



City of
SACRAMENTO

Preliminary Draft
**Adaptation Chapter of the
Climate Action & Adaptation Plan**



Preliminary Public Review Draft

October 31, 2022

ADAPTATION



Building Resilience

Consistent with California Government Code section 65302(g), this chapter describes the key climate change vulnerabilities in Sacramento, outlines the City's adaptation strategy to address these vulnerabilities, and presents the goals, policies, and actions/implementation measures that the City will take to strengthen its adaptive capacity.

Global and regional climate change will increase the frequency and severity of extreme heat events, urban heat island effect, flooding, droughts, and wildfires that will both individually and collectively have increasing impacts on vulnerable populations, critical services, and infrastructure in Sacramento. While

comprehensive, coordinated actions to reduce greenhouse gas (GHG) emissions can help mitigate the extent of these impacts over the long term, additional actions must be taken to address the people, places, and infrastructure most at risk and to leverage other opportunities to effectively and equitably build climate resilience in Sacramento's communities.

Climate change adaptation is the process of adjusting to current or anticipated effects of climate change to protect public health and safety. The coordinated efforts of State, regional, and local agencies and organizations contribute to a climate change readiness landscape that defines adaptive capacity in Sacramento. Recent efforts, such as studies on urban heat, anticipated changes in snowpack, and the impact of tree canopy in Sacramento, can inform the City on ways to bolster its

existing adaptive capacity. Likewise, partnership with local organizations can leverage opportunities to strengthen resilience in vulnerable communities and help achieve equitable environmental and health outcomes.

For more information about climate change impacts, vulnerability, and existing adaptive capacity in the City of Sacramento, see the Climate Change Vulnerability Assessment in [Appendix G](#).

Climate Change Vulnerability

Although climate change largely occurs on a regional and global scale, the effects can be felt more acutely in certain locations and by certain segments of the population. For example, Sacramento has historically been vulnerable to direct riverine flooding impacts, and this vulnerability would be expected to increase absent adaptive measures. An increase in the area burned by wildfires is not an immediate threat to the City of Sacramento, but the concentration of air pollution from wildfire smoke will especially impact individuals with preexisting health conditions such as asthma and people who spend a lot of time outdoors such as construction workers and homeless populations. Reducing vulnerability to climate change effects is an opportunity to advance sustainability and equity in Sacramento by implementing mitigations and providing resources to the people and places that are hit first and worst. Ultimately, integrating adaptive measures into future City actions can strengthen overall community resilience and provide for a more sustainable future.

CLIMATE CHANGE IMPACTS IN SACRAMENTO

The preeminent climate impacts in California include higher temperatures, sea level rise, reduced snowpack, changes in precipitation patterns including heavier precipitation events, increased droughts, and more wildfires. While not all of these occur within Sacramento, the impacts of these changes can affect the city's residents through secondary climate change effects such as flooding, heat waves, and air pollution. This section summarizes the level of risk that climate change impacts pose to Sacramento.

The City has undertaken a comprehensive Climate Change Vulnerability Assessment (attached as [Appendix G](#)) that evaluates the nature and extent of the climate change effects that impact Sacramento, particularly for vulnerable populations and critical facilities in the city. This study is based on scientific best practices, recent related efforts, and State guidelines. The primary data source for the Climate Change Vulnerability Assessment is Cal-Adapt, a tool developed by the Geospatial Innovation Facility (GIF) out of the University of California, Berkeley under the direction of the California Energy Commission (CEC). GIF and CEC released Cal-Adapt to the public in 2011, and it has since served as a tool that synthesizes existing California climate change scenarios and climate impact research and benefits local decision-makers. Climate data available from Cal-Adapt cover the major climate change effects in California, including changes in temperature, precipitation, snowpack, sea level rise, and wildfire. Inherently, climate changes refer to shifts in climatic patterns rather than a comparison of specific points in time. As such, these

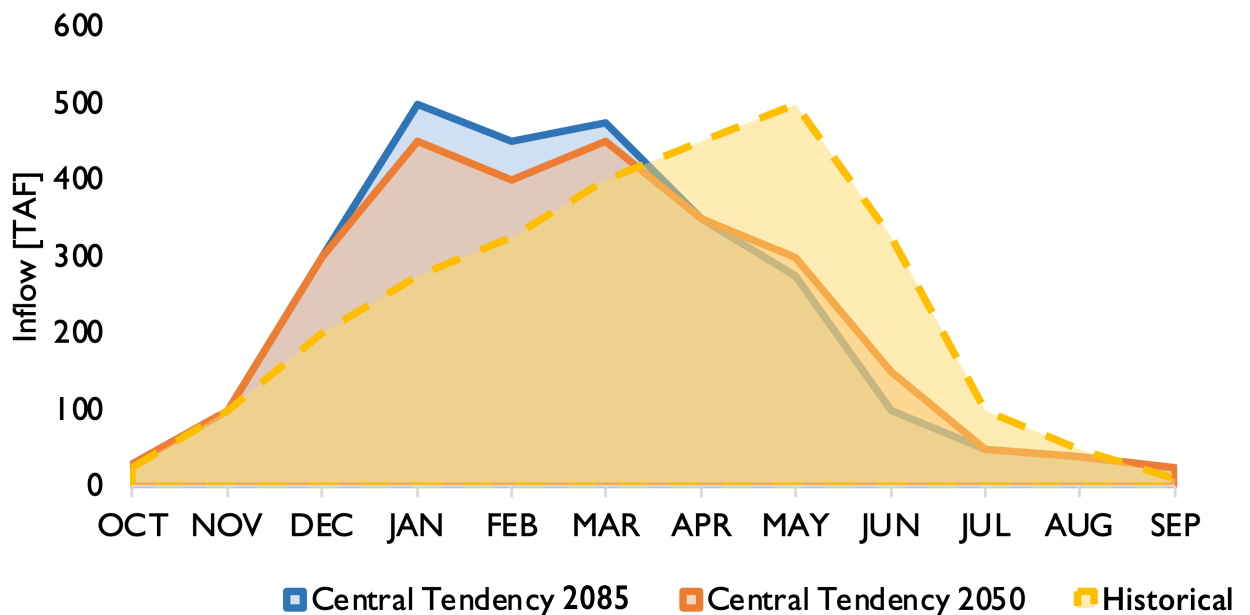


topics are compared across 30-year periods representing the historic baseline (1961-1990), mid-century (2035-2064), and end-of-century (2070-2099) to track how climate change has affected each of these areas since the time when the majority of California’s critical infrastructure was developed and when anthropogenic climate change signals were beginning to be felt. Studying these trends and potential outcomes helps the City take actions now to move toward a more sustainable future.

It is noted that many of these impacts are inter-related; for example, rising temperatures affect the hydrological cycle, which results in changes in precipitation patterns. Both of these, in turn, can contribute to reduction in snowpack. Less

snow, as a smaller waterbody, has less capability to resist temperature changes and is therefore more susceptible to rising temperatures, leading to greater runoff earlier in the year. Coupled with storm events, this amount of increased runoff can exacerbate flood risks (see [Figure 7-1](#)). Moreover, flood management requirements may necessitate releasing water storage from reservoirs to mitigate flood risk and can affect water supply later in the year, particularly during dry periods. The complexity of these concerns makes understanding the nature of climate change impacts that affect Sacramento—and tackling the root cause by reducing greenhouse gas emissions—a critical priority.

Figure 7-1: Monthly Average Unimpaired Inflows to Folsom Reservoir



Projected timing of inflows to Folsom Reservoir under future climate change conditions compared to historical conditions (under the median range of projected change in precipitation and temperature).

Source: Adapted from Figure ES.4 of the American River Basin Study, U.S. Bureau of Reclamation

CLIMATE ACTION & ADAPTATION PLAN

Temperature Increase

Secondary Impacts

- More frequent, extreme, and longer heat waves
- Exacerbated urban heat island effect
- Increased warm nights
- Higher source water temperature
- Negative impacts to air quality

Temporal Extent

Moderate. Effects will be most extreme in July and August, but may be felt anytime between May and October

Spatial Extent

High. Effects will be felt throughout the City, but will be most extreme in and around urban heat islands

Permanence

High. The most extreme effects will be seasonal, but average ambient temperatures will increase steadily over the century

Level of Disruption

High. Increased strain and potential physical damage to energy, utility, and transportation infrastructure from extreme heat; risk of black-outs; and heat-related illness/death. Higher source water temperature create need for additional water treatment technologies.

Level of Uncertainty

Low.

Precipitation Changes

Secondary Impacts

- Winter precipitation shift – more as rain, less as snow
- Reduced snowpack
- More storm events
- Increased runoff and flood risk
- Increased drought conditions
- Decreased water supply

Temporal Extent

High. Increased likelihood of riverine flooding in winter/early spring. Reduced surface water supply in summer due to reductions in winter snowpack.

Spatial Extent

High. Nearly all of the city is low-lying and dependent on levee protection, but areas already susceptible to localized, riverine, and flash flooding and/or have limited stormwater infrastructure will be most affected by increased winter rain and flows. Drought will affect most areas and increase demand for groundwater use.

Permanence

High. The most extreme effects will be seasonal, with continued changes expected over the century.

Level of Disruption

High. A large storm could cause significant health and infrastructure impacts, including loss of life and property, over potentially large portions of the City. Increased water temperature is harmful to water treatment, reservoir and hydroelectric operation, and ecological health.



Level of Uncertainty

Moderate. While impacts vary year to year, climate change is increasing the likelihood of a storm event capable of significant flooding; drought frequency is projected to increase in California.

Wildfire

Secondary Impacts

- Declines in air quality
- Soil erosion and water quality impacts

Temporal Extent

Moderate. Projected wildfire extent/severity is highly variable but will generally increase over the century. Future fire seasons may become longer

Spatial Extent

High. A wildfire is unlikely to break out within City limits, but wildfire smoke will affect the entire city.

Permanence

Moderate. Wildfire intensity is expected to gradually increase, with significant year-to-year variability

Level of Disruption

Moderate. The wildfire impact most likely to have a significant impact on the city is air pollution from wildfire smoke

Level of Uncertainty

Moderate.

Sea Level Rise

Secondary Impacts

- Ecosystem Impacts

Temporal Extent

Low. Sea level rise is projected to occur gradually over the course of the century

Spatial Extent

Moderate. Research is being conducted to determine if and how much sea level rise will impact Sacramento.

Permanence

High. Flooding may impact low lying areas of the City. Saltwater intrusion may affect ability to treat and receive drinking water.

Level of Disruption

Low. Effects may be more severe when coinciding with riverine or flash flooding. Increasing salinity of water may increase burden on upper watershed resources.

Level of Uncertainty

High.



CLIMATE ACTION & ADAPTATION PLAN

VULNERABLE POPULATIONS

Certain populations are particularly vulnerable to the effects of climate change and may require additional interventions to increase adaptive capacity. These include:

- **Children** under 15 years old have physiological characteristics and lifestyles that make them particularly vulnerable to the impacts of climate change. For example, increased time spent outdoors, especially for student athletes, can expose children to high temperatures and smoke from wildfires, potentially resulting in heat- and air-pollution-related illness or mortality. In addition, rapid lung development generally occurs from the ages of 10 to 18, and children's exposure to air pollution during this stage can lead to significant, adverse, and chronic effects on lung function.¹ In Sacramento, about 19.8 percent of the population is under 15 years old, and about a third of this group (6.8 percent of total population) is under the age of five.²



- **Older adults** ages 65 and older are a diverse population whose potential vulnerability to climate change is influenced by factors such as underlying health status, economic situation, and social connectedness. Physiological susceptibility to extreme heat and air pollution make older adults vulnerable to climate change effects, while older adults with limited mobility can be at greater risk during emergencies requiring evacuation. In addition, the financial burden of increased energy costs (e.g., for air conditioning) can disproportionately impact those on fixed incomes.
- **Individuals with a disability** may be more vulnerable to climate change due to limitations that may impact their ability to access information about or respond to an emergency event. About 12.4 percent of Sacramento's population has at least one disability³, many of whom also fall under another category of vulnerable populations described in this section.
- **Black, Latino/a/x, Asian, Pacific Islander, and Indigenous communities** may be exposed to a variety of factors that increase their vulnerability to climate change due to structural racism, or the social relations and practices that reinforce white privilege in the urban environment as well as the economy. As a result, communities of color are more likely than white residents to have lower income, be in poorer physical health, lack access to air-conditioning, live in areas with sparse vegetation, and work outdoors. In addition, communities of color are disproportionately impacted by poor air quality, due to

1. W. James Gauderman, Edward Avol, Frank Gilliland, et al, "The Effect of Air Pollution on Lung Development from 10 to 18 Years of Age," The New England Journal of Medicine 351, no. 11 (September 2004):1057-1067, <https://doi.org/10.1056/NEJMoa040610>.
2. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates Table S0101.
3. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates Table S1810.



both levels of exposure to air pollutants and elevated rates of diseases including asthma and Chronic Obstructive Pulmonary Disease. Sacramento is a racially diverse city consisting of 33.1 percent white residents, 28.3 percent Hispanic or Latinx residents, 18.4 percent Asian residents, 13.1 percent Black or African American residents, 1.6 percent Native Hawaiian or Pacific Islander residents, and 0.4 percent Native American. About five percent of residents identified as belonging to two or more races or a race not identified in the U.S. Census.⁴

- **Low-income** people can be more vulnerable to climate change due to pre-existing health conditions, reduced mobility options, reduced access to health care, housing instability and/or substandard housing, and limited ability to purchase goods and services that could mitigate the negative effects of climate change. Poverty is associated with societal exclusion, mental illness, and increased likelihood of suffering from chronic illnesses. Low-income individuals and families are also more likely to work or live in environments that expose them to pesticides, lead, and outdoor air pollution. Additionally, in the aftermath of an extreme climate event, low-income households may also have difficulty covering home repair or relocation costs, perpetuating housing-related vulnerability. About 15 percent of Sacramento families live in poverty⁵.
- **Outdoor workers** have disproportionate exposure to some effects of climate change such as increased ambient temperature and degraded air quality. Outdoor occupations include agricultural workers, landscapers,

emergency responders, utility repair crews and construction workers. They often have low wages, little job security and no health insurance or paid sick leave. Some groups, such as migrant and day laborers, experience compounded vulnerability from additional factors, like lack of access to quality housing, pesticide exposure, and linguistic isolation.

- **Cost-burdened households** are those that spend 30 percent or more of their household income on housing costs, and households that spend 50 percent or more are considered severely cost-burdened. In Sacramento, the median housing cost (in 2017 dollars) is \$1,184 per month, while the median household income is about \$4,551 per month – of which 30 percent (\$1,365) is only slightly above the median housing cost. This corresponds with about 40 percent of Sacramento households being cost-burdened.⁶ Additional living costs, including for energy, transportation, food, and medical care further exacerbate financial burden on cost-burdened households. Climate change effects like extreme heat can increase energy costs due to increased use of air conditioning. Similarly, cost-burdened households may be particularly vulnerable due to inability to pay for adaptive housing upgrades such as energy-efficient appliances and water-efficient landscaping that could help reduce costs over time.
- **Renters** are at an increased risk of climate vulnerability because they have less control than homeowners in making home upgrades to reduce climate exposure or increase resilience. For example, within the Sacramento Municipal

4. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates Table B03002.

5. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates Table S1702.

6. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates Table S2503.

CLIMATE ACTION & ADAPTATION PLAN

Utility District service area, 30.3 percent of renters do not have central air conditioning whereas only 11.5 percent of owners do not have central air conditioning.⁷ Even among renters with access, they are more likely than homeowners to use window conditioning units, which are less energy efficient and can contribute to higher energy costs. In addition, a neighborhood’s proportion of renter-occupied housing units has been shown to be positively correlated with higher mortality rates among the elderly during extreme heat events⁸. Rental housing, multifamily housing, and subsidized housing are correlated with higher neighborhood sensitivity to heat. Thirty-one percent of Sacramento County’s subsidized housing units are in high-heat census tracts – one of the highest rates in California.⁹ About 52.7 percent (95,780) of Sacramento’s housing units are renter-occupied¹⁰.

- **People experiencing homelessness** are especially vulnerable to climate change impacts due to elevated exposure to environmental stressors, lack of secure shelter, and lack of access to information in climate emergencies such as extreme weather. Homeless communities are often overlooked in disaster planning, have limited access to emergency alert systems,

and often lack the legal standing to help ensure their protection during emergencies. An estimated 3,665 individuals experience homelessness in Sacramento each night as of 2017, consisting of 78 percent of single adults over 25, 16 percent in family units and 6 percent of unaccompanied youth¹¹. Sacramento County’s Point-In-Time Count found a 19 percent increase in nighttime homelessness since 2017, approximately 30 percent of individuals sleeping outside in Sacramento County are over the age of 50, and Black and American Indian or Alaska Native people are disproportionately represented in the homeless population¹².

- **Linguistically isolated households**, in which no members aged five years or older speak English fluently, often experience limited access to or understanding of health and safety warnings and information during extreme weather events or disasters. Linguistic isolation may thus inhibit protective behaviors, and in the aftermath of an extreme event can create barriers to proper care and recovery services. Language barriers can also contribute to vulnerability for new immigrants, older first-generation immigrants, asylum seekers, and young children. Approximately 37.8 percent of Sacramento residents speak a language other than English

7. California Energy Commission, 2019 California Residential Appliance Saturation Study (RASS) [Subset of Volume 2 banners - 2019 Results for Sacramento Municipal Utility District], last updated May 26, 2021, downloaded October 8, 2022 from: https://webtools.dnv.com/CA_RASS/?tabid=0

8. Klein Rosenthal J, Kinney PL, Metzger KB. "Intra-urban vulnerability to heat-related mortality in New York City, 1997-2006." *Health & Place* (2014). May 11 2020: <https://www.sciencedirect.com/science/article/pii/S1353829214001087>.

9. Gabbe CJ, Pierce G. "Extreme Heat Vulnerability of Subsidized Housing Residents in California." *Housing Policy Debate*. (Jul 2020). July 27 2020: <https://www.tandfonline.com/doi/full/10.1080/10511482.2020.1768574>

10. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates Table S2502.

11. City of Sacramento, "Homelessness in Sacramento." (2017).

12. Baiocchi A, Curry S, Williams S, Argüello T, Price Wolf J, Morris J. "Homelessness in Sacramento County: Results from the 2019 Point-in-Time Count." (Sacramento, CA: Institute for Social Research and Sacramento Steps Forward, 2019). Nov 8 2019: <https://sacramentostepsforward.org/wp-content/uploads/2019/06/2019-Final-PIT-Report-1.pdf>



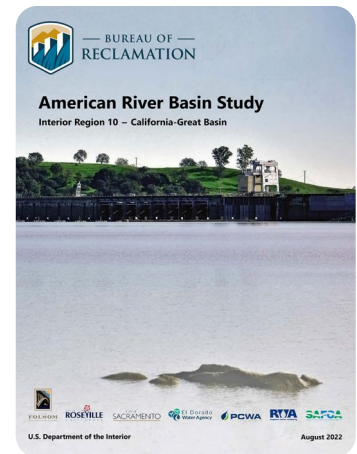
at home, and 41.2 percent of these individuals have limited English proficiency¹³. In the City of Sacramento, neighborhoods with high rates of linguistic isolation show significant overlap with neighborhoods high in poverty, residents with disabilities, and substandard housing. While a number of these neighborhoods are low-density or adjacent to industrial land uses, many linguistically isolated residents are located downtown.

CRITICAL FACILITIES

A critical facility is any facility whose damage or disruption would result in severe consequences to public health and safety or interrupt essential services for the community. Climate change has the potential to exacerbate impacts to critical facilities in Sacramento. These include:

- **Water quality and supply**, from both surface water and groundwater sources, is essential for the City to provide domestic water service to the area within the city limits and to several small areas within the Sacramento County. The City operates groundwater supply wells in addition to drawing surface water from the American River and Sacramento River. The City works with multiple partner agencies to plan for and manage groundwater and surface water. One key effort that was recently completed with several agency partners was the American River Basin Study¹⁴, which developed data, tools, and analysis to forecast potential impacts on water supply and water quality. While major changes in total precipitation within the American River Basin are not certain, the study projects

increased runoff in fall and winter, with decreased runoff in spring-summer. This will lead to reduced snowpack in the upper watershed, increased flood risk in the winter, and decreased flows in the



American River in summer and fall. The study outlines six potential climate change adaptation strategies for the American River Basin, providing a roadmap to ensure water reliability into the future. The American River Basin Study will also inform the work of the Regional Water Authority (RWA), a Joint Powers Authority representing two dozen water providers and affiliates in the greater Sacramento region. RWA's mission is to serve, represent, and align the interests of regional water providers and stakeholders for the purpose of improving water supply reliability, availability, quality, and affordability. A key RWA program is the Regional Water Bank, an innovative groundwater storage program that will improve regional water supply reliability into the future. The Sacramento region's unique setting at the confluence of the American and Sacramento Rivers, near Folsom Reservoir, and overlying the North American and South American groundwater subbasins, provides an ideal location for development of a water bank.

13. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates Table S1601.

14. U.S. Bureau of Reclamation, American River Basin Study: Interior Region 10 – California Great Basin, August 2022, <https://www.usbr.gov/watersmart/bsp/docs/arbs/ARBS-Study.pdf>.

CLIMATE ACTION & ADAPTATION PLAN

- **Water Treatment Facilities.** Warmer source water conditions can degrade quality of the water and may trigger conditions where treatment technologies currently being employed are inadequate to meet appropriate drinking water standards. Higher water temperatures are associated with increased algal growth, sometimes even contributing to blooms, in reservoirs such as Lake Natoma and along slower-moving stretches and the banks of river systems such as parts the lower American River. With this algal growth comes a greater threat of harmful algal blooms, which produce algal cyanotoxins and, more germane to the City's situation, production of taste- and odor-causing algal byproducts like geosmin and 2-methylisoborneol (MIB). Over the years, City staff have noted a direct correlation between elevated geosmin/MIB values in our surface water sources and customer taste and odor complaints. Similarly, warmer water temperatures could lead to an increased rate of disinfection byproduct formation. The City's surface water treatment plants are being evaluated to add additional treatment technologies to adapt to changing conditions. Other benefits of more advance treatment would be removal of disinfection byproducts from current treatments systems.
- **Sewer, stormwater, and flood control infrastructure.** Sanitary sewer and stormwater utilities are critical to the collection and conveyance of wastewater and stormwater in the city. A combined sewer and storm water system (CSS) serves a portion of the city, while the remainder is served by separated sewer and storm drainage systems. Wastewater systems and services are provided by the City of Sacramento



Department of Utilities (DOU), the Sacramento Area Sewer District (formerly County Services District CSD-1), and the Sacramento Regional County Sanitation District (Regional San). DOU maintains and operates two Combined Sewer System treatment plants (Pioneer Reservoir Treatment Plant and Combined Wastewater Treatment Plant), which operate only during significant rain events. Climate change poses a threat to wastewater and stormwater systems via flooding or increased flows, which can overwhelm and damage stormwater and sewer systems. A combined sewer overflow (CSO) occurs when flows to the CSS exceed the treatment system capacity, which causes untreated stormwater and wastewater to be discharged into nearby streams, rivers, and other water bodies, threatening public and ecosystem health. While Sacramento's extensive network of levees, dams, and weirs protects vast portions of the city from flooding, failure of this infrastructure under high-intensity storms could cause significant damage and injury. Sea level rise would also exacerbate flood risk in Sacramento and further threaten the structural integrity of the levee system.

- **Energy supply and infrastructure** can be interrupted because of increased temperatures,



changes in the hydrological cycle, wildfire, and heavy storms. For example, heat events increase demand for energy-intensive uses such as air conditioning and cooling equipment but reduces efficiency of energy transmission. This can make the city more susceptible to energy blackouts and increase energy bills during the summer. Both wildfire and heavy storms can damage infrastructure, producing electricity and phone line outages, which could limit emergency communication during a climate hazard. Heat and wildfires also threaten energy production and distribution, damaging powerlines or pipes, reducing transmission capacity via smoke and high heat, and shutting down lines as a safety measure. The Sacramento Municipal Utility District (SMUD) serves 900 square miles and is responsible for the acquisition, transmission, and distribution of electrical service to City of Sacramento customers. SMUD serves 1.5 million people, supplying power through a distribution grid in a looped system.

- **Transportation infrastructure** including roadways, railways, bridges, sidewalks, and transit lines can experience physical damage under extremely high temperatures. In addition,

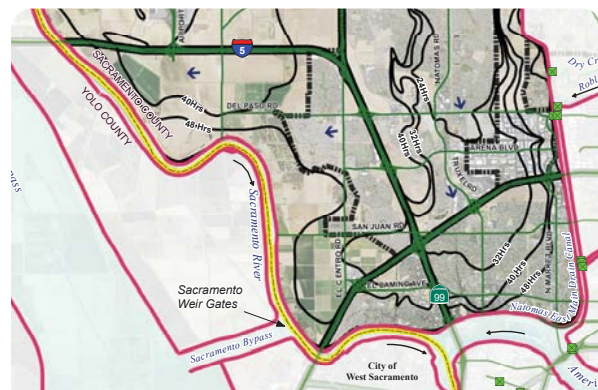
extreme heat can make taking transit, walking, or biking uncomfortable or infeasible. Wildfires can lower air quality, cause road and airport blockages and closures, and reduce road visibility. Flooding can make transportation routes inaccessible when storm events put roadways underwater, destroy critical infrastructure, knock out streetlights, cause trees to fall and block roadways, and wash out bridges. Maintaining a resilient network of evacuation routes and transportation corridors is essential to providing critical services during environmental crises. Certain groups such as the elderly, the hospitalized, individuals with mobility issues, those without a car or other access to reliable transportation, or those who do not receive language-appropriate warning and evacuation information may not be able to evacuate in a timely manner even if they wish to do so. In the absence of an evacuation event, disruptions to the transportation network can disproportionately affect low-income individuals, older adults, those with limited English proficiency, and those who have limited mobility. Car ownership also marks social vulnerability to storms and floods, as households without a vehicle lack the capacity to evacuate without

CLIMATE ACTION & ADAPTATION PLAN

assistance. About 10 percent of Sacramento’s households lack access to a household vehicle¹⁵.

- **Medical facilities and services** will experience increased demand under climate change impacts including higher ambient temperature, reduced ambient air quality, flooding, and wildfire that have the potential to strain medical services infrastructure. Six hospitals are located within the city of Sacramento: Kaiser Permanente South Sacramento Medical Center, Mercy General Hospital, Methodist Hospital of Sacramento, Shriners Hospital for Children, Sutter Medical Center, and UC Davis Medical Center. There are also several health clinics designed to address the needs of specific underserved populations throughout the Sacramento area, many of which are operated in coordination with the UC Davis Medical Hospital. The Department of Health and Human Services operates the Sacramento County Mental Health Treatment Center (SCMHTC), which includes the Minor Emergency Response Team unit. They provide crisis intervention and stabilization for children and youth experiencing a psychiatric emergency.
- **Emergency response and management facilities** will be increasingly relied on as the severity and frequency of floods and wildfires increase across the Sacramento region and beyond. Demand for emergency response/staff and social services, the need for more cooling/clean air/evacuation centers, and the need to manage emergency evacuation traffic may be expected to increase. While Sacramento does not have extensive urban-wildland interface, demand for fire protection services may also increase as

the fire department may be called to respond to fires across the region and the state. Demand for medical services could increase as wildfires exacerbate air quality issues already experienced in California’s Central Valley and contribute to health-related impacts, especially for vulnerable populations. Housing insecurity may be exacerbated following major flood events, creating another source of demand for social services. Flooding is the primary threat that would cause the City to begin an evacuation. Significant flood events could have an extensive impact on the City’s street network and hinder evacuation and/or emergency response. It is critical for the City to communicate any changes to evacuation routes in response to such events via local and agency websites as well as through educational campaigns and public service announcements. In the event of a climate hazard, special care should be given to transport vulnerable populations. Increased reliance on social and medical support services will require more public dollars from the City to operate, maintain, and adequately communicate with residents to advertise services.



Flood evacuation map of Natomas

15. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates Table S2504.



Adaptation Strategy

Where key climate change risks and vulnerabilities in Sacramento intersect, there is an opportunity to improve adaptive capacity. The adaptation strategy presented in this section prioritizes the areas in which existing levels of adaptive capacity are low, especially in comparison to high levels of risk and/or vulnerability. These priorities reflect the City's aim to achieve climate equity while also most effectively building resilience.

EXISTING ADAPTIVE CAPACITY

Planning and Management Capabilities

Existing regulatory capabilities across City departments and offices can help implement climate adaptation and mitigation activities. For example, the Community Development Department (CDD) regulates new development through the implementation of City development standards and the California Building Standards Code. CDD also develops and updates long-range plans for the city's future, such as the Sacramento General Plan and the Climate Action and Adaptation Plan, which lays out a set of strategies to achieve substantial greenhouse gas reductions and increase community-wide resilience to climate change.

Other City departments also prepare plans to guide operations within their respective areas of responsibility, many of which are related to climate change adaptation. For example, DOU updates the City of Sacramento Urban Water

Management Plan on a five-year cycle to assess the availability and reliability of water supplies and projected water use. Additionally, DOU's Comprehensive Flood Management Plan guides the City's flood risk and mitigation efforts.

The Sacramento Office of Emergency Management (SacOEM) prepares and coordinates the City of Sacramento Emergency Operations Plan, which provides guidance for those with emergency management responsibilities within the City of Sacramento. This plan covers a broad range of planned responses to emergencies associated with disasters, technological incidents, or other dangerous conditions to support effective mitigation of disaster damage, reconstruction, and repeated damage.

The City also coordinates with other agencies to develop plans that guide operations. For example, the Sacramento County Multi-jurisdictional Local Hazard Mitigation Plan (LHMP) is a FEMA-approved plan that serves as a tool to reduce or eliminate long-term risk to people and property from hazards. The 2021 LHMP was prepared in coordination with Sacramento County, seven incorporated communities and 24 special districts.

Collaborative Structures, Planning, and Management Capabilities

Like many agencies throughout California, the City of Sacramento must find the way to address climate impacts in a resource-constrained environment. It will be essential to find holistic and integrated approaches to address projected climate impacts. This can take the form of multi-benefit projects, in which mitigation measures are integrated and delivered

CLIMATE ACTION & ADAPTATION PLAN

through existing capital improvement plans. Alternately, this can be achieved through multi-agency partnerships that streamline and coordinate local investments to drive more cost-effective regional solutions where risk and mitigation approaches can be aligned. The City of Sacramento has already partnered with a range of government entities including federal, State, County, special districts, and other local municipal agencies, on a range of issues and projects that are central to Sacramento's successful adaptation to projected climate change impacts. Likewise, the City has key partnerships with community-based organizations that can be further developed to integrate vulnerable populations and further disseminate mitigation activities throughout the community.

Leveraging resources developed by the City's partners is essential to successful CAAP implementation. For example, following Assembly Bill 661, the Sacramento Metropolitan Air Quality Management District (SMAQMD) led a regional process to develop a Wildfire Smoke Air Pollution Emergency Plan and associated education materials for schools, businesses, and other organizations. The City can leverage these resources in programs and projects to adapt to wildfire smoke and other air quality hazards. Similarly, the Capital Region Climate Readiness Collaborative creates and disseminates educational resources on extreme heat that can support the City's adaptation goals. The California Natural Resources Agency is also drafting an Extreme Heat Action Plan as part of the California Climate Adaptation Strategy. Effectively leveraging such resources can support the City's climate adaptation efforts.

Another key example is the regionwide water resources and flood risk management effort between agencies including the U.S. Bureau

of Reclamation, State Department of Water Resources, Sacramento Area Flood Control Agency, the City of Sacramento Department of Utilities, and others. Findings from the American River Basin Study have affirmed the need for strategic actions including maintaining the Sacramento Regional Water Bank, which helps coordinate conflicting requirements for flood risk management and water supply throughout the region. Given that the scale of climate change impacts extend beyond City boundaries, these types of partnerships will continue to be instrumental in implementing effective adaptation measures.

Administrative/Technical Capabilities

Authority for emergency management in the City of Sacramento resides with the City Manager, who is designated by City Code as the Director of Emergency Services. Several important divisions related to climate change adaptation reside within the City Manager's Office. These include the Office of Climate Action and Sustainability, which leads the City's efforts to address climate change; the City's Office of Media and Communications, which facilitates communication with citizens and businesses; and SacOEM, which is responsible for conducting all-hazard preparation, mitigation, response, and recovery for the whole community. SacOEM also manages the Emergency Operations Center (EOC), which is staffed with City personnel who are trained to ensure unified, enduring support to first responders and the community for the duration of any disaster. For events that do not necessitate activating the EOC but still involve multiple departments, OEM may activate and lead a Crisis Action Team (CAT) to facilitate integrated



Citywide response. For multi-jurisdictional cohesion, SacOEM also has a staff member assigned to the Sacramento Regional Type-III Incident Management Team. In an emergency, the Office of Media and Communications helps disseminate and coordinate vital information to ensure public safety.

Several other City departments are responsible for activities related to loss prevention in Sacramento. DOU's Storm Drainage Division operates and maintains the City's storm drainage system, which consists of pumping stations, pipes, ditches, channels. DOU also helps maintain levees on several waterways, while others are maintained by other agencies, and conducts educational Flood Ready outreach to residents.

The Public Works Department manages and maintains the City's transportation system, responds to hazards in the public right of way, manages City trees and responds to downed trees, streetlight poles, traffic signal poles, guardrails, operates flood gates, and upgrades the City's transportation network as funding permits.

Fiscal Capabilities

The City of Sacramento will continue to seek and coordinate funding to effectively drive mitigation actions. For example, the City will seek to combine similar actions to align local funding and integrate mitigation measures into identified capital projects to bolster systemic resilience. The City will seek to build on General Fund dollars, water and stormwater utility enterprise funds, impact fees for new development, and other current City revenue sources to leverage State and federal funding to drive mitigation projects. The City continuously



seeks to acquire grant funding from both State and federal agencies: some key opportunities include grant funding from the FEMA Hazard Mitigation Assistance (HMA) program, which includes Pre-Disaster Mitigation and Flood Mitigation Assistance Grant Programs; FEMA Public Assistance Section 406 Mitigation; Community Development Block Grants (CDBG); and Increased Cost of Compliance funding. Key State funding sources for adaptation projects include CalOES, the Department of Water Resources (DWR), and the California Strategic Growth Council.

Education, Outreach, and Partnerships

Numerous education and outreach programs and methods exist currently to implement mitigation activities and communicate hazard-related information. Local citizen groups or non-profit groups such as American River Parkway Foundation and Community Emergency Response Team focus on environmental protection, emergency preparedness, access, and functional needs. Continued public education and information programs, Firewise Communities certification, and public-private

CLIMATE ACTION & ADAPTATION PLAN

partnership initiatives addressing disaster related issues also help to promote preparedness and mitigation information and strategies. In addition, the City conducts a number of outreach programs on an annual basis. Some examples include the “Flood Watch” newsletter developed by the Sacramento Area Flood Control Agency to inform the public on levee work status and assessment information and the Sacramento Splash in the Class program which provides presentations on stormwater pollution prevention to third through sixth grade classrooms.



ADAPTATION PRIORITIES

Implementing climate adaptation will require addressing a broad range of issues, from extreme heat to flood risk. Yet, each of these issues pose a different level of risk in Sacramento, and certain residents are more at-risk than others. For example, many communities and critical facilities are located in areas of high vulnerability to flooding due to dam or levee failure or levee overtopping, and climate change will further increase the chances of such an event. While Sacramento has extensive storm drainage and flood control infrastructure,

the adaptive capacity of this infrastructure to climate change impacts is not fully understood. Nevertheless, the City and partner agencies such as the Sacramento Area Flood Control Agency, the State DWR, and the federal Bureau of Reclamation have continued to proactively coordinate flood management risk and account for climatic changes. The American River Basin Study is one example of a regional effort that bolsters the City’s existing adaptive capacity in response to flooding and water supply availability impacts. On the other hand, while there is low risk of wildfire occurring within the city, the impact of smoke from regional wildfires in the surrounding area can substantially affect Sacramento residents. This effect will be felt most acutely by vulnerable populations such as people with asthma, outdoor workers, and other groups that are not specifically addressed by existing programs or policies.

The following priorities have been established based on the Climate Change Vulnerability Assessment, taking into account the risk level of the climate change impact and the level of existing adaptive capacity. These priorities correspond to the goals discussed in the next section.

- 1. Strengthen City Government Capacity for Integrated, Holistic Climate Adaptive Strategies**
- 2. Extreme Heat and Urban Heat Island Effect**
- 3. Flooding and Sea Level Rise**
- 4. Air Quality Impacts of Wildfires and Heat**
- 5. Climate Disaster Events**
- 6. Water Supply Availability and Water Conservation**



Goals, Policies, and Actions

This section, consistent with Government Code section 65302(g), presents the goals and policies that will guide the City, and actions that the City and its partners will implement to adapt to climate change impacts and improve resiliency. The Adaptation Strategy is intended to address Sacramento’s key climate vulnerabilities identified in the Climate Change Vulnerability Assessment. Goals and policies are supported by a suite of actions and a description of co-benefits.

The City has proactively incorporated extensive climate adaptation and resilience actions into the Draft 2040 General Plan, Draft Urban Forest Plan, and 2021 Local Hazard Mitigation Plan (LHMP). For each Adaptation Goal in this section, supporting policies are referenced from the Draft 2040 General Plan as applicable. Each goal is then followed by a table of related implementing actions from the Draft 2040 General Plan and LHMP. If the action is derived from another document, such as the LHMP, then that original source is provided in brackets. LHMP actions are provided in full detail in [Appendix H](#). Finally, newly drafted CAAP actions are included at the end of the table to help address any remaining gaps not covered by other documents.

Acronyms for each of the General Plan elements used in this scheme are defined below:

- **ER-EC:** Environmental Resources and Environmental Constraints
- **HCR:** Historic and Cultural Resources
- **PFS:** Public Facilities and Services

GENERAL PLAN ELEMENTS

Policies in the General Plan are uniquely numbered by each element using a naming convention that identifies the element, the goal number, and the policy number, as demonstrated below:

Policy
Goal
Element

MEASURE A-2: Create built environments...

- **ER-EC-5-7:** *Tree Canopy.* The City should strive to achieve a 25 percent urban tree canopy cover by 2030 and 35 percent by 2045. Prioritize tree planting in areas with the lowest average canopy cover and explore strategies to reduce barriers to tree planting in disadvantaged communities and improve tree health.

CLIMATE ACTION & ADAPTATION PLAN

MEASURE A-1: Strengthen City government capacity for integrated, holistic climate adaptive strategies.

Responding to climate impacts requires new, systemic approaches and solutions. Opportunities for multi-benefit approaches can happen with creative partnership and the repurposing of existing limited resources. Preparing for the increasing scale and severity of climate impacts necessitates new approaches. Resiliency will require embedding and institutionalizing new approaches into City operations. New approaches may be necessary to address existing limitations of funding, special use funds, and staff capacity. Integrated planning, funding, and implementation partnerships will be essential to timely meeting the adaptation challenges ahead.

Co-Benefits



Public Health



Community Cost Savings



Adaptation



Job Creation



Environmental Quality





Actions and Implementation

| Action | Lead Agency | Support/ Partner |
|---|---|--|
| <p>A-1.1: Climate-Informed Spending – Consider climate risks and vulnerability in City budget decisions, including the capital improvement program. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • City Manager's Office | <ul style="list-style-type: none"> • Budget Office |
| <p>A-1.2: Adaptation and Resilience Staff – Dedicate City staff and resources for long-term climate adaptation and resiliency needs. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • City Manager's Office | |
| <p>A-1.3: Climate-Informed Infrastructure Planning – Establish guidance and procedures for the consideration of climate impacts in all City infrastructure and capital projects, including minimum levels of preparation as applicable. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • City Manager's Office | <ul style="list-style-type: none"> • Utilities • Public Works • YPCE |
| <p>A.1-4: Resilient City Facilities – Evaluate and prioritize climate vulnerabilities in City facilities and infrastructure and establish a coordinated plan for the pursuit of related grants across City departments. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • City Manager's Office | <ul style="list-style-type: none"> • All |
| <p>A-1.5: Climate Change Collaboration and Partnerships – Support regional climate collaboration and provide continued leadership, with continued support of the Capital Region Climate Readiness Collaborative and related adaptation efforts. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • City Manager's Office | <ul style="list-style-type: none"> • Community Development • Public Works • Utilities |
| <p>A-1.6: Climate Change Data and Resources – Use and disseminate available resources on climate adaptation and impacts, with a focus on Sacramento's vulnerable communities. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • All | |

MEASURE A-2: Create built environments that reduce exposure to extreme heat and mitigate urban heat island effect.

As high temperatures during summer months become more extreme and occur over a longer period of time, the cost burdens and resource strain of greater energy use, incidence of heat-related sickness or death, and exacerbation of urban heat island effect will also increase. By understanding the primary components of urban heat—shade, evapotranspiration, and albedo—the City can make changes to the physical environment to create places that are more livable. For example, Measure CS-1 to increase urban tree canopy cover will provide more shade, which will reduce exposure to direct sun and reduce heat impacts. Trees also contribute to a cooler microclimate through evapotranspiration, which is the process of moisture evaporating from plants into the atmosphere. Meanwhile, increasing albedo (reflectivity) of built surfaces such as using white or light-colored “cool roofs” can help limit indoor temperature, thereby

reducing the need for air conditioning. As such, many of mitigations addressed by this goal can achieve co-benefits that strengthen the City’s adaptive capacity.

Alignment with Mayors’ Commission on Climate Change

The Mayors’ Commission on Climate Change made recommendations on community health and resilience that are addressed in the actions supporting this goal. Specifically, the actions under this goal will substantially further the objectives of providing access to green space within a quarter-mile of home for all residents by 2030 and of achieving a baseline tree canopy of 25 percent by 2030 and 35 percent by 2045. The actions under this goal also have important public health and climate resilience benefits, in line with MCCC recommendations.

Co-Benefits



Public Health



Community Cost Savings



Adaptation



Job Creation



Environmental Quality



Supporting Draft General Plan Policies

The following Draft 2040 General Plan policies support the goal of creating built environments that reduce exposure to extreme weather events and mitigate urban heat island effects:

ER-EC-5-1: *Cooling Design Techniques.* Through design guidelines and other means, in all new development the City shall promote the use of landscaping, building materials, and site design techniques that provide passive cooling and reduce energy demand. In particular, the City shall promote the use of voluntary measures identified in the California Green Building Code (Title 24, Part 11 of the California Code of Regulations) (CALGreen) to minimize heat island effects, including hardscape and roof materials with beneficial solar reflectance and thermal emittance values and measures for exterior wall shading.

ER-EC-5-2: *Urban Heat Islands Reduction.* The City should work with property owners and businesses identified in urban heat island hot spots shown in [Map 7-1](#) to address the urban heat island effect and reduce ambient temperatures in surrounding residential areas. City actions may include facilitating coordinated action among property owners and providing information and incentives for cost-effective heat reduction strategies, including front yard tree plantings and vegetation where streets lack room for street trees.

ER-EC-5-3: *Urban Heat Pilot Projects.* The City should continue to pursue pilot projects to test the use of new materials (e.g., landscaping, building materials, and site design

techniques) in City infrastructure projects that can mitigate urban heat when implemented at scale.

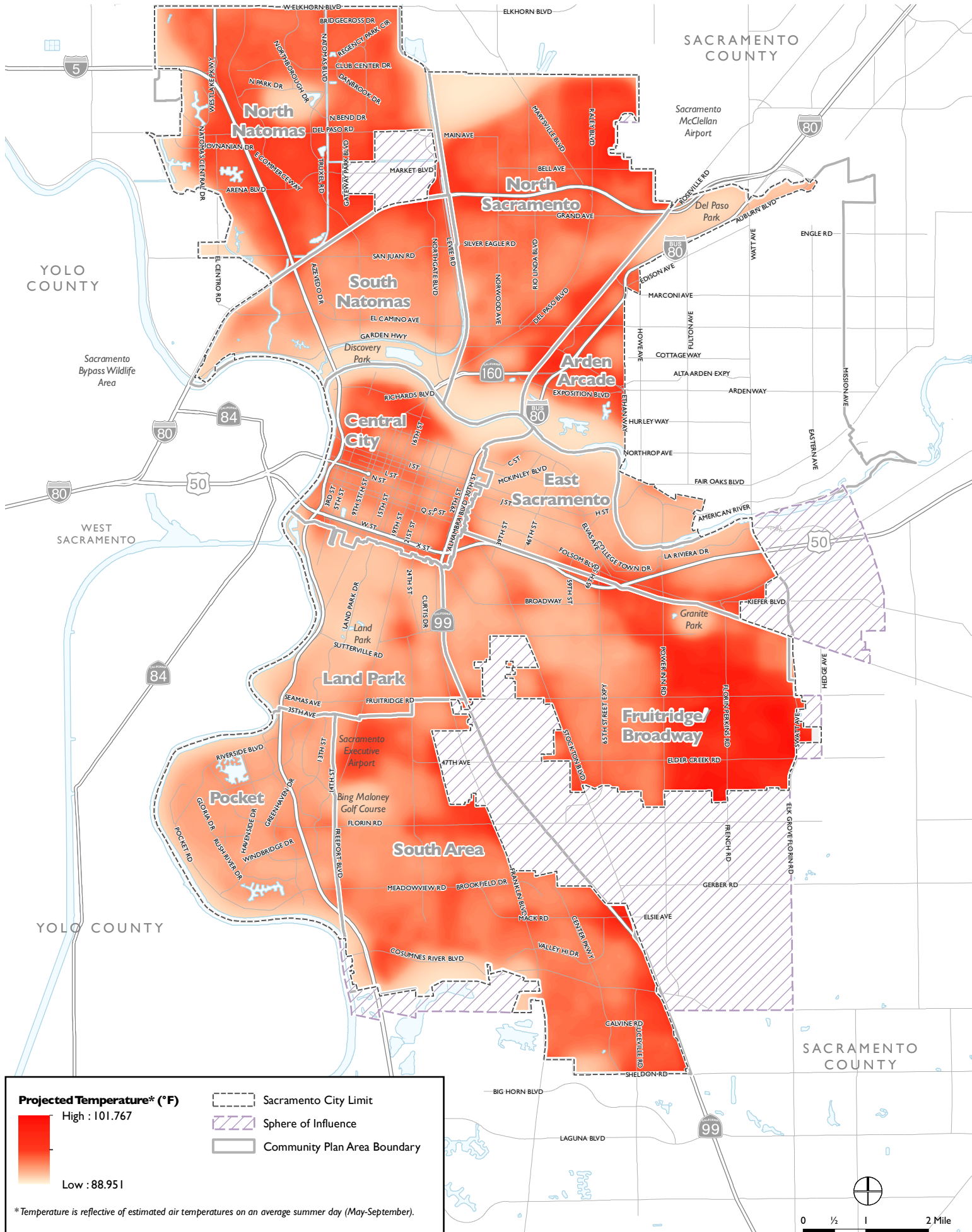
ER-EC-5-4: *Municipal Cool Roof Retrofits.* The City shall evaluate cool roofing options and plan for the retrofit of municipal facilities in coordination with energy efficiency upgrades, including administrative offices, community centers, and maintenance buildings. City buildings located in the most vulnerable areas shown on [Map 7-1](#) should be prioritized for retrofits.

ER-EC-5-5: *Cool Libraries.* The City shall work with the Sacramento Public Library (SPL) to facilitate the incorporation of cooling techniques into neighborhood library facilities, including the application of cool roofing materials, cool paving treatments, landscaping, and shading amenities as funding allows.

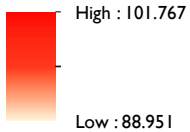
ER-EC-5-6: *Heat-Reducing Public Amenities.* The City shall strive to install heat-reducing public amenities in areas most affected by urban heat, prioritizing the areas with vulnerable populations.

- Drinking water fountains or bottle refilling facilities in public parks, at community facilities, transit centers, or other appropriate locations.
- Splash pads, sprinklers, fountains, and other water features in public parks, where appropriate.
- Shade structures and shading elements in parks and public facilities, where appropriate.
- Additional trees planting in passive landscape areas in parks and public facilities.

Map 7-1: Projected Average Summer Daytime Temperature (2040)

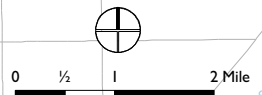


Projected Temperature* (°F)



- Sacramento City Limit
- Sphere of Influence
- Community Plan Area Boundary

*Temperature is reflective of estimated air temperatures on an average summer day (May-September).





ER-EC-5-7: *Tree Canopy.* The City should strive to achieve a 25 percent urban tree canopy cover by 2030 and 35 percent by 2045. Prioritize tree planting in areas with the lowest average canopy cover and explore strategies to reduce barriers to tree planting in disadvantaged communities and improve tree health.

ER-EC-5-8: *Tree Protection.* Encourage public agencies and private development projects to consider alternatives to removals of healthy trees whenever feasible and to evaluate the longer-term consequences of the inability to meet tree canopy objectives when conducting project analyses. Ensure adequate protections during construction to protect existing tree roots and tree health.

ER-EC-5-9: *Tree List.* Maintain and update a list of desirable trees that suit soil and climate conditions in specific areas of Sacramento. Continue to explore and promote tree species that demonstrate greater adaptiveness to higher temperatures, reduced water use, grey and recycled water, and pest and disease resistance.

ER-EC-5-10: *Watering and Irrigation.* Encourage appropriate irrigation and watering practices to support healthy tree growth. Prioritize responsible tree irrigation over the irrigation of other landscape plants during droughts to minimize tree stress and loss. Convert irrigation in parks and streetscapes to prioritize and support trees. Encourage residents to apply mulch and periodically check soil moisture around trees and water deeply with a soaker

hose when needed, while complying with water conservation regulations that apply to other landscape plants. Trees can be watered separately from lawns and landscapes, which are subject to the City's watering schedule.

ER-EC-5-11: *Parking Lot Shading.* Continue to require all paved areas be designed for a minimum of 50 percent tree shading within 15 years and strengthen monitoring and enforcement after parking lots are completed.

ER-EC-5-12: *Urban Forest Maintenance.* The City shall continue to plant, manage, and care for all trees on City property and within the public right-of-way to maximize their safe and useful life expectancy and continue to explore the introduction of tree species that are adapted to future climate conditions.

ER-EC-5-13: *Planting.* Trees should be provided with adequate growing space, aligned to reduce building heat and to shade public walkways to the extent feasible. Require adequate soil treatment and space in plantings to ensure long term success. Appropriate irrigation methods should be incorporated.



CLIMATE ACTION & ADAPTATION PLAN

Actions and Implementation

The following implementation actions are drawn from the Draft 2040 General Plan and adopted 2021 Local Hazard Mitigation Plan and support the goal of creating built environments that reduce exposure to extreme weather events and mitigate urban heat island effects:

| Action | Lead Agency | Support |
|---|---|--|
| <p>A-2.1: Heat Reduction in New Development – The City should evaluate updating the City Code to require the use of heat mitigation strategies to modulate temperatures in the public realm and for new development, particularly near light rail transit (LRT) stations and along transit corridors . Requirements may include the incorporation of:</p> <ul style="list-style-type: none"> • Building design strategies (varied building heights; minimal setback from sidewalks; vertical and horizontal shade features); • Cooling materials, treatments, and coatings; • Multiple layers of shading to maximize coverage throughout the day; • Street trees, and landscaping. <p><i>[Draft General Plan ER-EC-Action 8]</i></p> | <ul style="list-style-type: none"> • Community Development | <ul style="list-style-type: none"> • Public Works |
| <p>A-2.2: Bus Shelter Design – The City shall encourage Sacramento Regional Transit District (SacRT) to study the feasibility of designing and installing bus shelters that are designed to offer protection and relief from heat, including the incorporation of shade trees.</p> <p><i>[Draft General Plan ER-EC-Action 9]</i></p> | <ul style="list-style-type: none"> • Public Works | |
| <p>A-2.3: Cooling Landscape Standards – The City shall prepare a Landscape Manual or enhance landscape standards to mitigate urban heat island effects. Such standards could include a climate appropriate planting palette and recommended plant mix, targets for street tree canopy, shade structure coverage, and asphalt paving coverage.</p> <p><i>[General Plan ER-EC-Action. 14]</i></p> | <ul style="list-style-type: none"> • Public Works | <ul style="list-style-type: none"> • Community Development • Youth Parks • Community Enrichment |



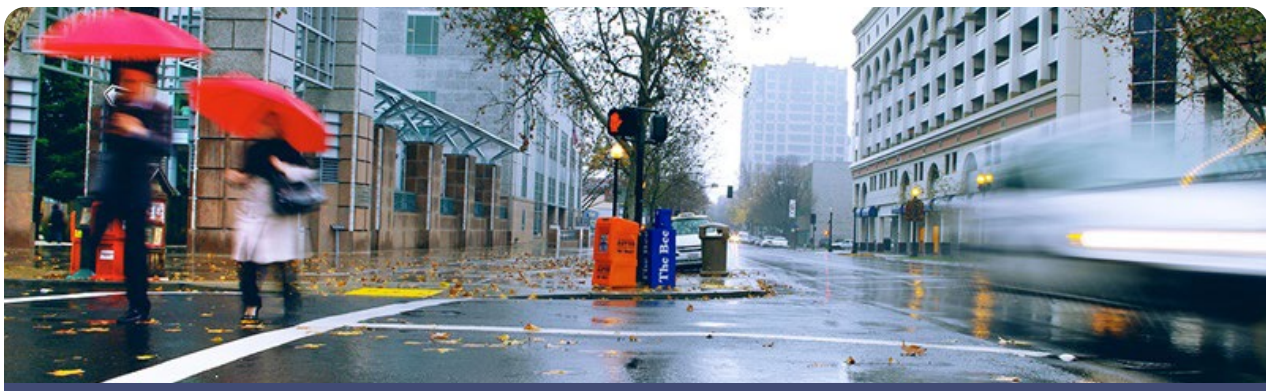
| Action | Lead Agency | Support |
|--|---|--|
| <p>A-2.4: Resilient Design Techniques – The City shall evaluate the feasibility of updating design guidelines, standards, and the municipal code to promote building materials and site design techniques that provide passive cooling and reduce energy demand. <i>[Draft General Plan ER-EC-Action 15]</i></p> | <ul style="list-style-type: none"> • Community Development | |
| <p>A-2.5: Urban Forest Plan – City shall develop and implement an Urban Forest Plan as a primary planning tool for the protection, expansion, maintenance, sustainability, and enhancement of Sacramento’s urban forest. <i>[Draft General Plan ER-EC-Action 16]</i></p> | <ul style="list-style-type: none"> • Public Works | <ul style="list-style-type: none"> • Community Development • Youth Parks • Community Enrichment |
| <p>A-2.6: Minimum Tree Planting Standards – The City shall review and amend the planning and development code as necessary to require minimum levels of tree planting in new development and significant remodels and expand tree canopy. At a minimum, the review should focus on:</p> <ul style="list-style-type: none"> • Strengthening requirements for trees in setback areas, particularly located to shade sidewalks and streets • Identifying opportunities to provide incentives or requirements for inclusion of trees in front, back and side yards • Incorporating standards for the placement of trees to maximize energy conservation • Reviewing Title 12.56 to better define how tree permits for ministerial development project reviews are processed. • Review solar panel installation requirements to minimize potential conflicts with tree planting. <p><i>[Draft General Plan ER-EC-Action 17]</i></p> | <ul style="list-style-type: none"> • Community Development | <ul style="list-style-type: none"> • Public Works |
| <p>A-2.7: Parking Lot Shade Ordinance Update – The City shall update the Parking Lot Shade Ordinance and Guidelines to facilitate compliance; improve site plan review and inspection, monitoring; and to strengthen requirements for ongoing maintenance and replacement of trees in parking lots. Provisions on when and how shading requirements may be satisfied through alternate methods such as canopies shall be incorporated. <i>[Draft General Plan ER-EC-Action 18]</i></p> | <ul style="list-style-type: none"> • Public Works | <ul style="list-style-type: none"> • Community Development |

CLIMATE ACTION & ADAPTATION PLAN

| Action | Lead Agency | Support |
|--|--|---|
| <p>A-2.8: Street Standards – Update Street Standards to optimize tree canopy and provide solutions for various street functions and conditions.</p> <p><i>[Draft General Plan ER-EC-Action 19]</i></p> | <ul style="list-style-type: none"> Public Works | <ul style="list-style-type: none"> Community Development |
| <p>A-2.9: Tree Canopy Health – Develop informational materials to provide to residents and businesses to support tree canopy health, including but not limited to the following:</p> <ul style="list-style-type: none"> Information for residents and businesses on tree benefits, planting guidance, tree selection and care, available programs, and water-wise irrigation Guidance on tree planting to maximize building energy conservation Guidance to plant and maintain healthy trees in parking lots Options and strategies to convert paved areas to tree planting areas. <p><i>[Draft General Plan ER-EC-Action 20]</i></p> | <ul style="list-style-type: none"> Public Works | <ul style="list-style-type: none"> Community Development |
| <p>A-2.10: Cooling Centers in High Priority Locations – This project includes the opening of cooling centers and respite centers in high priority locations throughout the City where these at risk populations are centered as well as high population areas where the general public may need to cool down. This can be an incentive for recreational centers and faith-based centers that can receive stipends for each day they are operational.</p> <p><i>[Local Hazard Mitigation Plan Action 37]</i></p> | <ul style="list-style-type: none"> Department of Community Response | <ul style="list-style-type: none"> Office of Emergency Management Youth Parks Community Enrichment; City Libraries |



| Action | Lead Agency | Support |
|--|--|--|
| <p>A-2.11: Extreme Weather Outreach Strategy – This project is meant to serve as an outreach mechanism to the population in Sacramento City. It will be completed mainly by providing social media toolkits for the general population with access to internet. For more at-risk populations, such as the homeless, the outreach will be completed in person by targeting the areas of Sacramento where the homeless population tends to stay. Outreach will also be completed via food banks and homeless assistance centers.</p> <p><i>[Local Hazard Mitigation Plan Action 38]</i></p> | <ul style="list-style-type: none"> • Department of Community Response | <ul style="list-style-type: none"> • Sacramento Steps Forward • Community Response • Office of Emergency Management • Public Information Officer |
| <p>A-2.12: Severe Weather Action Plan – The Severe Weather Action Plan will outline key triggers, such as, when to begin weather monitoring and cooling/warming centers activations. The Plan would also outline media and boots-on-the-ground outreach to the populations in need. The Plan will also identify community partners who will provide shelter and/or services during severe weather events.</p> <p><i>[Local Hazard Mitigation Plan Action 39]</i></p> | <ul style="list-style-type: none"> • Office of Emergency Management Planning Process | |
| <p>A-2.13: Home Air Conditioning – Increase access to home air conditioning for vulnerable populations that do not currently have access, in tandem with heat pump installation to ensure energy and cost-effectiveness.</p> <p><i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • Community Development • City Manager’s Office | |



The Department of Public Works work year-round to help prepare for winter storms.

CLIMATE ACTION & ADAPTATION PLAN

MEASURE A-3: Reduce the risk of damage to life, infrastructure, and property due to flooding and sea level rise.

The City of Sacramento is susceptible to various types of flood events, including riverine, flash, and localized stormwater flooding. Sacramento is also vulnerable to levee and dam failure flooding. Regardless of the type of flood, the cause is most often the result of severe weather patterns and excessive rainfall, either in the flood area or upstream reach. Flooding is the most significant natural hazard that the City faces, and the extent and frequency would be expected to increase without adaptive actions. Climate change exacerbates Sacramento’s flood risk because warmer winters lead to precipitation falling as rain rather than snow, leading to increased runoff in the fall and winter. Adaptive measures such as those identified in the American River Basin Study, and other planned projects including levee enhancements, will be essential to mitigate the risk of significant flooding.

Although many infrastructure projects in the city help reduce the risk of flooding, areas with limited stormwater infrastructure or areas

dependent on levee protection may still be at risk as climate-induced changes occur. In addition, climate resilience can be significantly strengthened by focusing efforts on proactive adaptation measures including relocating critical municipal facilities outside of hazard risk areas and building the community’s knowledge, ability and capacity to prevent flooding events from becoming disasters.

Sea level rise also has the potential to gradually exacerbate riverine flood risk in Sacramento over the course of the century, especially in low-lying areas. However, the impacts of sea level rise in Sacramento are still not clear, and additional studies are planned or underway to better understand its impact on the Sacramento-San Joaquin Delta region. Nevertheless, sea level rise will generally increase salinity of the Delta’s fresh waters and increase reliance on upper watershed sources, including Folsom Reservoir. Future flood risk management will therefore need balance flooding and water supply and quality concerns.

Co-Benefits



Public Health



Community Cost Savings



Adaptation



Job Creation



Environmental Quality



Supporting Draft General Plan Policies

The following Draft 2040 General Plan policies support the goal to reduce the risk to damage of life, infrastructure, and property due to flooding:

ER-EC-4-1: *Flood Management Planning Coordination.* The City shall work with local, regional, State, and federal agencies to maintain an adequate information base; monitor long-term flood safety and assess long-term flood event probabilities; prepare risk assessments that account for urbanization and the effects of climate change; identify strategies to mitigate flooding impacts; and participate in regional planning efforts.

ER-EC-4-2: *200-year Flood Protection.* The City shall coordinate with local, regional, State, and federal agencies to achieve at least 200-year flood protection for all areas of the city.

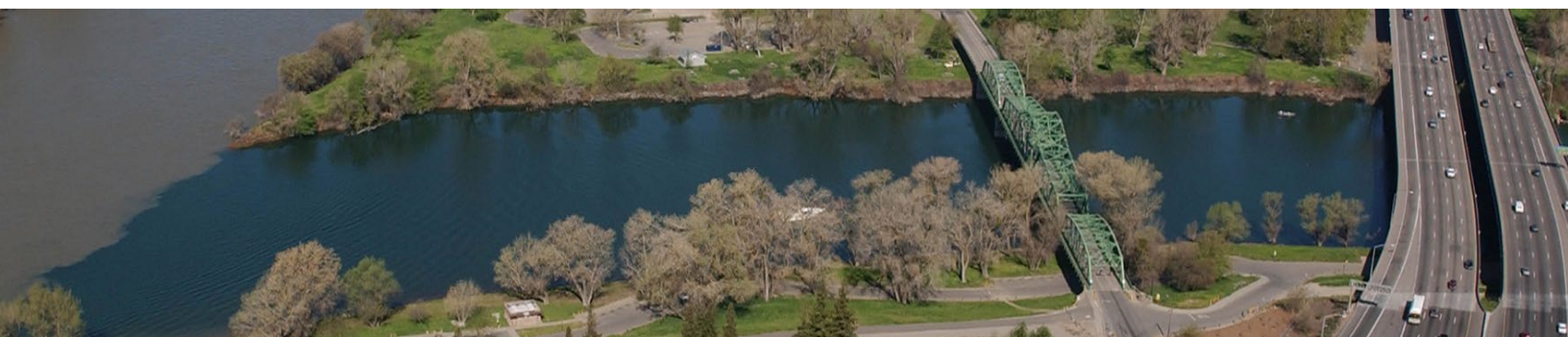
ER-EC-4-4: *Floodplain Requirements.* The City shall regulate development within floodplains in accordance with State and federal requirements and maintain the City's eligibility under the National Flood Insurance Program.

ER-EC-4-5: *Community Rating System.* The City shall continue its participation in FEMA's Community Rating System program, which gives property owners discounts on flood insurance.

ER-EC-4-6: *Flood Regulations.* The City shall continue to regulate new development in accordance with State requirements for 200-year level of flood protection and federal requirements for 100-year level of flood protection.

ER-EC-4-7: *Flood Hazard Risk Evaluation.* The City shall require evaluation of potential flood hazards prior to approval of development projects and shall require new development located within a Special Flood Hazard Area to be designed to meet federal and State regulations and minimize the risk of damage in the event of a flood.

ER-EC-4-8: *Interagency Levee Management.* The City shall coordinate with local, regional, State, and federal agencies to ensure new and existing levees are adequate in providing flood protection and coordinate to achieve local-certification of levees for 200-year flood protection by 2025.



Sacramento's Natomas Basin is one of the most at-risk areas in the nation for catastrophic flooding.

CLIMATE ACTION & ADAPTATION PLAN

Actions and Implementation

The following 2021 Local Hazard Mitigation Plan implementation actions support the goal to reduce the risk to damage of life, infrastructure, and property due to flooding:

| Action | Lead Agency | Support |
|--|--|---------|
| <p>A-3.1: Evaluation and Mitigation of Critical Facilities – in Identified Hazard Areas. This project addresses the additional evaluation of identified critical facilities to determine options for mitigation. The initial focus will be on those facilities within the flood hazard areas, with other hazard-prone facilities to follow. The end result of this analysis will be a list of facilities within the 100- and 500-year floodplain and their mitigation recommendations and priorities.</p> <p><i>[Local Hazard Mitigation Plan Action 6]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |
| <p>A-3.2: Retrofit of Repetitive Loss Properties – The City must identify property owners interested in retrofits and also obtain grant money to assist with the retrofits.</p> <p><i>[Local Hazard Mitigation Plan Action 7]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |
| <p>A-3.3: National Flood Insurance Program (NFIP) & Community Rating System (CRS) Continuation – Continue to meet minimum NFIP requirements and exceed those requirements by participating in the CRS program.</p> <p><i>[Local Hazard Mitigation Plan Action 11]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |
| <p>A-3.4: Develop a Master Generation Plan for Pump Stations – Develop a plan for identifying, prioritizing, and implementing power generation needs for pumping stations. Perform a power audit to identify needs. Plan will identify needs, costs, funding, and lead personnel. Plan will include the purchase and installation of necessary built-in and mobile generators and additional equipment. The City has a robust generator plan but a master plan is still in the process. Sumps that need generators have been identified but the program has been delayed due to funding.</p> <p><i>[Local Hazard Mitigation Plan Action 12]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |



| Action | Lead | Support |
|---|---|---|
| <p>A-3.5: Flood Recovery Plan – Create a plan that addresses key elements of flood recovery, such as, restoring infrastructure, debris removal, water quality, building inspection, facilitating access to individual assistance, providing temporary housing, assisting with business recover, and identify needed resources to support recovery efforts. Continue to update plan.</p> <p><i>[Local Hazard Mitigation Plan Action 17]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Management |
| <p>A-3.6: Public Information Flood Response Plan – Develop a pre-flood plan for public information projects that will be implemented during and after a flood. The plan will include a collection of outreach templates including key messages that need to be disseminated before, during, and after a flood. The plan will also include written procedures that explain how the materials will be disseminated and when the information should be released.</p> <p><i>[Local Hazard Mitigation Plan Action 18]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Management |
| <p>A-3.7: Purchase Drones for Use in Disaster Preparedness, Mitigation, and Response – Integrate the use of drones into the City’s scheduled facility inspection program. Implement inspection of areas that may have been impossible and/or very difficult to inspect in the past, with a program goal to increase efficiency, comprehensiveness, and frequency of inspections as a best practices measure.</p> <p><i>[Local Hazard Mitigation Plan Action 29]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities • Drainage Levee Inspection Section | |
| <p>A-3.8: Map and Assess Vulnerability to Sea Level Rise – Model various “what-if” scenarios to estimate potential vulnerability in order to develop sea level rise mitigation priorities. Develop an inventory of critical facilities and infrastructure that may be particularly vulnerable to sea level rise.</p> <p><i>[Local Hazard Mitigation Plan Action 30]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |

CLIMATE ACTION & ADAPTATION PLAN

| Action | Lead | Support |
|--|--|--|
| <p>A-3.9: Coordinate with Stakeholders on Proposed Flood Control Project on Magpie Creek – The project would raise approximately 2,100 feet of the Magpie Creek Diversion Channel left bank levee and extending the levee south along the west side of Raley Boulevard to Santa Ana Avenue, with floodgates at two driveways. <i>[Local Hazard Mitigation Plan Action 40]</i></p> | <ul style="list-style-type: none"> • Sacramento Area Flood Control Association | <ul style="list-style-type: none"> • US Army Corps of Engineers • County of Sacramento Department of Water Resources • City of Sacramento Department of Utilities |
| <p>A-3.10: Adopt Additional Floodplain Development Standards – The Development Services Task Force will discuss adoption of additional development standards related to floodplain management and best practices. <i>[Local Hazard Mitigation Plan Action 41]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • City of Sacramento Community Development Department |
| <p>A-3.11: Drainage Projects for Repetitive Loss Properties – Many drainage projects have been identified in the City’s Drainage Master Plans. These projects include upsizing pipelines, adding detention basins, adding bypass pipelines, retrofitting pump stations, and land acquisition. These projects will be ranked and grant funding will be pursued. <i>[Local Hazard Mitigation Plan Action 42]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |
| <p>A-3.12: Historic Magpie Creek – The Magpie Creek Diversion Channel is part of the Corps levee improvement project under the WRDA 16 authorization. The work consists of cutting off all (or the majority) of the spill into historic Magpie and keeping it contained in the diversion channel as it heads north then west. <i>[Local Hazard Mitigation Plan Action 44]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |
| <p>A-3.13: Natomas Internal Drainage Canals/Levees – Certify the Natomas Internal Drainage Canals/Levees to the 100-year and 200-year Level. DOU has contracted to provide the evaluation and recertification of the interior levees in the Natomas Basin. <i>[Local Hazard Mitigation Plan Action 45]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • County of Sacramento Department of Water Resources • Sutter County, Reclamation District 1000 |



| Action | Lead | Support |
|--|--|--|
| <p>A-3.14: Drainage Projects from the City’s Priority Drainage Project List – Many potential drainage projects that have been identified in the City’s Drainage Master Plans and have been prioritized on a Basin Master Planning and Improvement Projects priority list. These projects include upsizing pipelines, adding detention basins, adding pipelines, retrofitting pump stations, and land acquisition. These projects are ranked by priority.</p> <p><i>[Local Hazard Mitigation Plan Action 46]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |
| <p>A-3.15: Projects Identified in the Combined Sewer System Improvement Plan Update – Identified projects were categorized into storage and conveyance. The storage projects are located upstream or downstream of local flooding areas and are intended to detain flows until the CSS has re-generated capacity (i.e., peak of the storm has passed and HGL in the system has receded from peak conditions) and the storage facilities can be dewatered. The storage projects can be linear or parcel based. Conveyance projects would generally be located in proximity to or just downstream of localized flooding areas. Their objective would generally be to convey peak flows from and through the flood-prone areas to points downstream with greater capacity. The analysis carefully considered whether the increased conveyance had the potential to cause or exacerbate downstream flooding. If that was determined to be true, the conveyance project(s) were combined with upstream or downstream storage projects to mitigate the downstream flood exacerbation risk. Conveyance projects included upsizing existing pipes or constructing new pipes. Where baseline flooding occurred in a location with no opportunities for storage, a new pipe was sized to convey the 10-year storm design peak flows to the downstream system. Factors such as ground cover requirements, right-of-way width, and existing system pipe invert elevations (to which linear storage facilities must connect) were factored into the storage configurations.</p> <p><i>[Local Hazard Mitigation Plan Action 47]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • Wastewater & Storm Drain Engineering Program |

CLIMATE ACTION & ADAPTATION PLAN

| Action | Lead | Support |
|--|--|---|
| <p>A-3.16: Easements for Open Land Along Levees – Analysis of current levee easements and setback to determine where additional and future easements will be needed. Develop a method and funding source to acquire the needed easements and open space to meet the ULDC standards.</p> <p><i>[Local Hazard Mitigation Plan Action 48]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • City of Sacramento Community Development Department • Sacramento Area Flood Control Agency |
| <p>A-3.17: Flood Fighting Equipment – Purchase flood fighting equipment such as a utility landing craft, long reach excavator, and the truck (tractor) trailer.</p> <p><i>[Local Hazard Mitigation Plan Action 50]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities, Operations and Maintenance | |
| <p>A-3.18: Flood Management Land Use Planning and Development – Implementation of the land use planning and development action items outlined in the City of Sacramento’s Comprehensive Flood Management Plan. Highlighted projects include 200-year floodplain ordinance and projection plan, development guidelines for rescue and evacuation areas, City Code update for new development adjacent to levees.</p> <p><i>[Local Hazard Mitigation Plan Action 51]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • City of Sacramento Community Development Department |
| <p>A-3.19: Florin Creek Pump at Pomegranate Avenue – Construction of a relief pipeline and a pump station near Pomegranate Avenue.</p> <p><i>[Local Hazard Mitigation Plan Action 52]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |
| <p>A-3.20: Internal Drainage System Improvements – Implementation of the internal drainage system improvements outlined in the City of Sacramento’s Comprehensive Flood Management Plan. Highlighted projects include development of a grant program to fund drainage improvements, develop an Engineering Services efficiency plan, work on the passage of Proposition 218 drainage fee increase, and drainage master planning.</p> <p><i>[Local Hazard Mitigation Plan Action 53]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | |



| Action | Lead | Support |
|--|--|---|
| <p>A-3.21: Levee and Structural Flood Management Improvements – Implementation of the levee and structural improvement action items outlined in the City of Sacramento’s Comprehensive Flood Management Plan. Highlighted projects include support of local efforts to improve flood facilities, plan and implement modernization phase of levee accreditation and ULDC, and participate in the Regional Flood Management Plan.</p> <p><i>[Local Hazard Mitigation Plan Action 54]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • City of Sacramento Community Development Department • SAFCA |
| <p>A-3.22: Master planning to identify facilities needed to prevent 10-year event street flooding and 100-year event structure flooding – Develop master plans to identify facilities needed to prevent 10-year event street flooding and 100-year event structure flooding in areas of the City that do not currently have master planning. Prioritize the projects and formulate timeline for the identified projects. Execute the projects to provide protection from flooding.</p> <p><i>[Local Hazard Mitigation Plan Action 55]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • Wastewater & Storm Drain Engineering Program |
| <p>A-3.23: Multi-Jurisdictional Modeling for Drainage Watersheds Greater than 10 Square Miles – Development of a unified model for each watershed that extends over jurisdictional lines. The model would be maintained to reflect changes to the watershed, including development.</p> <p><i>[Local Hazard Mitigation Plan Action 59]</i></p> | <ul style="list-style-type: none"> • Sacramento Area Flood Control Agency | <ul style="list-style-type: none"> • County of Sacramento Department of Water Resources; • City of Sacramento Department of Utilities |
| <p>A-3.24: Stabilization of Erosion Hazard Areas – This project will include the identification and mitigation of erosion sites along the Sacramento river and other rivers in the region that pose a threat to levees and raise flooding concerns.</p> <p><i>[Local Hazard Mitigation Plan Action 63]</i></p> | <ul style="list-style-type: none"> • California Department of Water Resources | <ul style="list-style-type: none"> • Army Corps of Engineers • City and County of Sacramento |

MEASURE A-4: Increase awareness of and expand community resources to address the adverse health effects of air pollution.

Climate change exacerbates air pollution in the Sacramento region from both wildfires and other sources. Although a wildfire is unlikely to break out within Sacramento, smoke from wildfires occurring throughout the region, particularly upwind, can indirectly impact the entire city with elevated particulate matter (PM) pollution. Moreover, ozone pollution remains a critical air quality challenge in the Sacramento region, which is a nonattainment area for the federal 8-hour ozone standard.¹⁶ Both wildfire smoke and increasing numbers of hot, sunny days can contribute to greater ozone formation.¹⁷ Increasing adaptation to wildfire smoke and other air pollution is a priority for the City

of Sacramento due to the numerous populations that are vulnerable air pollution and the lack of existing adaptive capacity.

Alignment with Mayors' Commission on Climate Change

The Mayors' Commission on Climate Change made recommendations on community health and resilience that are addressed in the actions supporting this goal. Specifically, actions A-6.2 and A-6.3 under this goal will raise awareness in the community of how to prepare for and respond to wildfire smoke events.

Co-Benefits



Public Health



Community Cost Savings



Adaptation



Job Creation



Environmental Quality

16. U.S. Environmental Protection Agency, "8-Hour Ozone (2015) Designated Area/State Information with Design Standard," Green Book, data current as of September 8, 2022, accessed September 13, 2022, <https://www3.epa.gov/airquality/greenbook/jbtcw.html>.

17. Dmitri A. Kalashnikov, et al, "Increasing co-occurrence of fine particulate matter and ground-level ozone extremes in the western United States," Science Advances 8, no. 1 (January 5, 2022), <https://doi:10.1126/sciadv.abi9386>.



Supporting Draft General Plan Policies

The following Draft 2040 General Plan policies support the goal to increase awareness of and expand community resources to address the adverse health effects of air pollution:

ER-EC-1-1: Air Quality Monitoring. The City shall support the expansion of air quality monitoring efforts in Sacramento, prioritizing locations in the north and south of the city that have been identified with community input as a high priority for air pollution control initiatives.

ER-EC-1-3: Data-Informed Efforts. The City shall collaborate with SMAQMD, community organizations, and other stakeholders, and use air quality monitoring data to inform area-specific improvement actions outside of AB 617-related efforts. Such actions may include:

- Prioritizing areas for the installation of indoor air filtration rated MERV 13 or greater in existing buildings containing sensitive uses;
- Prioritizing areas for capital investments with co-benefits for air quality, such as tree planting and installation of EV charging infrastructure;
- Integrating air quality improvement actions into planning efforts, such as new specific plans, master plans, or area plans that will guide development in impacted areas; or
- Limiting the establishment of new sources of air pollutants in areas with elevated levels of pollutant concentrations unless appropriate mitigation is implemented.

ER-EC-1-5: Project Design. The City shall promote the incorporation of new technologies, materials, and design and construction techniques in private development projects that minimize air pollution, noise, excess heat, and other forms of pollution and its impacts.

ER-EC-1-8: Air Quality Awareness. The City shall cooperate with SMAQMD, SACOG, SMUD, and other groups to promote public access to air quality monitoring data and awareness about impacts of indoor and outdoor air quality on health and protective strategies.

ER-EC-1-9: Regional Coordination. The City shall support air quality planning efforts led by other local, regional, and State agencies while simultaneously leveraging City authority and resources to focus on reducing air pollution burden in disadvantaged communities.



CLIMATE ACTION & ADAPTATION PLAN

Actions and Implementation

The following proposed actions drawn from the Draft 2040 General Plan and adopted 2021 Local Hazard Mitigation Plan support the goal of increasing awareness of and expanding community resources to address the adverse health effects of air pollution:

| Action | Lead | Support |
|--|--|---|
| <p>A-4.1: Air Filtration Systems – The City shall explore opportunities to accelerate the installation of air filtration systems in existing buildings in partnerships with SMAQMD and other partners in the Sacramento region. Schools, nursing homes, and other sensitive uses within DACs and areas most affected by air quality issues should be prioritized.</p> <p><i>[Draft General Plan ER-EC-Action.1]</i></p> | <ul style="list-style-type: none"> • Office of Climate Action & Sustainability • Community Development | <ul style="list-style-type: none"> • Public Works |
| <p>A-4.2: Implement a Fire Education and Information Program – Implement an urban-wildfire safety program using materials for the community. Train educators and inspectors, identifies high risk neighborhoods and buildings, and develop agreed-upon, area specific solutions to fire issues.</p> <p><i>[Local Hazard Mitigation Plan Action 64]</i></p> | <ul style="list-style-type: none"> • Sacramento Fire Department | |
| <p>A-4.3: Outreach on the Effects of Smoke on Air Quality – The purpose of the project is to educate Sacramento residents on the effects of smoke in the air and provide resources to check the air quality in their area. This will be carried out via social and network media. The city will utilize its social media pages and radio to convey knowledge and resources residents can use to know when to use precaution. The project will also provide helpful tips to decrease the impacts of poor air quality in their homes and through the daily routines.</p> <p><i>[Local Hazard Mitigation Plan Action 66]</i></p> | <ul style="list-style-type: none"> • Sacramento Fire Department | <ul style="list-style-type: none"> • City Public Information Office; Spare the Air Sacramento Region |



MEASURE A-5: Increase community resilience to prepare for climate impacts.

Two pillars of disaster preparedness include community readiness and adequacy of City resources and services. The City seeks to provide a multitude of community resources, including resources specific to linguistically isolated and special needs populations, that help enhance general public awareness. Public safety services are also maintained and regularly assessed. However, the impacts of

climate change will increase demand for City services and the need for disaster preparedness. Existing community programs and City resources can be more effectively implemented to align these efforts with the greatest needs. Building an information and support network of community preparedness can be a powerful tool for adaptive capacity and decreases the dependence on City emergency services.

Co-Benefits



Public Health



Community Cost Savings



Adaptation



Job Creation



Environmental Quality

Supporting Draft General Plan Policies

The following Draft 2040 General Plan policies support the goal to increase community resilience investments to prepare for climate disaster events:

ER-EC-5-7: Extreme Heat Education. The City should work with community organizations and the Office of Emergency Management to provide information and services to residents to manage heat.

ER-EC-5-8: Heat Waves. The City shall work with labor organizations, the business community, and County and State health and safety agencies to publicize programs and standards for preventing heat-related illness in employees who work outdoors and publicize precautions for preventing heat-related illness during heat waves.

ER-EC-5-9: Cooling Centers. The City shall continue to open and operate City Cooling Centers in coordination with Office of Emergency Management during extreme heat events.

CLIMATE ACTION & ADAPTATION PLAN

ER-EC-5-11: *Emergency Power.* The City shall evaluate options for ensuring emergency power at critical and community facilities such as resilience hubs, including microgrids, solar capture and storage, distributed energy, and back-up generators. The City should consider the ability to reduce utility costs and carbon emissions in the assessment.

ER-EC-5-12: *Neighborhood Resilience.* The City shall facilitate and coordinate with community organizations for the development of neighborhood-level resilience plans to improve initial emergency response, subsequent recovery, and ongoing self-sufficiency throughout the city. The City should provide resources, training, and information, prioritizing DACs and vulnerable areas of the city for creation of these plans.

PFS-2.1: *Hazard Mitigation Planning.* The City shall continue to use the Local Hazard Mitigation Plan, Comprehensive Floodplain Management Plan, Emergency Operations Plan, and Operational Area Plan to guide actions and investments addressing disasters such as flooding, dam or levee failure, hazardous material spills, epidemics, fires, extreme weather, major transportation accidents, earthquakes, and terrorism.

PFS-2.2: *Critical Infrastructure.* The City shall protect and maintain critical infrastructure such as emergency shelters, fire stations, police stations, emergency operations centers, communications networks, and other emergency service facilities and utilities to ensure continuity of essential operations, including, but not limited to, uninterrupted public safety services, during flooding, seismic, geologic, wildfire, and other hazards.

PFS-2.3: *Evacuation Routes.* Partner with Caltrans and neighboring jurisdictions on measures to protect critical evacuation routes such as I-5, I-80, Highway 50, and State Route 99 and work with local agencies to develop contingency plans for operations when these and other roads are inoperable due to flooding or wildfire.

PFS-2.4: *Post-Disaster Response.* The City shall plan for the continuity of operations for critical facilities following a disaster to help prevent interruption of emergency response related to life, property, and environment preservation.

PFS-2.5: *Communitywide Resilience.* The City shall plan to accommodate the whole community during disaster preparedness, response, and recovery, including members of at-risk populations with access and functional needs concerns.

PFS-2.6: *Emergency Operations Center.* The City shall ensure operational readiness of the Emergency Operations Center (EOC) and coordinate applicable training to EOC assigned staff.

PFS-2.7: *Emergency and Disaster Preparedness Exercises.* The City shall coordinate with local and regional jurisdictions on an ongoing basis to conduct emergency and disaster preparedness exercises to test operational and emergency plans.

PFS-2.8: *Emergency Preparedness Programs.* The City shall sponsor and support educational programs regarding emergency response, disaster preparedness protocols and procedures, and disaster risk reduction.



PFS-2.9: Neighborhood Preparedness. Encourage community-based approaches to emergency preparedness and response, especially in higher risk communities with more significant barriers to personal mobility, transportation, and other resources necessary for disaster response.

PFS-2.10: Sacramento Alert. The City shall promote and encourage participation in Sacramento Alert, the regional early warning notification system used to notify residents by phone, text, or email of the

need to evacuate or shelter-in-place in the event of an emergency and the location of evacuation centers.

HCR-1.9: Disaster Preparedness. The City shall seek to minimize or avoid adverse impacts to historic and cultural resources from natural disasters. To this end, the City shall promote seismic safety, flood protection, and other building retrofit programs that preserve, enhance, and protect these resources consistent with their historic design character.

Actions and Implementation

The following Draft 2040 General Plan and 2021 Local Hazard Mitigation Plan implementation actions support the goal to increase community resilience investments to prepare for climate disaster events:

| Action | Lead | Support |
|---|--|---------|
| <p>A-5.1: CERT Training – The City shall expand the Community Emergency Response Training (CERT) program to address community and neighborhood preparedness for climate impacts. Pilot implementation of the updated program in disadvantaged communities and areas with populations most vulnerable to climate impacts.</p> <p><i>[Draft General Plan ER-EC-Action 3]</i></p> | <ul style="list-style-type: none"> Sacramento Fire Department | |
| <p>A-5.2: Post-Disaster Plan – The City shall develop a plan for post-disaster demolition and repair that protects historic resources against unnecessary loss of historic fabric and speculative demolitions.</p> <p><i>[Draft General Plan HCR-Action 7]</i></p> | <ul style="list-style-type: none"> Community Development Department | |

CLIMATE ACTION & ADAPTATION PLAN

| Action | Lead | Support |
|--|---|--|
| <p>A-5.3: Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness – A comprehensive multi-hazard outreach program will ascertain both broad and targeted educational needs throughout the community. The City will work with the County and other agencies as appropriate to develop timely and consistent annual outreach messages in order to communicate the risk and vulnerability of natural hazards of concern to the community. This includes measures the public can take to be better prepared and to reduce the damages and other impacts from a hazard event. The public outreach effort will leverage and build upon existing mechanisms.</p> <p><i>[Local Hazard Mitigation Plan Action 2]</i></p> | <ul style="list-style-type: none"> Office of Emergency Management | <ul style="list-style-type: none"> Sacramento County |
| <p>A-5.4: Maintain and Identify Changes in Critical Facilities GIS Layer to Support Emergency Management Efforts – Businesses, schools, EMS Services or any other identified critical facilities will have contact information collected and mapped for analyzing and preparation for the Multi-Hazard Mitigation Plan. Protection of critical infrastructure are supported by City Ordinance 2020-0009.</p> <p><i>[Local Hazard Mitigation Plan Action 4]</i></p> | <ul style="list-style-type: none"> City GIS Technical Group | <ul style="list-style-type: none"> City Department of Utilities City & County Office of Emergency Services |
| <p>A-5.5: Community Outreach on Multi Hazard Preparation & Pre-mitigation – Continue to maintain and improve webpage that addresses the multi-hazard threat and add measures for preparation and pre-mitigation. Continue to participate and host many community outreach events associated with Hazard awareness and preparation. These events include: “Capitol Action Day”, “Flood Preparedness Week”, “Highwater Jamboree” Annual Flood Preparedness Event and visiting neighborhood meetings and community events to share preparedness information.</p> <p><i>[Local Hazard Mitigation Plan Action 5]</i></p> | <ul style="list-style-type: none"> City of Sacramento Department of Utilities | <ul style="list-style-type: none"> City of Sacramento Office of Emergency Management |
| <p>A-5.6: Multi-lingual Disaster Education – Develop Public Service Announcements, educational videos, a social media campaign, and other material in a variety of languages to provide our diverse community with information on how to develop a personal/family safety plan.</p> <p><i>[Local Hazard Mitigation Plan Action 9]</i></p> | <ul style="list-style-type: none"> City of Sacramento Office of Emergency Management | <ul style="list-style-type: none"> Department of Utilities City of Sacramento Community Development Department |



| Action | Lead | Support |
|---|---|--|
| <p>A-5.7: Develop a Disaster Housing Plan – Develop a Disaster Housing Plan to identify potential disaster housing partners and outline the principles, practices, and implantation phase of such a plan. Supplement with OEM Emergency Operations Plan and Pre-Disaster Recovery Plan.</p> <p><i>[Local Hazard Mitigation Plan Action 13]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Community Development Department | <ul style="list-style-type: none"> • City Office of Emergency Management • Office of Innovation and Economic Development |
| <p>A-5.8: Disaster Resistant Business Program – Provide materials and administrative support for a comprehensive Business Continuity Planning (BCP) program, to include presentations to business, non-profits and professional groups, Chamber of Commerce events, etc. The program would include a one-day event with an overview on developing a Business Continuity Plan and breakout sessions addressing specific BCP issues.</p> <p><i>[Local Hazard Mitigation Plan Action 14]</i></p> | <ul style="list-style-type: none"> • City of Sacramento • Local Business Partners | |
| <p>A-5.9: Develop Enhanced Emergency Planning for Special Needs Populations in the City of Sacramento Emergency Operations Plan and Other Planning Documents – By working with local advocacy groups, and by identifying weaknesses and gaps in the City’s emergency planning, the increased capabilities of the enhanced plan will enable emergency responders to more effectively support the most vulnerable segment of the population. Access and Functional Needs (AFN) is included throughout the Emergency Operations Plan (EOP) and Pre-Disaster Recovery Plan. OEM continues to meet with AFN leaders to ensure accessibility and inclusion are maintained in compliance with the Americans with Disabilities Act. OEM plans are updated on a continuous basis and ensure that AFN is included throughout the entirety of the plan. Efforts to strengthen inclusivity continues as OEM networks and attends trainings, seminars, and events pertaining to AFN and diversity.</p> <p><i>[Local Hazard Mitigation Plan Action 15]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Management | |

CLIMATE ACTION & ADAPTATION PLAN

| Action | Lead | Support |
|---|--|---|
| <p>A-5.10: Establish a Post-Disaster Action Plan – Establish a City post-disaster action plan that outlines the procedures for public information, post-disaster damage assessment, code enforcement, financial recovery, and redundant operations. Continue to update the plan.</p> <p><i>[Local Hazard Mitigation Plan Action 16]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Services | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities • City of Sacramento Community Development Department |
| <p>A-5.11: Construction of a New Emergency Operations Center (EOC) – Build and equip a new Emergency Operations Center, to replace the inadequate EOC currently located in the city of Sacramento’s dispatch center. The new facility would be developed to FEMA 361 standards. Grant funding would be used to supplement normal construction costs with the additional cost for increasing the armoring of the facility to meet the FEMA 361 standards for Community SafeRooms.</p> <p><i>[Local Hazard Mitigation Plan Action 19]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Management | <ul style="list-style-type: none"> • Public Works |
| <p>A-5.12: Emergency Operation Center (EOC) Expansion and Information Technology Upgrade – Improvements to the City’s current EOC is necessary to meet the demands of a large-scale natural disaster. The facility has size limitations that will restrict the amount of personnel located in the same room. Potentially units will have to operate in separate rooms or buildings which would reduce real-time communications. Also, the facility needs improvements on the usability of the information technology infrastructure. A network separate from the police dispatch’s system is needed. Currently there is a shared network which has high security restrictions. The security restrictions make it difficult for a city employee to sign in at the EOC and be fully functional.</p> <p><i>[Local Hazard Mitigation Plan Action 20]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Management (Budget, Grants) | <ul style="list-style-type: none"> • Public Works • Information Technology |



| Action | Lead | Support |
|---|--|---------|
| <p>A-5.13: Public Education Campaign for Everbridge System – Outreach will be performed using a variety of methods to inform residents about the City emergency alert system, Everbridge. The campaign will direct resident to sign up for emergency alerts.</p> <p><i>[Local Hazard Mitigation Plan Action 22]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Management | |
| <p>A-5.14: Regional Emergency and Disaster Preparedness Exercises to Test Operational & Emergency Plans – Conduct regional, multi-agency emergency and disaster preparedness exercises to test operational and emergency plans. Tests will include levee or dam failure and other natural hazards.</p> <p><i>[Local Hazard Mitigation Plan Action 23]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Services • City of Sacramento Department of Management | |
| <p>A-5.15: Special Needs and Critical Facilities Database and Advanced Warning System – Through outreach activities, develop a database of vulnerable population groups and critical facilities in need of advance warning or evacuation assistance. Development and implementation of an advanced warning procedure. Successful programs have been developed in Houston, San Antonio and Florida and could serve as a model for implementation and personnel training.</p> <p><i>[Local Hazard Mitigation Plan Action 24]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Management | |
| <p>A-5.16: Emergency Notification and Evacuation Planning – Enhancements to the existing Reverse 911 system to more effectively notify mass populations of evacuation orders and routes, consistent with FEMA guidelines, identifying special needs communities and transportation providers, targeted outreach to maximize the capabilities of Reverse 911, and strategic training to assure effective deployment of the enhanced capabilities.</p> <p><i>[Local Hazard Mitigation Plan Action 43]</i></p> | <ul style="list-style-type: none"> • Sacramento County Office of Emergency Services | |

CLIMATE ACTION & ADAPTATION PLAN

| Action | Lead | Support |
|--|--|--|
| <p>A-5.17: Emergency Management Planning and Levee Security – Implementation of the emergency management and levee security action items outlined in the City of Sacramento’s Comprehensive Flood Management Plan. Highlighted projects include continued National Incident Management System (NIMS) and Standardized Emergency Management System (SEMS) exercises and training, creation of a disaster housing plan, increased public education and alerts efforts, development of an intergovernmental flood management and control standards, annual review of the Levee Security Plan, and improvement of flood warning systems.</p> <p><i>[Local Hazard Mitigation Plan Action 49]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • City of Sacramento Office of Emergency Services • Other maintaining agencies responsible of levee systems within the region |
| <p>A-5.18: Risk Communication and National Flood Insurance Program/Community Rating System Projects – Implement the risk communication and NFIP/CRS action items outlined in the City of Sacramento’s Comprehensive Flood Management Plan. Highlighted projects include implementation of the City’s Program of Public Information, develop Flood Response PPI projects, increase freeboard development to two feet, write a Levee Failure Response Plan for Critical Facilities, and sign a Memorandum of Agreement with the County of Sacramento for flood control planning of the South Sacramento County Streams.</p> <p><i>[Local Hazard Mitigation Plan Action 57]</i></p> | <ul style="list-style-type: none"> • City of Sacramento Department of Utilities | <ul style="list-style-type: none"> • City of Sacramento Community Development Department • Sacramento County and City Office of Emergency Management |
| <p>A-5.19: Resilience Platform – Create a centralized, easily accessible platform that compiles resources and serves as a “one-stop-shop” for residents to learn more about and access community resources. In recognition of equity gaps like the digital divide and in an effort to reach all segments of the community, this platform should be available in multiple languages and marketed most effectively as a multi-media hybrid.</p> <p><i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • City Manager’s Office | <ul style="list-style-type: none"> • Community Development Department • Public Works • Utilities |



| Action | Lead | Support |
|--|--|---|
| <p>A-5.20: City Resiliency Centers – Develop a strategy to optimize existing City-owned community centers and libraries for dual use as resiliency centers which provide resources to the community related to climate change impacts such as cooling, enhanced air filtration, onsite power and backup storage, vehicle charging, and supportive programming and services. Develop a resilience communications strategy that integrates Resilience Centers with the City’s regular and emergency communication strategies.</p> <p><i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • City Manager’s Office • OEM | <ul style="list-style-type: none"> • Public Works • YPCE |
| <p>A-5.21: Coordinated Regional Resiliency Centers – In collaboration with Sacramento Municipal Utility District (SMUD), other local and regional agencies, and community groups, develop a strategy for coordinated regional resiliency centers, including the creation of different templates, partnerships, and project approaches. Seek to prioritize efforts that support vulnerable populations regionwide during climatic events.</p> <p><i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • City Manager’s Office • OEM | <ul style="list-style-type: none"> • Public Works • YPCE • Community Development |

CLIMATE ACTION & ADAPTATION PLAN

| Action | Lead | Support |
|---|--|---------|
| <p>A-5.22: Conduct an assessment of transportation infrastructure at risk from flooding and climate impacts and prioritize improvements to those facilities that are most critical and at greatest risk.</p> <p><i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> Public Works | |

MEASURE A-6: Enhance water supply diversification and prioritize water use efficiency to build resilience to the effects of climate change.

California water suppliers and public agencies have worked toward the goals and targets established by the 2009 Water Conservation Act (SB X7-7) and the 2018 Making Water Conservation a California Way of Life framework, which emphasize the need to improve statewide water conservation and drought planning to help prepare California for longer, more intense droughts caused by climate change. Changes in precipitation patterns and reduced snowpack are compounded with the impact of drought on Sacramento’s climate and put greater strains on water resources. Beyond water supply, drought conditions also threaten environmental quality, public health and safety,

and the economic wellbeing of the agricultural sector. Drought can increase concentration of industrial chemicals, heavy metals, and agricultural runoff contaminants in groundwater, with greatest risk of exposure in communities living near these pollution sources. Lower crop yields can affect communities whose livelihoods depend on the agriculture industry, and soil drying and weakening caused by long-lasting droughts can compromise levee integrity. There are many recent regional efforts and more underway to address some of these risks, and Sacramento’s leadership in providing relief for the city’s vulnerable populations can broaden capacity for adaptation to drought.

Co-Benefits



Public Health



Community Cost Savings



Adaptation



Job Creation



Environmental Quality



Supporting Draft General Plan Policies

The following Draft 2040 General Plan policies support the goal to enhance water supply diversification and prioritize water use efficiency to build resilience to the effects of climate change:

ER-EC-9-1: *Active Water Conservation Program.*

The City shall continue to implement an active water conservation program to enhance the efficient use of the resource, consistent with State law and the objectives of the Climate Action and Adaptation Plan. To achieve State mandated water conservation standards, the City shall monitor use, conduct studies, and research, develop, and implement incentives and programs to increase water efficiency. When implementing the Water Conservation Program, a prioritization of program elements that enhance water affordability and promote livability in the City will be a factor.

ER-EC-9-2: *Water Efficient Landscaping.* The City shall promote project designs that minimize drainage concentrations, minimize impervious coverage, utilize pervious paving materials, utilize low impact development (LID) strategies, and utilize Best Management Practices (BMPs) to reduce stormwater runoff.

ER-EC-9-3: *Water Efficiency Training.* The City shall support the development of partnerships and collaborations to train and educate City staff, maintenance professionals, designers, contractors and property managers about water efficiency.

ER-EC-9-4: *Municipal Energy and Water Efficiency.* The City shall continue to implement energy and water conservation

measures in City facilities and operations, conducting municipal energy benchmarking on City facilities in an effort to continually improve municipal energy efficiency.

ER-EC-9-5: *Publicize Voluntary Programs.* The City shall connect businesses and residents with voluntary programs that provide energy and water efficiency audits, retrofit installations, rebates, and financing assistance by publishing information on the City's website.

ER-EC-9-9: *Onsite Water Reuse.* The City shall explore the feasibility of onsite reuse of greywater and blackwater for end uses such as toilet flushing and irrigation to offset supplies of potable water and support more resilient and sustainable water management.

PFS-3.2: *Utility Sustainability.* The City shall continue to improve the sustainability, resilience, and energy efficiency of its facilities, infrastructure, and operations consistent with the Climate Action and Adaptation Plan and the goal of achieving carbon neutrality by 2045.

PFS-4.2: *Water Supply Sustainability.* The City shall maintain a surface water/groundwater conjunctive use program, which uses more surface water when it is available and more groundwater when surface water is limited.

PFS-4.4: *Groundwater Infrastructure.* The City shall maintain investment in groundwater infrastructure to provide for water supply reliability. Groundwater sustainability, cost effectiveness, and the quality of the resource shall be factored into groundwater investments.

CLIMATE ACTION & ADAPTATION PLAN

PFS-4.5: Comprehensive Water Supply Planning.

The City shall prepare and implement an Urban Water Management Plan, updating it on a 5-year cycle, to ensure a reliable, long-term water supply and service under projected future conditions.

PFS-4.6: Recycled Water.

The City shall continue to monitor the feasibility of utilizing recycled water where appropriate, cost effective, safe, and environmentally sustainable.

Actions and Implementation

The following Draft 2040 General Plan and 2021 Local Hazard Mitigation Plan implementation actions support the goal to enhance water supply diversification and prioritize water use efficiency:

| Action | Lead | Support |
|--|---|--|
| <p>A-6.1: Onsite Non-Potable Water Reuse – The City shall assess the feasibility of requiring on-site water reuse for new commercial development. <i>[Draft General Plan PFS-Action 4]</i></p> | <ul style="list-style-type: none"> Department of Utilities | <ul style="list-style-type: none"> Community Development Department |
| <p>A-6.2: Perform a Groundwater Recharge Feasibility Study – Perform a groundwater recharge feasibility study to determine the most cost-effective way to replenish groundwater resources within Sacramento. <i>[Local Hazard Mitigation Plan Action 34]</i></p> | <ul style="list-style-type: none"> Department of Utilities | |
| <p>A-6.3: Water Conservation Resources and Incentives – Implement innovative water conservation programs and provide incentives to support water conservation such as leak repair assistance, landscape design assistance, rebates for turf conversions, irrigation upgrades, smart controllers, rain barrels, high-efficiency fixtures and appliances, and graywater systems for residents and businesses. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> Department of Utilities | |
| <p>A-6.4: Implement Groundwater Well Replacement Program – As recommended in the City’s Groundwater Master Plan, replace up to 38 groundwater extraction wells within the City’s water service area to allow the City to reliably meet its long-term water supply demands. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> Department of Utilities | |
| <p>A-6.5: Modify Water Treatment Technologies – to adapt to changing source water quality conditions. <i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> Department of Utilities | |



| | | |
|---|---|--|
| <p>A-6.6: Support Regional Groundwater Bank Programs – Continue to collaborate with regional water agencies and local partners to support groundwater bank programs including the Sacramento Regional Water Bank, RiverArc, Alder Creek Reservoir and Conservation Project, and Folsom Dam Raise with Groundwater Banking.</p> <p><i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • Department of Utilities | |
| <p>A-6.7: Diversify Surface Water Supply – Evaluate additional diversification of surface water supply to shift supplies to the Sacramento River, including collaboration with other partners to increase regional and system flexibilities, enhance water reliability, and benefit the ecosystem of the lower American River.</p> <p><i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • Department of Utilities | |
| <p>A-6.8: Construct water resiliency projects including the Groundwater Well Replacement Program</p> <p><i>[New Proposed Action]</i></p> | <ul style="list-style-type: none"> • Department of Utilities | |



