet, residents expect it to have impacts on their communities. Many entities across the region and state are taking actions related to adapting to sea level rise (e.g., California Coastal Commission). Several strategies have been considered by the Port of Los Angeles and used in other parts of the country to mitigate future impacts. The following are key concepts that community members kept in mind as they developed mitigation strategies for sea level rise:

- Because sea level rise is a global phenomenon, local solutions need to acknowledge that reality.
- Nature-based solutions exist to make public beaches more resistant to impacts from sea level rise.
- Sea level rise may affect only the homes of those who live near the coast. However, sea level rise will also affect places farther away that people will work at, play in, and travel through.

5.6.1. Sea Level Rise Issue 1

Issue SLR1: Infrastructure investments are needed to prepare coastal areas for coastal flooding associated with sea level rise.

Strategy SLR1: Invest in strategic relocation of coastal infrastructure in the near term to avoid damage and disruption from sea level rise.

[CBO Quotes - to be formatted]

Community members recognized that sea level rise will have negative impacts on utility infrastructure in low-lying areas. The following actions were developed from community input and best practices to support this strategy:

- 1a. Relocate or make improvements to utility infrastructure to make it less likely to be damaged by sea level rise.
- 1b. Flood-proof, retrofit, relocate, elevate, and add redundancy to accommodate impacts.

5.6.2. Sea Level Rise Issue 2

Issue SLR2: Updates to plans and procedures are needed to respond to sea level rise.

Strategy SLR2: Update any plans, policies, and procedures that could directly assist with responding to impacts from sea level rise.

[CBO Quotes - to be formatted]

Though community members did not have specific recommendations, they understood that a significant number of plans, policies, and other guidance would be needed to address the impacts of sea level rise on the built environment and beaches and the impacts from coastal storms that lead to flooding as sea levels increase. The following actions were developed from community input and best practices to support this strategy:

- 2a. Account for future sea level rise and storm surge projections within updates to emergency response plans and procedures.
- 2b. Integrate sea level rise and storm surge projections in long-range land use planning by limiting development and/or density in sea level rise areas.

5.6.3. Sea Level Rise Issue 3

Issue SLR3: Past solutions have not always proved effective for mitigating sea level rise.

Strategy SLR3: Additional nature-based solutions are needed to mitigate sea level rise.

[CBO Quotes - to be formatted]

Coupled with the discussions around extreme rainfall and flooding, it was recognized that nature-based solutions could be applied to sea level rise. The following actions were developed from community input and best practices to support this strategy:

- 3a. Use natural processes and green stormwater infrastructure such as low impact development, green roofs, and pavements that allow storm surge and floodwater to seep into the ground.
- 3b. Acquire and manage natural ecosystems (e.g., wetlands, floodplains) that assist in reducing flooding and storm surge.

5.7. Climate-related Public Health

The top concerns from community members regarding the impacts of climate change on public health were primarily related to heat, flooding, and wildfire smoke. The common factors discussed that made these impacts worse, also known as stressors, were issues such as trash, older facilities that need upgrading, and concerns about power outages. Vulnerable communities and individuals are already burdened with health issues and do not always have the resources needed to adapt to climate hazards nor to recover from climate events. The following are key concepts that community members kept in mind as they developed mitigation strategies for climate-related public health:

- Wildfire smoke is hard to prevent because of the large distances it can travel, ways to limit outdoor activities and exposure when air quality is worse is often all that is available.

- There are many potential ways to help vulnerable people reduce the impacts of heat on public health. These can take the form of creating awareness, reducing exposure, increasing access to health care, and cooling near places where vulnerable people live, among many other methods.

5.7.1. Climate-related Public Health Issue 1

Issue PH1: A loss of power during an emergency is dangerous for those with health issues.

Strategy PH1: Create backup power solutions, preferably using renewable energy, to provide power to vulnerable people during a loss of power.

[CBO Quotes - to be formatted]

"Solar panels should be more widely installed to help offset other electric bills." – Rising Communities
"The blackouts have lasted 24 hours." - Rising Communities.

Power outages can be dangerous or deadly when they are caused by certain types of climate events. When considering having no power, community members were concerned about keeping medicine and food cold and the ability to cool off during an extreme heat event. Many of the ideas that came out of community discussions focused on backup power solutions. The following actions were developed from community input and best practices to support this strategy:
- 1a. Solar photovoltaic and/or community solar system in combination with stationary energy storage for microgrid implementation, capable of providing backup power for entire residences for prolonged periods.
- 1b. Those with extreme health conditions should be assigned emergency generators for cases in these extreme weather conditions.
- 1c. Explore potential programs of investment to assist low-income residents getting solar systems installed on rooftops where they live and in their communities.

5.7.2. Climate-related Public Health Issue 2

Issue PH2: Air quality issues caused by wildfire smoke, fumes, exhaust, and industrial use make health problems worse, especially during extreme heat.

Strategy PH2: Reduce air quality issues through use of community tools such as localized air quality monitoring, nature-based mitigation solutions, and community-based enforcement.

[CBO Quotes - to be formatted]

"Air Quality affects you when it's hot, you can get sick." — Outdoor worker surveyed by Pacoima Beautiful
"The smoke and fumes rise in the heat and then the rain traps all those chemicals here closer to us and are what we are breathing." – Promesa Boyle Heights

Community members have had extensive experience with the stress caused by poor air quality while walking or riding the bus on a hot day. Sometimes these air quality issues affect the indoor air quality as community members open windows when air conditioning is not an option. Multiple comments were made about how poor air quality had a significant negative impact on people's health conditions and required visits to medical facilities. Participants offered a variety of solutions to address this public health issue. The following actions were developed from community input and best practices to support this strategy:

- 2a. Increase tree canopy and open space and decrease industry and associated air quality impacts for multiple health benefits including reduced heat, air quality, and mental health. (All) 2b. Explore options for conducting regular, localized air quality monitoring in communities where residents face regular air quality issues.
- 2c. Strengthen programs that support community-based air monitoring to achieve environmental equity.
- 2d. Use existing programs and funding sources to develop community-based air quality enforcement programs.
- 2e. Residential building designs that promote cross-ventilation through the use of windows on two sides and/or skylights in new development.
- 2f. Increase research, monitoring and documenting climate-related illnesses and deaths.

5.7.3. Climate-related Public Health Issue 3

Issue PH3: The process of getting to a bus stop and waiting for the bus during a hazard event can make health issues worse (e.g., protection from the elements/heat).

Strategy PH3: Work with communities and transit users to reduce exposure to heat throughout the transit process (e.g., waiting, pathways from home to bus stops).

[CBO Quotes - to be formatted]

"Many bus stops don't have any shade. There are piles of trash near or next to the bus stop." — Participant at Promesa Boyle Heights

A significant number of Angelenos rely on public transportation and pedestrian routes as their only form of transportation for their commute and for doing daily activities. Long walks through hot, unshaded urban areas and long waits at unshaded bus stops can lead to a health emergency. If this is combined with poor air quality and trash at bus stops, it makes the ability to breathe worse on a hot day. These issues were discussed frequently by participants and were a top priority as they touched on multiple climate hazards. The following actions were developed from community input and best practices to support this strategy:

- 3a. Work with transit riders to create bus shelters that provide relief from heat.
- 3b. Work with transit riders and community members to reduce heat exposure when walking on public walkways to and from destinations.

5.7.4. Climate-related Public Health Issue 4

Issue PH4: A lack of green space in a community contributes to health issues (physical and mental).

Strategy PH4: Increase the overall amount of community green space to be more equitable when compared with other neighborhoods across the City.

[CBO Quotes - to be formatted]

"Our green spaces need more greenery, more trees and cooling vegetation. We also need to make sure our trees are properly taken care of, so they are structurally sound." – Rising Communities

Green space, trees, and parks can have several benefits to public health through improvements in mental health and the reduction of heat impacts. Low-income neighborhoods and places with vulnerable populations also tend to have a deficit of green spaces. This leaves these communities with fewer methods for adapting to climate change and can contribute to worse health outcomes. Adding green spaces of any kind were noted by community members as a desirable method for addressing climate impacts and public health concerns. The following actions were developed from community input and best practices to support this strategy:

- 4a. Increase access to open space and enhance trail connectivity to improve mental and physical health.
- 4b. Add new street trees along streets and sidewalks in existing and new development, preserve existing healthy trees with consistent maintenance and prevent/minimize tree removal where possible.
- 4c. Add more trees in open space areas and green spaces.
- 4d. Increase the amount of shade as much as possible in outdoor areas where people have to wait for transportation, walk, or work.

5.7.5. Climate-related Public Health Issue 5

Issue PH5: Littering and the presence of trash create numerous problems related to clogged drains and unsanitary conditions at bus stops and makes air quality worse on hot days.

Strategy PH5: Use a coordinated set of targeted actions to clean up trash and reduce littering to reduce climate-related hazard stressors.

[CBO Quotes - to be formatted]

"We want dump cards for the inner city because we have the same problems with lack of access and capacity as rural communities." – Rising Communities.
"All along Compton there is bad flooding. It makes it hard for pedestrians because the sidewalks are inaccessible." – Rising Communities.
"The water was up to my waist. Trash cans were flowing down the street. There needs to be less trash and less littering in order to alleviate trash accumulating in the street." – SBCC

Though the City has made attempts to address the amount of illegal dumping and trash left on the streets and around bus stops, the problem continues. The lived experience of many community members included experiences of overflowing trash cans at bus stops, people dumping garbage and grease next to trees, and trash left around encampments of unhoused people. Various City departments have been working on solutions, and the input from community members shows that addressing this problem is a high priority. This is a complex problem that involves the need to change behaviors and will require additional resources to reduce the amount of trash that clogs drains, worsens air quality, and serves as a general health hazard in combination with climate impacts. The following actions were developed from community input and best practices to support this strategy:

- 5a. The City should continue to develop actions and programs across City departments to combat illegal dumping and littering.
- 5b. Add additional durable trash bins that can contain foul odors in public areas such as bus stops and parks to reduce potential public health impacts.
- 5c. The City should continue to develop options for adding permanently staffed trash collection stations or parked garbage trucks in areas where frequent dumping is occurring as a highly accessible and visible option to encourage people to safely dispose of trash instead of dumping.
- 5d. Create public-private partnerships to hire community organizations to do the trash cleanup on a more local/daily basis to keep up with trash issues and illegal dumping.
- 5e. Resilience hubs should include a self-care or public health care component to address community health needs during a climate event and to make up for the loss of health resources in some communities.

5.8. Cross-cutting Strategies

Cross-cutting strategies are more general mitigations that will positively affect efforts across multiple hazards. These overarching or general strategies emerged as communities discussed individual climate hazards, and they have not been repeated in the issue-specific sections. It will be noted within this section whether a cross-cutting strategy is relevant to specific climate hazards and impacts.

5.8.1. Cross-cutting Issue 1

Issue CC1: The large amount of paved urban areas makes many climate impacts worse.

Strategy CC1: Reduce the amount of paved areas on public and private lands.

[CBO Quotes - to be formatted]
"When we have so much pavement, there is no water draining into the ground so we need permeable pavement." — Promesa Boyle Heights
"New multifamily developments have no open space, no green spaces, and the design is not prioritizing cross wind natural ventilation." - SBCC

Urban areas in the U.S. tend to have more pavement than open ground or green space. Pavement, sometimes called "hardscape," prevents water from soaking into the ground and can soak up heat on hot days. This is the case in LA. The approach known as "depaving" involves identifying places where pavement can be reduced and replacing it with green space or another surface that allows water to pass through it. This is an emerging approach to reducing storm runoff, increasing groundwater recharge, and reducing heat island effects. Various city departments are exploring options for this form of mitigation through landscaping standards and looking for nature-based solutions for handling stormwater. There also tends to be a lot of paved area on private land such as driveways, parking lots, and walkways within housing complexes. Some of these are necessary for people with mobility issues to get around, but other paved surfaces are not needed. This recommendation based on public input and best practices can help reduce impacts in urban areas that regularly experience extreme heat and flooding. The following actions were developed from community input and best practices to support this strategy:

- 1a. Replace pavement with green spaces on both public and private property in urban areas that regularly experience extreme heat, flooding, and places that lack green spaces.
- 1b. Encourage private property owners to replace paved surfaces with green spaces or permeable surfaces to reduce flooding and heat.

5.8.2. Cross-cutting Issue 2

Issue CC2: There are gaps in local and community climate hazard data.

Strategy CC2: Use available options at all scales to collect climate data.

[CBO Quotes - to be formatted]
"We would like to have water testing kits more widely available." - SBCC

The CVA process confirmed that local data is not available for certain hazards, as has been documented in the Los Angeles County CVA and the FTBMI Climate Resilience Plan. Therefore, additional methods will be needed to collect this data using the capacity of community and City resources. As more data is gathered, it can inform processing to identify gaps in mitigation and eventually track progress on reducing climate hazard impacts.

A simple approach is for community groups and individuals to keep written and photographic records of climate events and impacts. People can start a "climate journal" for these events or include information about them in any private journal. Community groups can serve as a central recordkeeper for lived experiences or for scientific climate data collected by community members. CBOs should consider organizing a listening session or "community data-gathering" session after a major event. This would create an opportunity to collect up to date information on hazards resulting from extreme weather events, such as Hurricane Hillary, that could be used for future planning. . Though this is not scientific data, it is an opportunity to document lived experiences to inform processes such as an update to a CVA or a stormwater improvement program. Individuals and communities can also take

photographs of what happens during, only if it is safe to do so, or after an event to document important issues such as a specific drain that always backs up or the damage caused by a severe storm. When it is extremely hot on a specific day or over a few days, document the health impacts or the experience of waiting at a specific bus stop. These resources can help create a record of local climate impacts when combined with the information and history collected by other community members and organizations. This information can be shared with City representatives to help them understand the nature of the impact as a way to develop a solution.

Citizens could work with community groups, City departments, federal agencies, or university research projects to collect specific data about their neighborhood that can help scientists and decision-makers understand how climate events are affecting where they live and lead to more action and community-based solutions. Some examples of these data-gathering projects include measuring conditions such as surface temperature on a walking route or air quality near a pollution source to create a greater understanding of climate change and factors that make those climate impacts worse. Using this data at a single location, street corridor, or neighborhood level can inform development of mitigation efforts or justify actions such as investment in shade structures, canopy trees, or air quality policies. The following actions were developed from community input and best practices to support this strategy:

- 2a. Encourage individual citizens to keep climate journals, and photos when applicable, to record lived experience of impacts on health and daily life from climate hazards.
- 2b. CBOs should periodically ask community members to share their experiences from extreme climate events, especially immediately afterward to document what happened and talk about how to work together to prepare and adapt for future events. This information can be valuable for climate resilience plans.
- 2c. CBOs and individuals should participate in or conduct "citizen-scientist" data collection efforts that can document heat in specific locations within communities (e.g., NOAA Urban Heat Island (UHI) mapping campaign).
- 2d. Create a Citywide climate data dashboard to track data on climate hazards and provide information to the public.[2]

5.8.3. Cross-cutting Issue 3

Issue CC3: Community members need more resilience hubs closer to where they live and work.

Strategy CC3: Work with communities to add more resilience hubs where needed.

[CBO Quotes - to be formatted]

"We need more hubs to be cooling centers and or other support centers for youth and elderly that are dealing with the climate impacts of heat, flooding, and rain." - SCOPE

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[2] This action was discussed during the LHMP process and has been identified as an approach by other City departments and community organizations.

Multiple City departments have been working together to identify additional locations for cooling centers and emergency shelters for hazard events. Over the past few years, community groups, FTBMI, and other organizations have recognized that a more holistic approach would be to make these resilience hubs go beyond serving the needs around one hazard. The FTBMI Tribal Climate Resiliency Plan was completed at the beginning of 2024 and provided valuable mitigation strategies as a form of community input. For the purpose of this recommendation, it is important to include that plan's description of the resilience hub purpose:

> *Resilience hubs are a new concept of a trusted, community-run space with added physical amenities and programming to help the community survive the brutal shocks of heat waves, earthquakes, and chronic stressors. Resilience hubs/centers are an ideal and innovative replacement for cooling centers as the hub would be at a preexisting gathering place with the community actively engaged in the co-development and operation.*

CEMO and EMD are working on developing resilience hubs across the City. An important aspect of this process is that community members and community groups should continue to play a central role in informing what services are needed and what areas need a resilience hub where critical gaps exist. This will help communities get the services they need to be protected when an extreme climate event occurs (e.g., heat wave, flooding, severe storm with an associated power outage). The following actions were developed from community input and best practices to support this strategy:

- 3a. Create cooling centers/other places that create a safe space for all individuals with air conditioning and resilience hubs where residents can get support, coordinate communication, find resources, and reduce carbon pollution while enhancing quality of life.

5.8.3. Cross-cutting Issue 4

Issue CC4: Not all City facilities, policies, operations, and infrastructure are designed to withstand expected future climate hazards.

Strategy CC4: Update or create city plans and procedures to prepare city operations and facilities for expected climate hazards impacts.

The results of the vulnerability assessments and existing city plans and policies contain many strategies and proposed actions to prepare for climate hazards. This strategy supports the entirety of city department plans and studies that describe methods, approaches, and actions for making city operations and facilities more resilient to climate hazard impacts.

The following actions were developed from community input, plans, reports, and best practices to support this strategy:

- 4a. Update plans, facilities, and City operations to prepare for future climate hazard conditions in an equitable manner.

5.9. Conclusion

The Los Angeles CVA outlines the City's physical and social vulnerabilities to the ongoing and worsening climate hazards that Angelenos regularly experience. The vulnerabilities identified in this report intersect with other social, economic, and equity issues that make it more difficult for some individuals, groups, and communities to recover from or adapt to climate hazards and impacts. Though climate change is occurring, and the consensus is it will make daily life more challenging, a "whole city" approach provides an opportunity to mitigate the worst impacts and provide significant help to those who need it. From individual actions to community-organized initiatives to city-driven projects, collective action at multiple levels can effectively respond to the challenges posed by climate hazards. The City is committed to continued work with community partners, government agencies, and other stakeholder partners to continue to move forward on making Los Angeles a more resilient city for all.

5.9.1. Implementation Takeaways

1. Communities, individuals, and City departments should continue to work together to mitigate climate impacts, with a prioritization on vulnerable communities that are most negatively impacted and have insufficient access to resources.

CVA insights should inform budget allocations, legislation, and infrastructure investments. With equity as a guiding principle for the City's climate action, projects must also support climate resilience and prioritize historically disadvantaged people. To maximize resources, investments should provide widespread benefits by addressing multiple hazards when possible. Continuing to mitigate GHG emissions and slow climate change will be critical to reducing impacts to communities. An integrated approach to adaptation and mitigation ensures the City simultaneously curbs and prepares for climate change.

For example, LA100 was a renewable energy study that Los Angeles DWP conducted in partnership with the National Renewable Energy Labs (NREL) in 2021. The study examined how Los Angeles could reach the goal of 100% renewable power. DWP is building on that study by working with community representatives from Pacoima Beautiful and SCOPE LA along with City Departments and agencies on the development of their revised Strategic Long-Term Resilience Plan (SLTRP), which is looking to incorporate the LA100 Equity Strategies. These strategies incorporate research and community representation to achieve community-driven and equitable results from the transition to 100% renewable energy. The CVA mitigation strategies were informed by the LA100 process so that the CVA is aligned with ongoing city mitigation projects and studies.

Sharing the CVA's findings with all City departments, related agencies, and local jurisdictions is crucial to coordinating a comprehensive climate resilience strategy and preparing for the next phase of climate resilience plans and implementation. CVA findings and recommendations should be referenced when developing and implementing citywide and departmental strategies and work plans that incorporate climate adaptation measures. Implementation efforts should always include a strong commitment to community outreach to ensure the City maintains strong relationships with

community groups, in an effort to continue to address community-based needs around climate hazards and impacts. .

Some departments, such as the City Planning Department, have already begun to integrate the CVA recommendations to inform their policy and work programs. Specifically, City Planning's Urban Design Studio's draft Landscape and Site Design Ordinance, the Open Space Element update, the Environmental Justice Policy team's General Plan updates, as well as the Department's Olympics planning work programs have begun to integrate the recommended mitigation measures with regard to extreme heat.

2. Community-based organizations and climate resilience stakeholders should serve a central role in addressing climate impacts and increasing community resilience.

Consistent, regular engagement with communities,not just during planning processes, has shown positive results for City departments and the communities involved. It enables more inclusive, effective, and successful planning. Advocates can reference the CVA's data regarding social vulnerability to ensure equity considerations and community needs are a core element of improving City and community resilience.

Outside of partnering with City departments, CBOs and nonprofits have been conducting climate resilience work, and this CVA can provide useful information for that work going forward. Some coalitions of community groups and nonprofits are actively working on next steps that are reflective of or already encompass the strategies in this CVA. For example, Promesa Boyle Heights has partnered with nonprofit organizations to work on an industrial buffer zone project intended to mitigate impacts from industrial areas near the southern end of Boyle Heights. The project is promoting resilience strategies and actions including increasing cooling through use of cool roofs, cool pavement, hydration stations, bus shelters, resilience hubs, shade structures, tree canopy, and green spaces as a way of reducing extreme heat risks and providing other essential benefits and services to the residents of Boyle Heights. Community-based projects coupled with City programs and operations can serve as a useful approach for public-private-community partnership and cooperation on implementing resilience actions.

3. Other partners, local organizations, and services providers are taking action to mitigate climate change impacts and could be partners in acting on the recommendations in the CVA.

There are many different institutions, organizations, tribes, and service providers that are doing research or independent action on climate resilience. UCLA, UC Irvine, and other institutions of higher learning have produced multiple research studies on climate impacts. Other research projects include producing datasets that can be used to inform future climate plans. There are many secondary partners that provide public health services and could be partners in addressing public health actions from the CVA. Tribal nations and communities are actively working on various climate resilience initiatives and actions and could partner with the City, community organizations, and other partners to implement the recommendations from this assessment.

5.9.2. Areas for Continuous Analysis

California's network of academic and research partners produced key insights to inform the CVA. However, there are gaps, such as flooding and precipitation risk and the adaptive capacity of communities. By supporting research through continuing partnerships with research institutions (e.g., UCI, UCLA) on emerging questions and trends related to climate change, the city can ensure our actions stay relevant. As noted in Section 4.8.2 with Cross-Cutting Issue CC2, there are gaps in local and community climate hazard data that will require data collection that is coordinated with communities to ensure the data is documenting how climate impacts are impacting daily life. Researchers at academic, state, and federal institutions are well suited to create datasets that can help the City and communities to create informed plans and strategies.

The next steps that typically follow a CVA is to conduct a more comprehensive look at City functions within the context of community input and the expected impacts. This type of project would be a Climate Action and Adaptation Plan that would further develop ways to implement climate adaptation actions across City departments and operations in alignment with the City's budget.

Many individual City departments, community groups, and local organizations are already conducting climate resilience actions that align with the recommendations in this CVA. It is difficult to see who is doing what work and which departments are monitoring which hazards and climate metrics. As such, a citywide dashboard that reflects all of the climate programs being implemented by each department and shares who is monitoring the climate metrics and provides progress updates would greatly benefit all of Los Angeles' stakeholders, staff and decision makers. Future plans that add more specifics with strong connections to policies, regulations, and budgets can provide a detailed path towards developing necessary solutions. For the City, these will typically be formed through a suite of plans, programs, and policies. Addressing climate vulnerability will be an ongoing process as climate conditions change, progress is made, and community priorities evolve. This will require additional data and continued outreach to understand how Angelenos are living with and adapting to climate change. Together, the diverse communities of Los Angeles and all Angelenos can thrive through continued attention on climate vulnerability and effective actions based on the information available.

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level / Escala / Nivel	Timeframe | Periodo de Tiempo
	Issue EH1: Most of the study area is highly developed, with few tree canopies to offer shade. | *Problema EH1: La mayor parte del área de estudio está muy desarrollada, con pocas copas de árboles que ofrezcan sombra.*	Strategy EH1: Increase the amount of green space and tree canopy in areas impacted by the urban heat island effect. | *Estrategia EH1: Aumentar la cantidad de espacios verdes y copas de árboles en áreas afectadas por el efecto isla de calor urbano.*	1a. Increase green spaces such as parks, community gardens, and streetscaping with species that are well suited to provide relief in heat conditions, with an emphasis on native species where appropriate. | *Incrementar los espacios verdes como parques, jardines comunitarios y paisajismo urbano con especies locales que sean adecuadas para brindar alivio en condiciones de calor, con énfasis en las especies nativas cuando corresponda.*	X					X	CBOs/FTBMI/Anahualmecac/North East Trees	City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, p. 16; General Plan Open Space Element (Elemento de espacio abierto del plan general); Urban Forest Management Plan (plan de manejo forestal urbano)	RAP / StreetsLA / Urban Forestry / DCP	City | Ciudad	Mid | Medio
			1b. Identify areas with high urban heat island effect and introduce high quality shade tree species with large canopies and surfaces that would absorb or reflect heat and have lower surface temperatures [e.g., reflective roofs, alternative pavement materials, green space, etc.] as appropriate. | *Identifique áreas con un alto efecto de isla de calor urbano e introduzca sombra de alta calidad árboles especies con grandes copas y superficies que absorban o reflejen el calor y tengan temperaturas superficiales más bajas [por ejemplo, techos reflectantes, materiales de pavimento alternativos, espacios verdes, etc.] según corresponda.*	X					X	CBOs/FTBMI/Anahualmecac/North East Trees	A Greater LA: Climate Action Framework (Un Gran LA: Marco de Acción Climática), 2016, pp. 67, 77; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-20; General Plan Open Space Element (Elemento de espacio abierto del plan general); Urban Forest Management Plan (plan de manejo forestal urbano) ; UFEC Phase II Report (Informe UFEC Fase II); Cool Roof Ordinance (Ordenanza sobre techos fríos)	Urban Forestry / StreetsLA / EMD / DCP	City/Community | Ciudad/Comunidad	Short | Corto
			1c. Strengthen existing and implement new policies that protect existing trees from removal and ensure new developments include adequate green space. | *Fortalecer los existentes e implementar nuevas políticas que protejan los árboles existentes de la remoción y garanticen que los nuevos desarrollos incluyen espacios verdes adecuados.*	X	X		X		X	CBOs/FTBMI/Anahualmecac/North East Trees	General Plan Open Space Element (Elemento de espacio abierto del plan general); Urban Forest Management Plan (plan de manejo forestal urbano) Landscape and Site Design Ordinance	Urban Forestry / DCP	City | Ciudad	Short | Corto
			2a. Monitor vulnerable groups who are most at risk during heat waves. | *Vigilar a los grupos vulnerables que corren mayor riesgo durante las olas de calor.*	X					X	CBOs/FTBMI/Anahualmecac	Heat Action and Resilience Plan p .	CEMO	City/Community | Ciudad/Comunidad	Short | Corto
			2b. Install shelters, awnings, umbrellas in public spaces, such as public transportation stops, to protect pedestrians. | *Instalar refugios, toldos, o sombrillas en espacios públicos, como paradas de transporte público, para proteger a los peatones.*	X					X	CBOs/FTBMI/Anahualmecac	Heat Action and Resilience Plan plan de acción y resiliencia al calor); City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, p. 16	LADOT / StreetsLA	City/Community | Ciudad/Comunidad	Mid | Medio
			2c. Educate communities about heat-related risks and preventative measures, such as avoiding outdoor activities during the hottest hours of the day and staying hydrated. | *Educar a las comunidades sobre los riesgos relacionados con el calor y las medidas preventivas, como evitar actividades al aire libre durante las horas más calurosas del día y mantenerse hidratado.*	X					X	CBOs/FTBMI/Anahualmecac	Heat Action and Resilience Plan plan de acción y resiliencia al calor) ; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-3	CEMO	City/Community | Ciudad/Comunidad	Short | Corto

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department(s) | Departamento(s) Principal(es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
Extreme Heat | Calor Extremo	Issue EH2: People who are especially vulnerable to extreme heat include those who work outside, suffer from chronic or pre-existing health conditions, or do not have access to air conditioning. | *Problema EH2: Las personas que son especialmente vulnerables al calor extremo incluyen a quienes trabajan al aire libre, sufren de condiciones de salud crónicas o preexistentes, o no tienen acceso a aire acondicionado.*	Strategy EH2: Use a variety of approaches to reduce the heat impacts on people who are vulnerable and are unable to remain indoors to conduct necessary daily activities (e.g., outdoor workers, transit users, etc). | *Estrategia EH2: Utilice una variedad de enfoques para reducir los impactos del calor en las personas vulnerables que no pueden permanecer en interiores para realizar actividades diarias necesarias (por ejemplo, trabajadores al aire libre, usuarios del transporte público, etc.).*	2d. Coordinate with stakeholders, community agencies, and partners to establish hydration stations and cooling centers strategically across urban areas during heat waves. | *Coordinar con partes interesadas, agencias comunitarias y socios para establecer estaciones de hidratación y centros de enfriamiento estratégicamente en áreas urbanas durante las olas de calor.*	X					X	CBOs/Anahualmecac	Heat Action and Resilience Plan plan de acción y resiliencia al calor) ; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo) Council File: 23-1380	CEMO / RAP / Libraries	City/Community | Ciudad/Comunidad	Short | Corto
			2e. Reduce factors that contribute heat into the air and worsen outdoor working conditions through policies and heat plans. | *Reducir los factores que contribuyen al calor en el aire y empeoran las condiciones de trabajo al aire libre a través de políticas y planes de calor.*	X					X	CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-3, 32-7	CEMO/ EWDD / DCP / LADOT	City/Community | Ciudad/Comunidad	Mid | Medio
			2f. Install more hydration stations and better signage/wayfinding of all hydration stations. | *Más estaciones de hidratación y mejorar la señalización de todas las estaciones de hidratación.*	X					X	CBOs/FTBMI	Heat Action and Resilience Plan plan de acción y resiliencia al calor) ; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo)	RAP / StreetsLA / Libraries	City | Ciudad	Short | Corto
			2g. Add cooling centers, hydration stations, and resilience hubs near the outdoor places where people work and shop. / *Agregue centros de enfriamiento, estaciones de hidratación y centros de resiliencia cerca de los lugares al aire libre donde la gente trabaja y compra.*	X					X	CBOs/FTBMI	Heat Action Plan; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo) Council File: 23-1380	CEMO / RAP / Libraries/ StreetsLA	City | Ciudad	Ongoing | En curso
			2h. Create cool corridors using a combination of shaded walkways, shady tree-line pedestrian corridors, and reflective or light-colored pavements to reduce heat as people travel to work, school, and home. | *Cree corredores frescos utilizando una combinación de senderos sombreados, corredores peatonales corredores peatonales con árboles y pavimentos reflectantes o de colores claros para reducir el calor mientras las personas viajan al trabajo, la escuela y el hogar.*	X					X	CBOs/FTBMI/Anahualmecac	City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, p. 16; LA's Green New Deal - Sustainable City pLAn, 2019/Nuevo Acuerdo Ecológico de L.A. pLAn de Ciudad Sostenible, 2019, p. 29 ; A Greater LA: Climate Action Framework (Un Gran LA: Marco de Acción Climática), 2016, p. 76; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo)	CEMO / RAP / Libraries/ StreetsLA	City | Ciudad	Ongoing | En curso
	Issue EH3: Buildings rely on power sources as the primary way to reduce heat. /	Strategy EH3: Encourage use of building design elements to cool buildings using traditional methods. / *Estrategia EH3:*	3a. New buildings should use traditional local methods of building for hot climates such as use of thick masonry walls, adobe, terracotta tile, permanent shaded arcades, and shaded interior courtyards. | *Los nuevos edificios deben utilizar métodos tradicionales locales de construcción para climas cálidos, como el uso de gruesos muros de mampostería, adobe, tejas de terracota, soportales permanentemente sombreados y patios interiores con sombra.*	X					X	CBOs/FTBMI/Anahualmecac	A Greater LA: Climate Action Framework (Un Gran LA: Marco de Acción Climática), 2016, p. 76; City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, p. 15	BOE / LADBS	City | Ciudad	Long | Largo

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inunda cion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
	Problema EH3: Los edificios dependen de fuentes de energía como la forma principal de reducir el calor.	methods. / *Estrategia EH3: Fomenta el uso de elementos de diseño de edificios para enfriar edificios mediante metodos tradicionales.*	3b. Increase the use of exterior window shades, wider eaves, living roofs, light colored exterior coverings, and roofing materials to reduce exposure and retention of heat from sunlight. | *Aumentar el uso de persianas exteriores, aleros más anchos, techos verdes, revestimientos exteriores de colores claros y materiales para techos para reducir la exposición y retención del calor del sol.*	X					X	CBOs/FTBMI/Anahualmecac	A Greater LA: Climate Action Framework (Un Gran LA: Marco de Acción Climática), 2016, p. 76; City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, p. 15; Cool Roof Ordinance (Ordenanza sobre techos fríos)	DCP	All | Todos	Long | Largo
	Issue EH4: Existing shade trees are not always preserved and sometimes damaged, removed, or used as places for dumping. | *Problema EH4: Los árboles de sombra existentes no siempre se conservan y, a veces, se dañan, se eliminan o se usan como lugares de arrojar basura.*	Strategy EH4: Enhance tree care through expanding tree maintenance programs and public education campaigns around valuing trees and maintenance. | *Estrategia EH5: Mejorar el cuidado de los árboles mediante la ampliación de los programas de mantenimiento de árboles y campañas de educación pública sobre la importancia de los árboles y su mantenimiento.*	4a. Create and conduct a campaign to educate people on the importance of trees for reducing heat, responsible treatment and care of trees, and active city programs that manage and enhance the City's tree canopy. | *Crear y llevar a cabo una campaña para educar a las personas sobre la importancia de los árboles para reducir el calor, el tratamiento y cuidado responsable de los árboles y programas urbanos activos que gestionen y mejoren la copa de los árboles de la ciudad.*	X					X	CBOs/Anahualmecac/North East Trees	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-7	CEMO/ OFM / StreetsLA/ RAP	All | Todos	Short | Corto
			4b. City departments should continue to work with community groups to enhance tree preservation practices. | *Los departamentos de la ciudad deben continuar trabajando con grupos comunitarios para mejorar las prácticas de preservación de árboles.*	X					X	CBOs/Anahualmecac/North East Trees	City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, p. 15; LADWP Wildfire Mitigation Plan (Plan de Mitigación de Incendios Forestales), 2024, p. 31; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-7; Urban Forest Management Plan (plan de manejo forestal urbano)	StreetsLA/ RAP/ OFM	All | Todos	Short | Corto
	Issue EH5: Splash pads, play areas, and schools are not always healthy places to be when there is extreme heat. | *Problema EH5: Las áreas de juegos, las plataformas para chapotear y las escuelas no siempre son lugares saludables cuando hay calor extremo.*	Strategy EH5: Upgrade facilities used for play and cooling off by adding shade, updated hydration stations, and cooler surfaces to replace pavement. | *Estrategia EH5: Mejorar las instalaciones usadas para jugar y refrescarse añadiendo sombra, estaciones de hidratación actualizadas y superficies más frescas para reemplazar el pavimento.*	5a. Add shade structures over splash pads, pools, and play areas at parks and schools to reduce the heat of pavement, playgrounds, and play equipment on hot days. | *Agregue estructuras de sombra sobre plataformas para chapotear, piscinas y áreas de juego en parques y escuelas para reducir el calor del pavimento, áreas de juego y equipos de juego en los días calurosos.*	X					X	CBOs/FTBMI	Heat Action and Resilience Plan plan de acción y resiliencia al calor) ; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo)	CEMO/ StreetsLA/ RAP	All | Todos	Short | Corto
			5b. Upgrade and add hydration stations in recreational areas where existing facilities may be old and worn out, non-functional, or lacking in number to handle the needs of the people who use them. | *Mejorar y agregar estaciones de hidratación en áreas recreativas donde las instalaciones existentes puedan ser viejas y desgastadas, no funcionales o insuficientes para satisfacer las necesidades de las personas que las utilizan.*	X					X	CBOs/FTBMI	Heat Action and Resilience Plan plan de acción y resiliencia al calor) ; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo)	CEMO/ StreetsLA/ RAP	All | Todos	Short | Corto

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood || Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
	Issue PF1: During heavy rainfall, the stormwater conveyances, such as drains and pipes, fail. | *Problema PF1: Durante lluvias intensas, los sistemas de drenaje, como los desagües y tuberías, fallan.*	Strategy PF1: Make improvements to stormwater systems to mitigate urban flooding and major rainfall events. | *Estrategia PF1: Realizar mejoras en los sistemas de drenaje pluvial para mitigar las inundaciones urbanas y los eventos de lluvia intensa.*	1a. Perform a comprehensive inventory of repetitive flood-prone areas. | *Realizar un inventario exhaustivo de áreas repetitivas propensas a inundaciones.*				X			CBOs	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-9, 33-15	BOE	City/Community | Ciudad/Comunidad	Mid | Medio
			1b. Encourage local stormwater authorities to perform regular maintenance inspections, clear debris and sediment from stormwater infrastructure, and perform other preventative maintenance to prevent blockages. | *Alentar a las autoridades locales de aguas pluviales a realizar inspecciones de mantenimiento periódicas, limpiar escombros y sedimentos de la infraestructura de aguas pluviales y realizar otro mantenimiento preventivo para evitar obstrucciones.*				X			CBOs	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-18	LASAN	City | Ciudad	Short | Corto
			1c. Expand stormwater capacity or upgrade aging infrastructure by adding drains and improving street draining systems in areas of frequent flooding to account for extreme weather events and changes in land use. | *Ampliar la capacidad de aguas pluviales o mejorar la infraestructura antigua agregando drenajes y mejorando los sistemas de drenaje de las calles en áreas de inundaciones frecuentes para tener en cuenta eventos climáticos extremos y cambios en el uso de la tierra.*				X			CBOs	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-12, 33-15, 44-14, 33-16, 33-17, 33-23, 33-26	LASAN	City | Ciudad	Long | Largo
			1d. Equip pump stations with backup power sources. | *Equipar las estaciones de bombeo con fuentes de energía de respaldo.*				X			CBOs/FTBMI	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-7, 32-9, 33-20	LADWP	City | Ciudad	Mid | Medio
			1e. Consider potential for more frequent and intense rain events in plans, policies, and designs for new and existing stormwater systems. | *Considere el potencial de lluvias más frecuentes e intensas en los planes, políticas y diseños de sistemas de aguas pluviales nuevos y existentes.*				X			CBOs/Anahualmecac	City of Los Angeles 2020 Floodplain Management Plan (Plan de Manejo de Llanuras Aluviales de la Ciudad de Los Ángeles), 2020, pp. 13-5, 13-6; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-9, 32-10, 33-10, 33-11, 33-13, 33-14, 33-18, 33-20	RAP/ BOE/ LADWP	City | Ciudad	Mid | Medio
	Issue PF2: Sustained downpours and rising floodwaters causes severe damage which			2a. Encourage community members to adhere to evacuation orders and ensure alternative transportation routes are accessible. | *Aliente a los miembros de la comunidad a cumplir con las órdenes de evacuación y asegurar que las rutas de transporte alternativas sean accesibles.*				X			CBOs		EMD	City/Community | Ciudad/Comunidad	Short | Corto
			2b. Promptly provide disaster recovery assistance to residents. | *Proporcionar asistencia rápidamente para la recuperación ante desastres a los residentes.*				X			CBOs		EMD	City/Community | Ciudad/Comunidad	Short | Corto

Hazard | Peligro	Issue | Problema	Strategies | Erategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
and Flooding | Precipitacion Extrema y Inundacion	severe damage which leads to road closures and the displacement of residents. | *Problema PF2: Lluvias persistentes y el aumento de las inundaciones causan graves daños, lo que conduce al cierre de carretera y al desplazamiento de residentes.*	Strategy PF2: Provide more tools for community members to prepare for, respond to, and recover from flooding. | *Estrategia PF2: Proporcionar más herramientas para que los miembros de la comunidad se preparen, respondan y se recuperen de las inundaciones.*	2c. Educate homeowners in areas subject to frequent flooding on how they can protect their property. | *Educar a los propietarios de viviendas en áreas propensas a inundaciones frecuentes sobre cómo pueden proteger su propiedad.*				X			CBOs/Anahualmecac		BOE / EMD	City/Community | Ciudad/Comunidad	Short | Corto
			2d. For disaster preparations, redirect public transit resources to help people evacuate as many of these community members rely on public transportation and have no other means to evacuate. | *Para preparativos de desastres, redirige los recursos de transporte público para ayudar a las personas a evacuar, ya que muchos de estos miembros de la comunidad dependen del transporte público y no tienen otros medios para evacuar.*				X			CBOs		EMD/ LADOT	City | Ciudad	Short | Corto
			2e. We need more hubs to be cooling centers and or other support centers for youth and elderly that are dealing with the climate impacts of heat, flooding/rain. | *Necesitamos que más centros sean centros de enfriamiento y otros centros de apoyo para jóvenes y ancianos que estén lidiando con los impactos climáticos del calor, las inundaciones/lluvias.*				X			CBOs/Anahualmecac	[Heat Action and Resilience Plan plan de acción y resiliencia al calor)](#) ; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo) [Council File: 23-1380](#)	CEMO / RAP / Libraries	City | Ciudad	Short | Corto
	Issue PF3: Densely populated areas have a high risk for flash floods due to increased runoff. / *Problema PF3: Las zonas densamente pobladas tienen un alto riesgo de sufrir inundaciones repentinas debido al*	Strategy PF3: Use natural and new constructed infrastructure to reduce the amount of flooding in densely populated urban areas. / *Estrategia PF3: Usar infraestructura natural y de nueva construcción para reducir la cantidad de inundaciones en áreas urbanas densamente pobladas.*	3a. Provide structural forms of mitigation which divert floodwaters into conduits suited for controlled release outside of the metropolitan area. / *Proporcionar formas estructurales de mitigación que desvíen las aguas de las inundaciones hacia conductos adecuados para su liberación controlada fuera del área metropolitana.*				X			CBOs		BOE / LADWP	City | Ciudad	Ongoing | En curso
			3b. Improve resilience against flooding by mandating techniques such as elevating structures, waterproofing roofs and foundations, and retrofitting existing buildings in flood prone areas. / *Mejorar la resiliencia contra las inundaciones mediante la obligación de técnicas como elevar estructuras, impermeabilizar techos y cimientos, y adaptar edificios existentes en áreas propensas a inundaciones.*				X			CBOs	[LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-9](#)	BOE / LADBS / DCP	City | Ciudad	Ongoing | En curso
			3c. Implement Low Impact Development (LID)/Green Infrastructure (GI) to provide stormwater storage and prevent runoff. / *Implementar Desarrollo de Bajo Impacto (LID)/Infraestructura Verde (GI) para proporcionar almacenamiento de aguas pluviales y prevenir la escorrentía.*				X			CBOs/FTBMI/Anahualmecac	[LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-9, 33-15](#)	LADBS / BOE / DCP	City | Ciudad	Ongoing | En curso
			3d. Enhance floodplains to allow local streams and rivers to accommodate flows during storm events and capture stormwater for groundwater replenishment. / *Mejorar las llanuras aluviales para permitir que los arroyos y ríos locales se adapten a los flujos durante las tormentas y capturen las aguas pluviales para reponer las aguas subterráneas.*				X			CBOs		BOE / LADWP	City | Ciudad	Ongoing | En curso

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inunda cion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
Extreme Precipitation	repentinas debido al aumento de la escorrentia.	densamente pobladas.	3e. Facilitate nature-based stormwater infrastructure that slow, spread, and sink rainfall during storm events (e.g. bioswales, rain gardens). / *Facilitar una infraestructura de aguas pluviales basada en la naturaleza que ralentice, propague y hunda las lluvias durante las tormentas.*				X			CBOs/FTBMI/Anahualmecac/North East Trees	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-3, 32-9, 32-10, 33-13	BOE / BPW / DCP	City | Ciudad	Ongoing | En curso
			3f. Local capture of stormwater through nature-based solutions to enhance local water supply, reduce stress on aquatic ecosystems, and provide supplementary benefits like shading, cooling, and habitat. / *Captura local de aguas pluviales a través de soluciones basadas en la naturaleza para mejorar el suministro de agua local, reducir el estrés en los ecosistemas acuáticos y proporcionar beneficios complementarios como sombra, enfriamiento y hábitat.*				X			CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-9, 33-15	BOE / BSS / DCP	City | Ciudad	Ongoing | En curso
			3g. Use the City's emergency alert system to issue multilingual alerts, including indigenous languages, of flooding to urban areas that frequently flood to spread early awareness of an expected flood. / *Utilice el sistema de alerta de emergencia de la Ciudad para emitir alertas multilingües, incluidas las lenguas indígenas, sobre inundaciones en áreas urbanas que se inundan con frecuencia para difundir la conciencia temprana de una inundación esperada.*				X			CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-7, 33-10; City of Los Angeles 2020 Floodplain Management Plan (Plan de Manejo de Llanuras Aluviales de la Ciudad de Los Ángeles), 2020, p. 13-5; A Greater LA: Climate Action Framework (Un Gran LA: Marco de Acción Climática), 2016, p. 77 Council File: 23-0751	EMD	City | Ciudad	Ongoing | En curso
	Issue PF4: High flood waters are unsafe and unsanitary, with potential to pollute waterways and soil with hazardous and biohazardous materials. / *Problema PF4: Las inundaciones elevadas son inseguras e insalubres y pueden contaminar los cursos de agua y el suelo con materials peligrosos y biopeligrosos.*	Strategy PF4: Reduce the potential public health impacts from flooding through awareness and reduced exposure. / *Estrategia PF4: Reducir los posibles impactos de las inundaciones en la salud pública a través de la concientización y la reducción de la exposición .*	4a. Ensure emergency response personnel are aware of risks associated with after-storm floodwaters and are trained in performing necessary rescues and environmental cleanup. / *Asegurar de que el personal de respuesta a emergencias esté consciente de los riesgos asociados con las aguas de inundación después de la tormenta y esté capacitado para realizar los rescates y la limpieza ambiental necesarios.*				X			CBOs/FTBMI/Anahualmecac		EMD	City | Ciudad	Ongoing | En curso
			4b. Educate the public on health-related risks associated with contaminated floodwaters and what symptoms may require medical assistance. Utilize local authorities to instruct the community to avoid direct contact with floodwaters when unsafe. / *Educar al público sobre los riesgos para la salud asociados con las inundaciones contaminadas y qué síntomas pueden requerir asistencia médica. Utilizar a las autoridades locales para instruir a la comunidad a evitar el contacto directo con las aguas de inundación cuando no sean seguras.*				X			CBOs/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-3, 33-13, 33-17, 33-18, 33-19	EMD	City/Community | Ciudad/Comunid ad	Ongoing | En curso
			4c. Use Low Impact Development (LID)/Green Infrastructure (GI) wherever possible to filter stormwater and reduce pollutants from entering waterways. / *Utilice Desarrollo de Bajo Impacto (LID)/Infraestructura Verde (GI) siempre que sea posible para filtrar las aguas pluviales y reducir la entrada de contaminantes a las vías fluviales.*				X			CBOs/Anahualmecac		BSS / LADBS / BOE / DCP	City | Ciudad	Ongoing | En curso
			4d. Do more pre-clearing of storm drains by City staff and coordinated community-based clean up programs to remove trash and obstacles before a storm arrives. Offer community grants to CBOs to target areas that are neglected and/or have a lot of bulky items/trash at storm drains. / *Realiza más limpieza previa de los desagües pluviales por parte del personal de la ciudad y coordina programas de limpieza comunitarios para eliminar la basura y los obstáculos antes de que llegue una tormenta. Ofrezca subvenciones comunitarias a las organizaciones comunitarias para dirigirse a áreas descuidadas y/o que tengan muchos artículos voluminosos/basura en los desagües pluviales.*				X			CBOs/FTBMI/Anahualmecac		BSS/ LASAN	City/Community | Ciudad/Comunid ad	Ongoing | En curso

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inunda cion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
	Issue PF5: Alternatives to traditional paving and land cover are needed to reduce flooding. / *Problema PF5: Se necesitan alternativas al pavimento y la cobertura del suelo tradicionales para reducir las inundaciones.*	Strategy PF5: Use types of surfaces and paving that allows water to drain into the soil and reduces runoff. / *Estrategia PF5: Usar tipos de superficies y pavimentos que permitan que el agua drene hacia el suelo y reduzcan el esurrimiento.*	5a. Coverings for driveways and walkways should include gaps so that water can filter through it (permeable) and isn't designed to move water directly into storm drains but into landscaped areas. / *Las cubiertas para entradas de vehículos y pasillos deben incluir espacios para que el agua pueda filtrarse a través de ellos (permeables) y no están diseñadas para llevar el agua directamente a los desagües pluviales, sino a áreas ajardinadas.*						X	CBOs	[City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, p. 22]	BSS	City/Community | Ciudad/Comunid ad	Ongoing | En curso
			5b. Where possible, remove pavement when it is no longer necessary or functional and replace it with green space. / *Cuando sea posible, retire el pavimento cuando ya no sea necesario o funcional y reemplácelo con espacios verdes.*				X			CBOs/FTBMI/Anahualmecac		BSS / DCP	City/Community | Ciudad/Comunid ad	Ongoing | En curso
			5c. Encourage use of larger, consolidated planting areas and use of native landscaping and vegetated drainage areas on private property and other techniques that reduce runoff instead of hard surfaces or astroturf, and other techniques that reduce runoff. / *Fomenta el uso de áreas de plantación más grandes y consolidadas y el uso de paisajismo nativo y áreas de drenaje vegetadas en propiedades privadas y otras técnicas que reduzcan el escorrimiento en lugar de superficies duras o césped artificial y otras técnicas que reducen la escorrentía.*	X	X				X	CBOs/FTBMI/Anahualmecac	[City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, pp. 15, 22, 23; A Greater LA: Climate Action Framework (Un Gran LA: Marco de Acción Climática), 2016, pp. 67, 75; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-20]	DCP	City/Community/ Individual | Ciudad/Comunid ad/Individual	Ongoing | En curso
	Issue DR1: Rising utility bills and water usage restrictions disproportionately impact low-income	Strategy DR1: Modify drought	1a. Ensure equitable distribution of water resources and prioritize essential needs during periods of drought and introduce a tiered pricing structure or other methods to incentivize water conservation. / *Asegurar una distribución equitativa de los recursos hídricos y priorizar las necesidades esenciales durante los períodos de sequía, e introducir una estructura de precios escalonada u otros métodos para incentivar la conservación del agua.*		X				X	CBOs/Anahualmecac	[LA100 Equity Strategies Executive Summary (Resumen Ejecutivo de LA100 Estrategias de Equidad), pp. 16—19; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-4]	LADWP	All | Todos	Short | Corto
			1b. Engage community members of all socioeconomic statuses and businesses across the study area in the drought planning process, encouraging collective action to conserve water resources. / *Involucrar a miembros de la comunidad de todos los niveles socioeconómicos y a las empresas en el área de estudio en el proceso de planificación para la sequía, fomentando la acción colectiva para conservar los recursos hídricos.*		X					CBOs/FTBMI/Anahualmecac	[LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-4]	LADWP	City | Ciudad	Short | Corto

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department(s) | Departamento(s) Principal(es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
Drought | Sequia	communities and vulnerable populations. / *Problema DR1: El aumento de las facturas de servicios públicos y las restricciones en el uso del agua impactan de manera desproporcionada a las comunidades de bajos ingresos y a las poblaciones vulnerables.*	management approaches and water billing policies to reduce impacts from drought on low-income and vulnerable people. / *Estrategia DR1: Modificar enfoques de gestión de sequías y las políticas de facturación de agua para reducir los impactos de la sequía en personas vulnerables y de bajos ingresos.*	1c. Identify and connect stakeholders to emergency assistance programs to help vulnerable groups, including LGBTQIA+ individuals and low-income households. This may include providing access to water-saving technology or subsidies for water bills. / *Identificar y conectar a las partes interesadas con programas de asistencia de emergencia para ayudar a grupos vulnerables, incluyendo personas LGBTQIA+, y hogares de bajos ingresos. Esto podría incluir proporcionar acceso a tecnología de ahorro de agua o subsidios para las facturas de agua.*		X				X	CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-4	LADWP	City/Community | Ciudad/Comunidad	Short | Corto
			1d. Make regional power grid updates to minimize dependency on the water sector for power generation and reduce rising utility bills. / *Realizar actualizaciones en la red eléctrica regional para minimizar la dependencia del sector hídrico para la generación de energía y reducir las facturas de servicios públicos en aumento.*		X				X	CBOs/Anahualmecac	LA100 Equity Strategies Executive Summary (Resumen Ejecutivo de LA100 Estrategias de Equidad), pp. 16—19; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-7	LADWP	City | Ciudad	Long | Largo
			1e. Offer classes and implement drought planning processes, encouraging collective actions to conserve water resources such as how to irrigate urban farms, gardens, and landscaping more efficiently using rainwater. / *Ofrecer clases e implementar procesos de planificación para la sequía, fomentando acciones colectivas para conservar los recursos hídricos, como aprender a regar granjas urbanas, jardines y paisajes de manera más eficiente utilizando el agua de lluvia.*		X					CBOs/FTBMI/Anahualmecac	LA General Plan: Health Element, Programs Progress Report (Plan General de LA: Elemento de Salud, Informe de Progreso de Programas), 2023, p. 13	LADWP	City/Community | Ciudad/Comunidad	Mid | Medio
	Issue DR2: Water shortages increase the vulnerability of critical infrastructure systems, businesses, and communities. / *Problema DR2: La escasez de agua aumenta la vulnerabilidad de los sistemas de infraestructura críticos*	Strategy DR2: Upgrade water collection and stormwater infrastructure to replenish groundwater and recycle water. / *Estrategia DR2: Mejorar la infraestructura de recolección de agua y aguas pluviales para reponer el agua subterránea y reciclar el agua.*	2a. Monitor groundwater to inform aquifer management and model projected water quality and quantity under potential drought conditions. / *Monitorear el agua subterránea para informar sobre la gestión de los acuíferos y modelar la calidad y cantidad del agua proyectada en condiciones potenciales de sequía.*		X				X	CBOs	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-4	LADWP	City | Ciudad	Short | Corto
			2b. Expand current water supply, and diversify sources including the capture, treatment, and reuse of wastewater as a water source and aggressive leak prevention actions. / *Ampliar el suministro actual de agua y diversificar las fuentes, incluida la captura, tratamiento y reutilización de aguas residuales como fuente de agua y acciones agresivas de prevención de fugas.*		X					CBOs	Council File: 24-0456	LADWP	City | Ciudad	Long | Largo
			2c. Increase water storage capacity. / *Aumentar la capacidad de almacenamiento de agua.*		X					CBOs		LADWP	City | Ciudad	Long | Largo
			2d. Explore options for safely using gray water for irrigation without worsening water quality in the environment. / *Explore opciones para utilizar de forma segura aguas grises para riego sin empeorar la calidad del agua en el medio ambiente.*		X					CBOs	Council File: 22-1178	LADWP	City | Ciudad	Long | Largo

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infraestructura críticos, las empresas y las comunidades.			2e. Build and upgrade water infrastructure with drought resilience in mind through reducing leaks in the piping and facilities. / *Construir y mejorar la infraestructura hídrica teniendo en cuenta la resiliencia a la sequía mediante la reducción de fugas en las tuberías y las instalaciones.*		X					CBOs		LADWP	City | Ciudad	Long | Largo
			2f. Supplementary water sources will be required to meet water needs in the region. Recycled water has great potential to meet this need given its year-round availability. / *Se necesitarán fuentes de agua suplementarias para satisfacer las necesidades hídricas en la región. El agua reciclada tiene un gran potencial para cubrir esta necesidad debido a su disponibilidad durante todo el año.*		X					CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-4, 33-19 \n\n Council File: 24-0456	LADWP	City | Ciudad	Long | Largo
			2g. Encourage water conservation and the diversification of water resources such as gray water and water recycling. / *Fomente la conservación del agua y la diversificación de recursos hídricos, como el uso de aguas grises y el reciclaje del agua.*		X					CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-4; Urban Forest Management Plan (plan de manejo forestal urbano) Council File: 24-0456 Council File: 22-1178	LADWP	City | Ciudad	Long | Largo
	Issue DR3: People don't have enough information or money to collect water and get it into the ground. / *Problema DR3: La gente no tiene suficiente información ni dinero para recolectar agua y llevarla al suelo.*	Strategy DR3: Provide education and support for water conservation and landscaping techniques that retain water. / *Estrategia DR3: Proporcionar educación y apoyo para la conservación del agua y técnicas de paisajismo que retengan el agua.*	3a. Provide classes and training on the benefit of rainwater harvesting, green technology, water conservation and provide subsidized rain barrels. / *Proporcionar clases y capacitación sobre los beneficios de la recolección de agua de lluvia, tecnología verde, conservación del agua y proporcionar barriles de lluvia subsidiados.*		X				X	CBOs/FTBMI/Anahualmecac	LA General Plan: Health Element, Programs Progress Report (Plan General de LA: Elemento de Salud, Informe de Progreso de Programas), 2023, p. 13; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-4	LADWP / RAP	City | Ciudad	Short | Corto
			3b. Direct people to information on native landscaping and soil techniques for soaking up water and keeping it in the soil so they can make these changes on private land where possible. / *Dirija a las personas información sobre paisajismo nativo y técnicas de suelo para absorber agua y mantenerla en el suelo para que puedan hacer estos cambios en terrenos privados cuando sea posible.*		X				X	CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-4; Urban Forest Management Plan (plan de manejo forestal urbano)	Urban Forestry	City/Community/ Individual | Ciudad/Comunidad/Individual	Short | Corto
			1a. Enforce zoning restrictions which prevent incompatible uses or new development in high wildfire risk areas. / *Aplicar restricciones de zonificación que impidan usos incompatibles o nuevos desarrollos en áreas de alto riesgo de incendios forestales.*			X				CBOs/FTBMI/Anahualmecac		LADBS / DCP	City | Ciudad	Long | Largo

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
	Issue WF1: Wildfires disrupt transportation and utilities such as water supply, communications, and electric and gas services. / *Problema WF1: Los incendios forestales interrumpen el transporte y los servicios públicos, como el suministro de agua, las comunicaciones y los servicios de electricidad y gas.*	Strategy WF1: Reduce the risk of wildfire impacts on structures, people, including the unhoused, and infrastructure. / *Estrategia WF1: Reducir el riesgo de impactos de incendios forestales en las estructuras, las personas, incluidas las personas sin vivienda, y la infraestructura.*	1b. Ensure adequate road access for emergency vehicles and reliable water sources for firefighting. / *Garantizar acceso adecuado a las carreteras para los vehículos de emergencia y fuentes de agua confiables para la extinción de incendios.*			X				CBOs/FTBMI/Anahualmecac		BOE / LADBS / LAFD	City | Ciudad	Long | Largo
			1c. Hold tabletop exercises to identify courses of action to respond through contingency plans during next disruption of utility service. / *Realizar ejercicios de mesa para identificar cursos de acción para responder mediante planes de contingencia durante la próxima interrupción del servicio público.*			X				CBOs/FTBMI/Anahualmecac	LA100 Equity Strategies Executive Summary (Resumen Ejecutivo de LA100 Estrategias de Equidad), pp. 16—19	EMD / LADWP	City/Community | Ciudad/Comunidad	Mid | Medio
			1d. Strengthen power lines, utility poles, and communication networks in wildfire-prone areas to withstand fire impacts. / *Reforzar líneas eléctricas, postes de servicios públicos y redes de comunicación en áreas propensas a incendios forestales para resistir los impactos del fuego.*			X				CBOs/FTBMI/Anahualmecac	LA100 Equity Strategies Executive Summary (Resumen Ejecutivo de LA100 Estrategias de Equidad), pp. 16—19	LADWP / LAFD	City | Ciudad	Mid | Medio
			1e. Encourage communities to adhere to evacuation orders and ensure alternative transportation routes are accessible. / *Alentar a las comunidades a cumplir las órdenes de evacuación y asegurar que las rutas de transporte alternativas sean accesibles.*			X				CBOs/FTBMI/Anahualmecac		EMD	City/Community/ Individual | Ciudad/Comunidad/Individual	Short | Corto
			1f. Establish mutual aid agreements with neighboring utilities to share resources and personnel during emergencies. / *Establecer acuerdos de ayuda mutua con empresas de servicios públicos vecinas para compartir recursos y personal durante emergencias.*			X				CBOs/FTBMI/Anahualmecac		EMD	City | Ciudad	Mid | Medio
			1g. Assess critical infrastructure to determine where to install backup power at critical facilities to maintain essential services during power outages caused by wildfires. / *Evaluar la infraestructura crítica para determinar dónde instalar energía de respaldo en instalaciones críticas para mantener los servicios esenciales durante cortes de energía causados por incendios forestales.*			X				CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-28; https://www.ladwp.com/sites/default/files/2024-06/2024%20LADWP%20Wildfire%20Mitigation%20Plan.pdf	LADWP	City | Ciudad	Mid | Medio
			1h. Create and maintain fire defensible space around structures and infrastructure. / *Crear y mantener un espacio defensible alrededor de estructuras e infraestructura para protegerse de incendios.*			X				CBOs	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-14; LADWP Wildfire Mitigation Plan (Plan de Mitigación de Incendios Forestales), 2024, p. 31	LADBS / LAFD	City | Ciudad	Short | Corto

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
Wildfire | Incendios Foresta			1i. Make buildings less vulnerable to fire risk by limiting new development in the Wildfire Urban Interface (WUI) and requiring building codes that include use of fire resistant materials in high hazard areas. / *Hacer que los edificios sean menos vulnerables al riesgo de incendio limitando los nuevos desarrollos en la interfaz urbana de incendios (WUI) y exigiendo códigos de construcción que incluyan el uso de materiales resistentes al fuego en áreas de alto riesgo.*			X				CBOs	[LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-14](#)	DCP / LADBS	City | Ciudad	Short | Corto
	Issue WF2: Smoke from wildfires contains particle pollutants and carbon monoxide which can be extremely harmful to the lungs. / *Problema WF2: El humo de los incendios forestales contiene partículas contaminantes y monóxido de carbono que pueden ser extremadamente dañinos para los pulmones.*	Strategy WF2: Help people connect with information to reduce exposure to harmful air from natural and human-caused sources of air pollution. / *Estrategia WF2: Ayudar a las personas a conectarse con información para reducir la exposición al aire dañino proveniente de fuentes naturales y causadas por el ser humano.*	2a. Make available accessible platforms [e.g., websites or automated emergency alert texts/calls] where residents can check current air quality levels and receive advisories when air quality declines because of wildfires. / *Proporcionar plataformas accesibles [por ejemplo, sitios web o alertas automáticas de textos/llamadas de emergencia] donde los residentes puedan verificar los niveles actuales de calidad del aire y recibir avisos cuando la calidad del aire disminuye debido a incendios forestales.*			X				CBOs/FTBMI/Anahualmecac	[LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 32-7](#)	EMD / LADWP	City | Ciudad	Short | Corto
			2b. Coordinate with public health agencies and healthcare providers to provide actionable guidelines for residents to follow during poor air quality and to respond to increases in respiratory illnesses and other health impacts related to wildfire smoke exposure. / *Coordinar con agencias de salud pública y proveedores de atención médica para proporcionar pautas prácticas a los residentes durante la mala calidad del aire y para responder a los aumentos en enfermedades respiratorias y otros impactos en la salud relacionados con la exposición al humo de los incendios forestales.*			X			X	CBOs/FTBMI/Anahualmecac		EMD / LADWP	City | Ciudad	Mid | Medio
			2c. Equip cooling centers and resilience hubs with air filtering devices which allow them to be Cleaner Air shelters during bad air quality days. / *Equipar los centros de enfriamiento y centros de resiliencia con dispositivos de filtrado de aire que les permitan ser refugios de aire más limpio durante los días de mala calidad del aire.*			X			X	CBOs			City | Ciudad	Mid | Medio
	Issue WF3: The number of fires related to the unhoused population has been steadily climbing. / *El número de incendios relacionados con la población sin vivienda ha ido aumentando constantemente.*	Strategy WF3: Use a variety of approaches to reduce the number of fires caused by people. / *Estrategia WF3: Utilice una variedad de enfoques para reducir la cantidad de incendios causados por personas.*	3a. Conduct fire prevention education and community awareness outreach that provide the public, including unhoused individuals and LGBTQIA+ individuals, with fire safety practices and materials. / *Llevar a cabo educación sobre prevención de incendios y actividades de concientización comunitaria que brinden al público, incluidas las personas sin vivienda y las personas LGBTQIA+, prácticas y materiales de seguridad contra incendios.*			X				CBOs		LAFD	City/Community | Ciudad/Comunidad	Short | Corto
			3b. Enhance safety for all residents by establishing a program to encourage safe and managed campsites free of flammable debris and equipped with fire-resistant shelters, fire pits, and access to water sources. / *Mejorar la seguridad de todos los residentes mediante el establecimiento de un programa para fomentar campamentos seguros y administrados, libres de escombros inflamables y equipados con refugios resistentes al fuego, fogones y acceso a fuentes de agua.*			X				CBOs		LAFD	City/Community | Ciudad/Comunidad	Mid | Medio

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
	Issue WF4: Wildfire impacts were a top concern for community members. / *Problema WF4: Los impactos de los incendios forestales fueron una de las principales preocupaciones de los miembros de la comunidad.*	Strategy WF4: Work with communities to reduce the risk and impacts of wildfire. / *Estrategia WF4: Trabajar con las comunidades para reducir el riesgo y los impactos de los incendios forestales.*	4a. Enhance community engagement around wildfire risks, prevention, and evacuation, as well as grants and other programs and resources available to communities in High Fire Hazard Severity Zones. / *Mejorar la participación comunitaria en torno a los riesgos de incendios forestales, la prevención y evacuación, así como los subsidios y otros programas y recursos disponibles para las comunidades en zonas de alta severidad de incendios.*			X			X	CBOs/FTBMI/Anahualmecac/North East Trees	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-14, 32-15	EMD / LAFD	City/Community | Ciudad/Comunidad	Mid | Medio
			4b. Clear potential fuels on property such as dry underbrush, diseased trees, and invasive species and restore native habitat and riparian areas. / *Eliminar posibles combustibles de la propiedad, como maleza seca, árboles enfermos y especies invasoras, y restaurar el hábitat nativo y las áreas ribereñas.*			X			X	CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-14, 32-15	LADBS	City/Community | Ciudad/Comunidad	Short | Corto
			4c. Use indigenous and natural land management and fire prevention practices to reduce fire risk. / *Utilizar prácticas de manejo de tierras indígenas y naturales para evitar incendios y reducir el riesgo.*			X			X	CBOs/FTBMI/Anahualmecac	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 32-14, 32-15; Urban Forest Management Plan (plan de manejo forestal urbano)	LAFD / LADBS	City/Community | Ciudad/Comunidad	Short | Corto
			4d. Work with communities and fire officials to update wildfire, emergency response, and evacuation plans to address community needs, including BIPOC, low - income and LGBTQIA+ individuals, during fires and evacuations. / *Trabajar con las comunidades y los funcionarios de bomberos para actualizar los planes de evacuación, respuesta a emergencias e incendios forestales para abordar las necesidades de la comunidad, incluidas las personas BIPOC, de bajos ingresos y LGBTQIA+, durante incendios y evacuaciones.*			X				CBOs		LAFD / EMD	City/Community | Ciudad/Comunidad	Mid | Medio
	Issue SLR1: Infrastructure investments are needed to prepare coastal areas for coastal flooding associated with sea level rise. / *Problema SLR1: Se necesitan inversiones en infraestructura para preparar las áreas costeras para las inundaciones costeras asociadas con el*	Strategy SLR1: Invest in strategic relocation of coastal infrastructure in the near term to avoid damage and disruption from sea level rise. / *Estrategia SLR1: Invierte en la reubicación estratégica de la infraestructura costera a corto plazo para evitar daños y interrupciones debido al aumento del nivel del mar.*	1a. Relocate or make improvements to utility infrastructure to make it less likely to be damaged by sea level rise. / *Reubicar o mejorar la infraestructura de servicios públicos para que sea menos probable que sea dañada por el aumento del nivel del mar.*					X		CBOs	LA100 Equity Strategies Executive Summary (Resumen Ejecutivo de LA100 Estrategias de Equidad), pp. 16-19; Venice Coastal Zone Sea Level Rise Vulnerability Assessment (2018), Department of City Planning (Evaluación de vulnerabilidad al aumento del nivel del mar en la zona costera de Venecia, (2018) Departamento de Planificación); Port of LA Sea Level Rise Adaptation Study (Estudio de Adaptación al Aumento del Nivel del Mar del Puerto de LA), 2018, pp. 73–81; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024 p. 33-21	POLA	City | Ciudad	Long | Largo

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inunda cion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level / Escala / Nivel	Timeframe | Periodo de Tiempo
Sea Level Rise | Aumento del Nivel del Mar	aumento del nivel del mar.		1b. Flood-proof, retrofit, relocate, elevate, and add redundancy to accommodate impacts. / *Hacer a prueba de inundaciones, adaptar, reubicar, elevar, y agregar redundancia para acomodar los impactos.*					X		CBOs	Venice Coastal Zone Sea Level Rise Vulnerability Assessment (2018), Department of City Planning (Evaluación de vulnerabilidad al aumento del nivel del mar en la zona costera de Venecia, (2018) Departamento de Planificación)	LADBS/ POLA	City | Ciudad	Mid | Medio
	Issue SLR2: Updates to plans and procedures are needed to respond to sea level rise. / *Problema SLR2: Se necesitan actualizaciones de los planes y procedimientos para responder al aumento del nivel del mar.*	Strategy SLR2: Update any plans, policies, procedures that could directly assist with responding to impacts from sea level rise. / *Estrategia SLR2: Actualizar cualquier plan, política y procedimiento que pueda ayudar directamente a responder a los impactos del aumento del nivel del mar.*	2a. Account for future sea-level rise and storm surge projections within updates to emergency response plans and procedures. / *Tener en cuenta las proyecciones futuras del aumento del nivel del mar y las marejadas en las actualizaciones en los planes y procedimientos de respuesta ante emergencias.*					X		CBOs	Venice Coastal Zone Sea Level Rise Vulnerability Assessment (2018), Department of City Planning (Evaluación de vulnerabilidad al aumento del nivel del mar en la zona costera de Venecia, (2018) Departamento de Planificación); Port of LA Sea Level Rise Adaptation Study (Estudio de Adaptación al Aumento del Nivel del Mar del Puerto de LA), 2018, pp. 73—81; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-21	DCP/ POLA	City | Ciudad	Short | Corto
			2b. Integrate sea level rise and storm surge projections in long-range land use planning by limiting development and/or density in sea level rise areas. / *Integrar las proyecciones del aumento del nivel del mar y las marejadas ciclónicas en la planificación del uso del suelo a largo plazo.*					X		CBOs	Venice Coastal Zone Sea Level Rise Vulnerability Assessment (2018), Department of City Planning (Evaluación de vulnerabilidad al aumento del nivel del mar en la zona costera de Venecia, (2018) Departamento de Planificación); Port of LA Sea Level Rise Adaptation Study (Estudio de Adaptación al Aumento del Nivel del Mar del Puerto de LA), 2018, pp. 73—81; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-21	DCP/ POLA	City | Ciudad	Short | Corto
	Issue SLR3: Past solutions have not always proven effective for mitigating sea level rise. / *Problema SLR3: Las soluciones pasadas no siempre han demostrado ser efectivas para mitigar*	Strategy SLR3: Additional nature-based solutions are needed to mitigate sea level rise. / *Estrategia SLR3: Se necesitan soluciones adicionales basadas en la naturaleza para mitigar el aumento del nivel del mar.*	3a. Use natural processes and green stormwater infrastructure such as low impact development, green roofs, and pavements that allow storm surge and floodwater to seep into the ground. / *Utilizar procesos naturales e infraestructura verde para aguas pluviales, como desarrollos de bajo impacto, techos verdes y pavimentos que permitan que el agua de tormenta y las inundaciones se filtren en el suelo.*					X		CBOs	Venice Coastal Zone Sea Level Rise Vulnerability Assessment (2018), Department of City Planning (Evaluación de vulnerabilidad al aumento del nivel del mar en la zona costera de Venecia, (2018) Departamento de Planificación); Port of LA Sea Level Rise Adaptation Study (Estudio de Adaptación al Aumento del Nivel del Mar del Puerto de LA), 2018, pp. 73—81; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-21	BOE / LADBS / DCP	City | Ciudad	Mid | Medio

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
el aumento del nivel del mar.			3b. Acquire and manage natural ecosystems [i.e., wetlands, floodplains, etc.] that assist in reducing flooding and storm surge. / *Adquirir y gestionar ecosistemas naturales [es decir, humedales, llanuras de inundación, etc.] que ayuden a reducir las inundaciones y las marejadas ciclónicas.*					X		CBOs	Port of LA Sea Level Rise Adaptation Study (Estudio de Adaptación al Aumento del Nivel del Mar del Puerto de LA), 2018, pp. 73—81; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-21	BOE / RAP	City | Ciudad	Long | Largo
Issue PH1: A loss of power during an emergency is dangerous for those with health issues. / *Problema PH1: La pérdida de energía durante una emergencia es peligrosa para las personas con problemas de salud.*		Strategy PH1: Create backup power solutions, preferably using renewable energy, to provide power to vulnerable people during a loss of power. / *Estrategia PH1: Crear soluciones de energía de respaldo, preferiblemente utilizando energía renovable, para proporcionar energía a las personas vulnerables durante un corte de energía.*	1a. Solar photovoltaic and/or community solar system in combination with stationary energy storage for microgrid implementation, capable of providing back-up power to entire residences for prolonged periods. / *Sistema solar fotovoltaico y/o sistema solar comunitario en combinación con almacenamiento de energía estacionario para la implementación de un microred, capaz de proporcionar energía de respaldo a hogares enteras durante períodos prolongados.*	X		X			X	CBOs/FTBMI/Anahualmecac/North East Trees	Council File: 23-0141 Council File: 21-1039	LADWP / BOE / LADBS	City/Community | Ciudad/Comunidad	Mid | Medio
			1b. Those with extreme health conditions should be assigned emergency generators for cases in these extreme weather conditions. / *Aquellos con condiciones de salud extremas deberían recibir generadores de emergencia para casos en estas condiciones climáticas extremas.*	X		X			X	CBOs/FTBMI/Anahualmecac/North East Trees	Heat Action and Resilience Plan plan de acción y resiliencia al calor) ; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo)	CEMO / LADWP / BOE / LADBS	City/Community | Ciudad/Comunidad	Mid | Medio
			1c. Explore potential programs of investment to assist low-income residents getting solar systems installed on rooftops where they live and in their communities. / *Explorar posibles programas de inversión para ayudar a los residentes de bajos ingresos a instalar sistemas solares en los tejados de sus casas y de sus comunidades.*	X						CBOs			City/Community | Ciudad/Comunidad	Long | Largo
	Issue PH2: Air quality issues caused by wildfire smoke, fumes, exhaust and industrial uses make health problems worse, especially during extreme heat. / *Problema PH2: Los problemas de calidad*	Strategy PH2: Reduce air quality issues through use of community tools such as localized air quality monitoring, nature-based mitigation solutions, and community-based enforcement. / *Estrategia PH2: Reducir los problemas de calidad del aire*	2a. Increase tree canopy and open space and decrease industry and associated air quality impacts for multiple health benefits including reduced heat, air quality, and mental health. / *Aumentar la copa de los árboles y las áreas verdes y reducir la industria y los impactos en la calidad del aire para obtener múltiples beneficios para la salud, incluida la reducción del calor, la calidad del aire y la salud mental.*	X					X	CBOs/FTBMI/Anahualmecac/North East Trees	LA General Plan: Health Element, Programs Progress Report (Plan General de LA: Elemento de Salud, Informe de Progreso de Programas), 2023, p. 14; Open Space Element; Urban Forest Management Plan (plan de manejo forestal urbano) Council File: 20-0826	Urban Forestry / BSS / DCP / RAP	City/ Community/Individual/Business Sector	Short | Corto
			2b. Explore options for conducting regular, localized air quality monitoring in communities where residents face regular air quality issues. / *Explorar opciones para realizar monitoreo regular de la calidad del aire localizado en comunidades donde los residentes enfrentan problemas regulares de calidad del aire.*	X					X	CBOs/FTBMI/Anahualmecac/North East Trees	LA General Plan: Health Element, Programs Progress Report (Plan General de LA: Elemento de Salud, Informe de Progreso de Programas), 2023, p. 15	CEMO	City/Community | Ciudad/Comunidad	Short | Corto
			2c. Strengthen programs that support community-based air monitoring to achieve environmental equity. / *Fortalecer los programas que apoyan el monitoreo del aire comunitario para lograr la equidad ambiental.*	X					X	CBOs			City/Community | Ciudad/Comunidad	Mid | Medio

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
	del aire causados por el humo de los incendios forestales, los gases de escape y los usos industriales empeoran los problemas de salud, especialmente durante el calor extremo.	*problemas de calidad del aire mediante el uso de herramientas comunitarias como el monitoreo localizado de la calidad del aire, soluciones de mitigación basadas en la naturaleza y aplicación de la ley comunitaria.*	2d. Use existing programs and funding sources to develop community-based air quality enforcement programs. / *Utilizar programas y fuentes de financiación existentes para desarrollar programas comunitarios de control de la calidad del aire.*	X					X	CBOs			City/Community | Ciudad/Comunidad	Mid | Medio
			2e. Residential building designs that promote cross-ventilation through the use of windows on two sides and/or skylights in new development. / *Diseños de edificios residenciales que promueven la ventilación cruzada mediante el uso de ventanas en dos lados y/o tragaluces en nuevos desarrollos.*	X					X	CBOs/FTBMI/Anahualmecac/North East Trees	City of LA: Landscape and Site Design Ordinance (Borrador de Ordenanza de diseño de sitios y ajardinamiento del Departamento de Planificación), Draft for public review, 2024, p. 16; Plan for a Healthy Los Angeles (Plan para un Los Angeles saludable), 2021, p. 124	DCP / LADBS	City | Ciudad	Short | Corto
			2f. Increase research, monitoring and documenting of climate-related illnesses and deaths. / *Aumentar la investigación y la vigilancia sobre enfermedades y muertes relacionadas con el clima.*	X		X			X	Pacoima Beautiful/UCLA	A Greater LA: Climate Action Framework (Un Gran LA: Marco de Acción Climática), 2016, p. 72	CEMO	City | Ciudad	Short | Corto
Public Health | Salud Publica	Issue PH3: The process of getting to a bus stop and waiting for the bus during a hazard event can make health issues worse (e.g., protection from the elements/heat). / *Problema PH3: El proceso de llegar a una parada de autobús y esperar el autobús durante un evento peligroso puede empeorar los problemas de salud (por ejemplo, protección contra los elementos/calor).*	Strategy PH3: Work with communities and transit users to reduce exposure to heat throughout the transit process (e.g., waiting, pathways from home to bus stops). / *Estrategia PH3: Trabajar con las comunidades y pasajeros del transporte público para reducir la exposición al calor durante todo el proceso de transporte (por ejemplo, esperas, caminos desde el hogar hasta las paradas de autobús).*	3a. Work with transit riders to identify where create bus shelters are needed that help provide relief from heat. / *Trabajar con pasajeros de transporte público para identificar donde crear refugios de autobús faltan que brinden alivio del calor.*						X	CBOs	Identifying and Addressing Heat Inequities in the City of Los Angeles (UCLA/CEMO), 2023, p. 154, ; LA's Green New Deal - Sustainable City pLAn, 2019/Nuevo Acuerdo Ecológico de L.A. pLAn de Ciudad Sostenible, 2019, p. 29; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-20; Pacoima Beautiful - UCLA Student Report: Bus Shelter Equity: A study of the distribution of bus shelters in Los Angeles County and unincorporated communities / Pacoima Beautiful - Informe de Estudiantes de UCLA: Equidad en las Paradas de Autobús: Un estudio sobre la distribución de las paradas de autobús en el Condado de Los Ángeles y comunidades no incorporadas	StreetsLA	City | Ciudad	Short | Corto
			3b. Work with transit riders and community members to reduce heat exposure when walking on public walkways to and from destinations. / *Trabajar con los usuarios del transporte público y los miembros de la comunidad para reducir la exposición al calor al caminar por senderos públicos hacia y desde los destinos.*						X	CBOs	Identifying and Addressing Heat Inequities in the City of Los Angeles (UCLA/CEMO), 2023, p. 154, ; LA's Green New Deal - Sustainable City pLAn, 2019/Nuevo Acuerdo Ecológico de L.A. pLAn de Ciudad Sostenible, 2019, p. 29; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-20;	StreetsLA	City | Ciudad	Short | Corto

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
	Issue PH4: A lack of green space in a community contributes to health issues (physical and mental). / *Problema PH4: La falta de espacios verdes en una comunidad contribuye a problemas de salud (física y mental).*	Strategy PH4: Increase the overall amount of community green space to be more equitable when compared to other neighborhoods across the City. / *Estrategia PH4: Aumentar la cantidad total de espacios verdes comunitarios para que sean más equitativos en comparación con otros vecindarios de la ciudad.*	4a. Increase access to open space and enhance trail connectivity to improve mental and physical health. / *Aumentar el acceso a áreas verdes y mejorar la conectividad de los senderos para mejorar la salud física y mental.*						X	CBOs/FTBMI/Anahualmecac/North East Trees	General Plan Open Space Element (Elemento de espacio abierto del plan general); Urban Forest Management Plan (plan de manejo forestal urbano) Landscape and Site Design Ordinance	DCP / LADBS / Urban Forestry	City | Ciudad	Short | Corto
			4b. Add new street trees along streets and sidewalks in existing and new development, preserve healthy existing trees with consistent maintenance and prevent/minimize tree removal where possible. / *Agregar nuevos árboles en las calles y aceras en desarrollos nuevos y existentes, preservar los árboles existentes sanos con un mantenimiento constante y evitar/minimizar la remoción de árboles cuando sea posible.*	X			X		X	CBOs/FTBMI/Anahualmecac/North East Trees	General Plan Open Space Element (Elemento de espacio abierto del plan general); Urban Forest Management Plan (plan de manejo forestal urbano) Landscape and Site Design Ordinance	Urban Forestry / BSS / DCP	City | Ciudad	Mid | Medio
			4c. Add more trees in open space areas and green spaces. / *Agregue más árboles en áreas de espacios abiertos y espacios verdes.*	X			X		X	CBOs/FTBMI/Anahualmecac/North East Trees	General Plan Open Space Element (Elemento de espacio abierto del plan general); Urban Forest Management Plan (plan de manejo forestal urbano) Landscape and Site Design Ordinance	Urban Forestry / BSS / RAP	City | Ciudad	Mid | Medio
			4d. Increase the amount of shade as much as possible in outdoor areas where people have to wait for transportation, walk, or work. / *Aumentar la cantidad de sombra tanto como sea posible en áreas al aire libre donde las personas tienen que esperar por el transporte, caminar o trabajar.*	X			X		X	CBOs/FTBMI/Anahualmecac/North East Trees	General Plan Open Space Element (Elemento de espacio abierto del plan general); Urban Forest Management Plan (plan de manejo forestal urbano) Landscape and Site Design Ordinance	Urban Forestry / BSS / DCP	City | Ciudad	Mid | Medio
	Issue PH5: Littering and the presence of trash creates numerous problems related to clogged drains, unsanitary conditions at bus stops, and makes air quality worse on hot days. / *Problema PH5: La basura y la presencia de basura crean numerosos problemas relacionados con desagües obstruidos*	Strategy PH5: Use a coordinated set of targeted actions to clean up trash and reduce littering to reduce climate-related stressors. / *Estrategia PH5: Utilizar un conjunto coordinado de acciones específicas para limpiar la basura y reducir la basura para reducir los factores estresantes relacionados con el clima.*	5a. The City should continue to develop actions and programs across City departments to combat illegal dumping and littering. / *La ciudad debe seguir desarrollando acciones y programas en todos los departamentos de la ciudad para combatir los vertidos y basura ilegales.*	X					X	CBOs	City of Los Angeles Comptroller - Piling Up: Addressing LA's Illegal Dumping Problem, 2021 p. 33-32	LASAN / BSS	City/Community | Ciudad/Comunidad	Ongoing | En curso
			5b. Add additional durable trash bins that can contain foul odors in public areas such as bus stops and parks to reduce potential public health impacts. / *Agregar más contenedores de basura duraderos que puedan contener olores desagradables en áreas públicas como paradas de autobús y parques para reducir los posibles impactos en la salud pública.*	X					X	CBOs	City of Los Angeles Comptroller - Piling Up: Addressing LA's Illegal Dumping Problem, 2021 p. 33-32	LASAN / BSS	City | Ciudad	Ongoing | En curso
			5c. The City should continue to develop options for adding permanently staffed trash collection stations or parked garbage trucks in areas where frequent dumping is occurring as a highly accessible and visible option to encourage people to safely dispose of trash instead of dumping. / *La ciudad debe seguir desarrollando opciones para agregar estaciones de recolección de basura con personal permanente o camiones de basura estacionados en áreas donde se producen vertidos frecuentes, como una opción altamente accesible y visible para alentar a las personas a deshacerse de la basura de manera segura en lugar de tirarla.*	X					X	CBOs	City of Los Angeles Comptroller - Piling Up: Addressing LA's Illegal Dumping Problem, 2021 p. 33-32	LASAN / BSS	City/Community | Ciudad/Comunidad	Ongoing | En curso

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department (s) | Departamento (s) Principal (es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
desagües obstruidos, condiciones insalubres en las paradas de autobús y empeoran la calidad del aire en los días calurosos.			5d. Create public-private partnerships to hire community organizations to do the trash clean up on a more local/daily basis to keep up with trash issues and illegal dumping. / *Crear asociaciones público-privadas para contratar organizaciones comunitarias para que realicen la limpieza de la basura de forma más local/diaria para mantenerse al día con los problemas de basura y los vertidos ilegales.*	X						CBOs		LASAN / BSS	City/Community | Ciudad/Comunidad	Ongoing | En curso
			5e. Resilience hubs should include a self-care or public health care component to address community health needs during a climate event and to make up for the loss of health resources in some communities. / *Los centros de resiliencia deben incluir un componente de autocuidado o atención de salud pública para abordar las necesidades de salud de la comunidad durante un evento climático y compensar la pérdida de recursos de salud en algunas comunidades.*	X			X		X	CBOs			City/Community | Ciudad/Comunidad	Mid | Medio
Transversal	Issue CC1: The large amount of paved urban areas makes many climate impacts worse. / *Problema CC1: La gran cantidad de áreas urbanas pavimentadas empeora muchos impactos climáticos.*	Strategy CC1: Reduce the amount of paved area on public and private lands. / *Estrategia CC1: Reducir la cantidad de área pavimentada en terrenos públicos y privados.*	1a. Replace pavement with green spaces on both public and private property in urban areas that regularly experience extreme heat, flooding, and places that lack green spaces. / *Reemplacar el pavimento con espacios verdes en áreas urbanas que regularmente experimentan calor extremo, inundaciones y carecen de áreas verdes, tanto en propiedades públicas como privadas.*	X	X		X		X	CBOs/FTBMI/Anahualmecac/North East Trees	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 33-10, 33-11, 33-23—33-35; Urban Forest Management Plan (plan de manejo forestal urbano)	BSS / CEMO / DCP	City | Ciudad	Ongoing | En curso
			1b. Encourage private property owners to replace paved surfaces with green spaces or permeable surfaces to reduce flooding and heat. / *Alentar a los propietarios privados a reemplazar las superficies pavimentadas con espacios verdes o superficies permeables para reducir las inundaciones y el calor.*	X			X			CBOs			City | Ciudad	Short | Corto
			2a. Encourage individual citizens to keep climate journals, and photos when applicable, to record lived experience of impacts on health and daily life from climate hazards. / *Alentar a los ciudadanos individuales a llevar diarios climáticos y fotografías, cuando corresponda, para registrar las experiencias vividas de los impactos de los peligros climáticos en la salud y la vida diaria.*	X	X	X	X	X	X			CEMO	City/Community/Individual | Ciudad/Comunidad/Individual	Short | Corto
	Issue CC2: There are gaps in local and community climate hazard data. /	Strategy CC2: Use available options at all scales to collect climate data. / *Estrategia CC2:*	2b. CBOs should periodically ask community members to share their experiences from extreme climate events, especially immediately afterward to document what happened and talk about how to work together to prepare and adapt for future events. This information can be valuable for climate resilience plans. / *Las organizaciones deben pedir periódicamente a los miembros de la comunidad que compartan sus experiencias de eventos climáticos extremos, especialmente inmediatamente después para documentar lo sucedido y hablar sobre cómo trabajar juntos para prepararse y adaptarse a eventos futuros. Esta información puede ser valiosa para los planes de resiliencia climática.*	X	X	X		X	X			CEMO	City | Ciudad	Short | Corto

Hazard | Peligro	Issue | Problema	Strategies | Etrategias	Examples | Ejemplos	Heat | Calor	Drought | Sequia	Wildfire | Incendios	Precip / Flood | Lluvia / Inundacion	Sea Level Rise | Aumento del Nivel del Mar	Public Health | Salud Publica	Community Partner Input | Comentarios de los Socios Comunitarios	Source Document / Work Programs | Documentos de Referencia / Programas	Lead Department(s) | Departamento(s) Principal(es)	Scale / Level | Escala / Nivel	Timeframe | Periodo de Tiempo
Cross-Cutting | Cuestión	*Problema CC2: Hay falta de datos sobre peligros climáticos locales y comunitarios.*	*Utilizar las opciones disponibles en todas las escalas para recopilar datos climáticos.*	2c. CBOs and individuals should participate in or conduct "citizen-scientist" data collection efforts that can document heat in specific locations within communities. (e.g., NOAA Urban Heat Island (UHI) mapping campaign) / *Las organizaciones comunitarias y los individuos deben participar o realizar esfuerzos de recopilación de datos "ciudadanos-científicos" que puedan documentar el calor en lugares específicos dentro de las comunidades. (por ejemplo, campaña de mapeo de islas de calor urbano (UHI) de la NOAA)*	X					X	CBOs	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 33-10, 33-11, 33-23—33-35	CEMO	City/Community/Individual | Ciudad/Comunidad/Individual	Short | Corto
			2d. Create a Citywide climate data dashboard to track data on climate hazards and provide information to the public. / *Crear un panel de datos climáticos en toda la ciudad para realizar un seguimiento de los datos sobre los peligros climáticos y proporcionar información al público.*	X	X	X	X	X		CBOs	LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 33-10, 33-11, 33-23—33-35	CEMO	City | Ciudad	Short | Corto
	Issue CC3: Community members need more resilience hubs closer to where they live and work. / *Problema CC3: Los miembros de la comunidad necesitan más centros de resiliencia más cerca de donde viven y trabajan.*	Strategy CC3: Work with communities to add more resilience hubs where needed. / *Estrategia CC3: Trabajar con las comunidades para agregar más centros de resiliencia donde sea necesario.*	3a. Create cooling centers/other places that create a safe space for all individuals with air conditioning and resilience hubs where residents can get support, coordinate communication, find resources, and reduce carbon pollution while enhancing quality of life. / *Crear centros de enfriamiento/otros lugares que crean un espacio seguro para todas las personas con aire acondicionado y centros de resiliencia donde los residentes puedan obtener apoyo, coordinar la comunicación, encontrar recursos y reducir la contaminación de carbono mientras mejoran la calidad de vida.*	X	X	X		X	X	CBOs/FTBMI/Anahualmecac/North East Trees	Identifying and Addressing Heat Inequities in the City of Los Angeles (UCLA/CEMO), 2023, p. 220; A Greater LA: Climate Action Framework (Un Gran LA: Marco de Acción Climática), 2016, p. 77; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, p. 33-24; Cohesive Cooling Strategy (estrategia de enfriamiento cohesivo) Council File: 23-1380	CEMO / RAP / Libraries	City | Ciudad	Ongoing | En curso
	Issue CC4: Not all City facilities, policies, operations, and infrastructure are designed to withstand expected future climate hazards. / *Problema CC4: No todas las instalaciones, políticas, operaciones e infraestructura de la ciudad están diseñadas para resistir los peligros climáticos futuros esperados.*	Strategy CC4: Update or create city plans and procedures to prepare city operations and facilities for expected climate hazards impacts. / *Estrategia CC4: Actualizar o crear planes y procedimientos de la ciudad para preparar las operaciones e instalaciones de la ciudad para los impactos esperados de los peligros climáticos.*	4a. Update plans, facilities, and City operations to prepare for future climate hazard conditions in an equitable manner. / *Actualizar los planes, instalaciones y operaciones de la ciudad para prepararse para futuras condiciones de peligro climático de manera equitativa.*	X	X	X	X	X	X	CBOs/Anahualmecac	Heat Action Plan; LA Local Hazard Mitigation Plan (Plan de Mitigación de Peligros Locales de la Ciudad), 2024, pp. 33-9, 33-10, 33-11, 33-23—33-35; Plan for a Healthy Los Angeles (Plan para un Los Angeles saludable), 2021, p. 132	CEMO / EMD / DCP	City | Ciudad	Ongoing | En curso

Title	Owner	Last Updated	URL	Overview of Document/Source	Secondary Sources Related to CVA
Protecting Californians From Extreme Heat: A State Action Plan to Build Community Resilience	California Natural Resources Agency	2022	https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Climate-Resilience/2022-Final-Extreme-Heat-Action-Plan.pdf	State-level strategic and comprehensive set of actions to address extreme heat impacts spanning economic, cultural, ecological, and social impacts. Actions focus on: public awareness/notification, community services and response, the built environment, and Nature-based Solutions. Provides status updates on completed actions and recommendations for future actions.	UHI for California, California Tree Canopy, CA Nature GIS (30x30), Human Right to Water in California (CalHRTW 1.0)
Port of Los Angeles Sea Level Rise Adaptation Study	Port of Los Angeles	2018	https://kentico.portoflosangeles.org/getmedia/29acdb3a-c9a1-4e9c-a233-0a4e74438a3c/2018_Sea_Level_Rise_Adaptation_Study	Identifies the areas of state public trust lands that are projected to be exposed to sea level rise by the years 2030, 2050, and 2100, and provides an overview of vulnerabilities and a suite of adaptation strategies to both adapt over time and stay resilient to sea level rise.	N/A
California Climate Adaptation Strategy	California Natural Resources Agency	2021	https://climateresilience.ca.gov/	Links together the state's existing and planned climate adaptation efforts, showing how they fit together to achieve California's six climate resilience priorities. The Strategy is organized around outcome-based priorities, enabling a coordinated, integrated approach to building climate resilience.	CA Fourth Climate Change Assessment: Los Angeles Region Report
UCLA Heat Maps	UCLA	2018	https://sites.google.com/g.ucla.edu/uclaheatmaps/map?authuser=0	Interactive map of heat-related health outcomes in California, showing excess daily emergency room visits that occur on an extreme heat day compared to the usual, non-extreme heat day. Data is displayed by county and zip code.	CalEnviroScreen 4.0
Southern California Climate Adaptation Framework	Southern California Association of Governments	2021	https://maps.scag.ca.gov/climate/	The tool is designed to assist local jurisdictions and PR actioners by outlining the SB 379 Compliance Curriculum for Local Jurisdictions steps to conduct a vulnerability assessment, providing publicly available data on climate impacts and vulnerabilities across the SCAG region, and making relevant resources easily accessible, all in a central platform.	Cal-Adapt
South Coast Air Quality Monitoring Data	South Coast Air Quality Management District	2023	https://scaqmd-online.maps.arcgis.com/apps/webappviewer/index.html?id=3d51b5d2fc8d42d9af8c04f3c00f88d3	SCAQMD records daily Air Quality Index (AQI) values at 28 sensor/stations using a SCAQMD-developed method that blends measurements from high-quality regulatory monitors, hundreds of quality-controlled and calibrated low-cost sensors, and an air quality model. The program also collects data on ozone, nitrogen dioxide, carbon monoxide, fine particulate matter (2.5 and 10 ppm), temperature, wind speed and wind direction.	Historical Air Quality Data
City of Los Angeles Social Equity Index	City of Los Angeles Controller	2020	https://storymaps.arcgis.com/stories/ca477e68657643c9a2bad1fddfe24359	The LA Equity Index examines socioeconomic, environmental, education, and resource accessibility characteristics of the City's Census tracts to identify neighborhoods that experience less equity and opportunity. The Equity Index scores tracts on a scale from one (less equitable) to 10 (more equitable).	N/A
Cool Spots LA App	CEMO, LADWP, StreetsLA, the Department of Recreation and Parks, Los Angeles Public Libraries, and the Data Team of the Office of the Mayor	2023	https://lahub.maps.arcgis.com/apps/instant/nearby/index.html?appid=d3bea5218c3b4adca485a32c9e3fabee&center=-118.494;33.9779&level=11&hiddenLayers=LMS_Data_Public_5706;featColl_7801;Youthsource_centers_1444;featColl_3296;PoolLocations_9291;Cooling_Centers_In_City_Only_9371;Hydration_Stations_August_2022_3524	Interactive map for the public to locate Cooling Centers, libraries, senior centers, recreation centers, shade structures, bus shelters and hydration stations throughout Los Angeles.	N/A
City of Los Angeles Health Atlas	City of Los Angeles Department of City Planning	2013	https://planning.lacity.org/interactive-health-atlas/index/index.html	The Health Atlas accompanied the Plan for a Health Los Angeles, adopted in 2015 and updated in 2021. This tool uses 2010 Census data, but static (PDF) maps are available with more recent data (updated 2021).	N/A
Open Space Land Use - City of Los Angeles	City of Los Angeles Department of City Planning	2021	https://geohub.lacity.org/datasets/labos::open-space-land-use-city-of-los-angeles/explore?location=33.807314%2C-118.295532%2C9.35	Shapefile of all land zoned open space in City of LA.	N/A
City of LA General Plan: Safety Element	City of Los Angeles Department of City Planning	2021	https://clkrep.lacity.org/onlinedocs/2020/20-1213_misc_04-11-22.pdf	The Safety Element is one of eight State mandated elements of the General Plan and details local hazards, vulnerability to hazards, and emergency preparedness. This Safety Element incorporates the 2018 Local Hazard Mitigation Plan (LHMP), including future updates or amendments to the LHMP, into the Los Angeles General Plan Safety Element.	N/A
Tree Canopy	USDA	2018		Interactive map of urban tree canopy in California	Los Angeles Urban Forest Equity Assessment Report; TreeKeeper data by StreetsLA; NavigateLA
CalEnviroscreen 4.0	California Office of Environmental Health Hazard Assessment (OEHHA)	2021	https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40	A screening methodology that can be used to help identify California communities that are disproportionately burdened by multiple sources of pollution such as hazardous waste, solid waste, pesticide use, ozone, etc.	SB 535 Disadvantaged Communities
City of Los Angeles Building Footprints	City of Los Angeles Department of Building Services	2017	https://geohub.lacity.org/datasets/lahub::building-footprints/explore	This dataset captures all buildings over 64 square feet, based on 2014 aerial imagery. This dataset has unique building IDs, as well as building heights and elevations.	City of LA Parcels

Source Overview						
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2023 State of California Hazard Mitigation Plan	Cal OES	2023	TBD	The plan serves as the state-level roadmap to identify hazards impacting the State, assess the risk of these hazards, inventory the State's adaptive capacity, and identify opportunities and actions to reduce risk to these hazards. Hazards include natural, climate hazards and human-caused hazards.	Multiple
City of LA Parcels	City of Los Angeles Department of Public Works	2020	https://geohub.lacity.org/datasets/lahub::la-city-parcels/	This dataset captures parcels within City boundaries, based on 2015 data and last updated in 2020.	N/A
City of Los Angeles 2021 Community Greenhouse Gas Inventory	City of Los Angeles Department of Sanitation and Environment	2023	https://www.lacitysan.org/cs/groups/public/documents/document/y250/mdg4/~edisp/cnt088358.pdf	This annual report inventories the sources of the City's greenhouse gas emissions and tracks the City's progress toward climate goals.	N/A
Report on Equitable Building Decarbonization	City of Los Angeles Climate Emergency Mobilization Office	2022	https://www.climate4la.org/wp-content/uploads/2022/09/Report-on-Equitable-Building-Decarbonization-FINAL-September-15-2022.pdf	This report summarizes stakeholder input from community-based organizations representing the most pollution-burdened areas of Los Angeles. The process focuses on equity-based solutions to reduce emissions, improve public health, increase house security, lower utility bills, build habitable and health homes and neighborhoods, and create opportunities for well-paying jobs in the green energy industry.	N/A
One Water LA 2040 Plan: Volume 6 - Climate Risk & Resilience Assessment for Wastewater and Stormwater Infrastructure	City of Los Angeles Department of Sanitation and Environment	2018	https://www.lacitysan.org/cs/groups/sg_owla/documents/document/y250/mdmw/~edisp/cnt030192.pdf	This assessment includes a review and summary of current climate science, climate projections, and existing climate impact assessments; a vulnerability assessment of existing wastewater and stormwater infrastructure and systems; and identification and evaluation of adaptation options and strategies.	EPA Climate Resilience and Awareness Tool: Risk Assessment Application for Water Utilities
California Heat Assessment Tool (CHAT)	California Natural Resources Agency		https://www.cal-heat.org/explore	Interactive tool to identify heat health events presently and how these events are projected to change in the future.	Multiple
HistoricPlacesLA	City of Los Angeles Department of City Planning	2017	http://historicplacesla.org/map	This resource inventories the City's significant historic resources, including architecturally significant buildings and places of social importance, as well as historic districts, bridges, parks, and streetscapes.	Zone Information and Map Access Systems
Climate Mapping for Resilience and Adaptation	National Oceanic and Atmospheric Administration	2022	https://resilience.climate.gov/	This tool provides current and future climate hazard information to assist federal agencies and the recipients of federal funds with prioritizing, identifying, and implementing climate-informed infrastructure investments.	N/A
Special Flood Hazard Areas	City of Los Angeles Department of Public Works, Bureau of Engineering	2021	https://engineering.lacity.gov/about-us/divisions/clean-water/floodplain-mapping	The Bureau of Engineering provides information about the City's floodplain management plan (last updated 2021) and publishes NFIP-related maps (LOMC/LOMA, SFHAs, FIS, etc.).	N/A
2020 County of Los Angeles All-Hazard Mitigation Plan	County of Los Angeles Chief Executive Office and Office of Emergency Management	2020	https://ceo.lacounty.gov/wp-content/uploads/2022/04/County-of-Los-Angeles-All-Hazards-Mitigation-Plan-APPROVED-05-2020.pdf	The plan to assess risks posed by natural hazards and to develop a mitigation action plan for reducing the risks in Los Angeles County. Hazards assessed include climate change, dam failure, earthquake, flood, landslide, tsunami, and wildfire.	Multiple
Our Coast, Our Future (OCOF)	Point Blue Conservation Science, US Geological Survey (USGS)	2019	https://ourcoastourfuture.org/hazard-map/	Point Blue and USGS partnered to develop this data viewer as a decision-support tool for planners engaged in the climate adaptation planning process. Users can select from multiple sea level rise and magnitude (or frequency) scenarios and flood metrics (e.g., wave height, flood duration).	N/A
Tree Inventory	City of Los Angeles, Department of Public Works, Bureau of Street Services (StreetsLA)	2023	https://streetsla.lacity.org/tree-inventory	StreetsLA has been updating the City's street tree inventory by collecting information tree location, species, size, and distance from infrastructure, and producing Neighborhood Council reports. The results will be made available through a public viewer using TreeKepper software.	https://losangelesca.treekeepersoftware.com/index.cfm?deviceWidth=1920
Treekeepers	City of Los Angeles, Department of Public Works, Bureau of Street Services (StreetsLA); Davey Resource Group	2023	https://losangelesca.treekeepersoftware.com/index.cfm	This data viewer displays the updated street tree inventory and enables users to produce neighborhood-level reports on tree types, benefits (including ecosystem services), and health.	N/A
Los Angeles County Climate Vulnerability Assessment	County of Los Angeles Chief Executive Office	2021	https://ceo.lacounty.gov/wp-content/uploads/2021/10/LA-County-Climate-Vulnerability-Assessment-1.pdf	This analysis conducts a Climate Hazard Assessment, Social Vulnerability Assessment, Physical Vulnerability Assessment, and a Cascading Impacts Assessment to cumulatively evaluate which areas, assets, and population may be susciptible to climate-exacerbated hazards. The assessments use a mixed-methods approach to incorporate both qualitative and quantitative information. Most asset-specific analyses are overlay analyses or reclassification of existing datasets.	Multiple