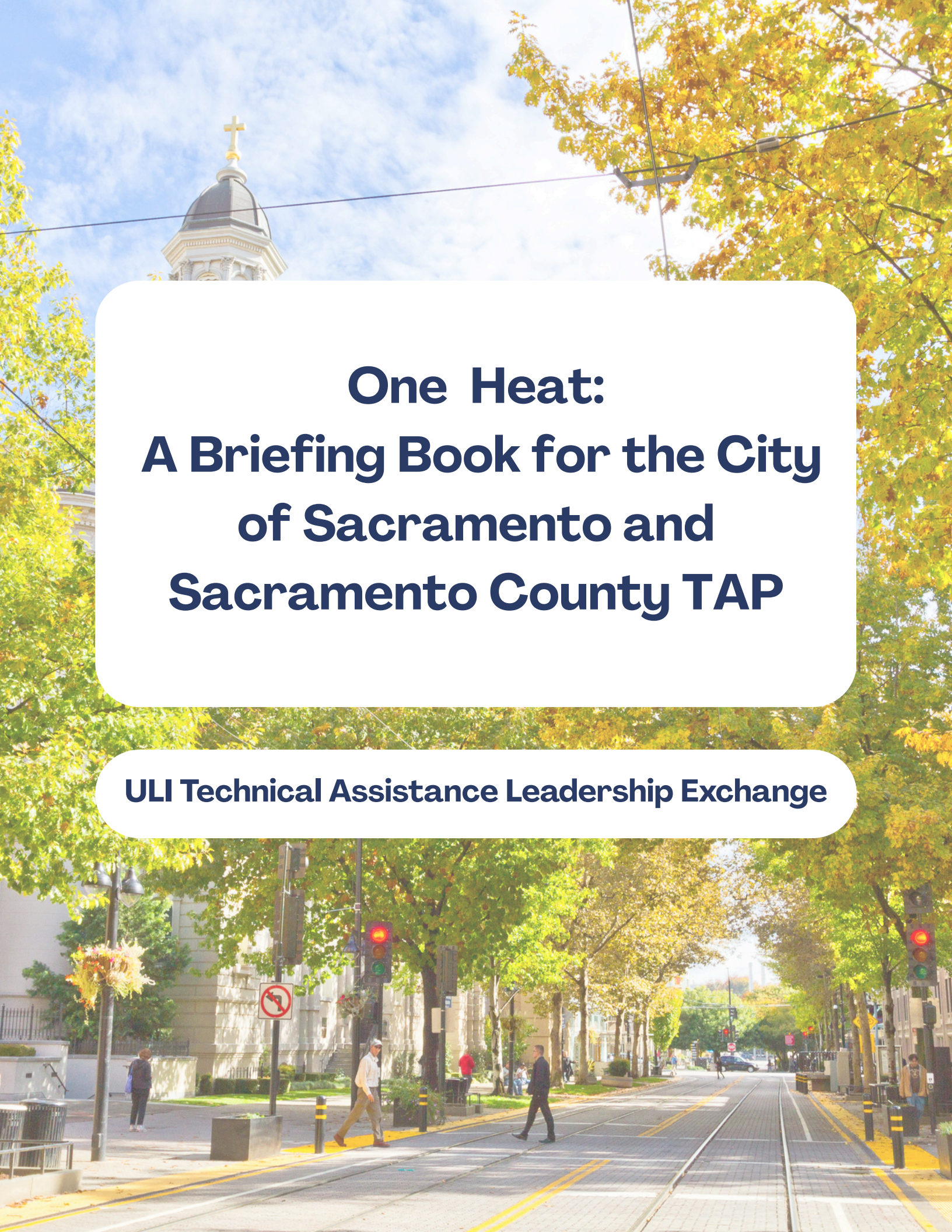

One Heat:
A Briefing Book for the City of Sacramento and Sacramento County TAP

ULI Technical Assistance Leadership Exchange

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Summary of the Problem

The Sacramento area—long recognized for its rich urban forest and known as the "City of Trees"—boasts one of the highest percentages of urban tree canopies in the country, reflecting a deep, regional commitment to urban forestry dating back to the 19th century. However, the region is also on the front lines of the extreme heat crisis, with days over 103.8°F projected to rise from four to nearly forty per year, alongside more warm nights, drought, and heat waves. While both the City and County have strong climate and environmental justice policies to mitigate these impacts—including the City's 2040 General Plan, Climate Action & Adaptation Plan and Sacramento Urban Forest Plan, and the County's Climate Action Plan and General Plan Environmental Justice Element– they also face difficult tradeoffs between infill development, heat mitigation, and environmental equity.

As the City and County are collectively planning for more than 160,000 new housing units to meet housing objectives, higher-density development is essential to advancing housing, transportation, and climate goals. It also presents opportunities to mitigate urban heat through climate-responsive design in the next generation of development. However, densification often competes with the physical space and design conditions needed to sustain a healthy tree canopy, increasing the significance of building design solutions.

Importantly, the burden of extreme heat is not shared equally across communities. Neighborhoods in North and South Sacramento have urban tree canopy coverage that can be less than half that of older, wealthier districts in the heart of the City. Aging commercial corridors within the County have expansive parking lots, car-centric design, and a persistent lack of coordinated investment that exacerbates urban heat island impacts. Residents in these areas face elevated health risks, increased utility bills, and a lack of safe, comfortable outdoor environments—including transit stops, bike lanes, and commercial corridors—that support mobility and wellbeing.

Builders and property owners are grappling with rising construction and maintenance costs, and many are increasingly wary of new requirements they perceive as burdensome. At the same time, our jurisdictions lack sufficient, dedicated funding to implement urban forestry and passive cooling programs at the scale needed to support historically underinvested neighborhoods that might not see significant private sector reinvestment in the next generation. This challenge is heightened by the fact that most trees are on private property, placing the burden of planting and long-term maintenance on individual property owners who may lack the resources and expertise to manage them effectively.

These issues create a pressing policy and urban design dilemma: How can we embed cooling strategies into the urban fabric, particularly where space is constrained and infrastructure is outdated? How can we ensure that new development contributes meaningfully to climate resilience without creating disincentives to build? Lastly, how can we foster partnerships and programs to sustain the commitment to the urban forest along with other green infrastructure investments and maintenance? Through this Technical Assistance Panel (TAP), the City and County of Sacramento seek expert insights into best practices in the real estate industry, architecture and landscape architecture professions, and efficient and effective solutions that other jurisdictions are deploying to navigate these tensions. We are particularly interested in heat resilient urban design and green infrastructure strategies that are implementable, equitable, and financially feasible, and that align with our region's broader goals for housing, sustainability, and public health.

Questions for the TAP

The City and County pose five questions to the TAP addressing key topic areas:

1. Best practices in design and development
2. Regulatory pathways
3. Incentives and funding
4. Equity and underserved areas
5. Role of the private sector

The following section provides the full questions in detail, along with considerations that should be made when addressing the question. These considerations are meant to help focus the TAP's response and ensure that the recommendations provided by the TAP are effective and implementable.

Accompanying each of the five questions are policy tools available to the City and County. These policy tools reflect upcoming work that will implement adopted City and/or County plans. Recommendations from the TAP may be integrated into these efforts. Other recommendations might live outside local agency policy and reflect best practices by private actors.

TAP Question #1
Best Practices in Design & Development

What building and landscape design strategies have other cities and counties with similar climates implemented to mitigate extreme heat in both new and existing developments—especially in infill contexts—and how can these best practices be adapted to support our desired urban forms?

Considerations: Include examples of integrating tree canopy and heat mitigation while maintaining consistency with infill policies (e.g., Missing Middle Housing), CEQA compliance, and development feasibility for existing and new development.

Policy Tools to Guide Leading Edge Solutions

Policy Tools - City

- Planning and Development Code Amendments (2026 and beyond)
- Design Guideline Updates/Consolidation (2026)
- Missing Middle Housing Ordinance (in process, 2026)
- Minimum Tree Requirements and Landscape Standards (2026)
- Parking lot shading requirements (2026 or later)
- Street Standards for Tree Canopy (in process, 2026)

Policy Tools - County

- Zoning Code Amendments (2026 and beyond)
- Multifamily Design Standards Update (2026 or later)
- Stockton Boulevard and North Watt Avenue Corridor Plans
- Minimum Parking Requirements and Parking Lot Shade Requirements (2026 or later)
- Minimum Tree Requirements and Landscape Standards (2026 or later)
- Infill Program Implementation (2026 and beyond)
- Adaptive Reuse Ordinance (2026-2028)

These policy tools reflect upcoming work that will implement adopted City and/or County plans. Recommendations from the TAP may be integrated into these efforts. Other recommendations might live outside local agency policy and reflect best practices by private actors.

TAP Question #2
Regulatory Pathways

What flexible and effective regulatory approaches have cities and counties used to integrate heat mitigation through climate-responsive building design and green infrastructure (landscape and hardscape) requirements into development codes and design guidelines and standards without discouraging investment or creating significant permitting challenges?

Considerations: Balance climate resilience goals with development feasibility, insurance and other financial challenges, and unintended consequences of rigid standards. Consider special requirements and/or incentives along key active transportation and transit corridors, first/last mile connection areas, and in TOD areas (1/2 mile radius of high frequency transit).

Policy Tools to Guide Leading Edge Solutions

Policy Tools - City

- Planning and Development Code Amendments (2026 and beyond)
- Design Guideline Updates/Consolidation (2026)
- Missing Middle Housing Ordinance (City, in process, 2026)
- Minimum Tree Requirements and Landscape Standards (2026)
- Parking lot shading requirements (2026 or later)
- Street Standards for Tree Canopy (in process, 2026)
- Tree protection ordinances (tbd)
- Climate Action & Adaptation Plan update (City, 2027-2030)
- General Plan update (City, 2027-2030)

Policy Tools - County

- Zoning Code Amendments (2026 and beyond)
- Multifamily Design Standards Update (2026 or later)
- Urban Forest Management Plan (County, 2026 or later)
- Minimum Parking Requirements and Parking Lot Shade Requirements (2026 or later)
- Minimum Tree Requirements and Landscape Standards (2026 or later)
- Tree Preservation Ordinance update (tbd)
- Infill Program Implementation (2026 and beyond)
- General Plan update (2027-2030)

TAP Question #3
Incentives and Funding

What public/private partnership models, funding sources, and incentive structures have proven effective in supporting climate-responsive building improvements and green infrastructure initiatives?

Considerations: Include programs and incentives for property owners and developers, municipal operating budgets, and innovative funding tools; address public cost burden and maintenance responsibilities. Green infrastructure could include irrigation, landscape retrofits, and urban forestry, especially in the propagation, planting, and long-term maintenance of trees.

Funding Tools and Leading Edge Solutions

Funding Tools - City and County

- Landscape & Lighting District Assessments
- Development Fees
- Dedicated Sales Taxes
- In lieu fee programs
- Foundation and Corporate Philanthropy

We encourage the TAP to offer a range of suggestions, and to highlight best practices in other communities that you would recommend that the Sacramento region consider to augment existing funding streams and provide adequate and stable funding.

TAP Question #4
Equity & Underserved Areas

How can jurisdictions ensure equitable access to heat mitigation strategies (including building design and tree canopy/green infrastructure), particularly in communities that may not experience new development in the near future? What policy, partnerships, and funding strategies can address historic underinvestment and ongoing barriers to implementation?

Considerations: Address low-income neighborhoods/Environmental Justice Communities, disinvestment in aging commercial corridors, long-term maintenance in areas without new development, and strategies to overcome systemic inequities.

Policy Tools and Leading Edge Solutions

Policy Tools - City

- Priority Tree Plantings (public and private) in low canopy neighborhoods (City of Sacramento Urban Forest Plan)
- Heat Reduction in Parks (CAAP A-2.14)
- Environmental Justice and Environmental Resources and Constraints Elements (GP)
- Foundation and Corporate Philanthropy
- Sacramento Tree Foundation programs
- SMUD Shade Tree Program

Policy Tools - County

- Environmental Justice Element implementation (GP)
- Countywide Climate Action Plan
  - TEMP-03: Expand Services and Raise Awareness of Heat-Related Risks and Illnesses for Residents of EJ Communities
- Sacramento Tree Foundation Programs
- SMUD Shade Tree Program

There is a lot of room for innovation and partnership outside the local government context for this question. We encourage the TAP to offer a range of suggestions, and to highlight best practices in other communities that the Sacramento region might emulate.

TAP Question #5
Role of the Private Sector

What role can the private sector -- including non-profits, developers, real estate professionals, and property owners -- play in implementing strategies to mitigate public realm heat impacts while also promoting energy efficiency, increased comfort, and resilience within our jurisdiction's current and next generation of buildings? What process streamlining, incentives, education, recommendations, or requirements could support and encourage their participation?

Tools and Leading Edge Solutions

City and County

- Climate Adaptive Tree Palette (City)
- Incentives
- Education campaigns

We are interested in learning about private sector strategies, their role, and opportunities for collaboration to advance cooling efforts.

History of Sacramento

Sacramento's development has long been shaped by its rivers and fertile valley. The region was first inhabited by Nisenan (Southern Maidu) and Plains Miwok peoples, who lived in villages, practiced religion, and sustained themselves through hunting, fishing, and gathering.

European settlement began in the early 1800s, when Spaniard Gabriel Moraga named the valley "Sacramento." In 1839, John Sutter established Sutter's Fort on a Mexican land grant in Nisenan territory. The Gold Rush transformed Sacramento into a transportation and trade hub. Chartered in 1849 and incorporated in 1850—the first city in California—Sacramento grew quickly, aided by its river ports, railroads, and later the Pony Express and First Transcontinental Railroad. In 1854, it became the state capital.

The introduction of streetcars in the late 1800s spurred "streetcar suburbs" such as Land Park, Curtis Park, Oak Park, and East Sacramento, annexed by 1911, tripling the city's size. After World War II, Sacramento experienced rapid suburbanization, expanding from 9,000 to nearly 70,000 acres by 1970 through annexations in North Sacramento, Natomas, and other areas. Growth followed the automobile and new freeways, often at the expense of existing neighborhoods. Retail shifted from downtown to suburban malls like Country Club Center (1954), Southgate, and Florin Center.

Sacramento County, established in 1850 as one of California's original 27 counties, developed in parallel with the city. With fertile agricultural lands, the county became a center for farming, ranching, and later food processing. Suburban growth after WWII extended into unincorporated areas such as Carmichael, Citrus Heights, Arden-Arcade, and Fair Oaks, shaping the modern metropolitan region.

By the late 20th century, annexations in the Pocket and Natomas fueled further population growth, while downtown declined under urban renewal projects that razed "blighted" areas, displacing many non-White communities, especially in the West End. Later revisions to the Capitol Area Plan and the expansion of light rail in the 1980s and 2000s brought reinvestment and new opportunities for transit-oriented development. Today, changing retail patterns and e-commerce are spurring efforts to reimagine older shopping centers while infill and redevelopment reshape both city and county landscapes.

City and County Demographics

	City of Sacramento	Sacramento County	Implications for Project
Population	530,000	600,000	Following robust growth in the early 2010s, the rate of growth has slowed substantially in recent years, a trend that is expected to continue
Median Income	$83,000	$89,000	Income disparities are pronounced. Median income in EJ communities are substantially lower than City/Countywide median
Median sale price (single unit)	$460,000	$510,000	Cost of mortgage payments grew substantially (88%) between 2020 and 2025
Average rent	2000/month	2000/month	Rents have had a slower rate of growth (29%) between 2020 and 2025
Occupancy	50% owner occupied/ 50% renter occupied	59% owner occupied/41% renter occupied	Adding tree canopy to renter occupied units is challenging due to cost and maintenance concerns
EJ comm-unities	41 census tracts are designated as DACs (30% of population)	93 of 221 census tracts are EJ communities	There is significant overlap between EJ communities and those most impacted by extreme heat.

Sources: American Community Survey, Zillow, State of California

Government Structure

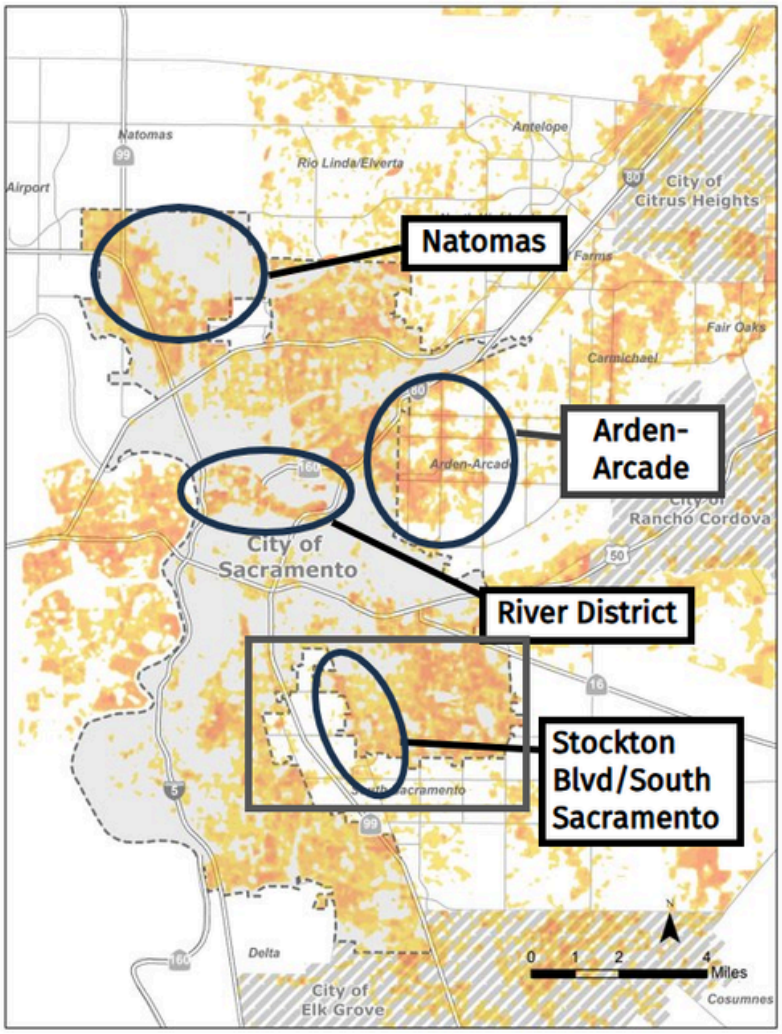
City of Sacramento

The **City** of Sacramento operates under a **council-manager** form of government. This structure includes an **elected mayor, eight councilmembers representing geographic districts, and a city manager appointed by the City Council**. The mayor is elected citywide and serves as the political leader and public face of the city, while the city manager acts as the chief administrative officer, overseeing day-to-day operations and implementing policies set by the City Council. The City Council is responsible for enacting ordinances, adopting the budget, and establishing policies for the city.

Sacramento County

The unincorporated areas of Sacramento County are governed by the **Sacramento County Board of Supervisors**, which operates under a **general law county structure** as defined by the State of California. **The five-member Board of Supervisors is elected by district and serves as both the legislative and executive body for the county**. In unincorporated areas, the Board acts as the local government authority, making decisions on land use, public safety, infrastructure, and services.

Focal Areas and Tour Locations



The following section provides additional context for our selected tour locations; while extreme heat mitigation is needed across both the City and County, our project is focusing on areas that are exhibiting more extreme impacts to rising temperatures. Each site was chosen because it exemplifies the extreme heat challenges confronting the Sacramento region today. Together, they represent a range of conditions, including new and existing small-lot residential development with limited tree canopy, aging commercial corridors dominated by expansive pavement and minimal shade, and neighborhoods in transition where growth and redevelopment present both challenges and opportunities. By visiting these locations, we hope the panel can better understand how extreme heat impacts different parts of our community and identify strategies to build resilience across diverse settings.

Small Lot Suburban Residential Development/New Growth Areas

While there has been significant infill growth in the City and County of Sacramento in recent years, the region still sees a range of ‘greenfield’ suburban development. Natomas was selected as a focus area because it highlights the challenges of newer suburban growth in Sacramento, where small residential lots and large building footprints leave little space for trees, and a car-centric development pattern leads to increased impervious surfaces and further reduces opportunities for shade and cooling. Sacramento’s natural ecology is grassland and prairie, which means our urban forest exists only because generations of residents have intentionally planted and cared for it since the 1850's. In more recently developed areas like Natomas, where tree canopy is limited, effective intervention is needed to ensure that the benefits of shade, cooling, and livability are part of the community’s future. Other similar areas in the City and County of Sacramento include: Delta Shores, Vineyard Springs, Florin-Vineyard Gap, North Vineyard Station, and other master-planned growth in both Natomas and along the Jackson Highway corridor.

Small Lot Suburban Residential Development/New Growth Areas Tour
Location: Natomas

Areas in Transition

Both the City and County have areas that historically were developed for a use that is either locationally-obsolete or have been transitioning over time. For example, in the City of Sacramento, the River District has historically been an industrial area on the northern edge of Sacramento's Central City that is now transitioning to a mix of residential, commercial, and civic uses. Despite its proximity to the American River Parkway, it remains one of Sacramento's hottest districts, with limited tree canopy and significant heat island effects. Because the area is poised for substantial new development in the coming years, it is especially important to integrate effective heat mitigation strategies now—ensuring that future growth creates a livable, resilient neighborhood rather than reinforcing existing vulnerabilities. Similar areas existing in the County of Sacramento, such as the North Watt Corridor area, which had surrounding industrial and other supportive uses associated with the now-closed McClellan Air Force Base. Like the River District, the North Watt Corridor area has little tree canopy and suffers from the effects of extreme heat. As the County is beginning to reimagine a comprehensive land use plan for this area, heat mitigation strategies tailored to transitioning areas are needed.

Areas in Transition Tour Location: River District

Additional Resources

River District Strategic Plan Overview (River District PBID video)

River District Specific Plan update webpage (City of Sacramento)

Aging Commercial Corridors

The Sacramento area is home to many distinct commercial corridors that are intended to cater to their local neighborhoods or serve as cross-jurisdictional gateways. However, many of these corridors are lacking urban cooling measures that effectively offset the existing or increased frequency of extreme heat events. This is especially true of commercial corridors in underserved, environmental justice communities.

The City and County are working to revitalize these corridors with new development opportunities and affordable housing options. However, aging infrastructure, vast areas of unshaded pavement, and inaccessible pathways make it difficult to plan for a hotter future.

Specific challenges within these corridors include lack of tree shade along public rights of way/sidewalks; large setbacks and parking lots with little or no canopy coverage; inability to maintain trees over time; lack of investment for existing neighborhoods to construct urban cooling features; and lack of canopy being planted during development and other land use conflicts such as solar carports and placement of trees. Major hurtles to retrofitting these areas include costs associated with new irrigation systems and maintaining landscape in a heavily paved environment.

Aging Commercial Corridors Tour
Location: Stockton Boulevard

Additional Resources

Stockton Boulevard Special Planning Area Regulations (Sacramento County)

Stockton Boulevard Specific Plan (City of Sacramento)

Examples of Other Aging Commercial Corridors

North Watt Avenue
North Highlands

Arden Arcade

Existing Residential in Disadvantaged Communities

Many existing neighborhoods in Sacramento County and the City of Sacramento face a persistent lack of reinvestment and infrastructure deficiencies, leaving them more vulnerable to the impacts of extreme heat and less equipped to support healthy, resilient communities.

Community members have consistently identified unsafe or uncomfortable conditions for outdoor activity. In many neighborhoods, routes to schools, parks, or daily destinations lack adequate tree canopy, making walking, biking, or other physical activity hazardous during increasingly hot summer months. This lack of shade discourages active transportation, exacerbates heat exposure, and contributes to long-term public health inequities.

In addition to public realm concerns, many homes in disadvantaged communities require on-site interventions. A significant share of the housing stock is older and in some cases lacks central air conditioning, insulation, or energy-efficient cooling systems. For residents—particularly low-income households and seniors—this creates severe risks during heat waves. Simply shading streets and sidewalks is not enough; strategies must also address on-site cooling and shading at the household level, such as retrofits for energy efficiency, tree planting in yards, cool roofs and surfaces, and rooftop or structural shading.

Together, these issues highlight the dual need for community-scale and site-specific retrofits: enhancing the public realm with shaded, safe, and inviting routes, while also supporting upgrades to private homes to ensure residents have the tools to cope with rising temperatures.

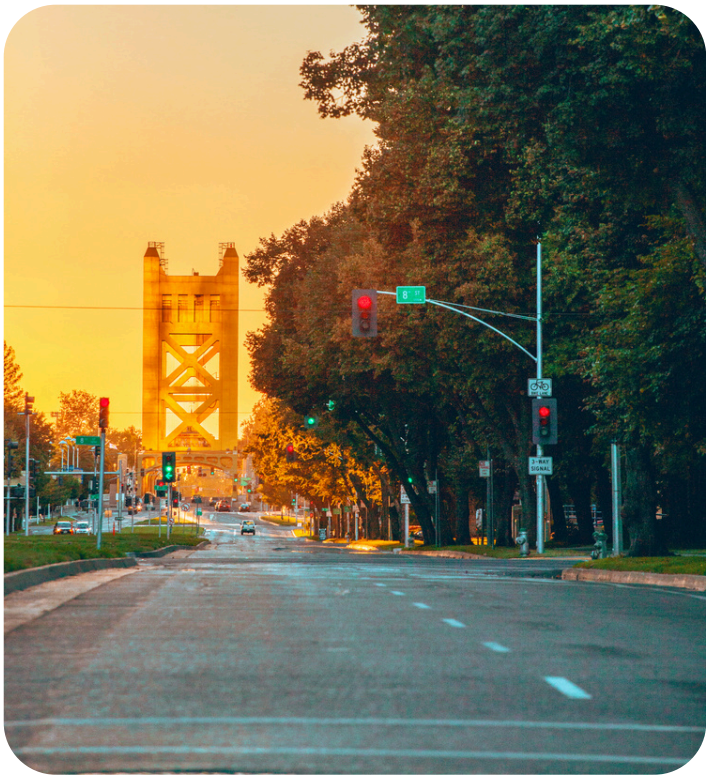
Existing Residential in Disadvantaged Communities Tour Location: South Sacramento

Policy Excerpts

The following excerpts were taken from the City and County policies related to addressing extreme heat and urban heat island impacts. Each excerpt is preceded by an introduction and summary of the document, followed by the applicable pages of text. Note that while these documents are separate, many are interrelated or draw from existing code.

For a general overview and brief commentary of the challenges and opportunities related local policies in the City and County, you may also refer to our Policy Matrix, which you can find **HERE**

City of Sacramento Vulnerability Assessment: Extreme Heat Excerpt



As climate change intensifies, Sacramento is experiencing hotter days, longer heat waves, and warmer nights, creating growing risks for public health, infrastructure, and overall quality of life. Increasing drought frequency and duration will challenge trees and other natural infrastructure. The City of Sacramento's Vulnerability Assessment identifies how extreme heat disproportionately affects certain populations—including older adults, young children, outdoor workers, unhoused residents, and communities with limited access to cooling. It also highlights impacts on the built environment, energy systems, and natural resources. Understanding the extent of extreme heat impacts and the nature of vulnerable populations and infrastructure is a critical first step in developing strategies that protect residents, strengthen resilience, and guide equitable climate action. **To review the full text of the Vulnerability Assessment, click HERE.**

are averages of the projected conditions occurring in these windows unless otherwise noted. Both of these periods are also 30-year ranges for the same reasons as the historical baseline, in addition to ensuring that the assessed values are valid comparisons. It is noted that the mid-century period most closely coincides with the projected build out date of the City of Sacramento's General Plan Update (2040).

2.2 Primary and Secondary Impacts

This work begins with an assessment of the primary and secondary climate change impacts most likely to affect the City of Sacramento. Primary and secondary impacts are identified in accordance with the California Adaptation Planning Guide: Planning for Adaptive Communities and via consultation with City of Sacramento staff, where a primary impact can be understood as a major disruption to the weather or environment that results from climate change, and a secondary impact is a shift in the weather or environment that occurs as a result of the primary impact. Primary and secondary climate impacts are organized as outlined in the Table 2-1.

Potential effects on human health and critical infrastructures are discussed under secondary impacts where appropriate. Each primary impact contains an assessment of that impact's temporal and spatial scale, as well as its level of uncertainty and estimated level of disruption to community function.

TEMPERATURE INCREASE

Climate models consistently report rising average temperatures across California.[17] The average annual maximum temperature in the City of Sacramento has already increased from the historical baseline average of 74.1°F[18] to about 75.0°F between 2000 and 2022. [19] Average annual maximum temperatures are projected to continue increasing to between 78.9°F and 79.9°F by mid-century, and to between 79.9°F and 83.8°F by the end of the century (Figure 2-1).[20] Increasing average daytime temperatures are expected to be accompanied by higher nighttime temperatures. Historically, the average annual minimum temperature has been 49.3°F, but these minimums are also projected to increase to between 53.6°F and 54.8°F by mid-century and to between 54.5°F and 58.8°F by the end of the century (Figure 2-1).[21] Overall temperature increase is associated with several secondary impacts, including increased incidence of extreme heat days, warm nights, heat waves, urban heat islands, heat-related health impacts, and heat-related damage to infrastructure (Table 2-2), as discussed below.

[17] Sacramento Municipal Utility District, Climate Readiness Assessment and Action Plan, 2016.

[18] Cal-Adapt, Annual Average Maximum Temperature for Sacramento, California, RCP 4.5 and RCP 8.5, Global Climate Model CanESM2, 2018.

[19] National Centers for Environmental Information, Climate Data Online - Global Historical Climatology Network, accessed October 3, 2022.

[20] Cal-Adapt, Annual Average Maximum Temperature for Sacramento, California, RCP 4.5 and RCP 8.5, Global Climate Model CanESM2, 2018.

[21] Cal-Adapt, Annual Average Minimum Temperature for Sacramento, California, RCP 4.5 and RCP 8.5, Global Climate Model CanESM2, 2018.

Table 2-1: Primary and Secondary Climate Change Impacts in Sacramento

Impacts[1]	*Temporal Extent*	*Spatial Extent*	*Permanence*	*Level of Disruption*	*Level of Uncertainty*
Temperature Increase • Increased Heat waves • Increased Urban heat island effects • Warmer average temperatures	**Moderate.** Effects will be most extreme in July and August, but may be felt anytime between May and October	**High.** Effects will be felt throughout the City, but will be most extreme in and around urban heat islands	**High.** The most extreme effects will be seasonal, but average ambient temperatures will increase steadily over the century	**High.** Increased strain and potential physical damage to energy, utility, and transportation infrastructure from extreme heat; risk of blackouts; and heat-related illness/death. Higher source water temperature create need for additional water treatment technologies.	**Low.**
Precipitation Changes • Extreme Storms • Flooding • Snowpack reduction • Drought • Reduced groundwater recharge • Increased water temperature • Deteriorated water quality	**High.** Increased likelihood of riverine flooding in winter/early spring. Reduced surface water supply in summer due to reductions in winter snowpack	**High.** Nearly all of the city is low-lying and dependent on levee protection and a system of pumping stations, pipes, ditches, and channels, but areas already susceptible to localized, riverine, and flash flooding and/or that 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.	**High.** The most extreme effects will be seasonal, with continued changes expected over the century	**High.** A large storm could cause significant health and infrastructure impacts over potentially large portions of the City. Increased water temperature is harmful to water treatment, reservoir and hydroelectric operation, and ecological health.	**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.

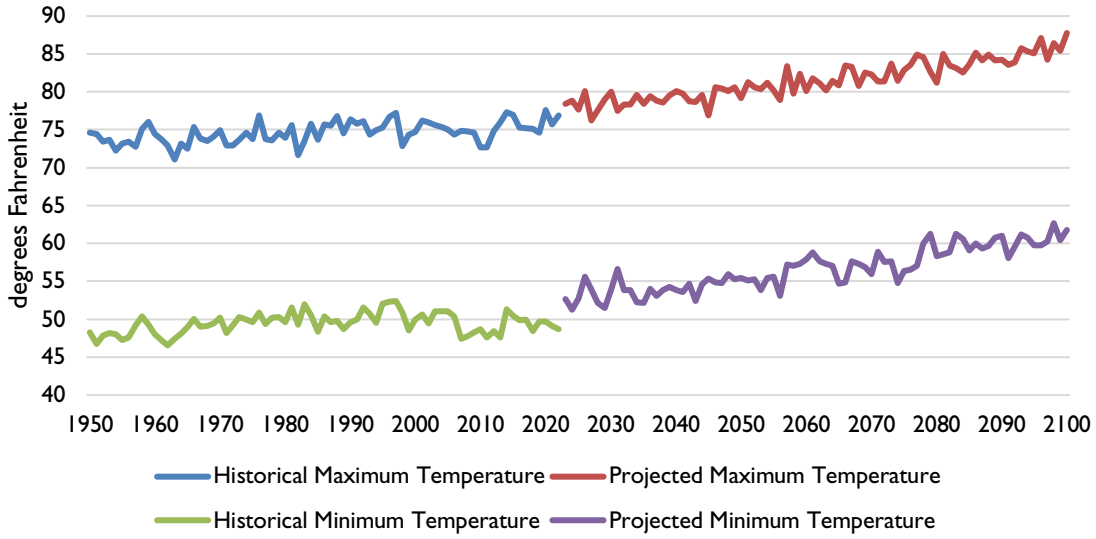
Impacts[1]	*Temporal Extent*	*Spatial Extent*	*Permanence*	*Level of Disruption*	*Level of Uncertainty*
Wildfire • Declines in air quality	**Moderate.** Projected wildfire extent/severity is highly variable but will generally increase over the century. Future fire seasons may become longer.	**High.** A wildfire is unlikely to break out within City limits, but wildfire smoke will affect the entire city.	**Moderate.** Wildfire intensity is expected to gradually increase, with significant year-to-year variability.	**Moderate.** The wildfire impact most likely to have a significant impact on the city is reduced air quality from wildfire smoke.	**Moderate.**
Sea Level Rise • Higher river levels during major storm events	**Low.** Sea level rise is projected to occur gradually over the course of the century.	**Low.** Areas within or near the Delta are most at risk.	**High.** In the longer term, sea level rise may exacerbate flood risk associated with major storm events.	**Low.** Effects may be significant when coinciding with riverine or flash flooding. Increasing salinity of water may increase burden on upper watershed resources.	**Moderate.**

1. Primary impacts are shown in **bold** and secondary impacts are listed by bullets (•) in the first column.

Table 2-2: Temperature Increase

Temporal Extent	• Effects will be felt most acutely in July and August, but excessive heat may occur May through October
Spatial Extent	• The entire City of Sacramento is likely to be affected • Effects will be felt most acutely in highly urbanized areas with limited tree canopy, where the urban heat island effect is most likely to occur
Permanence	• Annual average temperatures are projected to continue to increase through the end of the century, though the projected rate of increase is higher under a high emissions scenario
Level of Disruption	• High
Nature of Disruption	• Increased heat strains the electrical service sector by reducing the efficiency of electrical transmission and increasing demand for air conditioning • Greater incidence of heat-related illnesses and deaths may increase hospital visits and demand for medical services • High temperatures can physically damage utility and transportation infrastructure, disrupting services and increasing discomfort associated with active and public transportation • Increased water temperature affects drinking water treatment and quality, can lead to algal blooms, and is harmful to spawning anadromous fish and reservoir operations
Level of Uncertainty	• Low

Figure 2-1: Average Annual Temperatures



Created using historical and projected annual temperature data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Data values for 2007-2022 are included as historical values using data from NOAA National Centers for Environmental Information Climate Data Online. Both the average maximum and minimum temperatures are projected to increase over the course of the century.

Secondary Impacts

Extreme Heat Days

Cal-Adapt defines an extreme heat day as a day falling between April and October where the maximum daily temperature exceeds the 98th percentile of daily maximum temperature, based on historical data from between 1961 and 1990 (for the City of Sacramento, 103.8°F). Historically, the City of Sacramento has experienced about four extreme heat days per year. By mid-century, the city is projected to experience between 21 and 26 extreme days per year. At the end of the century, this number is anticipated to be between 23 and 52 extreme heat days per year (Figure 2-2 through 2-3). [22]

July and August are likely to be the most critical months for increased temperature effects. Historically, these months have experienced the highest temperatures; they are also projected to experience the highest temperature increases during the 21st century.[23] By the end of the century, about one of every two days in the month of July may be an extreme heat day (Figure 2-4). However, the effects of extreme heat days will likely be felt throughout spring and summer. Historically, extreme heat days in May, September, and October have been rare (on average, one or fewer high heat days every two years). By the end of the century, May and September are projected to experience an average of at least one extreme heat day per year, and these extreme heat days may extend into October (Figure 2-4). Dynamic weather patterns over the past two years have brought late summer heat waves to the region, with record-setting temperatures reached in 2022. Most concerningly, the late season heat wave in 2022 did not appear on long-range forecasts until a week prior, adding to the uncertainty of what future dynamic extreme heat events may bring.

The average temperature of extreme heat days is projected to gradually increase over the course of the century. Historically, the average temperature of a high heat day has been about 105.3°F. By the end of this century, this value may increase to 108.2°F (Figure 2-5).

Urban Heat Islands

Increases in urban temperature may be felt particularly acutely by those living in urban heat islands. Urban heat islands are pockets of the urban environment where temperatures can dramatically exceed those in neighboring areas with fuller tree canopies and more parks and open space. Urban heat islands are associated with a number of negative environmental and health effects, as well as increased demands for energy.

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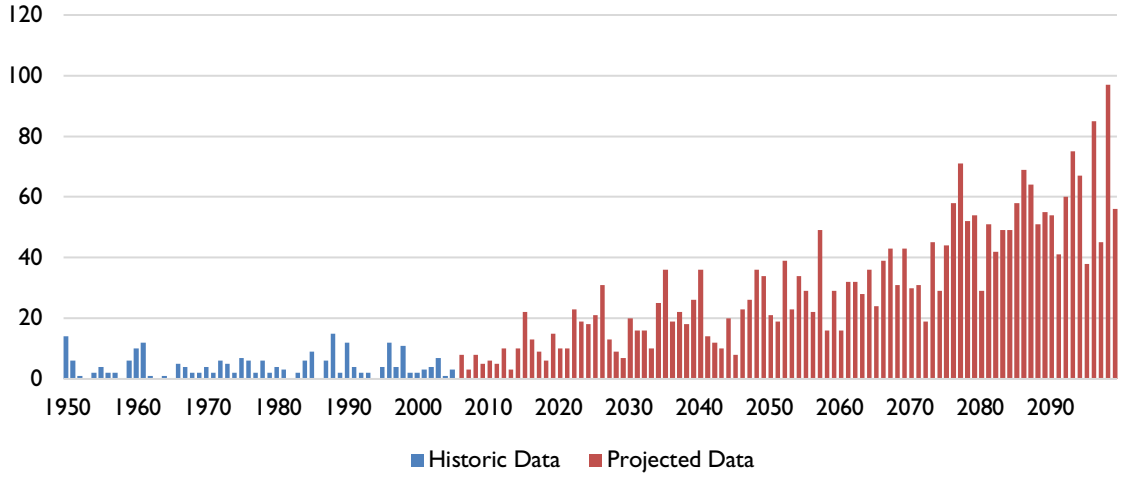
[22] Cal-Adapt, Number of Extreme Heat Days per Year for Sacramento, California [Place (Incorporated and Census Designated, 2015)], RCP 4.5 and RCP 8.5, Global Climate Model CanESM2, 2018.

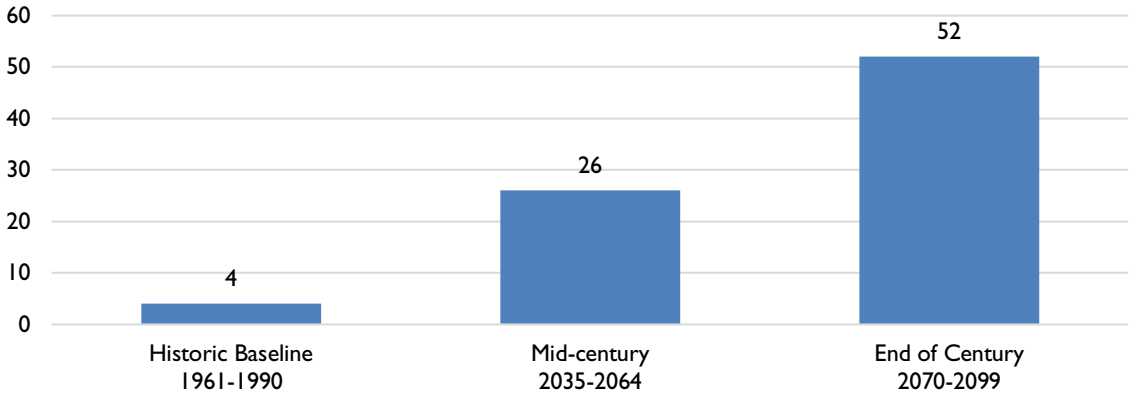
[23] Sacramento Area Council of Governments, Sacramento Region Transportation Climate Adaptation Plan, 2015. Accessed August 25, 2022: https://www.sacog.org/sites/main/files/file-attachments/fullplanwithappendices.pdf.

Figure 2-2: Annual Number of Extreme Heat Days



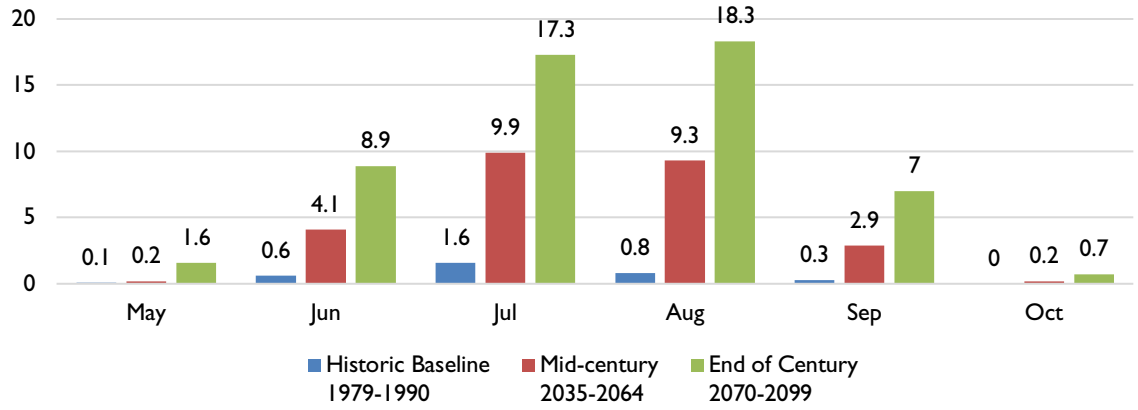
Created using Cal-Adapt's Extreme Heat Days & Warm Nights climate data tool. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Historical data (modeled and observed) is capped to 2005. While some variability in the annual number of extreme heat days is projected to occur in the future, there is a clear upwards trend in the number of extreme days that occur per year. By the end of the century, the annual number of extreme heat days is projected to be significantly higher than anything that has been observed historically.

Figure 2-3: Average Number of Extreme Heat Days per Year



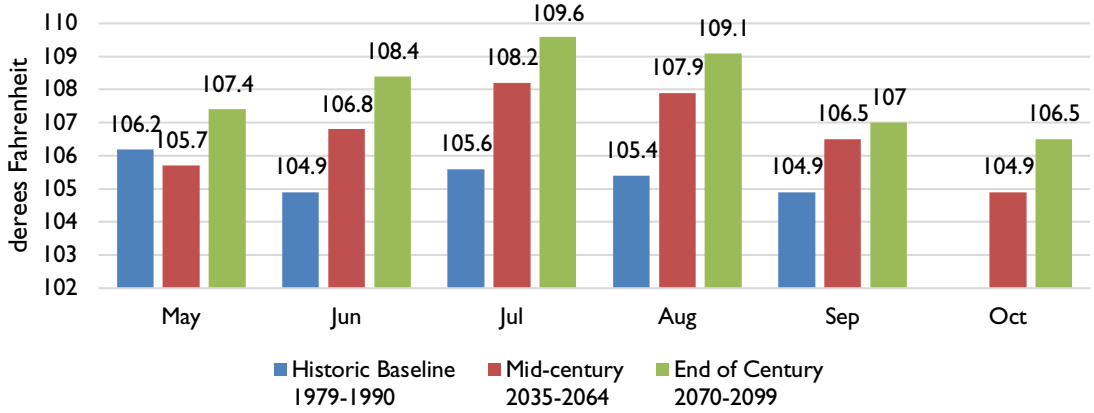
Created using historical and projected annual temperature data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. This chart shows the number of extreme heat events either observed or projected to occur, averaged over the time period indicated.

Figure 2-4: Average Number of Extreme Heat Events per Month



Created using gridMET observed daily maximum temperatures for 1979 to 1990 and projected daily maximum temperature data from Cal-Adapt under the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Observed daily maximum temperature is not available for 1961 to 1978. The number of extreme heat events occurring per month are projected to increase dramatically by the end of the century, particularly in the months of June, July, and August.

Figure 2-5: Monthly Average Maximum Temperature of Extreme Heat Days



Created using gridMET observed daily maximum temperatures for 1979 to 1990 and projected daily maximum temperature data from Cal-Adapt under the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Observed daily maximum temperature is not available for 1961 to 1978. Dramatic increases in the average daily high of extreme heat days are projected to occur, particularly in July in August and, by the end of the century, June. Mid- and end-of-century projections indicate that extreme heat days will begin to occur in October at least by 2040, a phenomenon that was not observed during the historical period.

Urban heat islands form where high levels of development intersect with limited landscape vegetation. Natural elements such as trees and green spaces provide cooling via evapotranspiration and shade.[24] In contrast, the materials that constitute the built environment, such as asphalt and concrete, absorb heat. These materials re-radiate absorbed heat and can raise nearby temperatures by several degrees.[25] Other anthropogenic activities such as running air conditioners and operating internal combustion engines can also raise urban temperatures.[26] The location of urban heat islands can also shift with changes in atmospheric conditions such as prevailing wind patterns.[27]

The pockets of high temperature created by urban heat islands facilitate the formation of ozone and smog.[28] Additionally, high pavement and rooftop surface temperatures can heat stormwater runoff. This heated runoff can enter local rivers and lakes, where it may upset the metabolism and reproduction of aquatic species.[29]

Increased daytime temperatures, reduced nighttime cooling, and higher air pollution levels associated with urban heat islands can exacerbate the health effects associated with excessive heat, warm nights, and air pollution. Potential health complaints include general discomfort, dehydration, respiratory difficulties, heat cramps and exhaustion, heat stroke, and heat-related mortality.[30] Seeking relief from excess heat, many urban residents may turn to air conditioning. While air conditioning can alleviate some of the most immediate health impacts of urban heat islands, air conditioning use also increases energy use[31], straining the electrical grid and potentially releasing both greenhouse gases and excess heat into the environment.

The impact of urban heat islands is particularly pronounced during the summer months and heat waves[32], when maximum temperatures reach their peaks, but hotter temperatures can also extend

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[24] Golden JS, "The Built Environment Induced Urban Heat Island Effect in Rapidly Urbanizing Arid Regions – A Sustainable Urban Engineering Complexity," *Environmental Sciences*, 2004. May 1, 2020: https://www.tandfonline.com/doi/abs/10.1080/15693430412331291698.

[25] Golden JS, 2004; United States Environmental Protection Agency, "Learn About Heat Islands," last updated September 2, 2022. Accessed October 27, 2022: https://www.epa.gov/heatislands/learn-about-heat-islands.

[26] Memon RA, Leung DY, Chunho L, "A review on the generation, determination and mitigation of urban heat island," *Journal of Environmental Sciences*, 2008. May 1, 2020: https://www.ncbi.nlm.nih.gov/pubmed/18572534; Salamanca F. Georgescu M, Mahalov A, Moustaoui M, Wang M. "Anthropogenic heating of the urban environment due to air conditioning." *Advancing Earth and Space Science*, May 9, 2014. May 1, 2020: https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2013JD021225.

[27] Wilby, RL. "A Review of Climate Change Impacts on the Built Environment." *Built Environment*, Mar 13 2007. May 4 2020: https://www.ingentaconnect.com/content/alex/benv/2007/00000033/00000001/art00003

[28] Akbari, H. "Energy Saving Potentials and Air Quality Benefits of Urban Heat Island Mitigation." (2001). May 1, 2020: https://www.osti.gov/servlets/purl/860475.

[29] United States Environmental Protection Agency, "Heat Island Impacts," last updated September 2, 2022. Accessed October 27, 2022: https://www.epa.gov/heatislands/heat-island-impacts

[30] United States Environmental Protection Agency, "Heat Island Impacts," 2022; Laaidi K, Zeghnoun A, Dousset B, Bretin P, Vandentorren S, Giraudet E, Beaudeau P. "The Impact of Heat Islands on Mortality in Paris during the August 2003 Heat Wave." *Environmental Health Perspectives*, Feb 1, 2012. May 1, 2020: https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.1103532; Memon RA, Leung DY, Chunho L, 2008.

[31] United States Environmental Protection Agency, "Heat Island Impacts," 2022.

[32] Sacramento Municipal Utility District, 2016.

into early morning and night.[33] This is significant because these cooler periods typically provide relief, especially for people who reside in or around urban heat islands and cannot afford or lack access to air conditioning, but latent heat accumulated throughout the day can severely dampen this effect and lead to prolonged heat exposure and health effects. Similarly, warmer nights will also increase energy costs and demand for air conditioning.

This heat island map, created using urban heat island index (UHII) data produced by the Sacramento Metropolitan Air Quality Management District's Capital Region Urban Heat Island Mitigation Project, calculated UHIIs using air temperatures at human height levels, as opposed to the surface temperatures of roads or buildings. This focus on air-temperature data provides a more accurate reflection of temperatures as experienced by Sacramento residents. UHII expresses the cumulative temperature difference between an urban location and a non-urban reference point summed over a certain time interval. The units of UHII are degree-hours or degree-days and represent the total urban heat island effect added up over a period of time. The UHII illustrated in Map 1 was computed for the May to September period for years 2013 through 2016 and was calculated for all hours (24-hour day), specific hours (6:00 a.m., 1:00 p.m., and 3:00 p.m.), and for ranges of hours representing peak periods for the electricity system.[34]

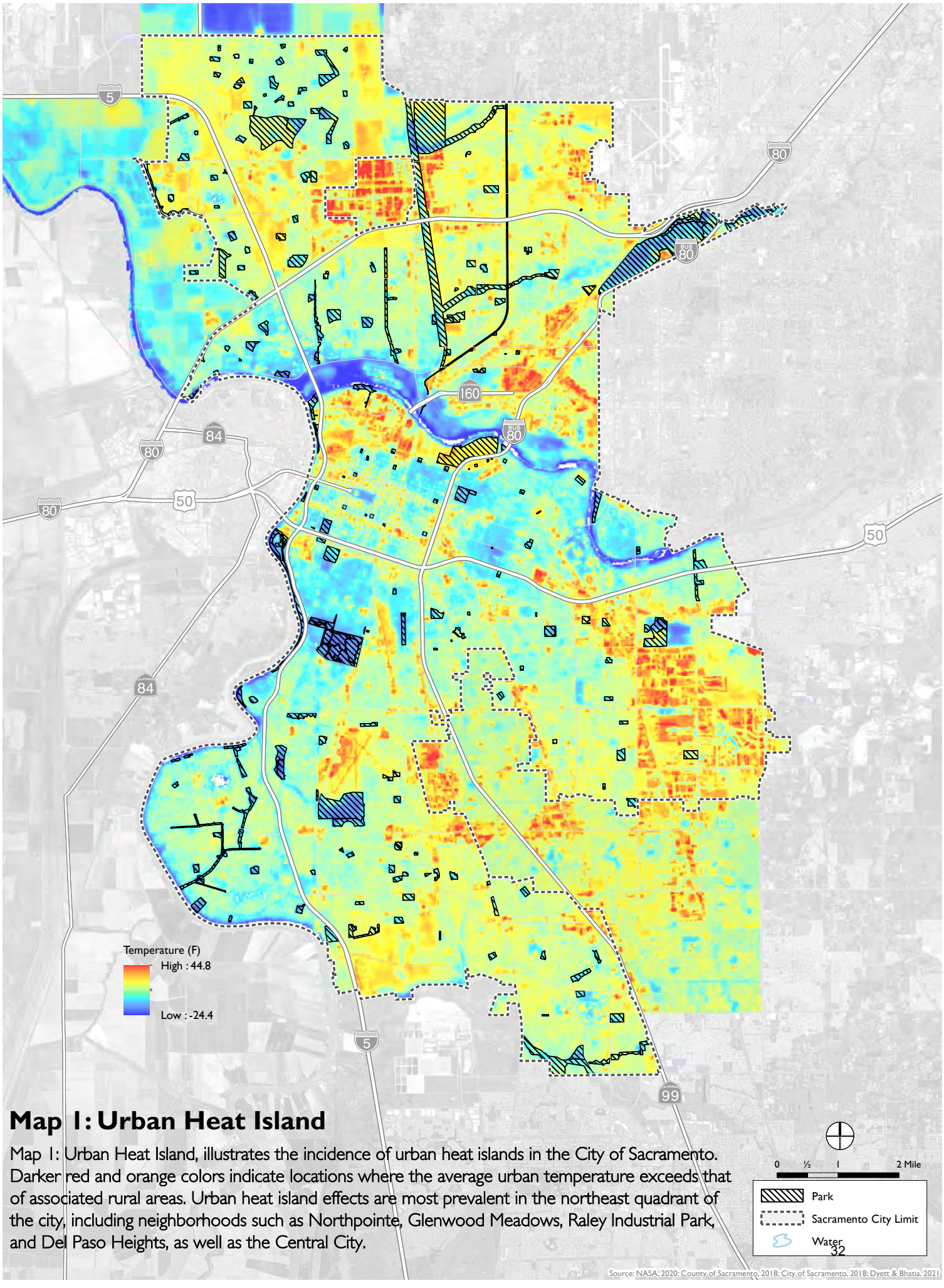
The urban heat island effect is currently prevalent throughout Sacramento, particularly in areas adjacent to major roadways and in the northeast quadrant of the city. Over the course of the next several decades, UHII is expected to increase. In areas that are already urbanized, local climate change will be the primary contributor to future changes in UHII. In areas that will be urbanizing between now and 2050, the impacts on air temperature will result from both changes in land use type and changes in climate.

One feature of the natural and built environment that can both reduce intensity of the urban heat island effect and improve air quality is the presence of trees and other forms of vegetation. As seen in Map 2: Tree Canopy, Sacramento's tree canopy is typically the densest in areas neighboring—but not immediately within—downtown. Tree cover is highest in wealthy historic neighborhoods and tends to decrease in areas that lie along the borders of the city. Trees will be more vulnerable to patterns of increased heat, drought, and storms, which will in turn cause them to be more vulnerable to stress and disease.

It is important to note that there may be tradeoffs in adaptation strategies. For instance, water conservation and drought resilience efforts could have a negative impact on urban heat islands due to removal of vegetation and use of heat-absorbent materials such as rock or artificial turf. These unintended consequences will need to be weighed alongside potential co-benefits when prioritizing adaptation measures.

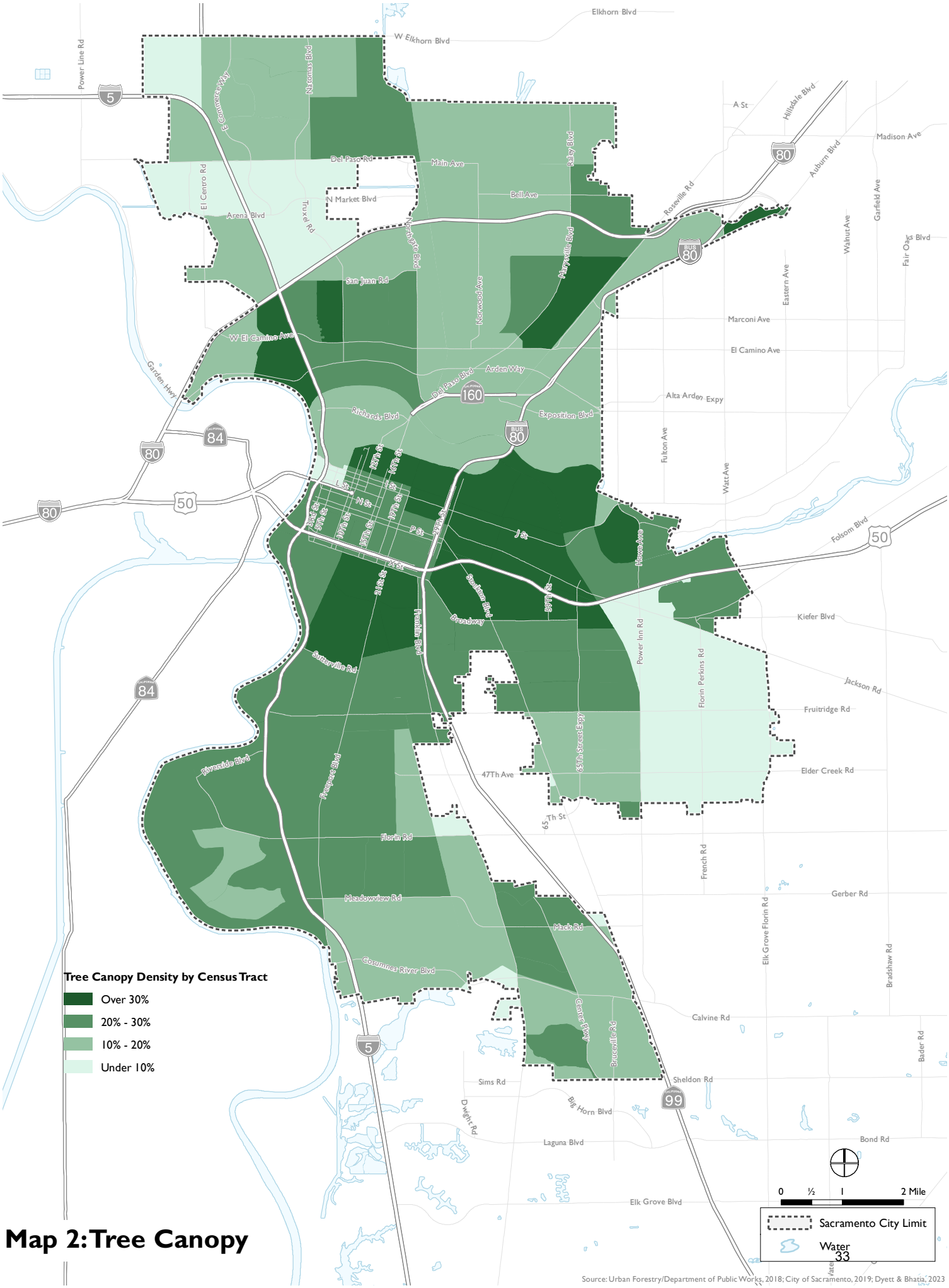
[33] Memon RA, Leung DY, Chunho L, 2008; Golden JS, 2004.

[34] Sacramento Metropolitan Air Quality Management District, Summary Report: Capital Region Urban Heat Island Mitigation Project (2020).



Map 1: Urban Heat Island

Map 1: Urban Heat Island, illustrates the incidence of urban heat islands in the City of Sacramento. Darker red and orange colors indicate locations where the average urban temperature exceeds that of associated rural areas. Urban heat island effects are most prevalent in the northeast quadrant of the city, including neighborhoods such as Northpointe, Glenwood Meadows, Raley Industrial Park, and Del Paso Heights, as well as the Central City.



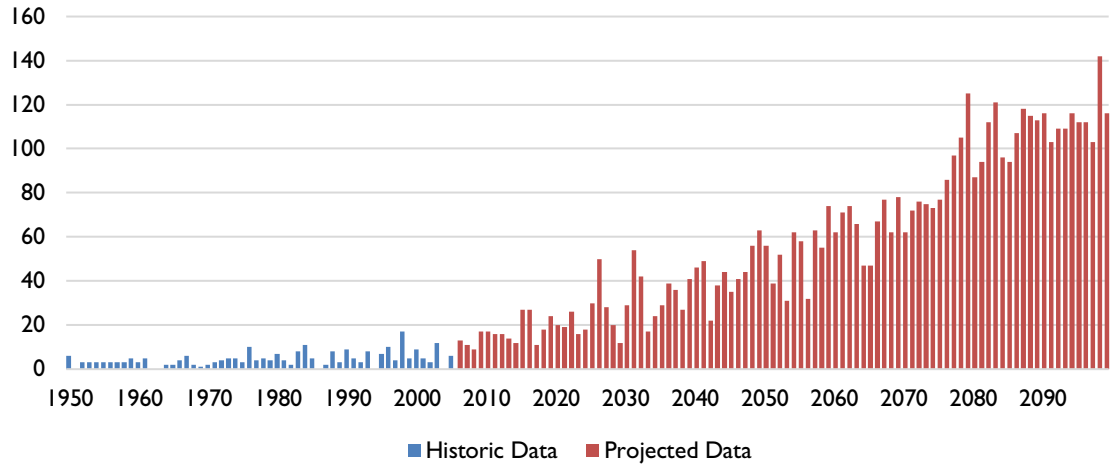
Map 2: Tree Canopy

Source: Urban Forestry/Department of Public Works, 2018; City of Sacramento, 2019; Dyett & Bhatia, 2023

Warm Nights

Cal-Adapt defines a warm night as a night falling between April and October when the daily minimum temperature exceeds the 98th historical percentile of daily minimum temperatures observed from 1961 to 1990[35] (for the City of Sacramento, 66.6°F). Both the frequency and intensity of warm nights are projected to increase in the future. Historically, the City of Sacramento experienced an average of three warm nights per year. By mid-century, the city is predicted to experience approximately 35 to 48 warm nights per year. By the end of the century, this figure could climb as high as 101 warm nights per year (Figure 2-6 and 2-7). The majority of these warm nights are projected to occur between June and September. By the end of the century, almost every night in July and August may be a warm night. Warm nights may also become a larger concern in May and October, months in which warm nights have historically been rare (Figure 2-8).

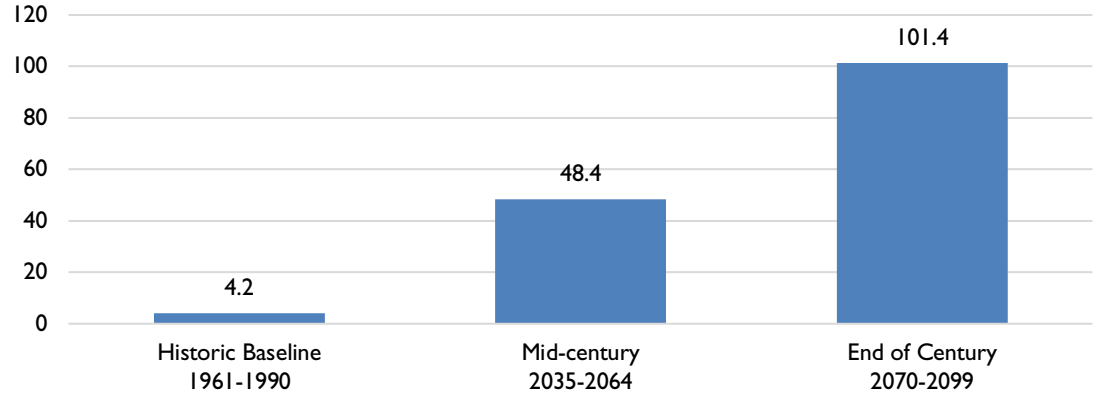
Figure 2-6: Annual Number of Warm Nights



Created using historical and projected warm night data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Historical data (modeled and observed) is capped at 2005. While some degree of variability in the annual number of warm nights that occur per year is projected to continue into the future, projections demonstrate a steadily increasing trend through the end of the century. By the end of the century, the annual number of warm nights is projected to far exceed anything that has been observed between 1950 and 2005.

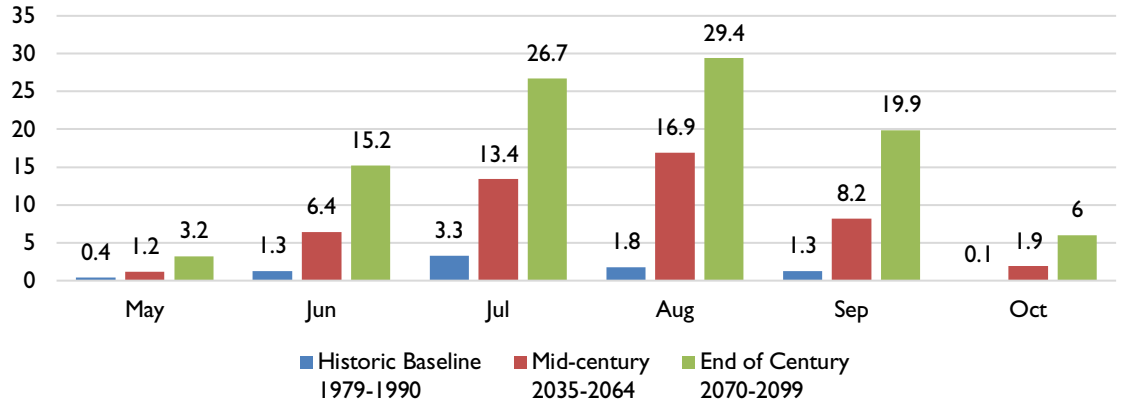
[35] Cal-Adapt, "Extreme Heat Days & Warm Nights," 2018.

Figure 2-7: Annual Number of Warm Nights



Created using historical and projected warm night data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento.

Figure 2-8: Average Number of Warm Nights Per Month



Created using gridMET observed daily minimum temperatures for 1979 to 1990 and projected daily minimum temperature data from Cal-Adapt under the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Observed daily minimum temperature is not available for 1961 to 1978. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. The average number of warm nights is projected to increase most dramatically in the summer months. However, temperature projections also illustrate increase in the number of warm nights that occur in the Spring and Fall.

Historically, the average warm night temperature has been about 68.9°F. By mid-century, average warm night temperature is projected to increase to 70.1°F. By the end of the century, average warm night temperature is projected to further increase to 71.6°F. The most dramatic increases in nighttime temperature are projected to occur in July and August (Figure 2-9).

Stretches of consecutive warm nights are also expected to increase in length. Historically, it has been unusual to see significantly more than two warm nights in a row. By mid-century, consecutive stretches of warm nights may be between 9 and 13 nights long. At the end of the century, the length of the average stretch of consecutive warm nights may climb up to 71 nights in a row (Figure 2-10, 2-11).

Elevated nighttime temperatures limit the body's opportunity to offload excess heat acquired during the day, increase mortality risk[36], and can disrupt sleep.[37] Within the city, the effects of warm nights may be felt most acutely in heavily built-up areas with limited vegetation. These areas can become very warm during the day and continue to radiate heat at night.[38] Nighttime air conditioner use, while providing relief to residents, may actually exacerbate these effects by releasing waste heat into the environment.[39] Additionally, should air conditioner systems fail, those who had come to rely on them may have few other options for relieving heat.[40]

Just as cool nights help the body recover from high daytime temperatures, firefighters have traditionally relied on cooler evening and nighttime temperatures to slow wildfire growth. Higher nighttime temperatures enable wildfires to blaze through the night.[41, 42]

[36] Laaidi K, et.al, 2012; Murage P, Hajat S, Kovats S. "Effect of night-time temperatures on cause and age-specific mortality in London." Environmental Epidemiology, Dec 13, 2017. May 1, 2020: https://journals.lww.com/environepidem/FullText/2017/12000/Effect_of_night_time_temperatures_on_cause_and.1.aspx.

[37] Obradovich N, Migliorini R, Mednick SC, Fowler JH. "Nighttime temperature and human sleep loss in a changing climate." *Science Advances*, May 26, 2017. May 1, 2020: https://advances.sciencemag.org/content/3/5/e1601555.

[38] Lenart M, Guido Z. "Rising temperatures bump up risk of wildfires." *Southwest Climate Outlook*, March 2011. May 1, 2020: https://climas.arizona.edu/sites/climas.arizona.edu/files/pdf2011marrisingtempsfirerisk.pdf.

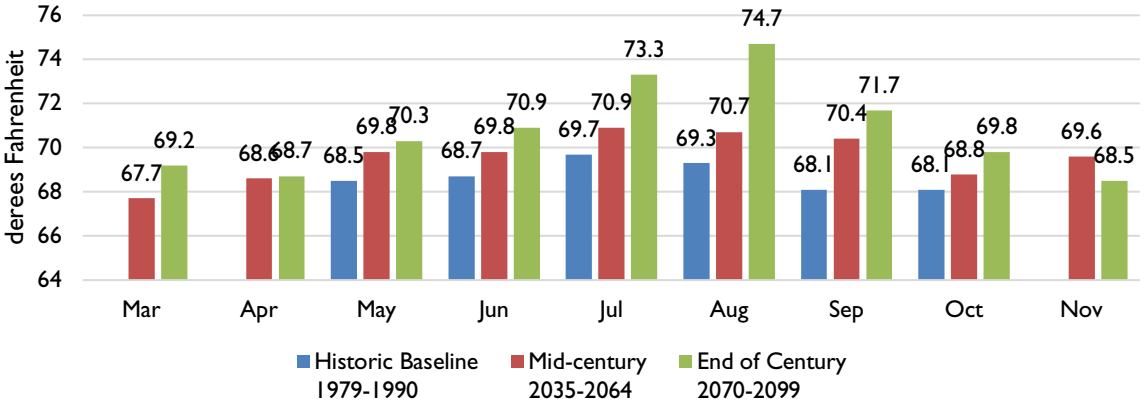
[39] Salamanca F., et.al., 2014.

[40] Gronlund CJ. "Racial and Socioeconomic Disparities in Heat-Related Health Effects and Their Mechanisms: s Review." *Current Epidemiology Reports*, 2014. May 3 2020: https://link.springer.com/article/10.1007/s40471-014-0014-4.

[41] McCann H, Mount J. "Managing Wildfires Requires New Strategies." *Public Policy Institute of California*, Sep 23, 2015. May 1, 2020: https://www.ppic.org/blog/managing-wildfires-requires-new-strategies/; Lenart M, Guido Z.

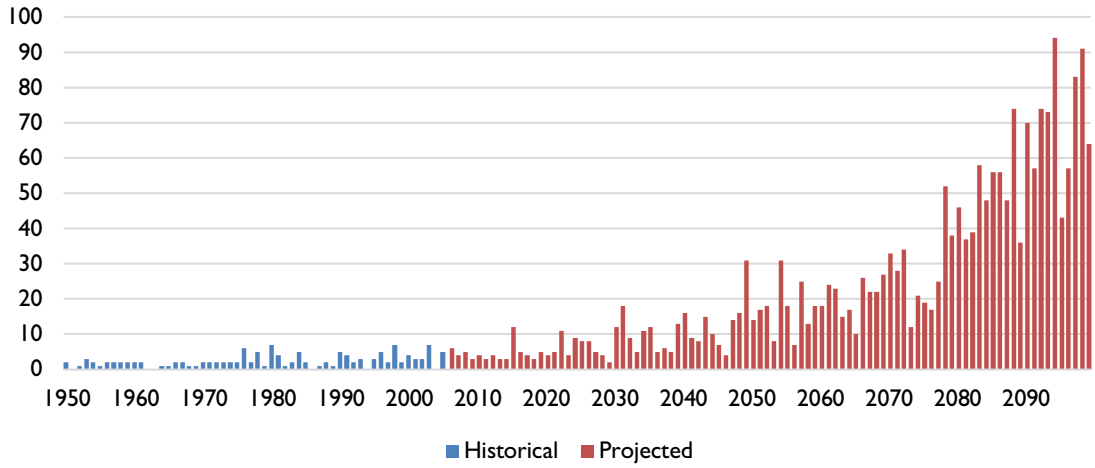
[42] Lenart M, Guido Z. "Rising temperatures bump up risk of wildfires." *Southwest Climate Outlook*, March 2011. May 1, 2020: https://climas.arizona.edu/sites/climas.arizona.edu/files/pdf2011marrisingtempsfirerisk.pdf.

Figure 2-9: Monthly Average Temperature of Warm Nights



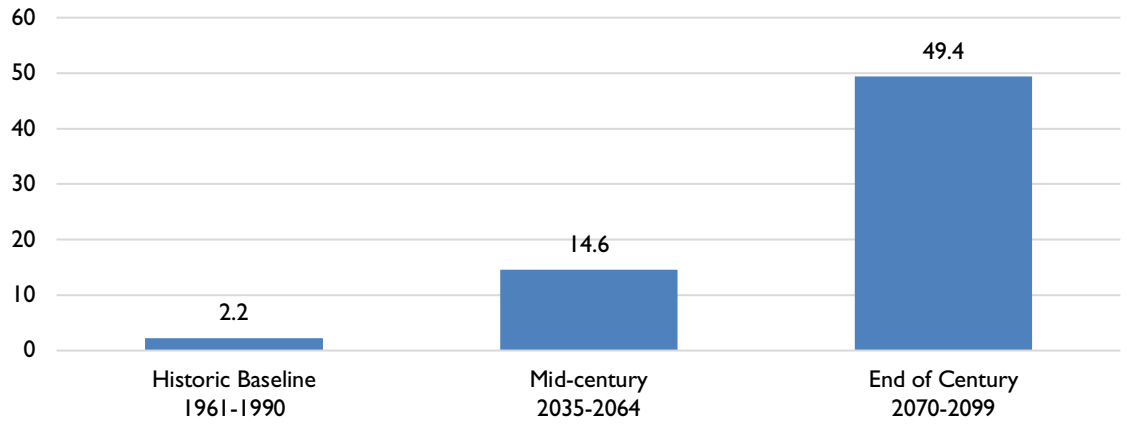
Warm nights refer to nights between April and October when the daily minimum temperature exceeds the 98th historical percentile of daily minimum temperatures observed from 1961 to 1990 (for the City of Sacramento, 66.6°F). Created using gridMET observed daily minimum temperatures for 1979 to 1990 and projected daily minimum temperature data from Cal-Adapt under the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Observed daily minimum temperature is not available for 1961 to 1978. Average minimum temperature is projected to increase most dramatically in July and August. However, warm nights are also to projected to occur in March, April, and November by the end of the century, a phenomenon that has not been observed historically.

Figure 2-10: Longest Stretch of Consecutive Warm Nights



Created using historical and projected warm night data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Historical data (modeled and observed) is capped at 2005. While considerable variability is projected to remain in the typical length of a nighttime heat wave up through the end of the century, nighttime temperature projections do demonstrate a clear upward trend in nighttime heatwave length. This increase may occur somewhat gradually up through the middle of the century but then begin to increase rapidly thereafter.

Figure 2-11: Average Longest Stretch of Consecutive Warm Nights



Created using historical and projected warm night data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. The chart above displays the historical and projected longest stretch of consecutive warm nights, averaged over the years indicated.

Heat Waves

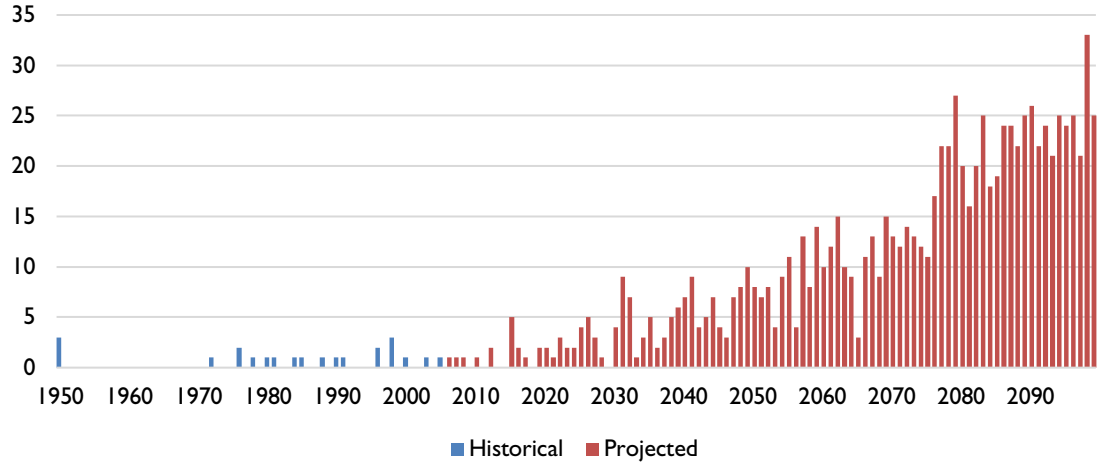
Cal-Adapt defines a heat wave as a period of four consecutive extreme heat days or warm nights.[43] Between 1961 and 1990, the Sacramento region experienced about one to two heat waves per decade.[44] Heat waves are projected to increase in intensity and duration.[45] By mid-century, the City of Sacramento may experience about three to eight four-day heat waves per year. At the end of the century, this range is predicted to rise to between three and 21 four-day heat waves per year (figures 2-12a and 2-12b). The typical heat wave duration is predicted to grow to between seven and 15 days by mid-century and up to 49 days by the end of the century (Figure 2-13 through 2-14).

[43] Cal-Adapt defines warm nights as those with daily minimum temperatures above the 98th percentile of historical daily minimum temperatures for a place, computed using data from April through October for 1961 to 1990. For the City of Sacramento, this is 66.6°F.

[44] Ascent Environmental, Climate Change Vulnerability Assessment for the Sacramento County Climate Action Plan: Communitywide Greenhouse Gas Reduction and Climate Change Adaptation (2017).

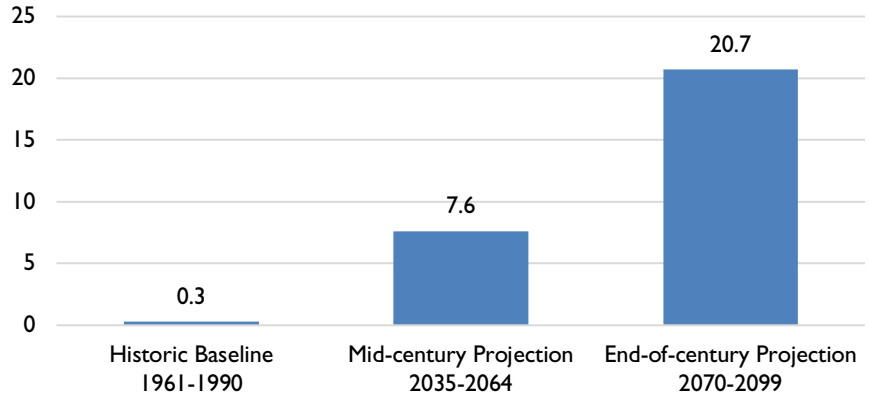
[45] Sacramento Municipal Utility District, SMUD 2018 Local Hazard Mitigation Plan (2018). Oct 28 2019: https://www.smud.org/-/media/Documents/Corporate/About-Us/Company-Information/Reports-and-Documents/2014-2021/2020/20190124-Local-Hazard-Mitigation-Plan-re-Submittal.ashx.

Figure 2-12a: Number of Heat Waves Per Year



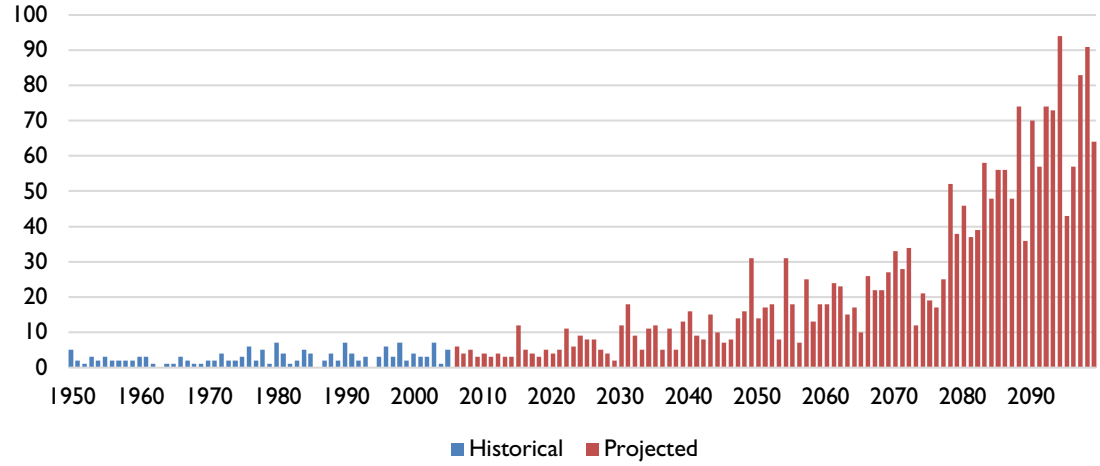
Created using historical and projected heat wave (both extreme heat days and warm nights) data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Historical data (modeled and observed) is capped at 2005. While considerable variability in the annual number of heat waves is projected to continue, the number of heat waves projected to occur per year does increase dramatically by the end of the century.

Figure 2-12b: Average Number of Heat Waves Per Year



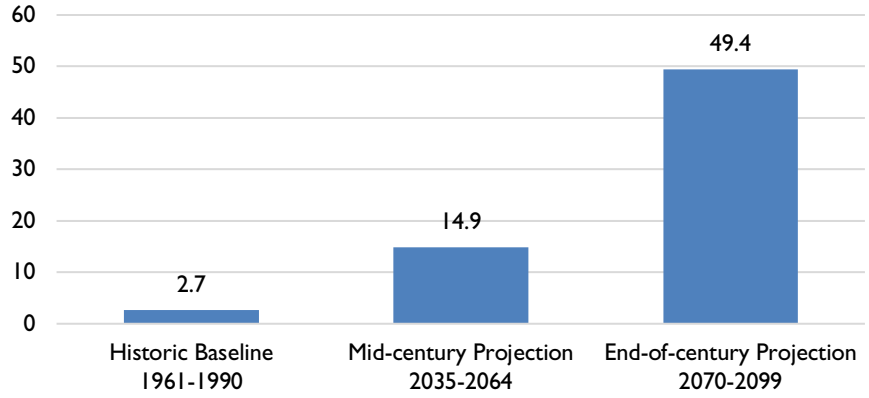
Created using historical and projected heat wave (both extreme heat days and warm nights) data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. While considerable variability in the annual number of heat waves is projected to continue, the number of heat waves projected to occur per year does increase dramatically by the end of the century.

Figure 2-13: Maximum Heat Wave Duration



Created using historical and projected heat wave (both extreme heat days and warm nights) data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento. Historical data (modeled and observed) is capped at 2005. The length of the longest heat wave is projected to gradually increase over the course of the century.

Figure 2-14: Average Maximum Heat Wave Duration



Created using historical and projected heat wave (both extreme heat days and warm nights) data from Cal-Adapt. Projected data was generated for the high emissions (RCP 8.5) scenario and the averaged (CanEMS2) climate model for the City of Sacramento.

Sensitivity

Heat-Related Illness

Heat waves and sustained high heat days directly harm human health through heat-related illness such as heat cramps, heat exhaustion, and heat stroke.[46] Heat also intensifies the photochemical reactions that produce smog, ground level ozone, and fine particulates, which exacerbate respiratory diseases in children, the elderly, and people with pre-existing cardiovascular, respiratory, and cerebrovascular disease and diabetes-related conditions.[47] Prolonged exposure to high temperatures is associated with increased hospital admissions for cardiovascular, kidney, and respiratory disorders.[48] On especially hot days, cooler nights have typically provided a period of respite. Increases in nighttime temperature prevent people from being able to adequately cool down at night, further increasing their risk of suffering heat-related illness.[49]

Most people find it relatively easy to take measures, such as locating to a cooler environment, that reduce their exposure to excessive heat. However, opportunities to reduce heat exposure are not evenly distributed throughout the population. Segments of the population who face especially high levels of heat exposure include those experiencing homelessness, outdoor workers, individuals that depend on medical equipment, individuals with impaired mobility,[50] and those without access to adequate home insulation, air conditioning, or ventilation.[51]

Survey data collected from residents of the greater Sacramento region revealed that heat-related discomfort at home tends to be more prevalent among lower-income households. The proportion of respondents with household incomes under $40,000 who reported feeling the most heat-related discomfort at home was nearly 2.8 times greater than those with household incomes over $100,000 (about 33 percent compared to 12 percent, respectively). Similarly, the proportion of respondents from households with incomes of over $100,000 who reported that their greatest source of heat-related discomfort came from outdoor activity was 2.6 times greater than households earning $40,000 or less (37 percent compared to 14 percent, respectively). A majority (about 60 percent) of those who reporting feeling no discomfort due to heat at all were respondents earning $60,000 or

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[46] Sari Kovats R, Hajat S. "Heat Stress and Public Health: A Critical Review." *Annual Review of Public Health*, Nov 21 2007. May 3 2020: https://www.annualreviews.org/doi/full/10.1146/annurev.publhealth.29.020907.090843.

[47] Maizlish N, English D, Chan J, Devin K, English P, Climate Change and Health Profile Report: Sacramento County (Sacramento, CA, 2017). Oct 28 2019: https://www.cdph.ca.gov/Programs/OHE/CDPH%20Document%20Library/CHPRs/CHPR067Sacramento_County2-23-17.pdf; U.S. Climate Resilience Toolkit, Extreme Heat—NIHHIS. Oct 28 2019: https://toolkit.climate.gov/topics/human-health/extreme-heat#:~:text=NIHHIS%20is%20designed%20to%20better,communication%20networks%20to%20improve%20resilience.

[48] U.S. Global Change Research Program, Climate and Health Assessment (Washington D.C., 2016). Oct 28 2019: https://health2016.globalchange.gov/temperature-related-death-and-illness; Gronlund CJ, 2014.

[49] U.S. Climate Resilience Toolkit, Extreme Heat—NIHHIS; U.S. Global Change Research Program, 2016.

[50] Sacramento Municipal Utility District, 2018.

[51] Maxwell, K., Julius S., Grambsch A., Kosmal A., Larson L., Sonti, N., Built Environment, Urban Systems, and Cities. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (Washington D.C., 2018). Oct 28 2019: https://nca2018.globalchange.gov/chapter/11/; Gronlund CJ, 2014.

more. Only six percent of those earning $40,000 or less said they felt no heat impacts, compared to 14 percent of those earning over $100,000. Survey results also show race contributing to experiences of heat. Higher percentages of American and Alaskan Native (36 percent), Latinx (26 percent), Asian (27 percent), and Middle Eastern or North African (44 percent) respondents reporting feeling their highest heat stress at home, as opposed to 19 percent of white respondents. Black respondents were more likely to report feeling heat-related discomfort during their commute (15 percent) and at work (19 percent) compared to white respondents (6 percent and 12 percent, respectively).[52]

Personal perceptions regarding heat risk and safety can also influence responses to heat. Those who fear exposure to crime may hesitate to open windows or travel to cooler locations, while some may not be aware of the dangers posed by high heat or may not think of themselves as susceptible.[53]

Studies have shown that cooling of the body is achieved through increased blood flow to the skin and sweating, cooling mechanisms that rely heavily on the cardiovascular system, as well as the endocrine, urinary, and integumentary processes.[54] Certain segments of the population whose natural cooling systems are inhibited are thus more sensitive to the health effects of heat. These groups include the elderly, those taking certain types of medication (anticholinergic, antihypertensive, and antipsychotic drugs), and children.[55] Conditions such as dementia and Parkinson's have also been found to be important risk factors for heat mortality. Additionally, social, cultural, and linguistic isolation have also been shown to contribute to heat's adverse health effects.[56] Sometimes limited transportation options for the elderly can also make it more difficult to relocate to cooler locations when local temperatures become extreme.

Just as cool nights help the body recover from high daytime temperatures, firefighters have traditionally relied on cooler evening and nighttime temperatures to slow wildfire growth. Higher nighttime temperatures enable wildfires to blaze through the night.[57]

Heat-Related Infrastructure Impacts

High temperatures can have detrimental impacts on key infrastructures including energy generation and distribution and transportation. High temperatures decrease the efficiency of power lines while increasing the demand for energy-intensive uses such as air conditioning and cooling equipment [58]. This results in a higher risk of energy blackouts[59] and increases energy bills.[60] These

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[52] Sacramento Metropolitan Air Quality Management District, 2020.

[53] Gronlund CJ, 2014.

[54] Gronlund CJ, 2014.

[55] Sari Kovats R and Hajat S, 2007; U.S. Global Change Research Program, 2016; Gronlund CJ, 2014.

[56] Gronlund CJ, 2014.

[57] McCann H, Mount J. "Managing Wildfires Requires New Strategies." *Public Policy Institute of California*, Sep 23, 2015. May 1, 2020: https://www.ppic.org/blog/managing-wildfires-requires-new-strategies/; Lenart M, Guido Z. "Rising temperatures bump up risk of wildfires." *Southwest Climate Outlook*, March 2011. May 1, 2020: https://climas.arizona.edu/sites/climas.arizona.edu/files/pdf2006aprrisingtempsfirerisk.pdf.

[58] Sacramento Municipal Utility District, 2016..

[59] Sacramento Area Council of Governments, 2015; U.S. Climate Resilience Toolkit, Extreme Heat—NIHHIS.

[60] Maxwell, K., et. al., 2018.

impacts can strain household budgets, increase exposure to heat, and negatively impact the provision of medical and social services.[61]

Extremely high temperatures can damage roadways, railways, and bridges, as well as reduce the comfort and feasibility of walking, biking, and taking public transit.[62] Roads and sidewalks absorb and radiate heat, subjecting those nearby, including walkers and transit riders, to increased heat burdens.[63] The Sacramento Regional Transit (SacRT) powers their light rail system with overhead catenary systems lines, which can stretch with heat and may lead to severing of the connection with the rail car.[64]

Increased temperatures can also have cascading effects through the environment as they increase the risk of wildfire and influence local precipitation patterns, as discussed later in this report.

CHANGES IN PRECIPITATION PATTERNS

Climate change models predict changes in the seasonal distribution of precipitation, with rainfall becoming more concentrated in extreme precipitation events during the winter months. Meanwhile, increasing average temperatures will cause more precipitation to fall in the form of rain, as opposed to snow. These changes may result in a number of secondary impacts, such as flooding, reduction in winter snowpack, drought, increased wildfire risk, changes in streamflow, and strain to health, energy, and infrastructure systems, as described below and in Table 2-3.

Table 2-3: Changes in Precipitation Patterns

Temporal Extent	• Increases in annual rainfall projected to continue through the end of the century • Most dramatic increases in extreme rainfall events projected to occur in the winter months • Decreased snow fraction/increased rain fraction. April snowpack level projected to continue to decline through the end of the century
Spatial Extent	• Flooding effects will be felt most strongly in low-lying areas, areas dependent on levee protection, and areas with inadequate stormwater infrastructure
Permanence	• Effects may be felt most acutely in winter months, with drought periods also becoming more likely
Level of Disruption	• High
Nature of Disruption	• A large storm could cause significant health and infrastructure impacts over potentially large portions of the city or region. • Increased water temperature is harmful to water treatment, reservoir and hydroelectric operation, and ecological health.
Level of Uncertainty	• Low

[61] Maxwell, K., et. al., 2018.

[62] Sacramento Area Council of Governments, 2015.

[63]Sacramento Metropolitan Air Quality Management District, 2020.

[64] Sacramento Metropolitan Air Quality Management District, 2020.

City of Sacramento CAAP Adaptation Chapter Excerpt: Goal A-2: Create built environments that reduce exposure to extreme heat and mitigate urban heat island effect.

The City of Sacramento's Climate Action & Adaptation Plan (CAAP) serves as the City's comprehensive framework for addressing climate change. It functions as a CEQA-qualified greenhouse gas reduction strategy, identifying pathways to achieve carbon neutrality by 2045 through policies and programs that advance clean energy, efficient buildings, and sustainable transportation. In addition to mitigation, the CAAP includes an Adaptation chapter that prepares the community for climate impacts such as extreme heat, drought, wildfire, and flooding.

This excerpt highlights Adaptation Goal A-2, which reflects the City's core policy direction for mitigating extreme heat. Sacramento's increasingly hot summers pose risks to public health, infrastructure, and livability. The policies and actions detailed here aim to reduce urban heat islands, improve cooling and shade, protect residents during heat emergencies, and ensure Sacramento is prepared to thrive in a warming climate. **To review the full text of the Climate Action & Adaptation Plan, click HERE**.

GOAL 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 the 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 General Plan Policies

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

ERC-8-1: Cooling Design Techniques. Through design guidelines and other means, in all new development the City shall promote the use of tree canopy, cool pavements, landscaping, cool roofing and other cool 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) to minimize heat island effects, including hardscape and roof materials with beneficial solar reflectance and thermal emittance values and measures for exterior wall shading.

ERC-8-2: Large Heat Islands. The City should work with property owners and businesses identified in urban heat island hot spots, informed by ***Figure 7-2*** to address the urban heat island effect and reduce ambient temperatures in surrounding residential areas. City actions may include the following:

- 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.

ERC-8-3: 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.

ERC-8-4: Municipal Cool Roof Retrofits. The City should 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, informed by ***Figure 7-2*** should be prioritized for retrofits.

ERC-8-5: 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.

ERC-8-6: 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. Amenities could include the following:

- 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 planted in passive landscape areas in parks and public facilities.

ERC-3-2: Tree Canopy Expansion. The City should strive to achieve a 25 percent urban tree canopy cover by 2030 and 35 percent by 2045. Prioritize tree planting and maintenance in areas with the lowest average canopy cover and explore strategies to reduce barriers to tree planting in disadvantaged communities and improve tree health.

ERC-3-3: Tree Protection. The City shall encourage public agencies and require 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 and environmental documents. Ensure adequate protections during construction to protect existing tree roots and structure.

ERC-3-5: Tree List. The City shall maintain and update a list of desirable trees that suit soil and climate conditions in specific areas of Sacramento. Consider carbon sequestration potential of selected species. Select tree species that demonstrate adaptiveness to projected climate change impacts, including the ability to thrive:

- in higher temperatures,
- with reduced water use,
- with grey and recycled water, and;
- with increased pest and disease prevalence.

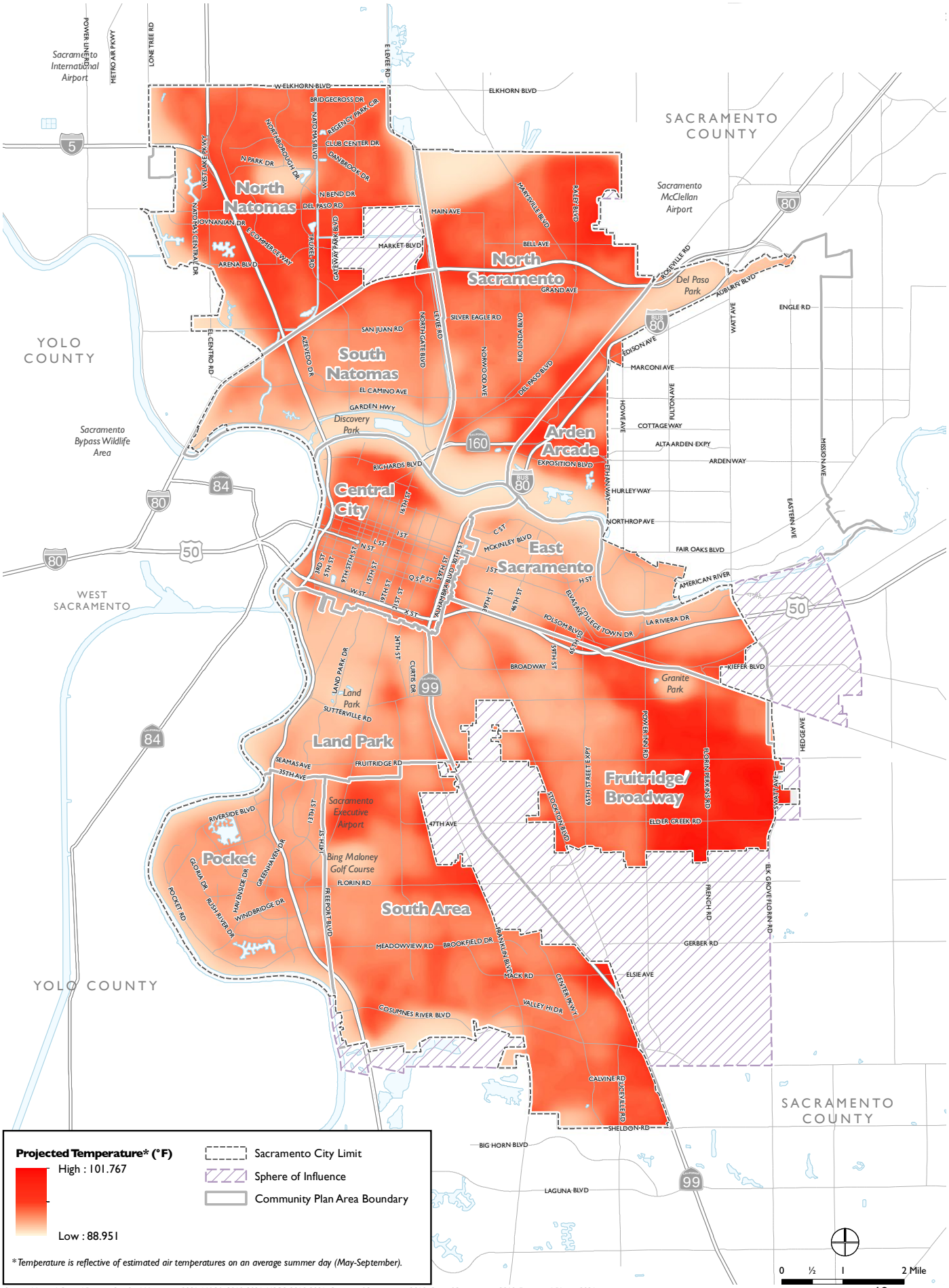
ERC-3-6: Urban Forest Maintenance. The City shall continue to plant, manage, and care for all trees on City property and within the public right-of-way to maximize their safe and useful life expectancy and continue to explore the selection of tree species that are adapted to future climate conditions.

ERC-3-9: Watering and Irrigation. The City shall encourage appropriate watering practices and irrigation to minimize needed water use and support healthy tree growth; support responsible tree irrigation during droughts to minimize tree stress and loss; and convert irrigation in parks and streetscapes where needed.

ERC-3-10: Parking Lot Shading. The City shall review and amend the Parking Lot Shading Design and Maintenance Guidelines and Parking Lot Shading Ordinance as needed to promote tree health, growth, and maintenance of trees to reduce urban heat island impacts.

ERC-3-11: Planting. The City shall encourage development to provide trees with appropriate irrigation methods and adequate growing space; site trees to reduce building heat and provide shade to public walkways to the extent feasible; and include appropriate soil treatment methods to promote healthy thriving trees.

Figure 7-2. Urban Heat Priority Intervention Areas Map



Source: Natural Capital Project, Stanford University, 2021; NASA, 2018-2021; USGS, 2018-2021; County of Sacramento, 2018; City of Sacramento, 2018; Dyett and Bhatia, 2021

Actions and Implementation

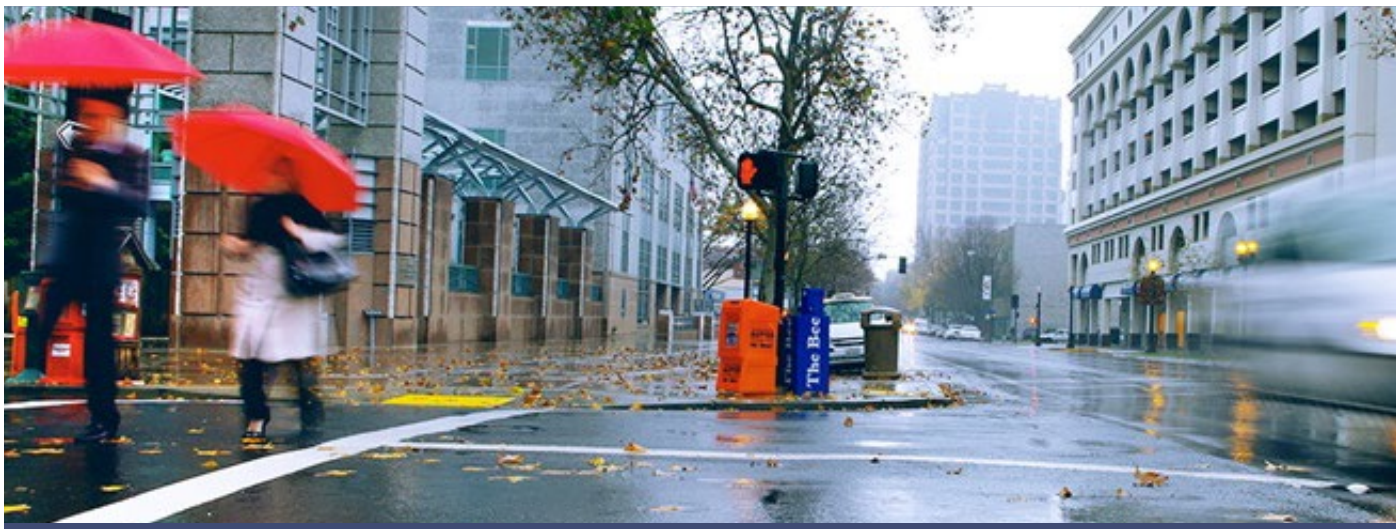
The following implementation actions are drawn from the 2040 General Plan and adopted 2021 Local Hazard Mitigation Plan and support the goal of creating built environments that reduce exposure to extreme weather events and mitigate urban heat island effects:

Action	Lead Agency	Support	Phase
A-2-1: Heat Reduction in the Public Realm – The City should explore opportunities to amend development standards and guidelines so as to promote the use of heat mitigation strategies to reduce temperatures in the public realm, particularly on active transportation networks, commercial corridors, near light rail transit (LRT) stations and along transit corridors. Requirements may include the incorporation of the following: • Building design strategies (varied building heights; setbacks from sidewalks; vertical and horizontal shade features); • Cooling building and pavement materials, treatments, and coatings; • Multiple layers of shading to maximize coverage throughout the day; and • Street trees, and landscaping. *[General Plan ERC-Action 4]*	• Community Development	• Public Works	Phase 2
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. *[General Plan ERC-Action 5]*	• Public Works		Phase 2
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. *[General Plan ERC-Action 7]*	• Public Works	• Community Development • Youth, Parks, and Community Enrichment	Phase 2

Action	Lead Agency	Support	Phase
A-2-4: Heat-Resilient Design Techniques – The City shall evaluate the feasibility of updating design guidelines, standards, and the municipal code to require building materials and site design techniques that provide passive cooling and reduce energy demand. *[General Plan ERC-Action 8]*	• Community Development		Phase 2
A-2-5: Urban Forest Plan – The 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. *[General Plan ERC-Action 1]*	• Public Works	• Community Development • Youth, Parks, and Community Enrichment	Phase 2
A-2-6: Minimum Tree Requirements – 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 improve tree canopy inclusion. Review the following topics at a minimum: • Requirements for trees in setback areas, particularly in new single-unit dwelling developments and subdivisions. • Identifying opportunities to provide incentives or requirements for inclusion of trees in front, back and side yards, particularly when sited to provide shade for sidewalks and streets. • Tree plantings in site plan review to place trees to maximize energy conservation. • Chapter 12.56 of the City Code to better define how tree permits for ministerial development project reviews are processed. • Solar panel installation requirements to minimize potential conflicts with tree planting. *[General Plan ERC-Action 9]*	• Community Development	• Public Works	Phase 2

Action	Lead Agency	Support	Phase
A-2-7: Parking Lot Shade Ordinance – The City shall update the Parking Lot Shade Ordinance and Guidelines to ease compliance, improve site plan review and inspection, monitoring, and to strengthen requirements for ongoing maintenance and replacement of trees in parking lots. Identify when and how shading requirements may be satisfied through alternate methods such as canopies and solar arrays. *[General Plan ERC-Action 10]*	• Public Works	• Community Development	Phase 2
A-2-8: Street Standards for Tree Canopy – The City shall update Street Standards with objective design standards for shade trees along roadways to optimize tree canopy and provide solutions for various street functions and conditions. *[General Plan ERC-Action 11]*	• Public Works	• Community Development	Phase 2
A-2-9: Tree Education – The City shall develop informational materials to provide to residents and businesses to support the City's tree canopy, including but not limited to the following: • Information for new 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. *[General Plan ERC-Action 2]*	• Public Works	• Community Development	Phase 2

Action	Lead Agency	Support	Phase
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. *[Local Hazard Mitigation Plan Action 37]*	• Community Response	• Office of Emergency Management • Youth, Parks, and Community Enrichment • City Libraries	Phase 1
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. *[Local Hazard Mitigation Plan Action 38]*	• Community Response	• Sacramento Steps Forward • Community Response • Office of Emergency Management • Public Information Officer	Phase 1



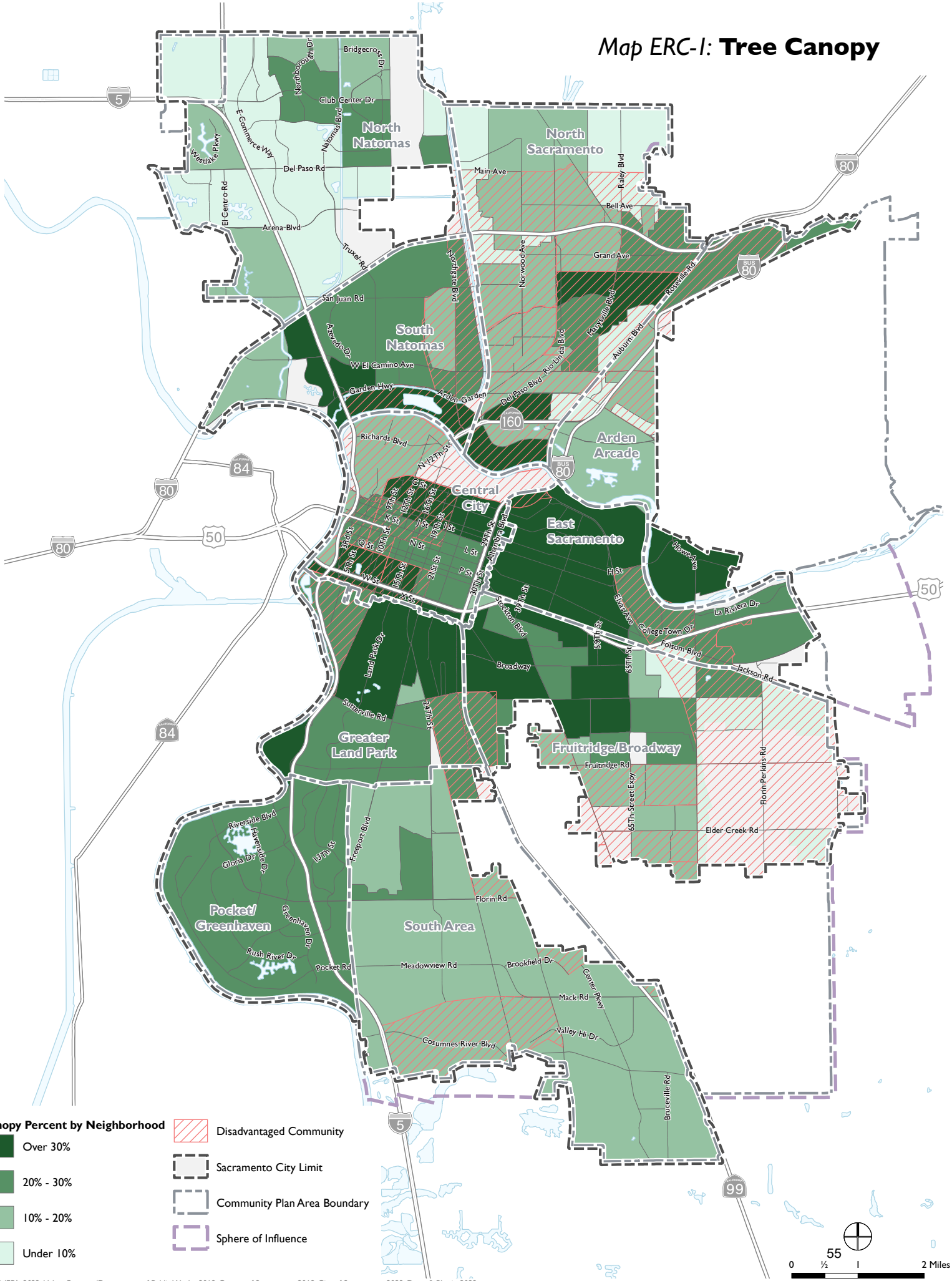
The Department of Public Works Works Year-Round to Help Prepare for Winter Storms.

Action	Lead Agency	Support	Phase
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. *[Local Hazard Mitigation Plan Action 39]*	• Office of Emergency Management Planning Process		Phase 2
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. *[New Proposed Action]*	• Community Development • City Manager's Office		Phase 2
A-2-14: Heat Reduction in Parks – The City shall increase parkland tree plantings and other nature-based solutions in passive landscape areas where feasible, especially in under-canopied neighborhoods. Other heat-reducing public amenities such as drinking fountains, water mister/spray areas, and shade structures will continue to be installed and maintained to mitigate urban heat island effects. *[New Proposed Action]*	• Youth, Parks, and Community Enrichment		Phase 2

City of Sacramento General Plan Environmental Resources and Constraints Element Extreme Heat Policies and Actions

A rich diversity of natural resources in and around Sacramento supports healthy living, economic opportunity, and the community's ability to adapt to challenges such as climate change. At the same time, the environment poses risks to human health and property, which are increasingly compounded by hotter average temperatures, shifting rainfall patterns, and more frequent extreme weather events. As Sacramento continues to grow and evolve, this General Plan element establishes policies to both preserve and enhance environmental resources while also reducing risks from natural hazards and strengthening resilience to climate change. **To review the full text of the Environmental Resources and Constraints Element, click HERE**

Map ERC-1: **Tree Canopy**



Canopy Percent by Neighborhood

- Over 30%
- 20% - 30%
- 10% - 20%
- Under 10%

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

0 ½ 1 2 Miles

Source: CalEPA, 2022; Urban Forestry/Department of Public Works, 2018; County of Sacramento 2018; City of Sacramento, 2023; Dyett & Bhatia, 2023

GOAL AND POLICIES

ERC-3 **A well-maintained, resilient, healthy, expansive and equitable urban forest for an environmentally sustainable future.**

ERC-3.1 **Urban Forest Plan.** The City shall maintain and implement an Urban Forest Plan.

ERC-3.2 **Tree Canopy Expansion.** The City should strive to achieve a 25 percent urban tree canopy cover by 2030 and 35 percent by 2045. Prioritize tree planting and tree maintenance in areas with the lowest average canopy cover and explore strategies to reduce barriers to tree planting in disadvantaged communities and improve tree health.

ERC-3.3 **Tree Protection.** The City shall encourage public agencies and require 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 and environmental documents. Ensure adequate protections during construction to protect existing tree roots and structure.

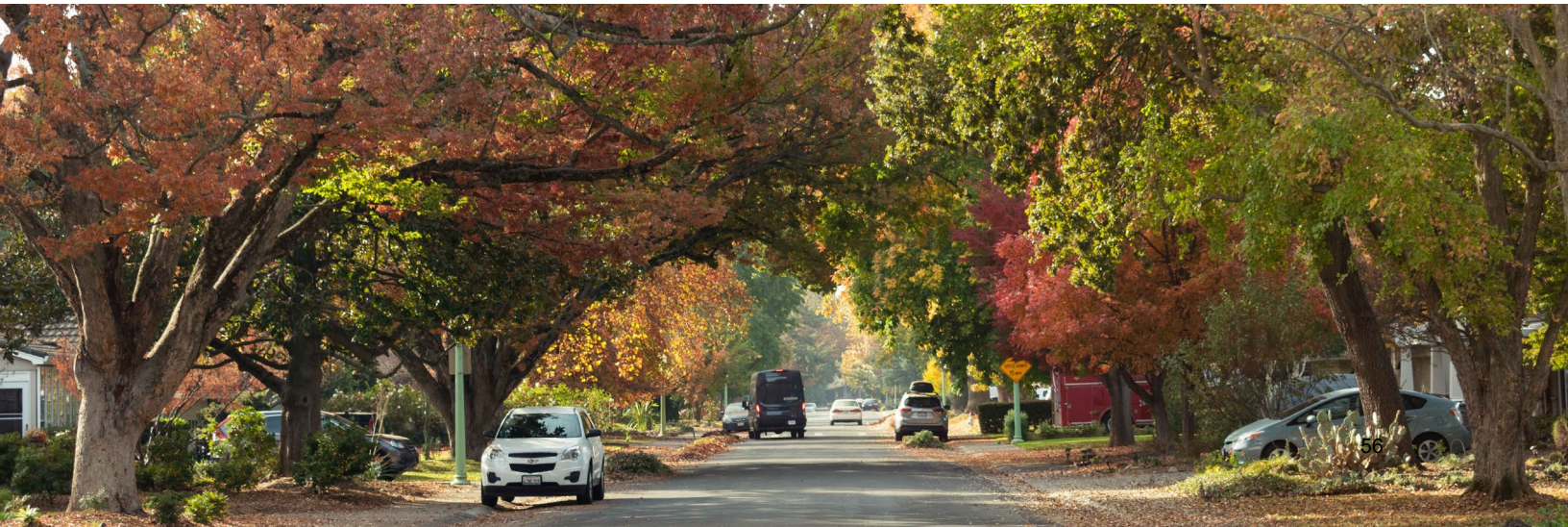
ERC-3.4 **Private Streets.** The City shall, when private streets are approved, require inclusion of trees unless clearly infeasible. If street trees are not feasible, locations within the development should be identified for inclusion of green space and tree canopy.

ERC-3.5 **Tree List.** The City shall maintain and update a list of desirable trees that suit soil and climate conditions in specific areas of Sacramento. Consider carbon sequestration potential of selected species. Select tree species that demonstrate adaptiveness to projected climate change impacts, including the ability to thrive:

- In higher temperatures;
- With reduced water use;
- With grey and recycled water; and
- With increased pest and disease prevalence.

ERC-3.6 **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 prioritize the selection of tree species that are adapted to future climate conditions.

ERC-3.7 **Trees of Significance.** The City shall promote stewardship of city trees and private protected trees and ensure that the design of development projects provides for the retention of these trees where possible. Where removal cannot be avoided, the City shall require replacement or appropriate remediation.



URBAN HEAT

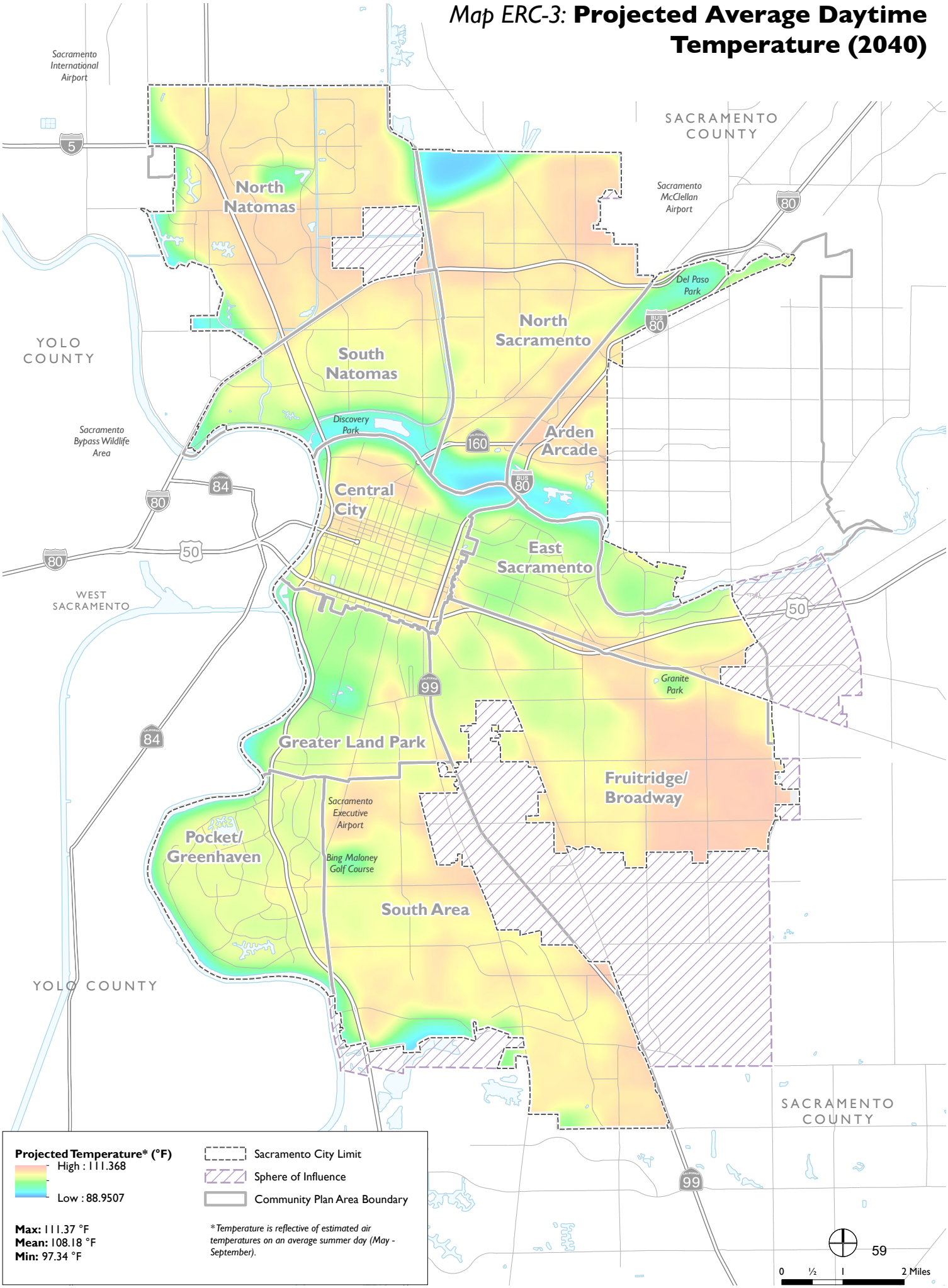
On a summer day in Sacramento, the city can feel 15 to 20 degrees Fahrenheit hotter than surrounding undeveloped rural areas. This is because key elements of the urban environment, including paved streets, parking lots, and buildings absorb and amplify the heat of the sun, unlike vegetation and soil of rural areas. Even after the sun goes down, these surfaces hold heat, causing high daytime temperatures to linger into the night. Additionally, corridors of tall buildings can trap heat close to the ground where people interact, and human activities like driving cars and operating factories produce "waste heat" that can aggravate the problem. Urban heat has serious implications for human health, energy consumption, infrastructure, and the environment. Extreme heat can cause heat-related illnesses (e.g, heat stroke), exacerbate asthma and cardiac disease, and even lead to death. Young children, older adults, outdoor workers, people experiencing homelessness, and those with underlying health conditions are particularly susceptible to heat-related problems, but anyone can experience minor to severe health complications. In the United States, more people die each year from extreme heat than are killed by storms, floods, and wildfires combined.

As temperatures continue to rise with climate change, the effects of urban heat will be felt even more acutely. **Map ERC-3** shows projected average summertime temperature throughout Sacramento in 2040. While neighborhoods throughout the city will feel the effects of increased urban heat, some neighborhoods will be more impacted than others. The lowest projected temperatures are in leafy neighborhoods with mature tree canopy coverage and plentiful parks and green spaces, like Land Park, Curtis Park, and East Sacramento. By contrast, neighborhoods with fewer trees and green spaces will experience higher temperatures. Many of these neighborhoods tend to have higher concentrations of lower-income households and people of color and are located adjacent to the areas with the hottest projected temperatures - locations with large expanses of asphalt and concrete, such as Executive Airport, the former Sleep Train Arena site, the Railyards, and several active industrial areas. Proximity to these large "urban heat islands" in combination with lack of trees and green spaces leads to more intense heat, and the higher levels of pollution in these neighborhoods also compounds the health risk for residents. **Map ERC-4** overlays the highest projected temperatures with areas with low tree canopy coverage and areas with the highest cumulative environmental justice impacts, shown on the map as a "High Composite Score," based on analysis of 68 different indicators such as pollution, demographic and health variables, housing conditions, access to healthy food and recreational facilities, neighborhood conditions, and transportation safety. Please see **Map EJ-5** in the Environmental Justice Element for a citywide map of these composite scores, showing communities most cumulatively impacted by environmental justice issues. These layers are used to create three tiers for priority intervention areas: areas with both low tree canopy and a high composite score are the most critical places to provide urban heat interventions. Areas with only high composite scores, followed by areas with low tree canopy, should be prioritized second and third, respectively.

Building community resilience to the effects of climate change is a critical consideration. This includes efforts to inform and empower residents to plan for and respond effectively to environmental challenges, as well as efforts to create resiliency hubs and neighborhood resilience plans.

Studies have shown that 25 percent tree canopy coverage in urban areas can reduce temperatures by as much as 8 degrees compared with bare, unplanted areas. While it can take years for newly planted trees to grow to maturity and provide substantial canopy, there are also solutions that can have a more immediate effect, such as the use of UV-reflective treatments and coatings on roofs and building surfaces, porous pavement, misters, and evaporative cooling towers. The California Building Code requires the use of cool roofing strategies for all new development and major remodels in the Sacramento region. Code requirements can be satisfied through the use of specialized materials to reflect more of the sun's light and emit heat rather than absorb it or through the installation of attic insulation materials and other techniques for ensuring that energy performance standards are met. The Building Code also identifies voluntary measures that can be applied for energy saving and heat reduction beyond the mandatory requirements. At the ground level, reflective treatments and coatings can also be used on building materials and pavements in combination with shade trees and landscaping to reduce heat. Landscaping, building features, and site design techniques that provide passive cooling and reduce energy demand are also beneficial and can be implemented as new development occurs. Policies in this section provide support for reducing urban heat, in particular on vulnerable neighborhoods, large urban heat islands, and opportunity areas that will see significant new development.

Map ERC-3: **Projected Average Daytime Temperature (2040)**



Projected Temperature* (°F)

High : 111.368

Low : 88.9507

Max: 111.37 °F
Mean: 108.18 °F
Min: 97.34 °F

Sacramento City Limit

Sphere of Influence

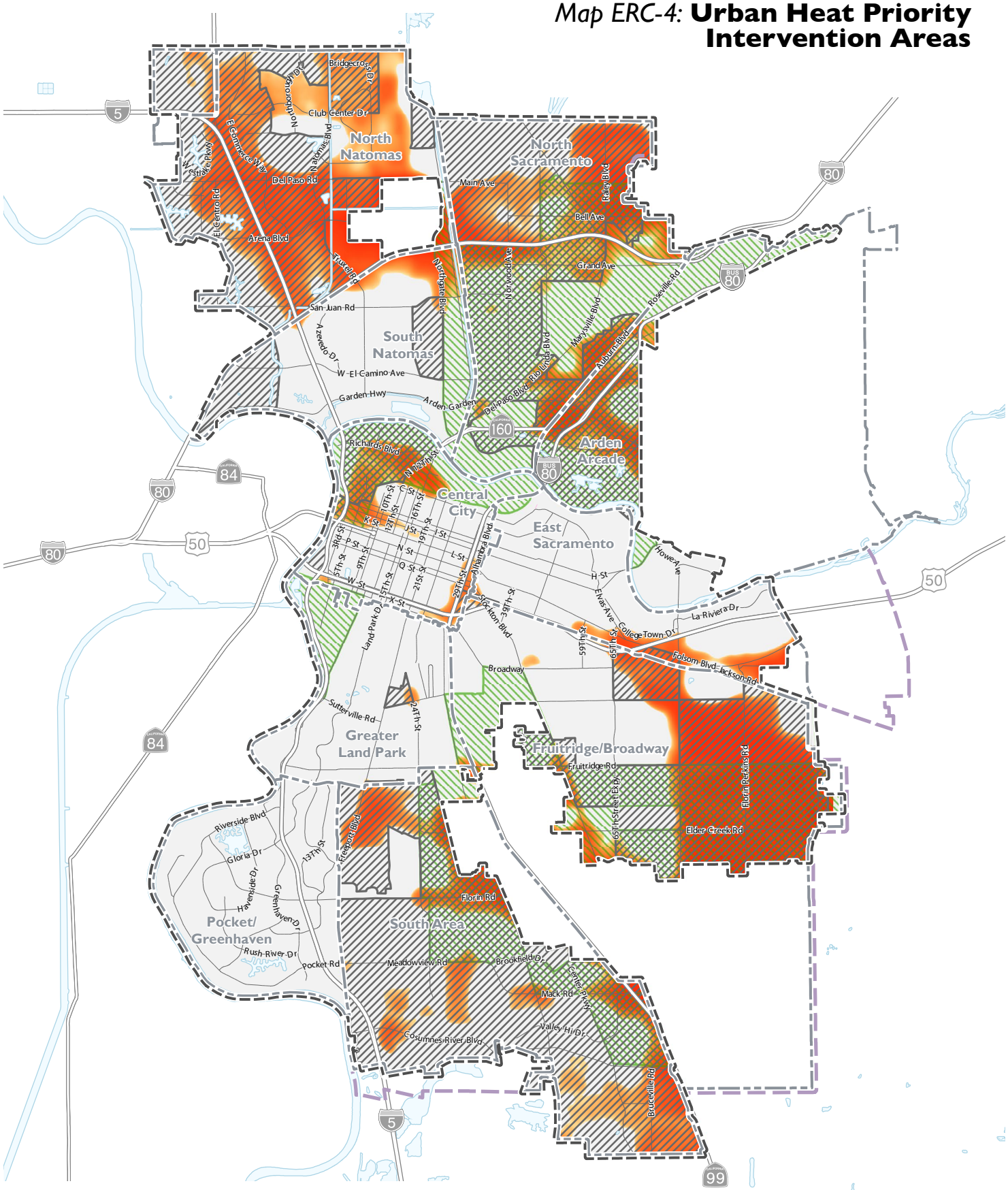
Community Plan Area Boundary

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

0 ½ 1 2 Miles

Source: Natural Capital Project, Stanford University, 2021; NASA, 2018-2021; USGS, 2018-2021; County of Sacramento, 2018; City of Sacramento, 2023; Dyett & Bhatia, 2023

Map ERC-4: **Urban Heat Priority Intervention Areas**



Tier 1: Low Canopy and High Composite Score*

Tier 2: High Composite Score

Tier 3: Low Tree Canopy

Heat Islands (Top 1/3rd Hottest Areas)

Projected Temperature (°F)

High: 111.368

Low: 109.888

Sacramento City Limit

Community Plan Area Boundary

Sphere of Influence

*Please refer to Map EJ-5 for more details on the High Composite Score.

Source: Eviction Lab, 2016; CalEPA, 2018; US Census Bureau ACS, 2014-2019; Datadiversitykids.org (Brandeis University), 2020; US EPA EJSCREEN, 2020; FEMA, 2020; CoStar, 2020; Urban Displacement Project (UC Berkeley), 2020; TIMS SafeTrec (UC Berkeley), 2020; Statewide Database (UC Berkeley), 2020; Trust for Public Land, 2021; NASA DEVELOP - Langley, 2021; HUD, 2019; US DHHS, 2021; City of Sacramento, 2023; Dyett & Bhatia, 2023

0 ½ 1 2 Miles

GOAL AND POLICIES

ERC-8 **Improved resilience to the effects of heat.**

ERC-8.1 **Cooling Design Techniques.** Through design guidelines and other means, in all new development the City shall promote the use of tree canopy, cool pavements, 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) to minimize heat island effects, including hardscape and roof materials with beneficial solar reflectance and thermal emittance values and measures for exterior wall shading.

ERC-8.2 **Large Heat Islands.** The City should work with property owners and businesses identified in urban heat island hot spots, informed by **Map ERC-4**, to address the urban heat island effect and reduce ambient temperatures in surrounding residential areas. City actions may include the following:

- 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.

ERC-8.3 **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.

ERC-8.4 **Municipal Cool Roof Retrofits.** The City should 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, informed by **Map ERC-4**, should be prioritized for retrofits.

ERC-8.5 **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.

ERC-8.6 **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. Amenities could include the following:

- 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 planted in passive landscape areas in parks and public facilities.

ERC-8.7 **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.

ERC-8.8 **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.

ERC-8.9 **Cooling Centers.** The City shall continue to open and operate City Cooling Centers in coordination with Office of Emergency Management during extreme heat events.

IMPLEMENTING ACTIONS

Plans and Programs

ERC-A.1: **Urban Forest Plan.** The 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.

Responsible Entity: Department of Public Works (lead); Community Development Department (support); Youth, Parks, and Community Enrichment (support)

Timeframe: Near-term (2024-2029)

ERC-A.2: **Tree Education.** The City shall develop informational materials to provide to residents and businesses to support the City's tree canopy, including, but not limited to, the following:

- Information for new 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; and
- Options and strategies to convert paved areas to tree planting areas.

Responsible Entity: Department of Public Works (lead); Community Development Department (support)

Timeframe: Near-term (2024-2029)

ERC-A.3: **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.

Responsible Entity: Sacramento Fire Department

Timeframe: Near-term (2024-2029)

Planning Studies and Reports

ERC-A.4: **Heat Reduction in the Public Realm.** The City should explore opportunities to amend development standards and guidelines so as to promote the use of heat mitigation strategies to reduce temperatures in the public realm, particularly on active transportation networks, commercial corridors, near light rail transit (LRT) stations, and along transit corridors. Requirements may include the incorporation of the following:

- Building design strategies (varied building heights; setbacks from sidewalks; vertical and horizontal shade features);
- Cooling building and pavement materials, treatments, and coatings;
- Multiple layers of shading to maximize coverage throughout the day; and
- Street trees, and landscaping.

Responsible Entity: Community Development Department

Timeframe: Near-term (2024-2029)

ERC-A.5: **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.

Responsible Entity: Department of Public Works

Timeframe: Mid-term (2030-2035)

ERC-A.6: Landscape Maintenance Ordinance. The City shall study the feasibility of a landscape maintenance ordinance that would phase out the use of gas-powered landscaping equipment. This feasibility study shall include the following:

- Account for and identify potential alternatives to achieve comparable landscaping results when gas-powered landscaping equipment is no longer allowed.
- Consider potential solutions to equity impacts on the landscaping workforce as the industry shifts to accommodate the phasing out of gas-powered landscaping equipment.
- Identify a landscaping industry- and workforce-informed process and criteria for determining the extent of phasing out gas-powered landscaping equipment and how to equitably shift industry practices in response.

Responsible Entity: Community Development Department (lead); Office of Innovation and Economic Development (support)

Timeframe: Near-term (2024-2029)

Regulations, Standards, and Development Review

ERC-A.7: Cooling Landscape Standards. The City shall prepare a Landscape Manual or enhance landscape standards to mitigate urban heat island effects. Such standards could include the following:

- A climate appropriate planting palette and recommended plant mix,
- Targets for street tree canopy,
- Shade structure coverage, and
- Asphalt paving coverage.

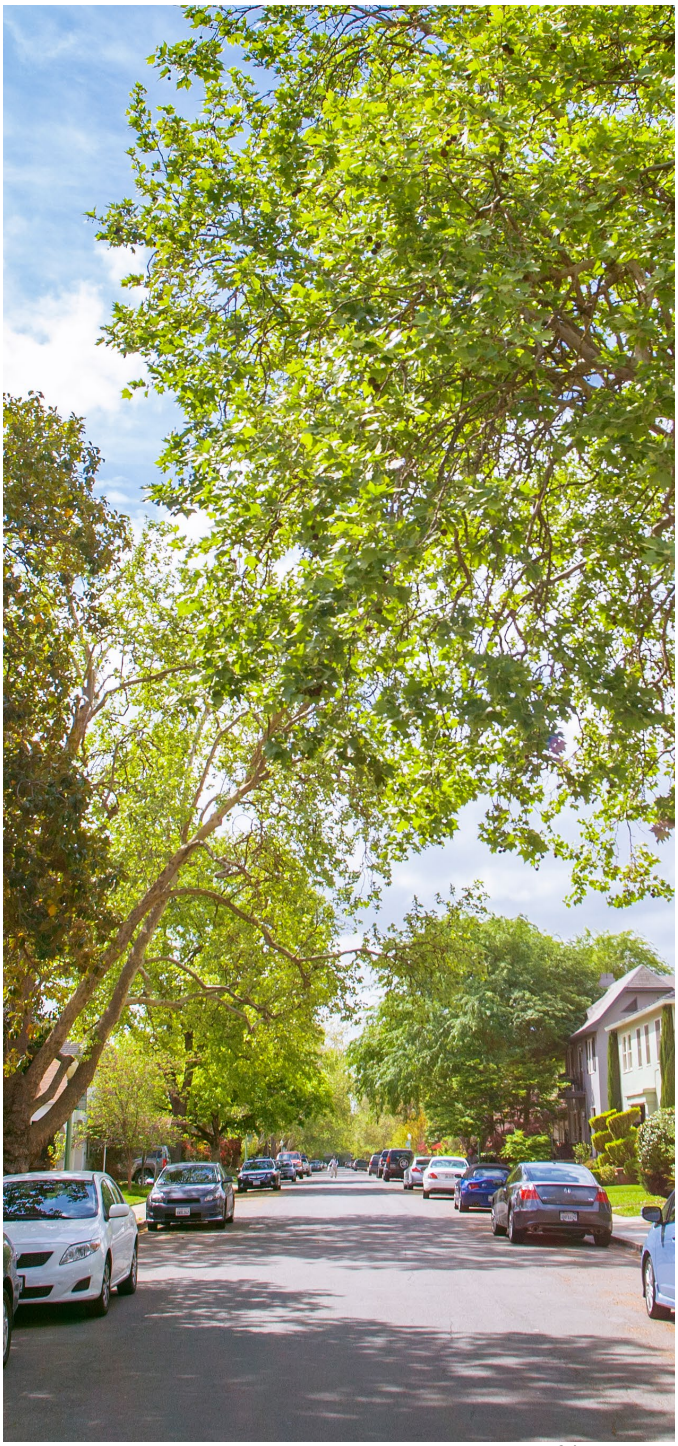
Responsible Entity: Community Development Department (lead); Department of Youth Parks and Community Enrichment (support)

Timeframe: Near-term (2024-2029)

ERC-A.8: Heat-Resilient Design Techniques. The City shall evaluate the feasibility of updating design guidelines, standards, and the municipal code to require building materials and site design techniques that provide passive cooling and reduce energy demand.

Responsible Entity: Community Development Department

Timeframe: Mid-term (2030-2035)



ERC-A.9: Minimum Tree Requirements. 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 improve tree canopy inclusion. Review the following topics at a minimum:

- Requirements for trees in setback areas, particularly located to shade sidewalks and streets, particularly in new single-unit dwelling developments and subdivisions;
- Opportunities to provide incentives or requirements for inclusion of trees in front, back and side yards, particularly when sited to provide shade for sidewalks and streets;
- Tree plantings in site plan review to place trees to maximize energy conservation;
- Chapter 12.56 of the City Code related tree permits for ministerial development project review; and
- Solar panel installation requirements to minimize potential conflicts with tree planting.

Responsible Entity: Community Development Department (lead); Department of Public Works (support)

Timeframe: Near-term (2024-2029)

ERC-A.10: Parking Lot Shade Ordinance. The City shall update the Parking Lot Shade Ordinance and Guidelines to ease compliance, improve site plan review and inspection, monitoring, and to strengthen requirements for ongoing maintenance and replacement of trees in parking lots. Identify when and how shading requirements may be satisfied through alternate methods such as canopies and solar arrays.

Responsible Entity: Department of Public Works (lead); Community Development Department (support)

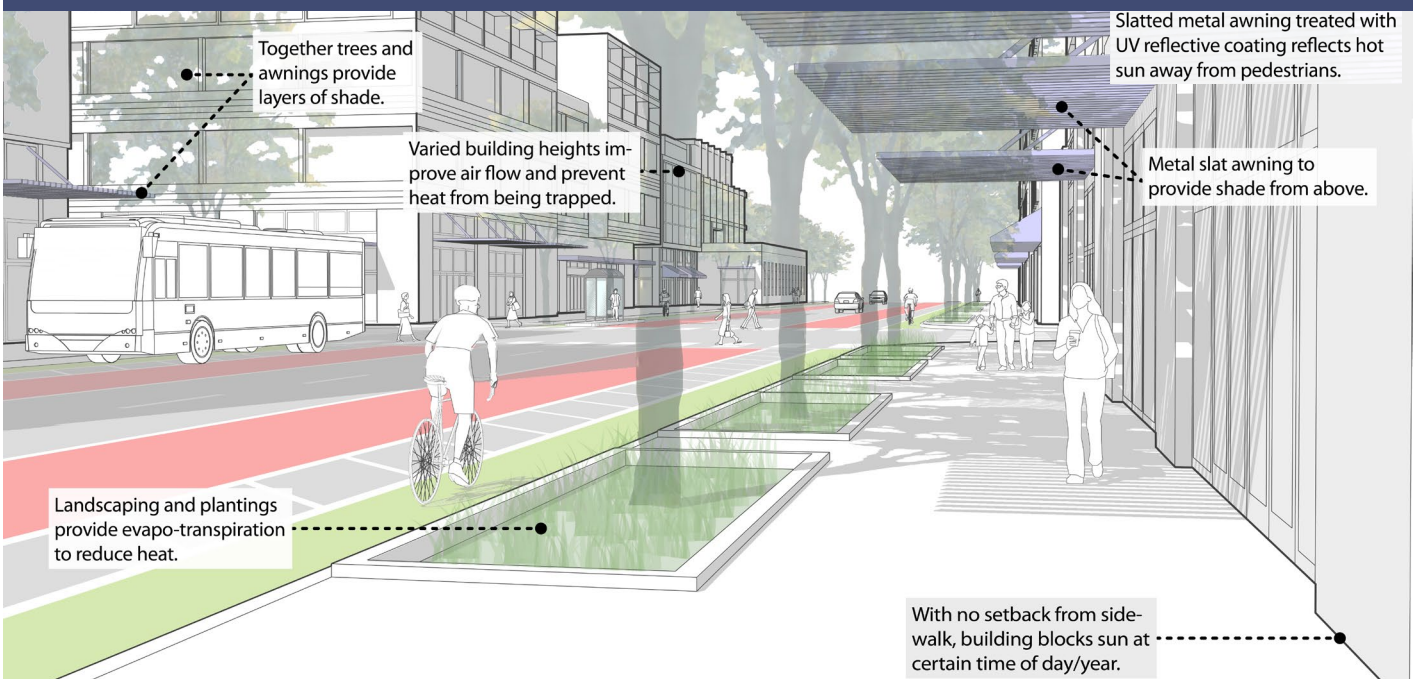
Timeframe: Mid-term (2030-2035)

ERC-A.11: Street Standards for Tree Canopy. The City shall update Street Standards with objective design standards for shade trees along roadways to optimize tree canopy and provide solutions for various street functions and conditions.

Responsible Entity: Department of Public Works (lead); Community Development Department (support)

Timeframe: Near-term (2024-2029)

Heat-resilient design techniques like awnings, trees and plants, and varied building heights provide passive cooling, reduce energy demand, and make outdoor spaces feel cooler.



City of Sacramento Urban Forest Plan

The Sacramento Urban Forest Plan, adopted in June 2025 lays out a framework of policies and actions to grow and sustain the city's tree canopy as a critical piece of meeting our Climate Action & Adaptation Plan (CAAP) goals. The plan prioritizes equitable access to trees and shade, directing resources toward communities with the greatest need, while also strengthening City codes, programs, and partnerships to expand canopy across both public and private land. With a primary goal of increasing Sacramento's tree canopy to 35 percent by 2045—nearly doubling the number of trees citywide—the plan identifies clear strategies, responsibilities, and implementation steps to achieve lasting benefits for residents, neighborhoods, and the environment. **To review the full text of the Urban Forest Plan, click HERE**

Policy and Program Framework

Sacramento City Hall

The Sacramento Urban Forest Plan outlines a comprehensive framework to align urban forestry policies and programs with the City's land use, climate, health, transportation, and equity goals.

Based on assessment of the urban forest and professional and community input, the goals, policies, and implementation strategies identified in this Policy and Program Framework are grounded in the following vision and guiding principles.

VISION

The City of Sacramento, together with community investment and involvement, will reinforce Sacramento's legacy as the "City of Trees". The City will address historic inequity in neighborhood tree canopy and prioritize the sustainable management and expansion of the urban tree canopy to provide extensive benefits and reprieve from the impacts of climate change for generations of Sacramentans to come.

GUIDING PRINCIPLES

Identified with collaborative input from community stakeholders, the following guiding principles established the foundation on which all Goals, Strategies, Policies, and Implementation Actions included in the SUFP were developed.

> **Civic Pride and Community Health:**
Sacramento's urban forest is essential to the city's identity, livability, and community and environmental health.

> **Resilience to Climate Change:**
Preserving, strengthening, expanding and adapting the urban forest is a critical strategy in responding to climate change.

> **Equity:**
All communities are entitled to the same access to tree canopy and its benefits. Inequities in tree canopy must be addressed.

> **Partnership and Engagement:**
The urban forest is a community asset, and urban forest programs and priorities need to be achieved through collaboration and shared responsibility between the City, community members, and external partners.

> **Planned-for Trees:**
Incorporating new trees and protecting existing trees within planned development is a priority, to allow trees to grow to maturity without interfering with adjacent infrastructure and contribute to canopy cover goals.

GOALS & STRATEGIES

The Policy and Program Framework and Implementation Strategy are both based on the following five goals for the urban forest. Each goal is accompanied by a series of strategies, which are required to achieve it.

Goal 1: GROW

Grow the urban forest through new plantings to support livable neighborhoods, mitigate the impacts of climate change and reinforce the City's legacy as the "City of Trees."

Strategies:

1. Expand Canopy
2. Plan for Trees
3. Canopy Equity

Goal 2: STEWARD

Steward the City's existing trees to preserve canopy and protect the urban forest from biological and cultural threats and loss.

Strategies:

1. Canopy Resilience
2. Native Forest Resilience
3. Tree Protection

Goal 3: MANAGE

Manage the urban forest through coordinated planning, design, and maintenance to ensure its long-term health and sustainability.

Strategies:

1. Organizational Best Practices
2. Manage Risk
3. Regular Maintenance
4. Enforce Standards
5. Manage for Co-benefits

Goal 4: ENGAGE

Engage, educate, and coordinate with community members, public agencies, partners, and private businesses to care for and grow the urban forest.

Strategies:

1. Community Engagement
2. Partner Coordination
3. Youth Engagement
4. Workforce Development

Goal 5: SUSTAIN

Sustain the growth, development, and continuity of city urban forest programs through dedicated funding and innovation.

Strategies:

1. Program Funding
2. Incentive Programs
3. Innovation

Grow

Goal 1: Grow the urban forest through new plantings to support livable neighborhoods, protect residents and visitors from the impact of climate change, and reinforce the City's legacy as the "City of Trees."

Strategy 1.1 Expand Canopy

Increase the current levels of canopy to maximize the benefits of the urban forest.

Policies + Implementation Actions

1.1.1 The City shall strive to achieve a minimum average Citywide tree canopy of 25 percent by 2030 and 35 percent by 2045.

A. To this end, the City shall aim for the following minimum Citywide 2045 canopy coverage goals in its planning, restoration, and urban forest implementation efforts.

- Residential neighborhoods: 40 percent
- Streets and sidewalks and shared use paths: 50 percent
- Parking lots: 50 percent[84]
- Commercial and mixed-use areas: 25 percent
- Industrial areas: 20 percent
- Public facilities and parks: maximize tree canopy based on usable space.

B. These goals will help drive land use and planning standards and decisions. The City will prioritize efforts and programs for more tree planting in those areas substantially below these goals, particularly in disadvantaged communities, and where heat island effects are greatest.

1.1.2 Continue to perform volunteer initiated tree planting operations in parks.

A. Maximize tree canopy cover within new parks' plans to the extent feasible while providing for other desired recreational amenities.

B. Increase tree planting in passive recreation and landscape areas within existing parks that can accommodate more new trees.

C. Prioritize tree plantings with appropriate irrigation in parks and public spaces in communities where tree canopy coverage is low to provide greater access to greenery and shade.

D. Identify and pursue new sources of funding to increase tree planting, irrigation, and tree maintenance operations in parks.

[84] In some instances, shading may be accomplished through installation of carports and/or overhead solar arrays or other efforts that have sustainability benefits.

1.1.3 Continue to operate a street tree planting program.

A. Minimize vacant planting sites within City right-of-way.

B. Strive to replace removed trees in the next available planting season.

C. Incorporate street tree plantings into new development.

D. Where feasible, incorporate street tree planting into complete street transformations for corridors developed without planting strips.

Strategy 1.2 Plan for Trees

Incorporate trees into all levels of planning and development to ensure existing trees are preserved, an adequate number of new trees are planted to reach canopy goals, that new trees maximize cooling benefits for the public realm, and that trees can grow to maturity without interfering with adjacent infrastructure.

Policies + Implementation Actions

1.2.1 Amend Sacramento City Code[85] as necessary to improve tree canopy inclusion and require minimum levels of tree planting in development projects. Review the following topics at a minimum:

A. Review City Code and Planned Unit Development Guidelines for opportunities to add requirements for trees in setback areas, particularly located to shade sidewalks, bikeways and streets based on minimum canopy goals, particularly in new single-unit dwelling developments/subdivisions

B. Opportunities to provide incentives for inclusion of trees in front, back, and side yards, particularly when sited to provide shade for sidewalks and bikeways;

C. Requiring consideration of tree placement in site plan and design review to maximize passive cooling and energy conservation;

D. Guidance on solar panel installation requirements to minimize potential conflicts with tree plantings;

E. Guidance defining how tree permits for ministerial development project reviews are processed, including timing of tree removal permit application processing and approved tree removals within the review, and permitting process;

F. Guidance on tree selection, prioritizing City-approved tree species that are climate-appropriate and more likely to survive projected climatic changes in the Sacramento Valley; and

G. Identify types of commercial and industrial developments with space appropriate for large trees and consider applying a higher level of specificity of tree-related requirements, including but not limited to trees species, mature canopy diameter, and post-construction inspection.

[85] Review and amendment of Sacramento City Code shall include Title 17 Planning and Development Code and Title 12 Streets, Sidewalks and Public Places code. (https://library.qcode.us/lib/sacramento_ca/pub/city_code)

1.2.2 Review and update design guidelines and development standards to support achievement of minimum canopy goals, outlined in strategy 1.1.1, and maximize benefits.

A. Update standards to prioritize tree placement that shades buildings and the public realm to the extent feasible.

B. Identify minimum requirements for the growing space necessary to support trees, including soil volume by tree size and soil treatment.

C. Identify appropriate long-term irrigation solutions. Where appropriate, safe, and feasible, include water re-use into irrigation practices.

D. Plant the right tree, in the right place, for the right reason. When planting trees or preparing or approving tree plans, require adequate space and appropriate species for the location. Incorporate large canopy shade trees to the extent feasible.

E. Identify appropriate recommendations for tree height and placement to avoid conflicts with pedestrian scale lighting, signage, and utilities.

1.2.3 Encourage development plans to meet minimum canopy goals, identified in strategy 1.1.1, within 15 years.

A. Identify and implement methods to include tree canopy assessment and requirements in the development review process. If necessary, identify new review fees or revenue streams to address this requirement.

B. Trees should be incorporated in private setback areas to the extent feasible. In addition to trees in setback areas, strategies such as plazas, paseos, parks, and robust street tree programs should be utilized to meet canopy goals.

C. When development is proposed with canopy potential below target canopy goals, due to the level of lot coverage or other conditions, identify how and where occupants or users will access trees or other shading and employ adequate shading mitigations.

D. Develop a calculator tool to help determine canopy potential for development projects.

E. Identify and establish metrics, processes, and fees to begin monitoring, tracking, and reporting on number of trees planted in new development, average future canopy predicted, and trees removed.

1.2.4 Develop mechanisms that require or incentivize preservation of existing trees during site development when feasible.

A. Provide maximum flexibility in development standards to preserve existing trees and maximize future tree canopy levels, especially for residential urban infill projects.

B. Continue to ensure Chapter 12.56 of City Code is enforced for all tree removals associated with development projects requiring ministerial review.

1.2.5 Identify strategies to strengthen implementation of the Parking Lot Shading Ordinance and Parking Lot Shading Design and Maintenance Guidelines to support achievement of a minimum of 50 percent shading and ensure long-term parking lot tree canopy success.

A. Review and amend Chapter 17.612.040 of City Code Tree Shading Requirements for Parking Lots and the Parking Lot Shading Design and Maintenance Guidelines to improve site plan review, support climate-resilient tree selection, improve inspection, and monitoring, and strengthen requirements for ongoing maintenance and replacement of parking lot trees.

B. Identify when and how shading requirements may be satisfied through alternate methods such as canopies and solar arrays.

C. Develop resources to strengthen monitoring and guidelines to support enforcement of the Parking Lot Shade Ordinance after parking lots are completed.

D. Develop an inventory of parking lots that are subject to the parking lot shade ordinance to aid in monitoring and enforcement efforts.

E. Explore amending Chapter 12.56 of City Code to include required parking lot trees under the definition of private protected trees.

F. Pursue opportunities, including grant funding and partnerships, to add trees in existing parking lots that have no or limited tree canopy. These efforts should focus on disadvantaged neighborhoods, particularly those with the greatest heat island impacts.

1.2.6 Support the achievement of 50 percent tree shading over streets and sidewalks and shared use paths.

A. Incorporate tree canopy strategies in the *Streets for People* active transportation plan.

B. Update street standards[86] to optimize tree canopy and provide solutions for various street functions and conditions.

C. Require street trees on approved private streets unless clearly infeasible. Develop conditions under which trees on private streets may be deemed infeasible and plans approved without the inclusion of street trees. If street trees are infeasible, locations within the development should be identified for inclusion of green space and tree canopy.

D. When planning and implementing complete streets projects, the City will incorporate tree planting with adequate planter space and irrigation as an essential infrastructure element to the extent feasible given physical conditions. Emphasis will be placed on shading sidewalks, bikeways, and shared use paths.

E. Partner with Sacramento Regional Transit to incorporate tree shading around transit stops and passenger waiting areas when feasible.

[86] The Street Design Standards are a portion of the City's Design and Procedures Manual – Section 15: Street Design Standards.

F. Support conversion of paved areas to accommodate trees through implementation of complete streets projects, restoration of planter strips where they have been converted to hardscape, and other strategies as appropriate.

G. Encourage property owners without front yard trees to plant trees that can shade the sidewalks and streets in front of their property.

1.2.7 Provide for the successful establishment of trees in new development and redevelopment projects.

A. Include a requirement for successful establishment of trees into conditions of approval for development projects.

B. Provide for the health and survival of required trees using landscape warranty conditions where feasible and identify the party responsible for tree maintenance and establishment when warranty obligation ends.

C. Improve guidelines and training for building inspectors and public works inspectors that inspect landscaping to include proper tree establishment.

Strategy 1.3 Canopy Equity

Prioritize addressing historic inequities, removing barriers to tree adoption, and ensuring the urban forest is shared equitably[87] across all communities[88].

Policies + Implementation Actions

1.3.1 Support City planting efforts and implementation of urban forest programs in priority communities[89].

1.3.2 Support and facilitate canopy expansion efforts on private property across the City with focus in priority communities.

A. Take action to support equitable urban forestry canopy expansion, maintenance, and benefits on private property and ensure programs are informed by diverse perspectives and focused to address those communities in greatest need.

B. Maximize involvement in urban forestry programs from residents in disadvantaged neighborhoods by enhancing community engagement and available urban forestry programs and resources.

C. Address financial barriers to tree planting and care for low-income residents.

D. Explore the feasibility of programs to require or encourage landlords to include trees on rental properties.

[87] Because equity is a guiding principle of the SUFP, equity-centered policies and implementation actions are also embedded into the other goals and strategies in this plan.

[88] Priority communities for urban forestry programming will be identified through regular assessment of Disadvantaged Community status, urban heat indices, tree canopy percentage, air quality indices, and public health concerns. Refer to Figure 12 Urban Forest Priority Intervention Areas Map.

[89] Priority communities are identifies in Figure 12 Urban Forest Priority Intervention Areas Map.

Steward

Goal 2: Steward the City's existing trees to preserve canopy and protect the urban forest from biological and cultural threats and loss.

Strategy 2.1 Canopy Resilience

Ensure Sacramento's urban forest is resilient and prepared for the biotic and abiotic[90] impacts of climate change to support the longevity and success of the city's trees.

Policies + Implementation Actions

2.1.1 Promote biological diversity in tree species and age for the city's urban forest to maintain resilience.

A. Strive to ensure that overall City tree planting efforts, including trees planted by the City and trees associated with approved development projects, follow the "10-20-30 rule"[91] for species diversity, except in instances when planting native trees for native forest enhancement or reforestation.

2.1.2 Update a comprehensive recommended tree list to ensure that all trees planted by the City or associated with approved development projects are suitable for changing climate conditions in Sacramento.

A. Recommended trees should be used to guide public and private plantings. This list will be modified as conditions change and will identify how trees not on this list will be evaluated for inclusion in City approvals.

B. Continue to support research and partnerships with research institutions to identify tree species that demonstrate substantial adaptability to the impacts of climate change expected in the Sacramento area.

C. Update the recommended tree list to include identifying information about each species to assist in proper tree selection; include characteristics such as canopy cover, minimum growing space, soil conditions, water use, and carbon sequestration capabilities.

D. Include native trees on the comprehensive recommended tree list and identify appropriate use cases.

2.1.3 Continue to monitor and identify pest threats and take preventative actions to anticipate threats and minimize potential impacts.

[90] Biotic factors are living things with an ecosystem (ex: plants, animals, bacteria); Abiotic factors are non-living components in an ecosystem (ex. water, soil, atmosphere).

[91] The "10-20-30 rule" is a widely used standard that recommends no single species represent greater than 10 percent of the total population, no single genus more than 20 percent, and no single family more than 30 percent.

Strategy 2.2 Native Forest Resilience

Conserve native oaks and woodlands as a valuable tool for climate adaptation that can address the twin crises of climate change and biodiversity loss.

Policies + Implementation Actions

2.2.1 Preserve native trees, woodlands, native species, and riparian areas to the extent feasible in recognition of their ties to the area's natural and cultural history, ability to sustain ecosystems, and adaptation to Sacramento's hot and dry climate.

2.2.2 Incorporate native plantings into the urban forest and parks when appropriate and to the extent feasible.

A. When planting native trees for native forest enhancement or reforestation, select species based on ecological appropriateness instead of adhering to the "10-20-30 rule"[92] for species diversity.

2.2.3 Advocate for regional forest corridors to facilitate adaptation and migration of native tree species and wildlife.

A. Explore developing and adopting a natural area plan in coordination with other agencies in the region.

Strategy 2.3 Tree Protection

Preserve existing tree canopy and healthy mature trees[93] as vital for maintaining current canopy levels, meeting canopy goals, and adapting to climate change. Enforce tree protection standards to protect the urban forest from loss of existing trees.

Policies + Implementation Actions

2.3.1 Preserve mature trees on public and private property to the extent feasible.

A. Support preservation of healthy trees in the City's regulations and discretionary decisions for new development and redevelopment.

B. Require development proposals to consider alternatives to removal of healthy trees and only consider removals of healthy, mature trees when alternatives to removal prove infeasible.

C. Consider long-term energy and economic benefits of tree inclusion against reductions in initial development costs when assessing development proposals.

D. Design public projects to avoid the removal of or damage to city trees to the extent feasible.

[92] For this policy document, mature trees are defined using the definition of private protected trees within Chapter 12.56 of City Code.

[93] The "10-20-30 rule" is a widely used standard that recommends no single species represent greater than 10 percent of the total population, no single genus more than 20 percent, and no single family more than 30 percent.

2.3.2 Protect existing trees during construction.

A. Require adequate protection during construction to protect existing tree roots and structure.

B. Develop a tree protection manual for construction projects.

2.3.3 Encourage appropriate watering and irrigation practices to minimize water use while supporting healthy tree growth.

A. Support initiatives that encourage other entities and private property owners to practice responsible tree irrigation during droughts to minimize tree stress and loss.

B. Upgrade or supplement irrigation in parks and streetscapes where needed to support appropriate tree watering practices.

2.3.4 Assess the success of the City's Tree Ordinance (City Code Chapter 12.56) to encourage the preservation and care of private protected trees.

A. Strengthen enforcement of tree regulations and requirements as necessary.

B. Regularly assess fines for violations, especially for repeat offenders.

C. Develop educational materials to promote tree protection ordinance and increase community awareness about tree protection requirements, particularly to landscape and tree care companies.

D. When necessary for the project to be constructed as designed, continue to require tree removal permits to be approved as part of project approval for proposed private development and City projects.

E. Continue to require replacement for the removal of City trees and private protected trees, including options for onsite, or offsite planting, and tree replacement fees.

2.3.5 Support the use of proper pruning techniques on privately maintained trees.

A. Provide education to support appropriate pruning practices on privately maintained trees and trees maintained by other agencies.

B. Encourage use of certified arborists for guidance on tree care and maintenance.

Manage

Goal 3: Manage the urban forest through coordinated planning, design, and maintenance to ensure its long-term health and sustainability.

Strategy 3.1 Organizational Best Practices

Seek to include necessary resources to manage city trees at a sustainable level.

Policies + Implementation Actions

3.1.1 Employ professional urban forest staff and rely on urban forestry best management practices.

A. Seek to maintain adequate and qualified urban forestry staffing and supporting contracts to appropriately maintain City trees and provide high levels of customer service.

B. Continue to maintain a high level of professionalism by requiring certified arborists and adherence to professional standards and best urban forest management practices for decision making, maintenance, care, and planting of trees under City authority.

3.1.2 Strengthen collaboration and support between all City departments that manage trees.

A. Coordinate an internal working group with key staff from relevant departments and divisions.

3.1.3 Conduct annual reporting on the urban forest plan to ensure progress toward goals and appropriate resource allocation.

A. Assess the urban forest program staffing levels, funding allocation and utilization, status of SUFP objectives, and tree planting and removal activities.

B. Provide an annual update to the City Council, in conjunction with annual reporting on the implementation of the Climate Action and Adaption Plan.

3.1.4 Perform regular updates to the Urban Forest Plan and canopy cover assessment and analysis reports.

A. Strive to perform a canopy cover assessment aligned with the CAAP update greenhouse gas inventory every five years.

B. Explore funding to support SUFP and canopy cover assessment and analysis report updates.

Strategy 3.2 Manage Risk

Utilize tree risk management policies, procedures, and practices to minimize the risk of injury and property damage.

Policies + Implementation Actions

3.2.1 Rely on industry best management practices for pest control, disease prevention, and hazard mitigation measures in urban environments in treatment of City-managed trees.

A. Require regular disease and pest training for City urban forestry staff.

B. Continue to monitor City-managed trees for signs of emergent pests and diseases and take proactive measures to address threats.

C. Continue to monitor and address as necessary City-managed trees that have structural deficiencies, disease, or may cause harm.

3.2.2 Maintain and implement emergency response plans for storm events that result in tree loss and damage.

3.2.3 Minimize future damage or conflict by planning for trees as a part of infrastructure.

A. Require proper planting space and tree selections to minimize conflicts and damage to infrastructure assets, including sidewalks, overhead lines, underground utilities, and solar panels.

Strategy 3.3 Regular Maintenance

Perform regular maintenance on City trees to improve the health, longevity, safety, and functional capacity of the urban forest.

Policies + Implementation Actions

3.3.1 Continue to operate a proactive tree maintenance program to preserve and protect City-managed trees.

A. Strive to achieve a five-year maintenance pruning cycle.

3.3.2 Update and regularly maintain a comprehensive inventory of all City-managed trees.

A. Integrate inventories across City departments into one central inventory.

B. Perform a comprehensive inventory update to capture all street trees, park trees, trees on City-managed facilities, and vacant planting stalls.

C. Implement procedures to regularly incorporate new plantings, tree removals, and tree maintenance into the inventory on an on-going basis.

D. Explore coordination and integration of inventories with other public agencies with land in the city limits, including but not limited to the State of California, County of Sacramento, UC Davis, Sacramento State, Los Rios Community College District, public school districts, and public utilities.

Strategy 3.4 Manage for Co-benefits

Plan to maximize the co-benefits of the urban forest throughout trees' full life cycle.

Policies + Implementation Actions

3.4.1 Support tree reuse efforts within the City to extend the life cycle of trees.

A. When large trees need to be removed as a part of a Capital Improvement Project or private development, identify options for the highest and best use of the wood.

3.4.2 Explore opportunities to leverage the benefits of trees to retain stormwater runoff.

A. Identify opportunities to incorporate trees as a central green stormwater infrastructure element in stormwater master planning.

B. Explore opportunities to encourage tree planting through existing city water efficiency programs.

3.4.3 When designing transportation improvements, support the inclusion of adequate tree canopy to provide substantial shade for active transportation infrastructure and support achievement of 50 percent shading on streets, sidewalks, and shared use paths.

A. When conducting active transportation audits, identify opportunities to add shade trees on public and private land.

B. Review procedures to ensure that inclusion and preservation of trees are part of transportation planning and projects.

C. To the extent feasible require the inclusion of trees in all road diets, transportation Capital Improvement Projects, and private development projects altering the roadway. Identify irrigation or ongoing water solutions for all included trees.

D. When conducting active transportation audits, identify opportunities to add shade trees on public and private land.

Engage

Goal 4: Engage, educate, and coordinate with community members, public agencies, partners, and private businesses to care for and grow the urban forest.

Strategy 4.1 Community Engagement

Support community advocacy for and involvement in the urban forest.

Policies + Implementation Actions

4.1.1 Recognize and promote the city's urban forest.

A. Annually celebrate Arbor Day to promote awareness of the city's tree canopy and benefits.

B. Annually maintain the City's status as a Tree City USA[94].

C. Promote the City of Sacramento's urban forest nationally and internationally to encourage visitors and tourism.

4.1.2 Conduct Citywide urban forest public outreach and education.

A. Inform and educate residents about the urban forest, City-maintained tree operations and maintenance, available tree planting and water-wise irrigation programs, and opportunities to support the urban forest.

B. Develop informational materials to provide to homeowners, tenants, and business owners to support tree canopy, including but not limited to the following topics:

- Information on tree benefits, planting and tree maintenance guidance, tree selection and care, available programs, and water-wise irrigation.
- Information about tree species that are adapted to Sacramento's climate and resilient to drought and climate change.
- 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.
- Shared responsibility between City and property owners for street trees.
- How to identify and report public tree issues or violations.

C. Update the City's urban forestry website to improve available information and references to tree partners and opportunities.

[94] Tree City USA is a recognition earned from the Arbor Day Foundation through demonstrated commitment to trees. (https://www.arborday.org/programs/treecityusa/)

D. Prioritize public outreach and tree programs in disadvantaged, high heat, and low-canopy neighborhoods.

E. Identify opportunities to provide translated and/or bilingual outreach and education materials.

F. Develop partnerships with community-based organizations to strengthen multi-lingual and culturally appropriate engagement.

4.1.3 Encourage active participation by residents in the development and promotion of a sustainable urban forest.

A. Establish a tree ambassador program.

B. Provide and support educational events about the benefits of trees, proper irrigation and water use, and tree care and pruning.

C. Encourage and support community tree planting, volunteer, and community forestry efforts of other agencies and partners.

D. Prioritize City-led community tree planting events and volunteer opportunities in disadvantaged, high heat, and low-canopy neighborhoods.

Strategy 4.2 Partner Coordination

Facilitate coordination, involvement, and commitment from all entities that own, control, regulate, or affect the urban forest.

Policies + Implementation Actions

4.2.1 Continue existing partnerships and establish new partnerships.

A. Strengthen partnerships with other agencies, organizations, contractors, and public utilities whose activities impact trees through regular dialogue and project coordination.

B. Establish new partnerships and memoranda of understanding with partners to deliver tree planting, maintenance, and education projects and reach City tree program goals.

C. Collaborate with groups such as the Sacramento Metropolitan Air Quality Management District, Sacramento Municipal Utility District, State of California, Sacramento County, Los Rios Community College District, K-12 school districts, Tribes, Sacramento Tree Foundation, environmental groups, community and neighborhood associations, business and property improvement districts, and other agencies and organizations to expand tree planting, preservation, and care programs throughout the city.

D. Explore partnerships to support landlords to plant, retain, and maintain trees on private property.

4.2.2 Support and encourage businesses to increase tree canopy.

A. Work with businesses and property improvement districts to incorporate and add trees to business corridors, streets, and parking lots.

B. Explore incentives and other programs to encourage the addition of trees to commercial properties and parking lots.

C. Develop and implement a pilot program to retrofit existing low canopy parking lots to increase tree canopy and reduce urban heat.

4.2.3 Strengthen partnerships with entities in disadvantaged and low tree canopy neighborhoods.

A. Build and strengthen partnerships with community-based organizations, businesses, non-profits, neighborhood groups, faith-based organizations, and other entities within or that serve disadvantaged, low tree canopy, and high heat neighborhoods to promote and expand access to urban forest programs.

4.2.4 Support science-based urban forest decision making among partners.

A. Encourage other agencies and utilities that govern tree removal, maintenance, policies, and/or restrictions to ensure these decisions are based in ecological and science-based information and balance decisions for tree removal or restrictions with longer-term environmental consequences.

Strategy 4.3 Youth Engagement

Cultivate youth engagement in the urban forest to continue Sacramento's legacy of tree stewardship.

Policies + Implementation Actions

4.3.1 Support opportunities for youth leadership in urban forest programs.

A. Sponsor and support youth leadership efforts and programs around tree planting and care.

B. Partner with the Youth Commission and YPCE Youth Division to take a leadership role in promoting planting programs, developing efforts to increase access to trees in disadvantaged communities, and training youth "tree stewards" within the community.

C. Provide seed funding as needed to support urban forest youth leadership programs.

4.3.2 Increase youth tree literacy and access to trees.

A. Partner with schools to increase trees, tree maintenance, and irrigation on school grounds.

B. Partner with schools to offer tree care curriculum and programs.

Strategy 4.4 Workforce Development

Advance career pathways in urban forestry.

Policies + Implementation Actions

4.4.1 Promote workforce development programs for tree care professions as a critical component of green industry.

A. Explore developing and facilitating tree care apprenticeship programs in the city with local tree care companies, certified arborists, workforce development organizations, and educational institutions.

B. Coordinate with the Landscape and Learning program[95], local high schools, and community colleges to promote careers in tree care and provide basic urban forestry and arboriculture skills training as resources and funding allow.

C. Identify opportunities to utilize workforce development programs, such as the regional and state conservation corps, in City urban forest efforts.

4.4.2 Build workforce pipelines from Sacramento's historically under-employed and low-income neighborhoods into the City's urban forest workforce.

A. Strengthen partnerships and opportunities for pre-employment training, job placement support, and advertisement to increase awareness about career pathways into urban forestry.

B. Prioritize outreach for workforce development programs to Sacramento's historically under-employed and low-income neighborhoods to facilitate entry into well-paying urban forestry careers.

[95] https://www.cityofsacramento.org/ParksandRec/Youth-Division/Youth-Employment/LandscapeAndLearning

Sustain

Goal 5: Sustain the growth, development, and continuity of City urban forest programs through dedicated funding and innovation.

Strategy 5.1 Program Funding

Pursue sustainable funding to support the ambitious canopy and program goals within this Plan.

Policies + Implementation Actions

5.1.1 Pursue an increase in dedicated long-term funding to provide an increased level of tree canopy, perform associated care and maintenance, and expand core urban forestry services and programs.

A. Provide information on the level of funding and staff needed to 1) increase the frequency of maintenance levels for City-managed trees, 2) increase tree planting in parks and along streets, 3) increase maintenance capacity to care for new trees added to the inventory from increased planting levels, and 4) implement new programs to support tree planting and care on private property.

B. Develop a cohesive funding program for tree planting and irrigation within City parks.

5.1.2 Pursue grant funding to promote tree planting and partner engagement.

A. Seek grant funding for programs to promote tree planting and maintenance efforts, public-private partnerships, workforce development, community education, street tree expansion, and parking lot greening.

5.1.3 Optimize existing funding sources to meet canopy and management goals.

A. Assess current processes and fees to identify improvements to better achieve objectives.

5.1.4 Explore new funding sources.

A. Explore opportunities to utilize taxes, special assessments, and special tax districts to receive dedicated program funding.

B. Explore non-traditional and technology-driven funding techniques, such as donation and gifting programs.

Strategy 5.2 Incentive Programs

Explore incentive programs to reduce barriers to tree planting and care on private property.

Policies + Implementation Actions

5.2.1 Explore providing financial support to low-income residents for tree planting and care.

A. Identify funding sources or incentives to support mature tree care, including water use and maintenance costs related to trees.

B. Identify funding options or incentives to reduce barriers to tree planting, including education, support for irrigation installation, and support for maintenance costs.

5.2.2 Explore financial incentives to support residents with private protected trees maintenance.

A. Investigate potential tax incentives for properties with private protected and registered trees.

Strategy 5.3 Innovation

Advance innovative technologies and approaches to support the urban forest.

Policies + Implementation Actions

5.3.1 Support new technologies for tree canopy assessment and planning.

A. Utilize technology that allows for public access to urban forest data and can be easily used by residents and other organizations.

B. Identify innovative tools that allow for improved assessment of urban forest resources and utilize that data to improve program and project planning.

City of Sacramento Design Guidelines

City of Sacramento utilizes Design Guidelines to facilitate review of development projects and provide design principles for structures that enhance neighborhood character, creating more attractive and inviting places while maintaining visual interest and a strong sense of place. This excerpt includes the landscape standards from the single-unit design guidelines as well as the landscape standards and open space requirements from the multi-unit design guidelines. Full **text of these design guidelines, design guidelines for other building types, and guidelines for specific design districts can be found HERE**

15 Landscaping

Design Principle

Landscaping should be used around the home to positively contribute to the appearance. The front yard should be planted with landscaped materials that may include a mixture of mulch, rock, groundcover, decorative shrubs and trees.

Landscaped areas should be mulched with bark or stone to retain soil moisture and inhibit weed germination

Rationale

Landscaping can improve ratings of visual quality and improve the character of the neighborhood. Trees provide shade, reduce energy consumption in the summer, help to filter air pollution, and can increase property values.

Design Guidelines

15-1 New construction shall conform to the City Municipal Code Section 17.612.010, “Landscaping requirements,” which states that a maximum of 40% of the front yard setback may be paved for parking and driveways, with an additional 10% for walkways or uncovered patio use. The remaining portion of the yard must be landscaped.

15-2 A minimum of one tree should be planted in the front yard. A minimum of two trees should be planted for homes on corner lots when the yard permits full canopy growth.

This landscape demonstrates the effective use of a limited plant pallet with a variety of forms and textures

15-3 Low water alternatives to turf, such as ornamental grasses, shrubs, mulch, and groundcover are encouraged.

15-4 Provide a variety of plant material forms and textures, but avoid using an excessive variety of plant species in non-turf-based landscapes. Keep the plant pallet simple, and use pavers, rock, mulch, and masses plantings to create visual order.

15-5 Bare soil should be planted or mulched with bark, stone, or other suitable materials to avoid unnecessary runoff, retain soil moisture, and inhibit weed germination.

15-6 Street trees should be retained. Consult Urban Forestry in the Department of Public Works for questions regarding the care of street trees. Private tree services are available for consultation before trimming or removal of mature trees on private lots.

15-7 Street trees and plant species should be suitable for the Sacramento climate. Drought tolerant species are encouraged.

15-8 Trees species should be selected so that each tree’s canopy at full growth can be accommodated by the site.

Sustainability Guidelines

15-9 Shade trees should be planted on the south and west of the home to provide summer shade and reduce energy consumption.

15-10 New planting strips located between the sidewalk and street should be a minimum of 6 feet wide to promote the health of shade trees.

15-11 Water Efficient Landscaping Requirements: New construction projects with an aggregate landscape area equal to or greater than five hundred square feet (500) requiring a building permit, plan check, plan review, or design review are subject to Chapter 15.92 Water Efficient Landscape Requirements of the Sacramento City Code.

Native and low water use ornamental plants can significantly reduce water consumption. This low water landscape includes a dry riverbed element.

Source: Jaiguru Nursery Garden

This plant pallet provides a variety of plant forms and textures

16 Irrigation

Design Principle

Irrigation is essential to maintain the health and beauty of a home's landscaping and shall be provided for all infill homes.

A conventional spray system is most effective for turf and groundcover

Rationale

The seasonal extremes of the Sacramento climate make regular irrigation of planted areas mandatory. Automatic irrigation ensures regular and consistent watering, and promotes healthy landscaping.

Design Guidelines

16-1 New construction projects shall provide landscaping consistent with Sacramento City Code, Sections 17.612.010 "Landscaping requirements," and Chapter 15.92 Water Efficient Landscape Requirements of the Sacramento City Code.

16-2 An automatic irrigation system should be installed in the front yard to provide consistent coverage of all planted areas. A home on a corner lot should have an automatic irrigation system that covers the yards fronting both streets. Automatic controllers with rain shut-off valves provide greater water conservation.

16-3 If there is a front planting strip, the homeowner is responsible for the irrigation and maintenance of it.

16-4 Turf and groundcover are more effectively irrigated with a conventional spray system Head-to-head spray coverage is recommended. Avoid overspray onto sidewalks and adjacent properties.

16-5 A drip irrigation system is recommended for shrubs and trees to provide deeper, more even watering. Drip irrigation also permits greater water conservation than a conventional spray system.

16-6 Irrigation controls must be screened from view by landscaping or other attractive site materials.

A drip irrigation system provides deeper watering for shrubs and trees

Landscaping / Open Space

Residential projects should be designed to maximize opportunities for creating usable, attractive, and integrated open space.

Landscaping can be used to complement buildings and to make a positive contribution to the aesthetics and function of the specific site and the area. Planted areas shall be used to enhance the appearance of structures, define site functions, and screen undesirable views.

Open space areas should be linked among adjacent developments to allow shared open space opportunities, with a goal of providing contiguous regional open spaces and greenbelts.

Usable, attractive and functional open space and landscaping provide for a pleasant and sustainable living environment. Landscaping also provides cooling shade and helps to improve air quality.

SECTIONS

- **Interior Common Space**
- **Landscaping**
- **Irrigation**
- **Open Space**

Source: newvistas.com

Landscaping used to complement buildings and contribute to the aesthetics of the area

6 Interior Common Space

Design Principle

Interior common spaces that are easily accessible and visually appealing should be provided in multi-unit resident communities. Units that are adjacent to common spaces should have entry features and windows that open onto those common spaces.

Rationale

Interior common spaces should ideally foster a sense of community, which can be facilitated by building facades that allow residents to see and use common spaces. Common spaces should offer amenities that invite use, such as seating, shade, and tot lots.

Design Guidelines

6-1 Ground floor units should have doorways that open onto interior common spaces.

6-2 All units that overlook interior common spaces should have windows that allow residents to easily see these areas.

6-3 Common amenities should be provided that cater to all age ranges, from small children to the elderly, such as tot lots, seating areas, and swimming pools, as appropriate.

6-4 Common facilities such as recreation rooms, laundry and mail areas should be located adjacent to common open space to increase activity in these areas.

6-5 Common open spaces should be designated as a visible, accessible transition between the street and individual units.

This common space provides shade, a range of engaging areas, and easy access from nearby units

Source: Sacramento Places

7 Landscaping

Design Principle

Landscaping should be provided within all street side setbacks, common areas, and parking lots to provide shade and create visually appealing exterior spaces.

Rationale

A variety of landscaping plants and materials can contribute to the visual interest of a neighborhood. Landscaping elements should be selected not only with consideration for the style of the multi-unit structures, but should also complement the landscaping of other buildings on the block.

Design Guidelines

7-1 Exterior site design and landscaping should provide functional recreational spaces and/or community site amenities.

7-2 Exterior spaces should be designed to enhance the overall appearance and compatibility of such development by providing privacy, buffering daylight, and to provide a pleasant transition to the street.

7-3 Street-facing elevations should have landscaping adjacent to their foundation. Landscaped area may be along the edge of a porch instead of the foundation.

7-4 Dense landscaping and/or architectural treatments should be provided to screen unattractive views and features such as storage areas, stand-alone unfinished or untreated trash enclosures, freeway structures, mechanical equipment (i.e., transformers, HVAC etc.) and other similar elements.

7-5 Incorporate appropriate landscaping that includes a variety of trees, shrubs, and other plantings. Unpaved areas should be planted with irrigated plant materials. Unpaved areas where landscaping would be challenging should be mulched to minimize weed growth and improve appearance.

7-6 Provisions for on-going maintenance should be identified to ensure the timely replacement of any dead or diseased vegetation.

7-7 Landscaping compatible with building design is encouraged. Trellises, arbors, cascading landscaping, vines and perimeter garden walls are encouraged.

7-8 Landscaping should be in scale and compatible with the project and adjacent land uses.

7-9 Landscaping should be utilized to soften the differences between infill development and existing adjacent properties in the established neighborhood.

7-10 Security issues should be considered in the landscape design of the site, including creation of barriers and screening.

7-11 Landscape plans should avoid potential conflicts between landscaping and lighting.

7-12 Provide deciduous shade trees around the east, west and south sides of residences to help reduce cooling loads during the summer and allowing solar gain during the winter months.

7-13 Landscaping shall conform to the City Municipal Code Section 13.64.010, “Landscaping requirements,” which requires that the front and street side setbacks must be planted with landscaping materials that primarily consist of turf or low-growing groundcover.

7-14 Trees should be planted in the setbacks and common areas at intervals appropriate to the full spread of the mature trees.

7-15 Street trees should be retained. Consult the City of Sacramento Parks and Trees Service (916-264-5200) for questions regarding the care of street trees. Private tree services are available to consult before trimming or removing mature trees.

7-16 Plant species should be suitable for the Sacramento climate. Low-water landscaping materials are encouraged.

7-17 All planting areas, including those designed to accommodate the 2-foot overhang on parking spaces, should be landscaped with groundcover or other planting materials to reduce stormwater runoff.

7-18 New planting strips located between the sidewalk and street should be a minimum of six feet wide to promote the health of shade trees.

7-19 Paved and hardscaped surfaces should be shaded by trees, shade structures, or photovoltaic solar panels, when possible, to reduce heat transmission and reduce energy consumption.

7-20 Deciduous shade trees and shrubs should be planted on the west and south sides of buildings to minimize solar heat gain and increase energy efficiency.

7-21 Streetscapes should incorporate a planter strip separating the sidewalk from the street (except where prohibited by the existing street cross section). Planting of trees within the planter strip is strongly encouraged for screening, security, shading and cooling benefits.

7-22 Retain existing mature trees in landscape and building location plans where possible.

7-23 Landscaping shall not impede fire access to hydrants connections.

7-24 Street design (cross sections) shall be compatible with the City Street Design Manual.

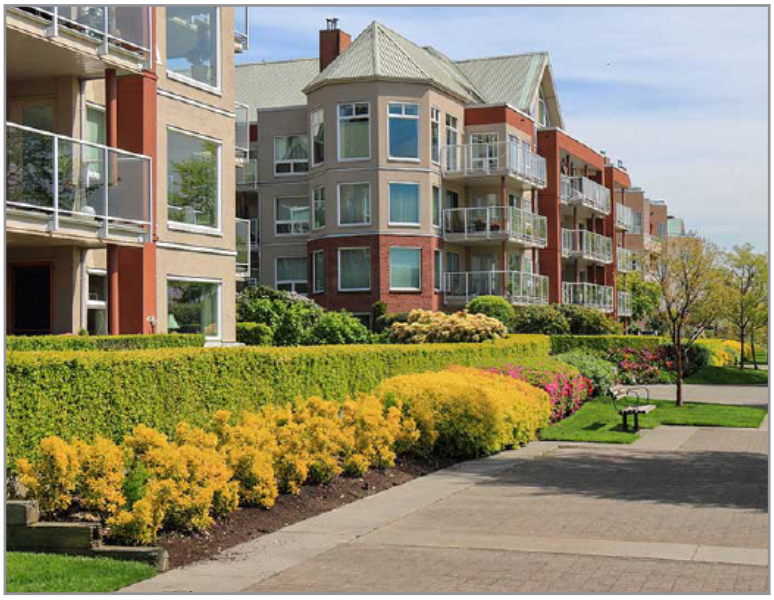
7-25 All new landscaping shall comply with the City of Sacramento Water Conservation Ordinance.

Refer to the following lists for more information about recommended species:

Sacramento Tree Foundation
www.sactree.com/treeInfo/treesWeOffer.html

Sacramento Municipal Utility District (SMUD)
www.smud.org/residential/saving/trees/index.html

City of Sacramento Department of Parks and Recreation
www.cityofsacramento.org/parksandrecreation/urbanforest/index.html



Source: earthdevelopmentinc.com

Landscaping used to complement buildings and contribute to the aesthetics of the area

8 Irrigation

Design Principle

An automatic irrigation system should be provided for new construction to maintain the health and positive appearance of all landscaped areas.

Rationale

The seasonal extremes of the Sacramento climate make regular irrigation of planted areas mandatory. Automatic irrigation ensures regular and consistent watering, and is desirable for the health of landscaping. Irrigation systems and watering frequency should reflect planting types with drought tolerant landscaping requiring less frequent watering capabilities.

Design Guidelines

8-1 An irrigation system must be installed to provide consistent coverage of all landscaped areas.

8-2 Turf and groundcover are more effectively irrigated with a conventional spray system. Head-to-head spray coverage is recommended. Avoid overspray onto sidewalks and adjacent properties.

8-3 A drip irrigation system is recommended for shrubs and trees to provide deeper, more even watering. Drip irrigation also permits greater water conservation than a conventional spray system.

8-4 Automatic controllers with rain shut-off valves will allow for greater water conservation.

8-5 Irrigation controls must be screened from view by landscaping or other attractive site materials.

Source: mithun.com

Irrigation controls must be screened from view by landscaping or other attractive site materials

9 Open Space

Design Principle

Open space should be situated to allow for shared open space opportunities among all multi-unit residents

Rationale

Usable, attractive and functional space and landscaping provide for a pleasant and sustainable living environment.

Source: cadanet.org/EVIVA

Multi-unit projects should be organized around usable common space

Design Guidelines

9-1 Multi-unit projects should be organized around usable common space. The site plan for each multi-unit project should address both active and passive open space uses. Open spaces consisting of playgrounds, pools, picnic areas, tot lots, community rooms, etc. should be provided as appropriate for the ages and number of residents. Unless otherwise identified as an “adults only” or “senior” project, recreation areas for children should be provided.

9-2 Common areas should be accessible from all buildings and connected by a comprehensive, on-site pedestrian circulation system. Common open space recreation areas, plazas and courtyards should be located and landscaped to take advantage of solar orientation, provide protection from wind and afford shade.

9-3 Individual dwelling units should consider a usable outdoor space designed for the exclusive use of that dwelling unit at grade or in the form of a balcony for upper story dwellings. Private usable open space, if provided, should be directly accessible from buildings and be of such size as to offer a reasonable outdoor living opportunity. The placement of air conditioning and other mechanical equipment should not render private open space unusable.

Sacramento County Climate Action Plan

The Sacramento County 2024 Final Climate Action Plan (County CAP) is a comprehensive plan for reducing greenhouse gas (GHG) emissions and adapting to the effects of climate change. The County CAP identifies strategies and measures to meet the State of California's 2030 and 2045 GHG emissions reduction targets. The County CAP is a multi-objective plan that balances environmental, economic, and community interests; provides mechanisms to reduce GHG emissions associated with implementing the Sacramento County General Plan of 2005–2030; and aligns with multiple County initiatives. The County's CAP was adopted less than a year ago by the Board of Supervisors on November 5, 2024. This ULI Program and associated TA is one of the first initiatives to implement some of the priority policies and measures of the County's CAP.

The high-level goals of the County CAP are twofold: (1) to reduce GHG emissions from both community sources and County government operations; and (2) to adapt and build resilience to climate change. These goals will be accomplished through the implementation of the CAP's GHG reduction and adaptation measures.
This effort, rooted in extreme heat resiliency, will directly help implement relevant policies related to both high-level goals: GHG emission reductions; and adaption and resiliency to climate change.

To review the full text of the Climate Action Plan, click HERE

Figure 3.1 Climate Change Adaptation Planning Process

Source: **Developed by Ascent in 2024**.

3.3 Vulnerability Assessment Summary

To effectively adapt to climate change and improve community resilience, the County first needs to understand its vulnerability climate change effects. This is determined through the Vulnerability Assessment.

The VA that was developed as part of the multi-year planning process that eventually culminated in this CAP was completed in January 2017 (County of Sacramento 2017). Several elements of the original VA were then updated and summarized in an appendix for the 2022 CAP (County of Sacramento 2022). Collectively, these two items serve as the basis for the county's climate change vulnerability, and henceforth, any reference to "VA" is meant to encompass both documents, as this chapter synthesizes and summarizes the most relevant and up-to-date components of each.

The VA provides a comprehensive analysis of community vulnerabilities to climate change across the unincorporated county. It identifies and characterizes climate change effects that are anticipated to impact the community. The VA follows the steps in Phase 2 of the APG and aims to answer the following questions:

- **Exposure**: what climate change effects does the county currently face? How are these climate change effects projected to change in the future?
- **Sensitivity and Potential Impacts:** what aspects of the community (i.e., populations, built environment, community functions) in the unincorporated county will be affected by climate change effects, and to what degree?
- **Adaptive Capacity:** what is currently being done to address climate change effects and the associated impacts in the unincorporated county? What ability does the County have to address such climate change effects and their impacts in the future?
- **Vulnerability:** how vulnerable is the unincorporated county to climate change effects?

The County conducted the VA consistent with APG guidance using the steps above. As mentioned previously, there were five climate change effects evaluated to which the county is exposed, including flooding, increased temperatures and extreme heat, sea level rise, wildfire, and drought. If left unaddressed, each of these climate change effects will adversely impact populations, community functions, and structures across the unincorporated county in various ways. However, the County, partner agencies, and other organizations within the county have already taken steps to build adaptive capacity and protect sensitive populations, community functions, and structures from the effects of climate change. **Table 3.1** below shows how both potential impacts and adaptive capacity are scored on a qualitative scale of Low, Medium, and High (along with a description of each), in accordance with the APG.

Table 3.1 Potential Impact and Adaptive Capacity Scoring Rubric

Score	Potential Impact Scoring Description	Adaptive Capacity Scoring Description
Low	Impact is unlikely based on projected exposure; would result in minor consequences to public health, safety, and/or other metrics of concern.	The unincorporated county lacks capacity to manage climate change effect; major changes would be required.
Medium	Impact is somewhat likely based on projected exposure; would result in some consequences to public health, safety, and/or other metrics of concern.	The unincorporated county has some capacity to manage climate change effect; some changes would be required.
High	Impact is highly likely based on projected exposure; would result in substantial consequences to public health, safety, and/or other metrics of concern.	The unincorporated county has high capacity to manage climate change effect; minimal to no changes are required.

Source: **Cal OES 2020; adapted by Ascent in 2024**.

Once the scoring for potential impacts and adaptive capacity has been determined, the final step in the VA process is to characterize the unincorporated county's vulnerability to each climate change effect, which is assessed on the magnitude of risk to and potential impacts on populations, community functions, and structures while considering the current adaptive capacity in place to mitigate these impacts. Each climate change effect is assigned an overall numerical vulnerability score based on associated scores for potential impacts and adaptive capacity. Vulnerability scoring can help the County understand which climate hazards it should prioritize in future planning efforts. **Table 3.2** presents the rubric used to determine overall vulnerability scores based on the ratings for potential impacts and adaptive capacity, in accordance with the APG.

Table 3.2 Vulnerability Scoring Rubric

Vulnerability Score				
Adaptive Capacity	Low	3	4	5
	Medium	2	3	4
	High	1	2	3
		Low	Medium	High
		Potential Impacts		

Source: **Cal OES 2020; adapted by Ascent in 2024**.

The unincorporated county's vulnerability score for each identified climate change effect— flooding, increased temperatures and extreme heat, sea level rise, wildfire, and drought—is included in **Table 3.3** below, along with the qualitative potential impact and adaptive capacity scores (County of Sacramento 2022). The table shows flooding as the most pressing vulnerability within the county with a score of 4/5, indicating that it should be a high priority for the County in its climate adaptation planning efforts. Increased temperatures and extreme heat, along with sea level rise both have the next highest vulnerability score of 4, indicating that the County should also consider these high priorities. These climate change effects could have significant impacts on the county's populations, community functions, and structures in both the near-term and long-term. Although a variety of adaptive efforts related to each climate change effect are already in place, the magnitude of risks posed by these effects contributes to higher vulnerability in the unincorporated county. Wildfire and drought are both characterized as having a vulnerability score of 3. While this vulnerability score is lower than the other climate change effects, additional adaptation efforts will be required in the future to mitigate potential impacts and protect the unincorporated county. More context for each climate change effect can be found throughout the rest of this chapter, and additional detail, data, information, references, and methodologies for analyzing exposure, sensitivities and potential impacts, adaptive capacity, and vulnerability can be found in the VA itself.

Table 3.3 Potential Impact, Adaptive Capacity, and Vulnerability Scores

Climate Change Effect	Potential Impacts	Adaptive Capacity	Vulnerability Score
Flooding	High	Low/Medium	4/5
Increased Temperatures and Extreme Heat	High	Medium	4
Sea Level Rise	High	Medium	4
Wildfire	Medium	Medium	3
Drought	Medium	Medium	3

Source: **Evaluated by Ascent in 2021**.

3.4 Adaptation Measures Overview

To address the vulnerabilities identified in the VA, the County has developed a suite of adaptation measures organized by climate change effect. Each measure is first denoted with a three to five-letter code indicating which climate change effect the measure is related to (e.g., the "code" for increased temperatures and extreme heat is "TEMP"), followed by the measure number. Though this classification system is applied to each measure for identification purposes, it should be noted that the order of measures is not related to measure importance, effectiveness, or otherwise, as implementation of each measure is important. **Table 3.4** below presents a summary of all the adaptation measures included in this CAP, with more detailed information on each measure presented throughout the rest of the chapter, organized by climate change effect.

Table 3.4 Adaptation Measures Summary

Climate Change Effect	Adaptation Measure
Flooding (FLOOD)	FLOOD-01: Evaluate and Improve Capacity of Stormwater Infrastructure for High-Intensity Rainfall Events
	FLOOD-02: Improve Sewage and Solid Waste Management Infrastructure
	FLOOD-03: Identify New Locations for Flood Control, Prioritizing Green Infrastructure Solutions
	FLOOD-04: Coordinate with Federal, State, and Local Agencies to Improve Emergency Evacuation and Supply Transportation Routes
	FLOOD-05: Invest in the Use of Pervious Pavements and Landscaping in Developed Areas and Restrict the Use of Paved Surfaces
	FLOOD-06: Map Critical Facilities and Infrastructure Locations Vulnerable to Flooding and Upgrade and/or Relocate Infrastructure Where Applicable
	FLOOD-07: Establish an Underground Utilities Program Resistant to Flooding
	FLOOD-08: Partner with SAFCA and Local Agencies, Utilities, and Other Organizations to Support Future and Ongoing Flood-Related Climate Change Initiatives
	FLOOD-09: Research the Tolerance of Current Crop Mixes to Withstand Flooding and Support Aquaculture and Fish Habitat
	FLOOD-10: Expand Educational Programs to Address Vector and Waterborne Diseases
	FLOOD-11: Identify Concrete Channel Restoration Areas
	FLOOD-12: Replant Bare or Disturbed Areas
	FLOOD-13: Update and Implement the County's Local Hazard Mitigation Plan to Address Climate-Change-Related Flooding Impacts
	FLOOD-14: Safeguard Freshwater Supply Against Contamination, Degradation, or Loss

Climate Change Effect	Adaptation Measure
Increased Temperatures and Extreme Heat (TEMP)	TEMP-01: Protect Critical Infrastructure Vulnerable to Extreme Heat Events
	TEMP-02: Partner with Local Agencies and Utilities on Heat-Related Climate Change Initiatives and Efforts
	TEMP-03: Expand Services and Raise Awareness of Heat-Related Risks and Illness for Residents of EJ Communities
	TEMP-04: Encourage the Installation or Use of Cool Roof Technologies, Passive Solar Home Design, Green Roofs, and Rooftop Gardens
	TEMP-05: Increase Participation in the Sacramento Area Sustainable Business Program
	TEMP-06: Partner with Valley Vision to Expand the Business Resiliency Initiative
	TEMP-07: Use Cool Pavement Technology and Reduce the Amount of Paved Surfaces
	TEMP-08: Increase Parking Lot Shading, Landscaping, and Urban Greening, Prioritizing EJ Communities
	TEMP-09: Understand the Tolerance of Current Crop Mixes to Withstand Increased Temperatures
	TEMP-10: Work with SMUD to Improve Electric Grid Reliability
Sea Level Rise (SLR)	SLR-01: Coordinate with Other Agencies on Floodplain Mapping Updates and Identification of Improvements to Protect Vulnerable Populations, Functions, and Structures
	SLR-02: Support and Monitor Ongoing Analysis of Sea Level Rise Data
	SLR-03: Update the County's Local Hazard Mitigation Plan to Incorporate Sea Level Rise
	SLR-04: Incorporate Sea Leve Rise Effects into Capital Improvement Plans
	SLR-05: Guide Future Development out of Areas Vulnerable to Sea Level Rise
Wildfire (FIRE)	FIRE-01: Map and Identify Locations that are Newly at Risk, or at Higher Risk for Fire Hazards
	FIRE-02: Coordinate with State and Local Agencies to Establish Ecological Recovery Programs
	FIRE-03: Transition County Tree Planting to More Fire-Resilient Species
	FIRE-04: Coordinate and Improve Emergency Preparedness Systems
	FIRE-05: Avoid New Development in Very-High Fire Hazard Severity Zones
	FIRE-06: Collaborate with Agencies and Organizations on Programs to Reduce Wildfire Hazards
Drought (WATER)	WATER-01: Evaluate Vulnerabilities of Water Supply Systems and Networks and Develop Strategies to Improve Resilience
	WATER-02: Increase Onsite Greywater and Rainwater Reuse, Stormwater Reuse, and Recycled Water Systems
	WATER-03: Create Incentives and Programs to Transfer Knowledge and Technologies to Assist Farmers with New Production Methods and Drought-Tolerant Species
	WATER-04: Reduce Potable Water Use in Outdoor Landscaping
	WATER-05: Expand Upon Existing Water Conservation Education Outreach Programs for Residents and Businesses
	WATER-06: Collaborate with Federal, State, and Local Agencies and Organizations to Identify Future Water Supplies, Explore Alternative Supply Sources, and Improve Capacity
Cross-Cutting[1] (ALL)	ALL-01: Create a Comprehensive Outreach Strategy
	ALL-02: Set Up Annual Progress Report/Check-In for All Applicable Measures

Note: SAFCA = Sacramento Area Flood Control Agency; SMUD = Sacramento Municipal Utility District

[1]"Cross-Cutting" refers to measures that are inherently broad and that largely address or overlap with all other climate change effects.

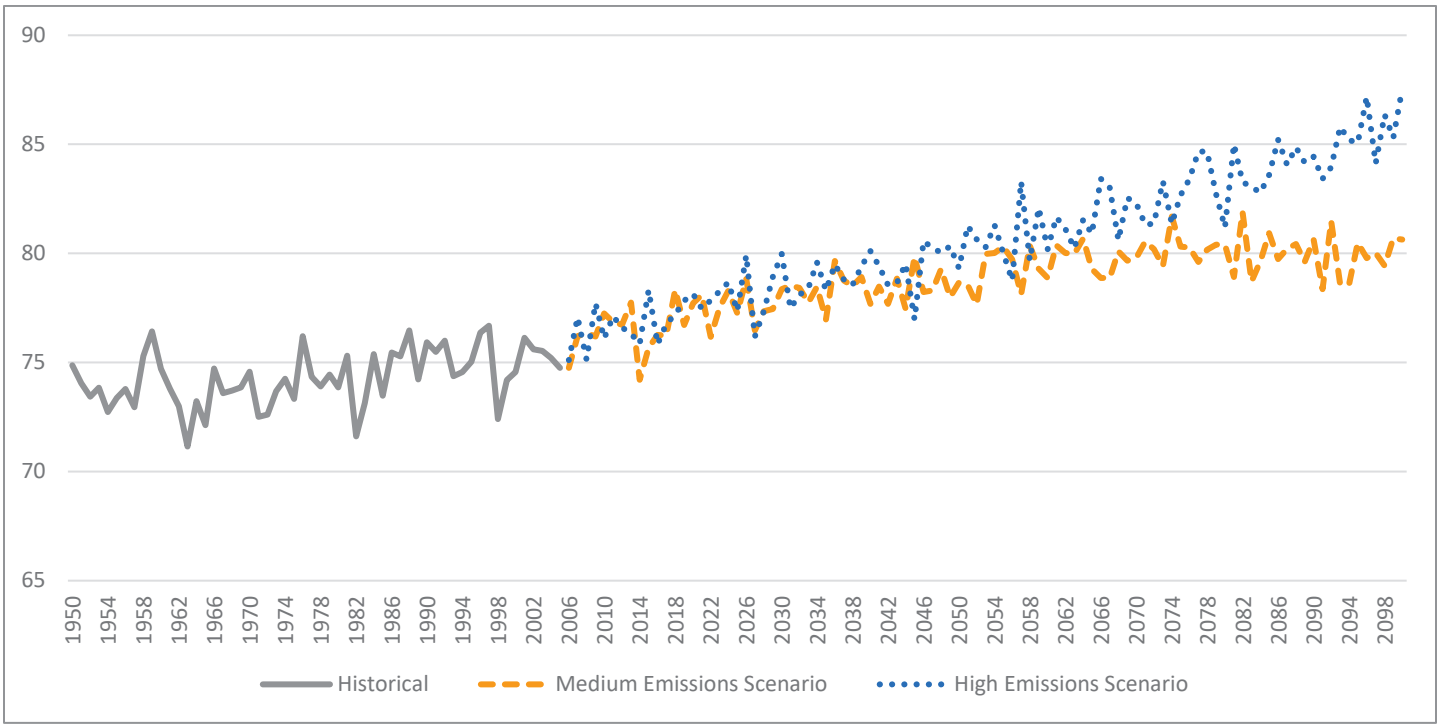
Source: **Compiled by Ascent in 2024**.

Increased Temperatures and Extreme Heat

The county has experienced, and is projected to continue experiencing, increases in average annual temperature and extreme heat, which could lead to an array of potential impacts. According to Cal-Adapt, the average annual maximum and minimum temperature across Sacramento County are both projected to rise between 5 and 9 degrees Fahrenheit (°F) from their respective historic averages by the end of the century as a result of climate change (CEC 2020a). **Figure 3.2** displays a time series of historic and future projected annual average maximum temperature in the county. Increased temperatures will also lead to a significant increase in extreme heat events. For the City of Sacramento, which serves as a proxy for the county, an extreme heat day is defined as a day when the maximum temperature is above the extreme heat threshold of 103.8 °F. Heat waves refer to a period of four or more consecutive extreme heat days (CEC 2020b). The average annual number of extreme heat days and heat waves are both projected to rise through the end of the century. **Table 3.6** displays historical data and future projections for increased temperatures and extreme heat in the county, organized by defined timescales and future GHG emissions scenarios.

Extreme heat thresholds are unique to any location. The threshold identified for the purposes of this CAP is 103.8 °F.

Figure 3.2 Historical and Projected Annual Average Maximum Temperature in Sacramento County



Source: **CEC 2020a**.

Table 3.6 Changes in Annual Average Temperature and Extreme Heat in Sacramento County

Annual Averages	Historic (1961-1990)	Medium Emissions Scenario		High Emissions Scenario	
		Mid-Century (2035-2064)	Late Century (2070-2099)	Mid-Century (2035-2064)	Late Century (2070-2099)
Temperature					
Maximum Temperature (°F)	74.0	78.3	79.8	79.4	82.7
Minimum Temperature (°F)	48.4	52.2	53.4	53.2	56.8
Extreme Heat					
Extreme Heat Days[1] (#)	4	17	24	22	40
Heat Waves[2] (#)	NA	1.9	2.8	2.6	5.8

Notes: # = number; °F = degrees Fahrenheit; NA = not applicable.

[1] The threshold for an extreme heat day for the City of Sacramento, which serves as a proxy for the county, is 103.8 °F.

[2] Heat waves are defined by Cal-Adapt as four or more consecutive extreme heat days.

Source: **CEC 2020a, 2020b**.

The unincorporated county's populations are at significant risk of being harmed by increased temperatures and extreme heat. Extreme heat can be harmful to public health, both directly and indirectly. Extreme heat itself can cause heat stroke and other heat-related illnesses, increase the risk of cardiovascular disease, respiratory disease, kidney failure, and preterm births, and exacerbate other pre-existing conditions in certain vulnerable populations, such as those who are medically fragile or chronically ill. Additionally, extreme heat and rising temperatures can heighten allergies and intensify the photochemical reactions that produce smog, ground-level ozone, and other pollutants, which can be detrimental to human health. Further, increased temperatures and extreme heat may lead to a notable increase in air conditioning demand across the county, placing more stress on the electrical grid, leading to higher-cost electricity bills for residents who have air conditioning access, and causing disproportionate impacts on individuals or families residing in units that do not have air conditioning. The county's transportation systems are at risk of being adversely affected by increased temperatures and extreme heat. During prolonged periods of increased temperatures or extreme heat, pavement may deteriorate, rail lines may buckle, the structural integrity of bridges may be compromised, air conditioning in buses could fail, and overall transportation maintenance costs may increase (County of Sacramento 2017, 2022). While these examples serve as a snapshot of how increased temperatures and extreme heat may affect the county, the range of potential impacts is much broader. The following adaptation measures will help build resilience to increased temperatures and extreme heat.

Measure GHG-02: Expand the Urban Forest Excerpt

This measure aims to enhance carbon storage potential by preserving and improving urban forests while enhancing green spaces, promoting biodiversity, and improving environmental sustainability. The measure also aims to improve the quality of life for county residents while prioritizing actions in Environmental Justice (EJ) Communities as defined in the County's EJ Element of the General Plan. The overall objective is to maintain and enhance the urban forest, planting 15,000 net new trees by 2030 and 62,000 net new trees by 2045. This measure includes nine implementing actions.

This policy has ambitious goals of expanding the urban forest with 15,000 new trees by 2030 and 62,000 new trees by 2045. This policy prioritizes these plantings in EJ Communities, which compliments policies in the EJ Element (see the EJ Element relevant policy framework). The action items point to mechanisms to accomplish this goal and the County is looking for TA related to these action items – the feasibility and best practices of accomplishing these items. Also see the section regarding the existing Tree Preservation Ordinance for additional information on Action GHG-02-d.

MEASURE GHG-02: Expand the Urban Forest

GHG Reduction Potential

2030	2045
808 $MTCO_2e$	**3,234** $MTCO_2e$

Objectives

Maintain and enhance the urban forest, planting 15,000 net new trees by 2030 and 62,000 net new trees by 2045.

Co-Benefits

- Public Health & Wellbeing
- Equity
- Resource Preservation

MEASURE SUMMARY

With this measure, the County aims to enhance carbon storage potential by preserving and improving urban forests while enhancing green spaces, promoting biodiversity, and improving environmental sustainability. The measure also aims to improve the quality of life for county residents while prioritizing actions Environmental Justice Communities as defined in the County's Environmental Justice Element of the General Plan.

ACTIONS

Action GHG-02-a: Develop and adopt an Urban Forest Management Plan to increase and maintain the urban forest, which includes:

- the identification of potential tree planting sites to meet goals of 15,000 net new trees by 2030 and 62,000 net new trees by 2045, highlighting priority areas in Environmental Justice Communities;
- street and park tree preservation;
- tree species and design guidelines, prioritizing native trees; and
- watering and maintenance practices.

Action GHG-02-b: Develop and annually update an urban forest work plan to identify a budget and specific tree planting and maintenance projects for implementation each year consistent with the goals and targets of the Urban Forest Management Plan.

Action GHG-02-c: Adopt an ordinance to require new development to plant an appropriate number of trees onsite to provide a 50 percent canopy cover over parking surfaces and a 20 percent canopy cover over the remainder of the site. Exemptions to the ordinance may be provided in cases where tree canopy may conflict with solar photovoltaic (PV) system siting on the development site, or with the Solar Shade Control Act.

Action GHG-02-d: Amend the Tree Preservation Ordinance to require that

- applicable tree removals during discretionary projects on private property that require a tree permit be replaced by an appropriate size and species tree as determined by Planning and Environmental Review, and
- where onsite replacement of an appropriate tree is not feasible, the permit applicant shall pay a fee equivalent to the County's cost for planting and maintaining each appropriate tree to the Tree Preservation Fund.

Also, amend the ordinance to expand the tree types for which the ordinance is applicable to include:

- any tree native to Sacramento County; and
- "heritage trees" that are 50 years or older or have a connection to a historical event, building, district, or person.

Action GHG-02-e: Continue to partner with the Sacramento Tree Foundation to use existing programs such as Sacramento Shade, NeighborWoods, and NATURE to increase the tree canopy through offering free tree planting on private property, prioritizing drought-tolerant species in Environmental Justice Communities.

Action GHG-02-f: Identify and partner with community cooperatives, and Sacramento Tree Foundation, to organize at least three tree-planting and maintenance events each year in different census designated places in the unincorporated county, to highlight and realize the community benefits of urban trees.

Action GHG-02-g: Inform county residents and businesses of the availability of free trees, from partnerships with Sacramento Tree Foundation, by including information on accessing the program on the County's website and through semi-annual newsletters, social media posts, or mailers.

Action GHG-02-h: Conduct a targeted outreach campaign to promote the availability of free trees, from partnerships with Sacramento Tree Foundation, in Environmental Justice Communities that may include multilingual printed outreach materials and promotion at community events.

Action GHG-02-i: Identify appropriate community-based organizations, and jointly submit applications for grant funding for urban forest expansion in underserved communities through the US Forest Service’s Urban and Community Forestry Grant Program.

Action GHG-02-j: Develop a tracking system to ensure that the number of trees planted through County efforts is trackable, through internal County departments, the County's permitting system, and annual data requests from partner organizations on the number of trees planted, and removed, in the unincorporated county.

Adaptation and Resiliency Measures Excerpts: Increased Temperature and Extreme Heat

The following measures outline a comprehensive approach to reducing the impacts of extreme heat in Sacramento County through partnerships, incentive programs, urban design standards, and community-based initiatives. Each measure is designed to address a different facet of heat resilience—ranging from collaboration with local agencies and utilities on heat-reducing programs, to incentivizing cool roof technologies and green infrastructure, to strengthening business and community preparedness for climate-related disruptions. Together, these strategies aim to mitigate the urban heat island effect, lower energy demand during peak periods, support local businesses and residents, and prioritize benefits for environmental justice communities most vulnerable to extreme heat.

MEASURE TEMP-02: Partner with Local Agencies and Utilities on Heat-Related Climate Change Initiatives and Efforts

Implementing County Department

Sustainability Manager

Timeframe

Near Term (2025-2028)

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Resource Preservation

MEASURE SUMMARY

The County aims to reduce urban heat island effects by leveraging and supporting existing programs, as well as partnering with local agencies and utilities on the development of future heat-reducing initiatives. Reducing the urban heat island effect will result in less reliance on air conditioning, which decreases energy use. It also provides public health benefits through reducing occurrences of heat-borne illnesses.

ACTIONS

Action TEMP-02-a: Partner with the Sacramento Metropolitan Air Quality Management District (SMAQMD), SMUD, PG&E, and the Sacramento Area Council of Governments (SACOG) to implement future and ongoing heat-related climate change initiatives. Such partnerships could include helping other organizations increase participation in existing programs through education and promotion, and by using and integrating them in County programs and activities, where feasible. Examples include, but are not limited to, participation in SMAQMD's Regional Urban Heat Island Initiative, Sacramento Tree Foundation Shade Tree and NeighborWoods Programs, PG&E's Energy Efficient Cool Roof program, and SACOG's Complete Streets GHG reduction measures.

MEASURE TEMP-04: Encourage the Installation or Use of Cool Roof Technologies, Passive Solar Home Design, Green Roofs, and Rooftop Gardens

Implementing County Departments

Sustainability Manager
Planning and Environmental Review
Building Permits and Inspection

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

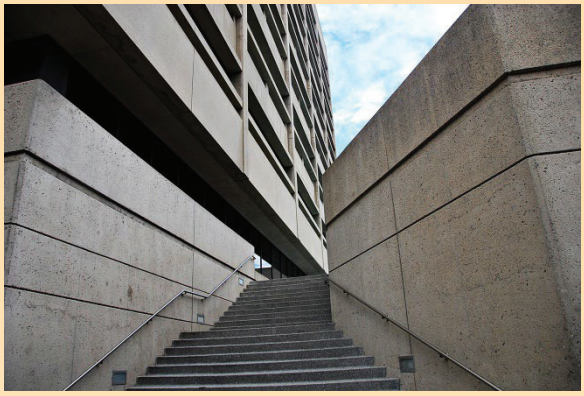
This measure aims to use cool roofs, passive design, rooftop gardens, and green roofs to mitigate urban heat island effects, lower energy consumption, and improve air quality.

ACTIONS

Action TEMP-04-a: Develop incentive programs including, but not limited to, permit streamlining, permit fee reductions, or tax rebates for developers and landowners to apply passive solar home design to future residential buildings. A home that employs passive solar home design has windows oriented toward the south, is composed of materials of high heat absorption, and is built to distribute heat and cold air throughout the home. Use of these design elements provides natural cooling and heating and reduces energy demand.

Action TEMP-04-b: Develop incentive programs including, but not limited to, permit streamlining, permit fee reductions, and tax rebates to encourage the use of rooftop gardens and green roofs in residential and commercial buildings. Rooftop gardens are gardens on rooftops, while green roofs (or living roofs) are roof tops that are partially or completely covered by vegetation. These forms of roofing lower the amount of heat absorbed by a building and reduce energy demand associated with air conditioning.

MEASURE TEMP-05: Increase Participation in the Sacramento Area Sustainable Business Program



Implementing County Departments

Sustainability Manager
Business Environmental Resource Center

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

Through this measure, the County aims to increase participation in the Sustainable Business Program, which will reduce energy consumption and promote environmental sustainability. For example, educating and promoting the reduction of baseline energy consumption will help the County and businesses avoid power disruptions when energy demand spikes during heatwaves.

ACTIONS

Action TEMP-05-a: Increase funding and staff resources for the Sacramento Area Sustainable Business Program through the County's Business Environmental Resource Center, with the goal of increasing overall participation and certification in the program and implementing annual monitoring of businesses that adopt practices to reduce energy consumption and promote energy efficiency, along with other sustainability measures.

MEASURE TEMP-06: Partner with Valley Vision to Expand the Business Resiliency Initiative

Implementing County Departments

Sustainability Manager
Economic Development

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

The County aims to increase participation in the Business Resiliency Initiative, which would result in increased resiliency on a business-by-business basis during power outages induced by extreme heat events. The Initiative was launched in the Sacramento Capital Region of California to increase awareness and preparedness for continuity risks faced by small and medium businesses. The Initiative aims to minimize the impacts of an economic crisis potentially caused by unforeseen disaster - recognizing the increase in frequency and severity of extreme weather events and climate change related impacts.

Businesses would be responsible for conducting self-evaluations to identify assets at risk or vulnerable to weather-related disturbances that include extreme heat events, but also other extreme events such storms, floods, or fires.

ACTIONS

Action TEMP-06-a: Partner with Valley Vision to train businesses to use the Business Resiliency Initiative toolkit, which will prepare business for weather-related risks to daily operations. Aspects of the Business Resiliency Initiative toolkit include:

- preparation of a hazard vulnerability assessment, which identifies the greatest risks and hazards facing individual businesses;
- review of existing resiliency;
- development of a business continuity plan;
- testing of business continuity plans through drills and exercises; and
- engagement in community outreach.

MEASURE TEMP-07: Use Cool Pavement Technology and Reduce the Amount of Paved Surfaces

Implementing County Departments

Sustainability Manager
Planning and Environmental Review
Building Permits and Inspection

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

This measure furthers the County's goal to lessen urban heat island effects through the incorporation of cool pavements into the construction and maintenance of paved surfaces. Cool pavements help reduce exposure to heat-related illnesses, decrease building energy consumption and associated GHG emissions, and improve air quality.

ACTIONS

Action TEMP-07-a: Require the use of cool pavement technology in both the replacement and construction of new roads, sidewalks, parking areas, and bikeways.

Action TEMP-07-b: Develop and incorporate cool pavement standards into the County's roadway design manual for use in public rights-of-way.

Action TEMP-07-c: Develop and incorporate cool pavement standards into the County's development standards for private development projects, in both new construction and changes to existing onsite paved surface areas (e.g., parking lots, private roadways, or other hardscape areas).

Action TEMP-07-d: Apply cool pavement standards when constructing new County-owned facilities or modifying existing County-owned facilities.

Action TEMP-07-e: Collaborate with the Capital Region Climate Readiness Collaborative, the California Environmental Protection Agency, the UC Davis Cool Pavement Research Center, and other regional partners to obtain guidance, explore pilot projects, or other technical support. (Note: this action could also be achieved collaboratively with others as part of the regional urban heat island initiative described in TEMP-02-a).

MEASURE TEMP-08: Increase Parking Lot Shading, Landscaping, and Urban Greening, Prioritizing EJ Communities

Implementing County Departments

Sustainability Manager
Planning and Environmental Review
Code Enforcement
Department of General Services

Timeframe

Midterm (2029-2031)

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Equity
- Infrastructure Reliability

MEASURE SUMMARY

The County seeks to increase urban greening through parking lot shading, tree planting, landscaping, and other heat-reducing activities to reduce the urban heat island effect. Actions included in this measure focus on enforcing County standards regarding shading requirements for parking lots, incorporating solar photovoltaic (PV) carports, and developing urban greening and tree planting programs that provide shade.

Additionally, under Measure GHG-02 (Expand the Urban Forest), the County aims to plant 15,000 net new trees by 2030 and 62,000 net new trees by 2045. This GHG measure will also provide adaptive co-benefits for extreme heat that include increasing shade and reducing the urban heat island effect.

ACTIONS

Action TEMP-08-a: Enforce the existing parking lot shading coverage requirements (i.e., 30 percent coverage for 5-24 parking spaces, 40 percent coverage for 25-29 parking spaces, and 50 percent coverage for 50+ parking spaces) for new development projects that include parking, and revise parking lot shading standards to provide larger minimum sizes for tree planters to improve tree health.

Action TEMP-08-b: Enforce existing standards for tree shading and landscaping in existing parking lots not in compliance and establish a compliance program to ensure that trees are maintained properly.

Action TEMP-08-c: Establish rebate programs, permit fee reductions, or tax deductions to incentivize the installation of solar PV carports in existing and future parking lots. Solar PV carports provide shade in parking lots while simultaneously converting solar energy into electricity that can be used to charge electric vehicles (EVs) and plug-in hybrid vehicles.

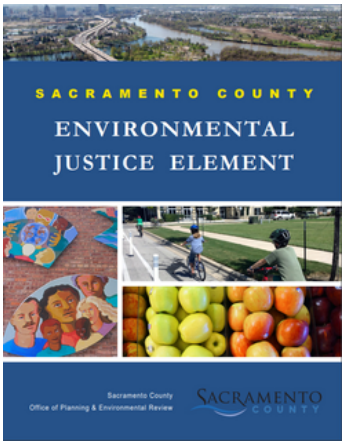
Action TEMP-08-d: Establish rebate programs, permit fee reductions, or tax deductions to incentivize the installation of solar PV carports in existing and future parking lots. Solar PV carports provide shade in parking lots while simultaneously converting solar energy into electricity that can be used to charge EVs and plug-in hybrid vehicles.

Action TEMP-08-e: Develop standards for the inclusion of solar PV carports in County-owned parking lots.

Action TEMP-08-f: Collaborate with the Capital Region Climate Readiness Collaborative, the Sacramento Tree Foundation, SMUD, PG&E, or other regional partners to identify incentives, grants, or other resources for the purposes of commercial and residential greening actions including, but not limited to, planting of parking lot or street trees, maintaining tree health, and establishing community gardens.

Action TEMP-08-g: Require County-led active transportation and public transit infrastructure modifications and upgrades to incorporate shading, preferably in the form of trees, when upgrades to facilities are performed. Encourage modifications led by SacRT to also incorporate shading in the form of trees.

Sacramento County General Plan Environmental Justice Element Excerpt



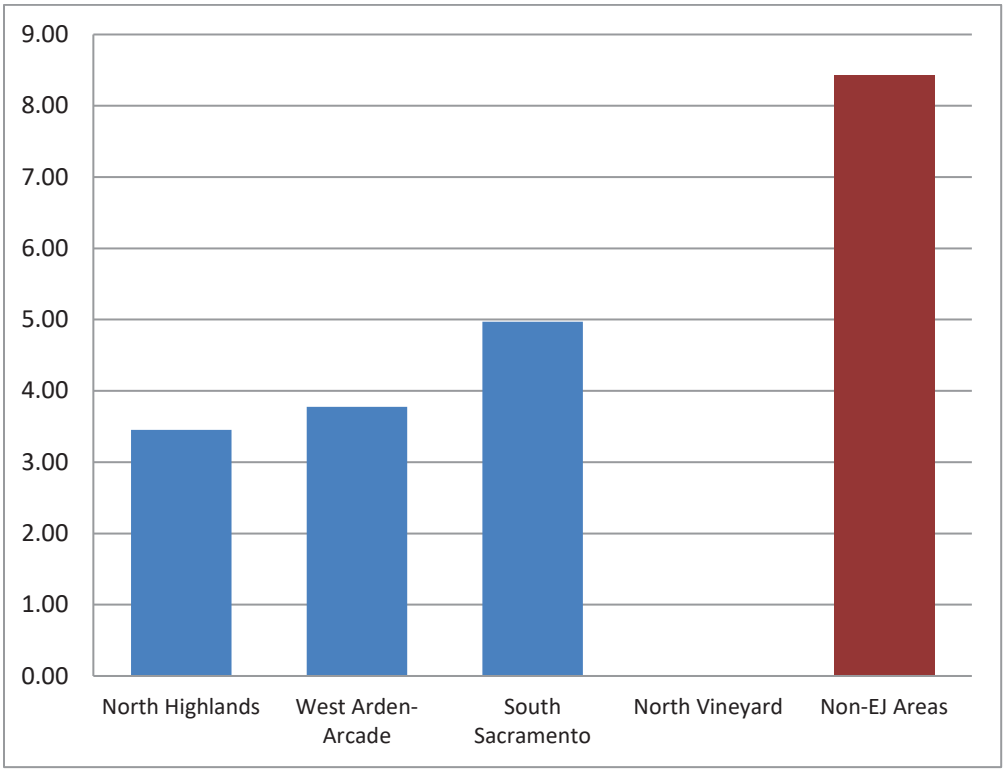
In September 2016, the State of California Legislature passed Senate Bill 1000 (SB 1000) which requires cities and counties with disadvantaged communities to incorporate environmental justice (EJ) policies into their general plans. In response to this legislation, the County's General Plan was amended to include a new stand-alone Environmental Justice Element. The EJ Element was approved and adopted by the Board of Supervisors in December 2019.

The EJ Element covers the following topics: Pollution Exposure and Air Quality; Access to Public Facilities; Food Access; Safe and Sanitary Homes; Promotion of Physical Activity; Promotion of Civic Engagement; and, Crime Prevention. The EJ Element has geographic focal areas that are considered disadvantaged compared to other parts of the unincorporated County. These areas are known as "EJ Communities," which were identified utilizing factors in the California Communities Environmental Health Screening Tool (or CalEnviroScreen) paired with the Low Income High Minority (LIHM) Areas identified in the Sacramento Area Council of Governments' (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). Using this data, the following four EJ Communities were identified: North Highlands/Foothill Farms, North Vineyard, South Sacramento and West Arden-Arcade.

The EJ Element shows that the lack of tree canopy and related exposure to heat and heat islands significantly decreases opportunities for physical activity. Furthermore, community members stressed that their communities needed more trees in the public realm so they could safely utilize basic amenities and resources. The EJ Element findings and policies are the framework for many prioritized policies of the County's CAP, including policies in place to increase the urban forest canopy and adaptation and resiliency measures related to rising temperatures. Together, the CAP and EJ findings and policies are the foundation for the County's participation in this ULI TALE program. **To review the full text of the EJ Element, click HERE .**

Park Acreage: Though EJ Communities have more residences that are close to public parks than non-EJ areas, non-EJ areas have more park acreage. According to Figure 15, the amount of park acres per 1,000 residences is much higher in non-EJ areas than in the EJ Communities. The non-EJ areas have almost 8.5 acres per 1,000 residences while South Sacramento, the EJ Community with the highest acreage amount has only 5.0 acres per 1,000 residences. The reason for this disproportionality is that communities in the non-EJ areas have large community parks while the EJ Communities lack community parks.

Figure 15: Park Acres per 1,000 Residences



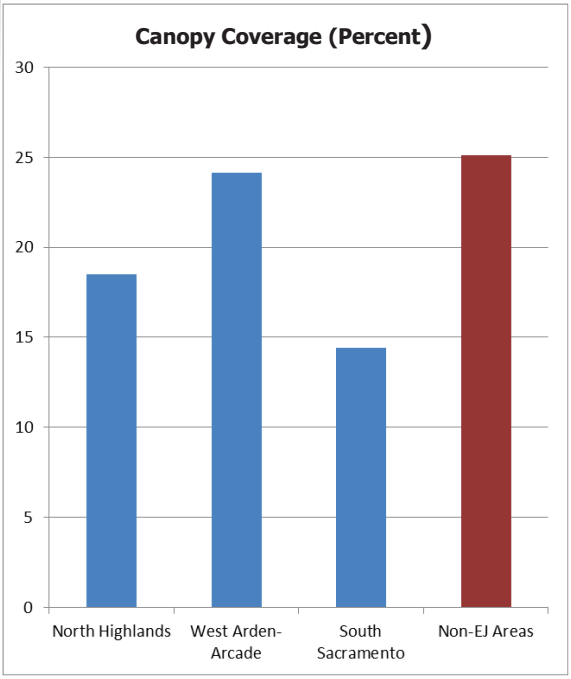
Note: North Highlands includes Foothill Farms/Old Foothill Farms
Source: Sacramento County GIS, 2017

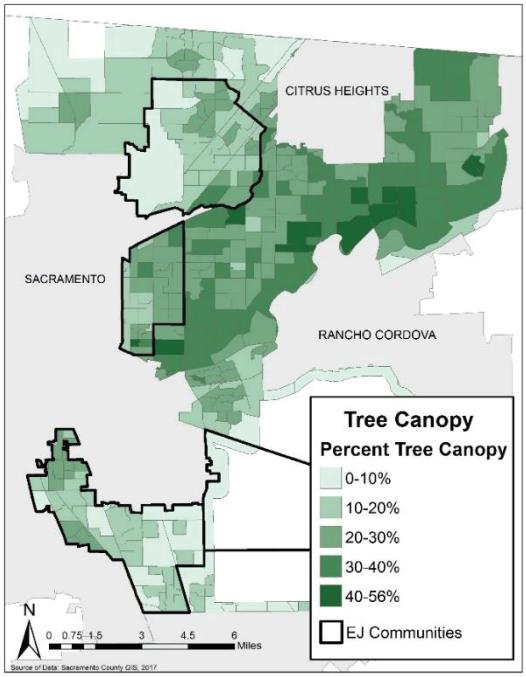
TREE CANOPY

The Sacramento Tree Foundation has collected tree canopy data for most of Sacramento County as part of the Green Prescription effort. Research for this effort found that "greater tree canopy was statistically significantly associated ($p<0.05$) with lower prevalence of overweight/obesity, more leisure vigorous physical activity, better self-reported general health, lower prevalence of asthma, and better neighborhood social cohesion." This means that a robust tree canopy in a community will encourage more bicycling and pedestrian activity that results in better health and social outcomes.

According to Figure 16, the canopy percentage is lower in North Highlands/Foothill Farms and South Sacramento than that in non-EJ communities. Tree canopy data was extremely limited in North Vineyard and was therefore excluded.

Figure 16: Tree Canopy





Note: North Highlands includes Foothill Farms and Old Foothill Farms.
Source: Sacramento Tree Foundation, 2017

POLICES AND IMPLEMENTATION MEASURES

PROMOTING AND ENCOURAGING PHYSICAL ACTIVITY

Objective

Improve the physical fitness of the unincorporated County's residents, particularly those who live in Environmental Justice Communities

Intent

Physical activity is essential to increased fitness and overall health of people of all ages. Studies have shown that increased physical activity during in one's daily life leads to lower mortality rates than those who are sedentary. An active lifestyle that incorporates exercise can prevent or improve chronic illnesses such as coronary heart disease, diabetes, colon cancer and high blood pressure (U.S. Department of Health and Human Services, 2002). Exercise can also prevent or reduce obesity, a condition that contributes to the same chronic illnesses. Finally, physical activity can improve mental health by reducing stress and depression and increasing psychological well-being.

Residents throughout the unincorporated County could benefit from increased physical activity, but particularly those who live in Environmental Justice Communities. Obesity rates are higher in the North Highlands/Foothill Farms, South Sacramento and West Arden-Arcade Environmental Justice Communities than in other areas of the unincorporated County (See obesity rates subsection).

Policies (Countywide)

EJ-16. Promote physical activity programs and education including but not limited to programs offered by the local park and recreation districts and encourage residents to regularly participate in physical activity and active lifestyles.

EJ-17. Promote walking, biking, and other modes of active transportation as safe, easy, healthy, and fun alternatives for all residents to complete local errands and short trips.

EJ-18. Encourage school district activities, programs, and master planning efforts that support physical activity and wellness.

Implementation Measures (Countywide)

A. Continue to include guidelines in the County's Countywide Design Guidelines that encourage physical activity (Active Design Guidelines). The Countywide Design Guidelines identify active design guidelines with a logo and has an appendix on active design strategies. (PLANNING AND ENVIRONMENTAL REVIEW)

B. Encourage businesses and non-profit organizations to offer indoor recreational facilities and programs compatible with existing commercial structures and zones, such as batting cages, rock climbing walls, basketball/indoor soccer courts, and studios offering martial arts, aerobics, and yoga classes. (PLANNING AND ENVIRONMENTAL REVIEW)

Implementation Measure (Environmental Justice Communities)

C. For non-profit organizations, reduce entitlement fees for use permits for indoor and outdoor general recreational facilities in Environmental Justice Communities and/or reduce level of review for use permits from Planning Commission to Zoning Administrator. (PLANNING AND ENVIRONMENTAL REVIEW)

COMMUNITY DESIGN THAT PROMOTES PHYSICAL ACTIVITY

Objective

The construction of urban development projects designed to support physical activity.

Intent

The built environment has a major role in determining a community's opportunities for physical activity. Like in many other cities and towns in the country, physical development in EJ Communities has been historically geared toward the automobile and not toward pedestrians or bicyclists. Neighborhoods have been designed to provide privacy to residents by minimizing access into the neighborhood and feeding cars into larger and larger roadways (neighborhood street to arterial or thoroughfare). Commercial areas have also been designed for automobiles with large parking lots between the building and the roadway. For pedestrians and bicyclists, these design decisions resulted in less accessibility and unattractive (and sometimes unsafe) travel environments.

Alternatively, certain land use development patterns encourage pedestrian and bicycle travel, which results in having a positive impact on public health. Mixing housing with stores, services, employment, and developing neighborhoods that are more compact can create communities where residents' daily needs are met with a short walk or bike ride. Greater connectivity between homes, retail, employment, and recreation locations can also encourage more pedestrian and bicycle activity. This is accomplished through grid pattern streets, shorter blocks, and integrated pathways that shorten distances between amenities and other destinations. Within development projects such as apartments and small lot subdivisions, the placement of open space with amenities such as pedestrian walkways, tot-lots, pools, community gardens and small common greens can encourage residents to partake in physical activity.

The ability to apply community design that promotes physical activity varies among the Environmental Justice Communities. West Arden-Arcade is almost at full buildout

with limited infill opportunities, while North Highlands/Foothill Farms and South Sacramento have moderate amounts of vacant land. Major development is expected for North Vineyard due to the establishment of master plans within its borders. In EJ Communities, there are also redevelopment opportunities where developments that are more bicycle and pedestrian friendly can replace existing auto-oriented developments.

Policy (Countywide)

EJ-19. When planning for new development in new communities, the features below shall be incorporated for their public health benefits and ability to encourage more active lifestyles, unless environmental constraints make this infeasible. In existing communities, the features below shall be considered, as appropriate and feasible:

a. Where appropriate, compact, mixed use development and a balance of land uses including schools, parks, jobs, retail and grocery stores, so that everyday needs are within walking distance of homes.

b. Grid or modified-grid pattern streets, integrated pathways and public transportation that connect multiple destinations and provide for alternatives to the automobile.

c. Wide sidewalks, shorter blocks, well-marked crosswalks, on-street parking, shaded streets and traffic-calming measures to encourage pedestrian activity.

d. Walkable commercial areas with features that may include doors and windows fronting on the street, street furniture, pedestrian-scale lighting, and served by transit when feasible.

e. Open space, including important habitat, wildlife corridors, and agricultural areas incorporated as community separators and appropriately accessible via non-vehicular pathways.

Implementation Measures (Countywide)

A. At such time the County initiates a rezone program, the Office of Planning and Environmental Review (PER) will rezone properties to multifamily zones that are close to existing services and adjacent to existing bike lanes and sidewalks. (PLANNING AND ENVIRONMENTAL REVIEW)

B. Develop a comprehensive Transit-Oriented Development Ordinance that will incentivize transit supportive uses near light rail stations or major transit stops and preserve transit areas for appropriate development opportunities. This ordinance will incorporate the transit-oriented development standards in the TOD Design Guidelines and be applicable to all areas within ½ mile of a light rail station or major transit stop. The Comprehensive Transit-Oriented Development Ordinance will allow flexibility in allowed uses and development standards based on the neighborhood context of the transit station.

or

Prepare Master Plans and Special Planning Area ordinances for areas surrounding light rail stations or major transit stops. These planning documents will incentivize transit supportive uses and preserve transit areas for appropriate development opportunities. Many of the transit-oriented development standards in the TOD Design Guidelines will be incorporated into the planning documents. Allowed land uses and development standards will be based on the neighborhood context of the transit station. (PLANNING AND ENVIRONMENTAL REVIEW)

C. Coordinate with Department of Health Services, Sacramento County Department of Transportation (SACDOT) and other public health agencies and organizations during master planning efforts to identify and integrate design elements into land use plans that encourage physical activity. (PLANNING AND ENVIRONMENTAL REVIEW, DEPARTMENT OF HEALTH SERVICES, TRANSPORTATION)

D. Coordinate with the Department of Health Services to conduct meetings, workshops or public hearings in order to solicit input from interested individuals and organizations on opportunities and recommendations for integrating public health concerns into local land use and transportation planning. (PLANNING AND ENVIRONMENTAL REVIEW, DEPARTMENT OF HEALTH SERVICES, TRANSPORTATION)

ACTIVE TRANSPORTATION

Objective

Improve the pedestrian and bicycle network particularly in Environmental Justice Communities by increasing the quantity of pedestrian and bicycle facilities and by increasing the quality of new and existing facilities in terms of user safety.

Intent

Wide participation in "Active Transportation" which includes non-motorized forms of transportation (bicycling, walking and scootering) has both health and environmental benefits. Active transportation encourages physical activity and reduces rates of overweight and chronic diseases. Active transportation can also replace vehicle trips, which is a significant contributor of air pollution in Sacramento County. This air pollution is a major factor in causing asthma, lung cancer, respiratory and cardiovascular disease (see Pollution Exposure Section).

The extent of the active transportation network is important; the more people are reached by this network, the more this network will be used. However, to be truly useful, this active transportation network must not only reach the users of this network but must also connect them to desirable destinations; it must enable people to go to places where they want to go. Finally, the active transportation network must be safe to use. If potential users perceive that using the network is not safe, they will not use the network.

In the past, auto transportation has been prioritized over active transportation. In many communities, the auto transportation network is well developed while the active transportation network is non-existent or semi-developed with minimal features for the safety and enjoyment of pedestrians and bicyclists. However, more recently, features that make walking and biking much safer have been incorporated into the design of the streetscape. These include installing traffic-slowing features, adding bike lanes, establishing well-defined crosswalks, building wider sidewalks and buffering pedestrians from traffic. In addition to making the streetscape safer for pedestrians and bicyclists, other features have been incorporated into the design of the streetscape to make walking and bicycling more enjoyable. These include providing interesting and attractive streetscapes, stores fronting on the street with minimal setbacks, street furniture, shade trees and inviting public spaces. Many of the features have been incorporated into smart growth street projects, which strive to design streets and the surrounding street corridor for all modes of travel.

The General Plan, the Countywide Design Guidelines and the Zoning Code require many of the features that increase the safety and enjoyment of pedestrians and bicyclists. One concept that has not yet been incorporated into these documents is the concept of "level of stress" (LTS) which evaluates bikeways by matching roadway design, traffic volumes and speeds with bicyclist level of stress. This concept is gaining

in EJ Communities (except for North Vineyard) is higher than in non-EJ areas. There are large residential areas within EJ Communities that are not within quarter mile of a park. The County or a nongovernmental organization (NGO) can identify these areas and can advocate for the location of new parks in those neighborhoods if there is suitable vacant land available and if there is community support for a new park.

Besides distance from a park, evaluating park accessibility also includes identifying physical barriers that keep residents from easily accessing the parks. For new developments, a public health official can evaluate park accessibility during the development review process.

Policy (Countywide)

EJ-22. Parks should easily be accessible to the surrounding neighborhood and beyond and be as barrier-free as possible, particularly for those with limited mobility.

Implementation Measure (Countywide)

A. Park accessibility will be analyzed, during the review of master plans and tentative subdivision maps. (DEPARTMENT OF HEALTH SERVICES, PLANNING AND ENVIRONMENTAL REVIEW)

Implementation Measure (EJ Communities)

B. The County will support efforts through analysis and public comments to identify neighborhoods in Environmental Justice Communities that lack access to public parks and identify vacant land that could be used for public parks. The County will also support efforts to contact recreation and park districts to advocate for public parks or alternative permanent or temporary facilities (such as pocket parks or pop-up parks) in neighborhoods that lack access to public parks. (PLANNING AND ENVIRONMENTAL REVIEW)

TREE CANOPY

Objective

Increase tree canopy in Environmental Justice Communities, to levels existing in urbanized areas that are outside of EJ Communities.

Intent

A robust tree canopy can encourage physical activity by providing shade to pedestrians and bicyclists and beautifying their environment. Healthy tree canopy exists in many of Sacramento County's most desirable neighborhoods that adds to the economic value of homes in the neighborhoods. A healthy tree canopy also benefits business districts where studies have shown that people actually spend more when the district has a robust tree canopy. Besides aesthetics and financial benefits, a robust tree canopy can have environmental benefits by shielding hardscape and roofs from heat waves, thus reducing the heat island effect and reducing exposure to air contaminants.

There is a need for a more extensive tree canopy in some of the EJ Communities. Percentage of area covered by tree canopy in West Arden-Arcade is similar to that in non-EJ areas but the percentages in North Highlands/Foothill Farms and South Sacramento EJ Communities are much less.

There is an existing program to expand the tree canopy in the Sacramento region. The Sacramento Tree Foundation introduced Greenprint, previously called the Sacramento Regional Urban Forest Framework, as an initiative to double the tree canopy in 40 years. Greenprint seeks to increase the Sacramento region's average shade coverage to 35 percent and established tree canopy goals and strategies for each municipality in the region.

Besides expanding the tree canopy in the unincorporated County particularly in EJ Communities, it is important to preserve the existing tree canopy. The County's Tree Preservation ordinance and Conservation Element recognize the value of preserving trees and seek to protect the resource by protecting trees from removal without compensation. However, this does not address any existing canopy deficiencies.

Policy (EJ Community)

EJ-23. The County will achieve equitable tree canopy in EJ Communities.

Implementation Measures (EJ Communities)

During California Environmental Quality Act review of impacts for public works, private development, revitalization and master planning projects in under-canopied EJ Communities, mitigation shall be required that provides an extra 25% tree replacement and said mitigation shall be directed to the same EJ community where the impact occurs. (PLANNING AND ENVIRONMENTAL REVIEW)

Policies (Countywide)

EJ-24. Increase tree canopy coverage to at least 35 percent in all unincorporated County neighborhoods by 2040, especially those that are in Environmental Justice Communities.

EJ-25. Consistently enforce existing Tree Protection Ordinances including the zoning code, the Tree Ordinance (SCC 19.04) and the Tree Preservation Ordinance (SCC 19.12).

Implementation Measures (Countywide)

A. As a condition of approval for discretionary projects, Sacramento County shall require the appropriate remedy for any open tree violations on site. (PLANNING AND ENVIRONMENTAL REVIEW)

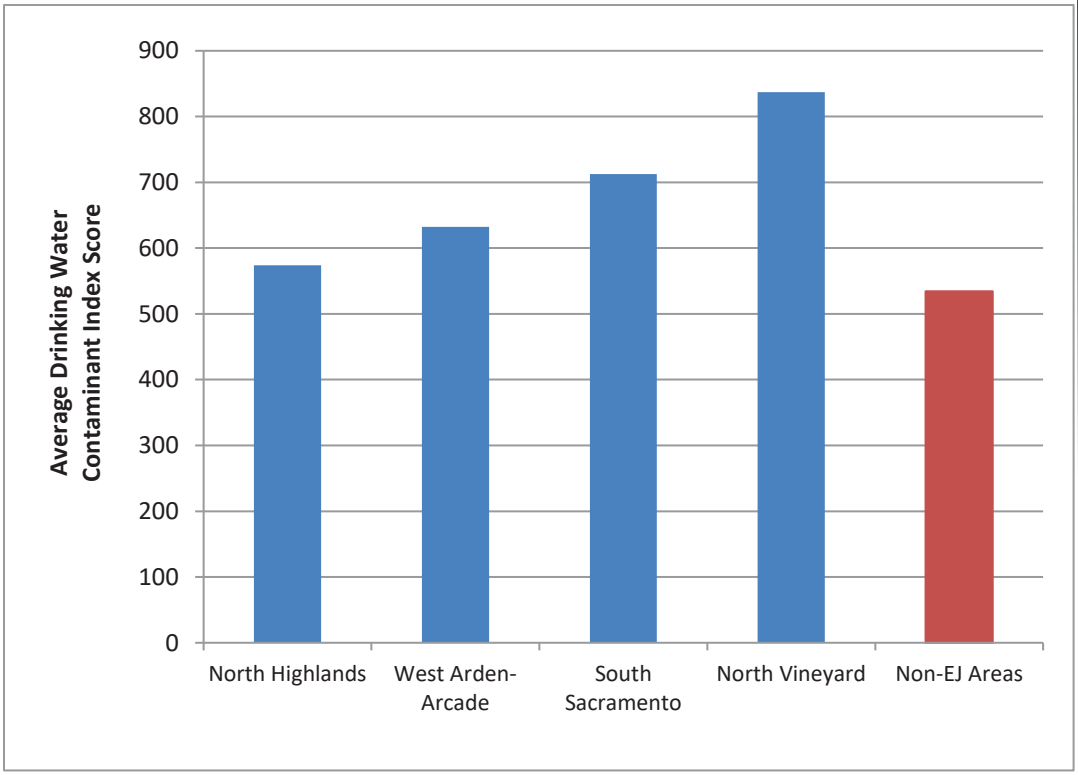
B. Sacramento County will continue to support Sacramento Tree Foundation's NeighborWoods program in order to help achieve 35 percent tree canopy coverage in Sacramento County neighborhoods. (PLANNING AND ENVIRONMENTAL REVIEW)

C. Survey EJ communities to identify appropriate opportunity sites to receive tree mitigation plantings. (PLANNING AND ENVIRONMENTAL REVIEW)

within a census tract (CalEPA, 2017). According to the CalEnviroscreen 3.0 Report, California water systems have a high rate of compliance with drinking water standards (CalEPA, 2017). The State Water Resources Control Board reported that in 2014, water systems serving only about 2.9 percent of California's population were in violation of one or more drinking water standards (SWRCB, 2016). In addition, a census tract may include many different public drinking water sources and thus, the assigned index score for a census tract may not reflect water quality existing in different portions of the census tract.

Drinking water contamination scores are shown in Figure 24. Each of the EJ Communities have a higher score than non-EJ areas.

Figure 24: Drinking Water Contamination (2005-2013)



Note: North Highlands includes Foothill Farms and Old Foothill Farms
Source: CalEnviroscreen, 2017

Between 2012 and 2017, the State Water Resources Control Board cited eight water providers in unincorporated Sacramento County for violating the California Safe Drinking Water Act. Most of these were small water systems located in the Sacramento Delta. One of the remaining water providers was in the South Sacramento EJ Community while the others were in non-EJ areas. The water provider within the South Sacramento EJ Community serves approximately 7,600 residents, which is 11 percent of all residents in the South Sacramento EJ Community. Thus, unsafe drinking water is not a widespread issue within EJ Communities.

POLICIES AND IMPLEMENTATION MEASURES

CLIMATE ACTION PLAN

Objective

Environmental Justice Communities are not disproportionately impacted by climate change.

Intent

Climate change includes both individual extreme events such as a flood or a heat wave and events that occur over time such as sea level rise. The impacts of climate change are already affecting many communities in California and can disproportionately affect disadvantaged areas. Many disadvantaged areas are also close to major sources of GHG emissions such as freeways, refineries and power plants.

Climate change impacts can introduce new environmental problems to EJ Communities or exasperate existing environmental problems. For example, the relatively poor air quality in Environmental Justice Communities (Figure 21) can become even worse during heat waves. The North Highlands/Foothill Farms and South Sacramento communities also do not have robust tree canopies and thus, residents in these communities are more susceptible to getting heat stroke or heat exhaustion during a heat wave.

Because Environmental Justice Communities can be more vulnerable to the effects of climate change, these communities need to be prioritized in programs that are part of the Climate Action Plan.

Policy (Environmental Justice Communities)

EJ-28. It is the policy of Sacramento County that programs developed as a part of a Climate Action Plan such as incentive programs, fee mitigation programs, adaptation and resiliency programs, and County-funded programs shall prioritize Environmental Justice Communities.

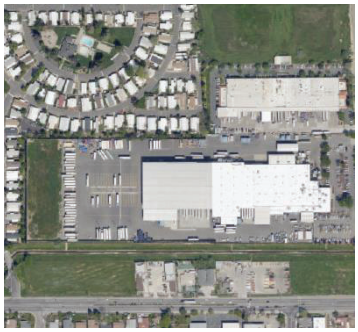
CONFLICTING LAND USES

Objective

Sensitive receptors in residential areas are protected from exposure to air pollutants.

Intent

When conflicting land uses are sited adjacent to each other, sensitive receptors can be exposed to pollutants from both mobile sources and stationary sources. For example, one neighborhood in the South Sacramento EJ Community is sited adjacent to several industrial land uses containing stationary sources, large arterial roadways that act as commercial truck routes, and Highway 99. This neighborhood experiences higher levels of diesel particulate matter than in other EJ Communities.



Because of truck traffic, industrial areas often have higher levels of diesel particulate matter which can impact nearby residential neighborhoods such as this mobile home park in South Sacramento

Photo Source: Sacramento County GIS.

While the County desires to site sensitive receptors away from sources of pollution to the maximum extent possible, it is also the goal of the County to support transit oriented, mixed use, and infill development. Therefore, the policies and implementation measures below allow potentially conflicting land uses to be sited adjacent to each other if appropriate exposure reduction methods are incorporated with guidance from the Sacramento Metropolitan Air Quality Management District (AQMD).

Related Policies in Other Elements

- Policies AQ-3, AQ-4A and AQ-4B in the Multidisciplinary Coordination Section of the Air Quality Element.
- Policy LU-19 in the Community and Neighborhood Identity Section of the Land Use Element.
- Policy PF-32 in the Neighborhood Integration Section of the Public Facilities Element.
- Policy HE 7.1.6 of the Housing Element.

Related Implementation Measures in Other Elements

SECTION 10: SAFE AND SANITARY HOMES

The housing conditions of older homes in a community have direct health implications for those who live in the homes. Many residents in Environmental Justice Communities live in dwellings that were built before standards and regulations were established to ensure that new homes are free from pollutants such as lead and asbestos. The proportion of older homes in Environmental Justice communities are usually higher than in non-EJ areas and thus residents in EJ Communities are disproportionately exposed to these health threats. Older housing often have other problems such as poor ventilation, which leads to uncomfortable indoor temperatures and mold-producing moisture, and pest and vermin infestation.

Overcrowded housing is another issue that affects the safety and cleanliness of homes. According to the World Health Organization, unsanitary conditions arising from overcrowding in homes can contribute to the spread of disease (California Environmental Justice Alliance, 87). Unfortunately, overcrowding is an underreported issue; however, the U.S. Census Bureau does have data to determine whether overcrowding is occurring in a neighborhood. Overcrowding is often measured by determining the persons-per-room in a dwelling unit with houses with more than one person per room.

Finally, housing affordability is another issue that influences whether homes in a community are safe and sanitary. When a tenant or homeowner spends more than 30 percent of their income toward housing (including utilities), they are generally considered to be overpaying or cost-burdened. When a household is cost-burdened, there is less money for housing maintenance or other needs such as health care and healthy food.

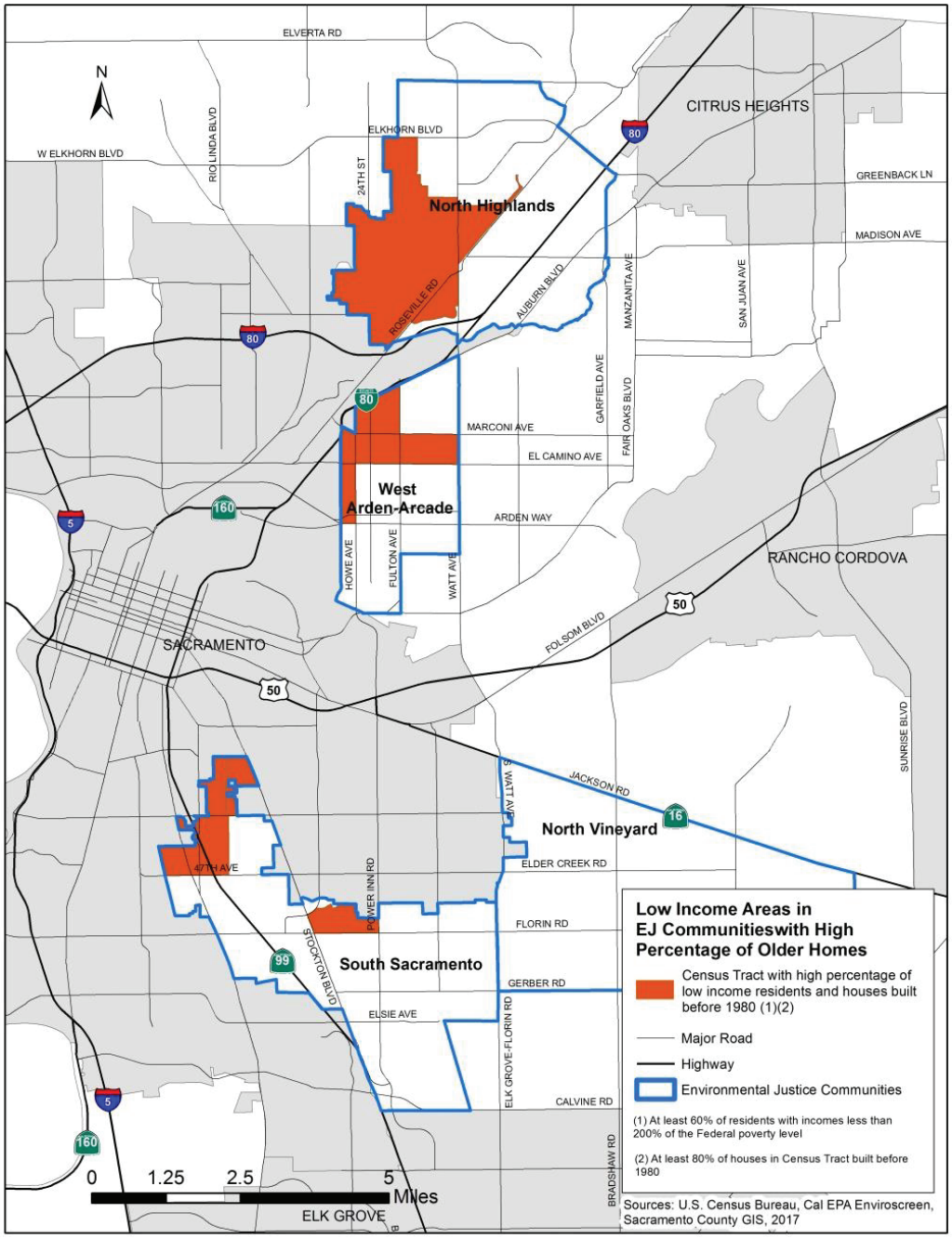
BASELINE CONDITIONS

INADEQUATE MAINTENANCE

Age of housing stock and owner income are major factors in the need for housing maintenance. Therefore, staff developed two criteria for identifying areas (census tracts) within EJ Communities that potentially have a large number of inadequately or improperly maintained homes. The first criterion is having at least 80 percent of homes built before 1980. The second criterion is having at least 60 percent of households with annual incomes less than double the Federal poverty level.

According to Figure 25: Census Tracts in EJ Communities with Potentially Large Number of Houses Needing Maintenance, two EJ Communities (West Arden-Arcade and South Sacramento) have large areas with older homes and lower-income residents. Figure 25 also shows North Highlands/Foothill Farms having a large area of older homes but this is misleading because most of this area is comprised of the McClellan Business Park. The only other areas in the unincorporated County with older homes and lower income residents are semi-rural areas west of North Highlands and in the Sacramento Delta (Sacramento County, 2009).

Figure 25: Census Tracts in EJ Communities with Potentially Large Number of Houses Needing Maintenance



HOUSING OVERCROWDING

There is a higher percentage of overcrowded homes in EJ Communities than in non-EJ areas (Figure 26). For all residences, the percentage of homes that are overcrowded in EJ communities is seven percent while in non-EJ areas the percentage is three percent. For renter-occupied residences, the percentage of homes that are overcrowded in EJ communities is ten percent compared to six percent in non-EJ areas. These percentages may not seem high but in EJ Communities, over 5,000 homes are overcrowded.

Sacramento County
Countywide Design Guidelines

The Countywide Design Guidelines are an implementing tool of the County's General Plan, applying to the whole unincorporated county. There are separate sections for Single Family Dwellings, Multi-family Dwellings, Commercial, Employment Districts, Village Centers/Mixed-Use, and New Communities. The Design Guidelines incorporate "Active Design" strategies to aid the County in creating a built environment that is healthy, sustainable, livable and promotes active transportation choices like biking, walking, and access to transit. The Design Guidelines include an active design icon to call out policies and standards that incorporate active design.

The Countywide Design Guidelines can be reviewed in full HERE.

2.0 Single-Family Design Guidelines

The primary goals of the Single-Family Guidelines are to ensure that new single-family development is a positive addition to the community and achieves the highest resident quality of life, whether in new or established neighborhoods. Single-family housing shall adhere to the applicable standards of the Zoning Code, unless alternatives can be justified by provisions of these Design Guidelines.

Single Family Design Review is based on three different areas of focus – Neighborhood Site Design, Building Design, and Landscaping/Site Elements.

Design Review Approval shall be applicable as follows:

1. For Subdivisions of 20 lots or more (new and previously approved tentative subdivision maps) and at a density of 8 dwelling units per net acre or less. Neighborhood Site Design Guidelines (Section 2.2) will be reviewed with the tentative subdivision map. Design Review of Building Design and Landscaping (Sections 2.3 and 2.4) is required, and may occur after the approval of the tentative map, but must occur prior to submittal for a building permit. Design Review of Building Design and Landscaping may be based on conceptual or illustrative drawings.

2. For Subdivisions at a density greater than of 8 dwelling units per net acre. Design review for Site Design, Building Design, and Landscaping (Sections 2.2, 2.3 and 2.4) is required concurrent with consideration of the tentative subdivision map.

3. For Subdivisions of less than 20 lots and at a density of 8 dwelling units per net acre or less, for custom lot subdivisions, and for tentative parcel maps. Neighborhood Site Design Guidelines (Section 2.2) will be reviewed with the tentative subdivision or parcel map. Design review for Building Design and Landscaping (Sections 2.3 and 2.4) may be required as a condition of approval in order to achieve General Plan objectives. The conditions of approval may specify the design objectives particular to the project (e.g. privacy to adjoining properties) to be evaluated prior to issuance of a building permit.

General Design Standards and Guidelines

- For projects subject to design review per Section 2.0, new two-story residential buildings directly adjacent to one-story residential buildings, should respect the privacy of adjacent one-story buildings (Figure 2.4).
- The direct line-of-sight between dwelling units, specifically bedrooms and bathrooms, should be avoided by orienting windows, balconies, and entryways so they do not directly face into adjacent property windows or private open space.
- Landscaping should be used as screening to enhance residential privacy.

2.3.4 Architectural Styles

Design Principles

For projects subject to design review per Section 2.0, building design should respect, enhance, and contribute positively to the predominant characteristic developments in the neighborhood. New homes in existing neighborhoods should be designed in a cohesive architectural style that complements the best examples of existing residential development on the block. If there is a mixture of styles on the block, then the design of infill construction may be more flexibly interpreted.

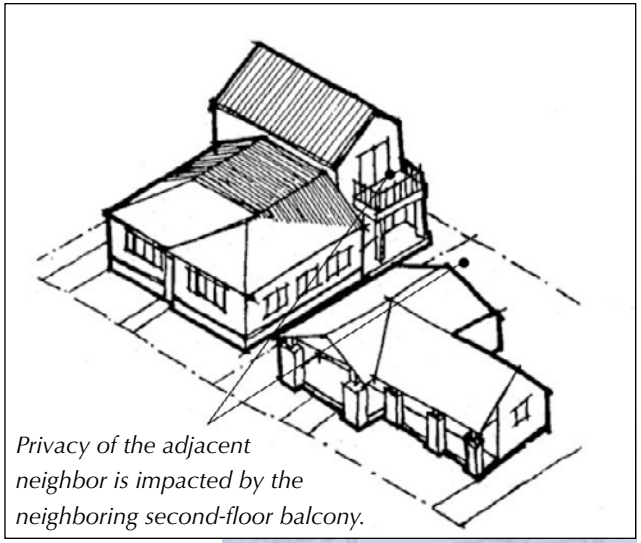
Rationale

Quality in detail and design contributes positively to the neighborhood. The use of cohesive, but different architectural "styles" and materials is intended to add variety to the buildings as is often found in neighborhoods that have evolved over time.

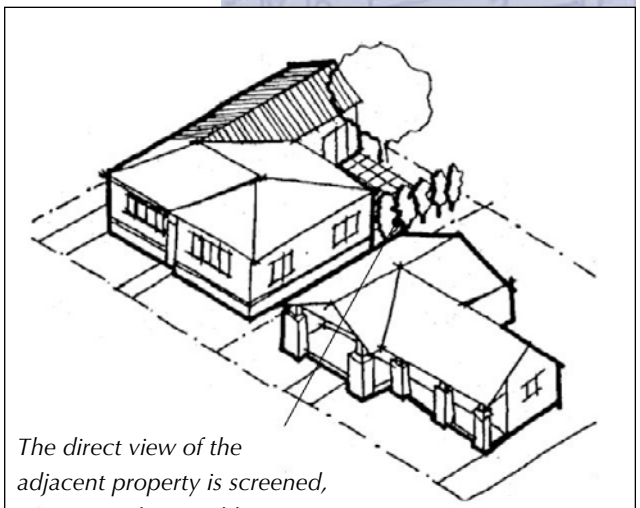
General Design Standards and Guidelines

- For single-family subdivisions, the building styles along the same street should be complementary and coordinated yet diverse. Variation of architectural styles along the same street is appropriate if the overall massing, form and setbacks of the homes is compatible.

Figure 2.4: Single-family privacy protection



Privacy of the adjacent neighbor is impacted by the neighboring second-floor balcony.



The direct view of the adjacent property is screened, respecting that neighbor's privacy.

Inappropriate, incompatible scale and mass of newer infill housing on the left as compared to the preexisting house on the right

Appropriate, compatible scale and mass

- Production home development projects should provide a minimum of four different housing product types.
- New stylistic interpretations of traditional architecture are encouraged, but fundamental design principles such as proportions, scale, shapes and rhythm shall be utilized.
- Architectural features and detailing should be proportional to the scale of the home, as well as to other homes of a similar architectural style in the surroundings.
- Individual elements of a structure should be consistent with that structure's overall design or style.
- No building facade shall consist of an unarticulated blank wall or unbroken series of garage doors.
- The structure should have appropriate finishes on all sides to provide continuity. Materials should appear substantial and integral to the structure; and shall be durable so as not to readily succumb to weathering and aging. Material changes not accompanied by changes in plane appear "tacked-on" and are strongly discouraged.
- For most architectural styles, exterior colors should be in context or compatible with those in its neighborhood.
- Corner lots should present attractive facades to both adjoining streets through elements such as wrap-around porches, bays, entries, window treatments, and use of alternative materials such as brick and stone.
- Provide windows with views onto outdoor spaces for additional security and visual interest. Active uses, such as kitchens and living rooms, are encouraged to the front of the building for more "eyes on the street."
- Energy conservation strategies should be employed including window shading devices, selection of colors to reduce heat gain, cool roofs, whole house energy systems, and use of high-quality insulation materials and radiant barriers to reduce energy consumption (especially the use of air conditioning during hot summer months), to the greatest extent possible.
- Inclusion of rain gardens and rain barrels to capture roof runoff is highly recommended.
- Use of recycled paint and other quality recycled materials is encouraged.

2.3.5 Architectural Details

Design Principles
For projects subject to design review per Section 2.0, buildings should be well articulated through building elements such as the roof, entryway, windows, porches, balconies and decorative trim, which should be stylistically cohesive and proportional to the overall structure. Color, materials, and texture should convey a high-quality appearance and shall be complementary to the surrounding area. Products shall be of a quality that is durable and does not readily show signs of weathering and aging.

Rationale
Use of stylistically cohesive, character defining elements enhances visual compatibility and attractiveness of the building. Use of appropriate details maintains the authenticity of the building style, and can help to create a well-articulated building facade and scale.

2.3.5.a. Elevations and Facades

General Design Standards and Guidelines
- Attractive, well-articulated building facades should be created. Articulation can be achieved with windows, setbacks, entries, porches, and/or balconies. All elevations should be given design treatment with particular emphasis on those seen from the street or public way.

Figure 2.5: Streetscape diversity is achieved through different models and architectural treatments.

All elevations should be treated with the same high-quality details as the front of the house.

- Variety in use of materials is desirable. For projects in existing neighborhoods subject to design review per Section 2.0, the materials should complement existing neighborhood context.
- No building facade shall consist of an unarticulated blank wall or an unbroken series of garage doors.
- The structure should have appropriate finishes on all sides to provide continuity. Materials should appear substantial and integral to the structure; and shall be durable so as not to readily succumb to weathering and aging. Material changes not accompanied by changes in plane appear "tacked-on" and are strongly discouraged.
- For projects subject to design review per Section 2.0 and most architectural styles, exterior colors should be in context or compatible with those in its neighborhood.
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- Inclusion of rain gardens and rain barrels to capture roof runoff is highly recommended.
- Use of recycled paint and other quality recycled materials is encouraged.

2.3.5.B. Roof Styles

General Design Standards and Guidelines

- Roof forms should be an integral part of the architectural design of the building. There should be a consistent relationship of slopes and pitches used on each building.
- For projects subject to design review per Section 2.0, the design of a roof on new homes in existing neighborhoods should fit in with designs of roofs on homes in the established neighborhood.
- For projects subject to design review per Section 2.0, new homes in existing neighborhoods should respect the primary roof pitch of the majority of existing homes on the block to allow for coherence of design, while displaying variety in details such as dormers and gable orientation.
- Flat roofs should be used only if it can be demonstrated that they fit in the overall design character of the neighborhood.
- Appropriate roof overhangs are encouraged to promote window shading and building longevity when appropriate to the architectural design of the home.
- Photovoltaic solar panels or solar shingles such as "solar slate" are encouraged to reduce the home's use of energy from the grid.
- Homeowners are encouraged to consider roofing options that include recycled content.
- The use of "cool roof" options, including lighter colored, high albedo coatings and other "cool roofing" materials and applications are encouraged to achieve energy efficiency inside homes and reduce the heat island effect.
- The use of rooftop solar or wind turbine installations (where allowable) should be integrated into the overall home image and be non-obtrusive on the neighborhood imagery.
- Installation of radiant heat barriers and insulation in attic and rafters is encouraged to increase energy efficiency and interior livability.

Coherent streetscape is achieved through consistent roof pitch.

A series of gable dormers that are compatible with the scale of the main structure help break up the overall massing of the building while creating a rhythm.

Planter strip along a local residential road is planted with native vegetation and utilized as a stormwater treatment device

Rationale

Treatment of the landscape in the public and private areas is a major component of neighborhood creation, character, and compatibility. Landscaping can be used as a strong complement to buildings and to make a positive contribution to the aesthetics and function of the specific lot, building, and area. Landscaping of the individual lot can also provide for a smooth transition between the public and the private area and improve the safety along the streets. Landscaping and landscape maintenance are critical components of any successful residential project and shall be considered an essential part of the design and construction process, particularly for single-family residential developments.

2.4.1.A. Planting

Design Guidelines

- Incorporate trees, shrubs, plants, groundcover, and grass areas within single-family development projects to create a well-designed landscaped environment for residents and those viewing from public areas.
- Front yard areas should be designed using landscape elements pertaining to form, horizontal and vertical lines, hardscape and softscape, and ornate qualities that are compatible to the primary structure.
- Visual openness should be maintained in front yards to provide for visual surveillance of the street and sidewalks.
- Visual focal points such as sculpture and public art are strongly encouraged to be integrated into subdivision common area landscaping.
- To the extent feasible, existing mature trees and shrubs that represent existing significant landscaping shall be preserved.
- All plants should be given enough space to grow to their natural size.
- Provide street trees in the front and side street yards of residential lots, consistent with Section 5.2.4.C of the Zoning Code.

- Air conditioning/mechanical equipment and trash enclosures should be placed out of view from the public right-of-way and should be screened with landscaping. Shading air conditioning equipment helps conserve energy.
- Unpaved areas should be planted with irrigated plant materials, and mulched where landscaping would be challenging to minimize weed growth and improve appearance.
- For subdivisions, planting strips located between the sidewalk and street should be at a minimum six (6) feet wide to allow for a mature tree to grow. Planting strips less than six (6) feet wide must be consistent with the improvement standards and still provide for the planting of smaller canopy trees.
- Provide sidewalk shading with the planting of street trees in the public realm, consistent with the County Improvement Standards.
- For subdivisions, marked entries should incorporate landscaped open space areas. Enhanced parkways and tree lined medians can create an attractive entrance and are encouraged.
- Various water conservation measures and systems to capture and treat stormwater should be employed through landscaping to the extent feasible, in accordance with the Water Conservation Ordinance and the River Friendly Landscape Design Toolkit.
- Primary selection of trees and plant species should be from the California native palette and other drought tolerant species. Invasive species are strongly discouraged (Refer to Table 2.3 for a list of suggested native plants selection).
- Hydrozoning-grouping plants by water needs for irrigation water efficiency should be implemented.
- Low water use groundcovers or plants should be planted. Use of high input water consuming decorative lawns is discouraged.
- Deciduous trees and shrubs that shade the west and south sides of the home are

Shrubs and groundcover can provide a low-water landscape alternative to turf.

Native and low water-use ornamental plants can significantly reduce water consumption.

encouraged to minimize solar heat gain of the building.

- Shade trees should be strategically planted to shade pavement areas and air conditioners.
- Trees that become diseased, die or require removal, should be replaced in order to sustain the tree canopy and benefits provided by the landscape palette.
- Bare soils should be planted or mulched with bark, stone, or other suitable materials to avoid unnecessary runoff.
- Bio-retention areas or "rain gardens" are encouraged in the front and rear yard, where feasible.
- Utilize the River Friendly Landscape Design Toolkit for the new California landscape.
- Reduce yard waste by utilizing River-Friendly landscaping practices such as carefully selecting the right size plants for the yard, mulching, and providing for composting.
- For new subdivisions, street-side landscaping areas should be depressed and planted with native vegetation. Open curbs or curb cuts should be provided to allow for stormwater collection into these areas for filtration/infiltration.
- Garden or raised beds for growing vegetables are encouraged.
- Use of known high allergen plantings is discouraged.

2.4.1.c. Paving and Hardscape Surfaces

Design Guidelines

- The paving materials selected should contribute to the overall appearance of the home.
- Alternative paving surfaces, such as concrete pavers, brick, or stone are encouraged for driveway and walkway surfaces to reduce the appearance or large, paved areas. Use of pervious paving materials is encouraged.
- Alternative driveway and paving treatments (such as Ribbon or Hollywood driveways) are common in older neighborhoods and can provide guidance for new homes in existing neighborhoods for those projects subject to design review, per Section 2. Ribbon driveways are made up of two parallel strips of paving, with a strip of grass or pervious pavers between the paving strips to allow the rain water to soak in. This type of design minimizes impervious surfaces by only using conventional pavement on the area where a vehicle will be driving or parking, and not the surfaces between the wheels.
- Impervious surfaces should be minimized to the greatest extent possible to reduce stormwater runoff and urban heat island effect. Alternative paving surfaces such as permeable paver blocks and permeable concrete should be considered for driveways, walkways, and patios.
- Porous streets and sidewalks that allow stormwater to seep into the ground and adjacent drainage swales are recommended.
- Utilize cool pavement whenever possible to reduce urban heat island impacts.
- Integrate a variety of paving/hardscape treatments to reduce runoff and obtain the greatest benefits in cooling, groundwater infiltration and aesthetics.

Permeable interlocking concrete pavement combines stormwater infiltration, retention, and surface use (e.g. driveway) into one place, thereby reducing runoff volume.

- Landscaping shall be included adjacent to a wall when open to public view and should be used to soften and screen the hard edge appearance of the wall, consistent with the Zoning Code.
- Use of materials that are consistent with the style of the home is encouraged.

2.4.4 Utilities and Storage

Design Principle
The visibility of utilities and storage facilities should be minimized by placing them at the side or rear of the home and screening them from view from the public street or open space.

Rationale
Utilities and service features are less attractive but necessary parts of a home. By placing these features away from public view and screening them, using fences and landscaping, the aesthetics of the neighborhood can be improved.

Placing mechanical units in suitable locations such as sides and niches of buildings, and screening from public view reduce visual impact.

Design Guidelines
- Trash receptacles should be placed in the side or rear yard and adequately screened by landscaping or side yard fence. Trash areas should be designed to accommodate recycle bins. If trash receptacles are to be stored in the garage the garage must be able to allow user access to them.
- Storage sheds should be located in the rear yard and shall comply with setback requirements. Placement in the side yard is acceptable if the shed is adequately screened by landscaping or a side yard fence, when proposed with the initial home construction.
- Accessory structures should be similar in character and materials to the main building, but subordinate in massing, scale, and height when proposed with initial home construction.
- Antennae should be mounted at the rear of the home. Satellite dishes should be mounted on the home to minimize their visibility.
- Heating and cooling units should not be roof-mounted or placed at the front of the home. Heating and cooling units should be placed in the attic or at the side or rear of the home and screened by a side yard fence or landscaping. Solar panels do not need to be screened.

- Wherever possible utilities should be undergrounded.
- Where feasible, heating, ventilation, and air conditioning units should be placed on the north side of the primary structure or garage (if not the street side) to shade the units and minimize energy consumption.
- All new HVAC equipment shall meet SMUD's latest guidelines for energy efficiency.
- Installation of building integrated solar panels and micro wind-turbines on the roof are encouraged and not precluded by any of the guidelines in this document.
- All new homes are subject to the State of California's Building requirements. Efforts should be made to advance energy reductions and enhance conservation efforts to achieve the zero-net energy 2020 goals for new homes.
- Home electric vehicle chargers are encouraged.
- Plumbing systems that provide outdoor plumbing connection for use in greywater irrigation are encouraged, consistent with health requirements.
- Refer to the commercial design guidelines Section 4.4.6 for guidelines for wireless communication facilities.

The visibility of utilities and storage facilities shall be minimized by placing them at the side or rear of the home and screening them from view.

4.0 Commercial Design Guidelines

The purpose of this chapter is to provide overall planning and sustainable design principles and guidelines for commercial projects. Commercial projects are divided into three forms: commercial districts, commercial corridors, and commercial centers. Commercial districts occur as major centers of regional or subregional commercial activity. Commercial corridors contain commercial activity and bisect many neighborhoods and often are public transit corridors. Commercial centers are smaller in scale and serve the commercial needs of the neighborhoods nearby. Projects within these three types are subject to the Commercial Design Guidelines which have the goal of providing commercial projects that are well designed to meet the community design goals of the Sacramento County General Plan.

Many existing commercial districts, corridors, and centers are characterized by their auto-oriented commercial past, individually developed projects and sites, and franchise architecture. Many of these older commercial developments require revitalization. These Commercial Design Guidelines are to be used to guide this revitalization and to provide standards for new commercial development in the County.

4.1 Understanding Context: Commercial Districts

Projects in commercial districts should further the economic and image objectives for the district and advance healthy and sustainable communities in the County. Each project should contribute to the streetscape, pedestrian and auto access objectives, architectural and signage design objectives for the site and surrounding area. To do this, projects will need to be planned and designed to complement both existing and anticipated future investment. Project applicants need to consider the following questions.

- Site connections: How can driveway and sidewalk connections increase the connectivity and accessibility to the site from adjacent neighborhoods and development?
- Building alignments: What are the typical building and landscape setbacks along public streets?
- Streetscape and landscape design: What type trees exist along public streets? Is there a landscape plan for the corridor or district?
- Roadway and parking lot design: How can parking lots and driveways be designed to increase connectivity and safety for pedestrians, people with disabilities, and bicyclists in the district?

Landscape, lighting and signage for every project should contribute to the implementation of streetscape principles and concepts for commercial corridors or districts. Streetscape and landscaping should promote pedestrian activity and provide for pedestrian safety, access, comfort and connections while contributing to overall placemaking and objectives for commercial districts or centers. Landscaping and trees can be used to complement buildings and to make a positive contribution to the aesthetics and function of the specific site and area. These aesthetics contribute to the mental and emotional well-being of customers, and support economic activity. Landscaping helps reduce storm water runoff, filters water and captures carbon and air particulates to improve air and water quality, provides shade during summer months and lowers temperatures reducing heat island impacts.

It is the intent that projects be evaluated on a community life cycle basis to maximize community benefit over time and encourage projects that serve as a catalyst for change.

Design Guidelines

- Renovated and new projects should have an inter-connected system of roadways, pedestrian walks and sidewalks. This system should connect to the district and neighborhood and should be safe and attractive to pedestrians and invite walking activity.
- Projects should possess an overall landscape and streetscape concept plan. The plan should reinforce the placemaking, connections, and shopping environment objectives for the project and surrounding district.
- Projects should provide an overall street lighting and furniture concept plan. The plan should identify the types and location of lighting fixtures and furniture. The lighting and furniture should be a coordinated "family" with color and style that complements site and architectural concepts and invites shoppers to use it. The lighting plan should use fixtures that are energy efficient, contribute to a safe environment and reduce impacts on dark skies.
- Roadway and street design should incorporate various methods of traffic calming to support pedestrian circulation and active transportation objectives. This could include changing paving materials in crosswalks, undulations, reduced speeds, flashing beacons, etc.
- Use accent paving such as textured paving and paving blocks in driveways. Use of permeable concrete, cool pavements and pavers is desirable. Minimize and share driveways wherever possible.
- Along streets with greater than 50,000 vehicles ADT, plant trees conducive to absorbing particulates including deodar cedar, valley oak, and redwoods. Utilize canopy trees for pedestrian areas to increase shading, cool the pavement and support walking.
-

Parking lots and driveways should be planned to reduce the number of curb cuts; provide interconnectivity between sites; and designed to support pedestrian activity, safety, connections and comfort.

Design Guidelines

- Parking for commercial uses should be located next to or behind buildings. These parking areas should be divided up into smaller, landscaped lots with defined pedestrian connections.
- Renovated and new projects should be planned to reduce the number of curb cuts and driveways. Where possible, projects should share driveways and parking access with adjacent sites to provide an interconnected system of auto and service access points.
- Projects should have a hierarchy of primary and secondary drives and roads. Primary driveways should be designed as streets. This includes incorporating sidewalks, streetscape and lighting to improve wayfinding and reinforcing site design and pedestrian connection concepts.
- Parking lots and driveways should provide pedestrian connections to storefronts. Dedicated walkways through parking lots and sidewalks should be included in the design of access roadways. Distinguish walkways from driving surfaces using varied surface treatments, and raising walkways, separated or protected walkways or similar design approaches.
- Traffic calming techniques should be employed in parking and driveway areas to support pedestrian circulation concepts.
- Parking areas should incorporate best practices that include: trees, lighting, landscaped storm water features, cool[1] and pervious pavement and pavers. Plant trees and shrubs to soften the overall impact of parking areas and to provide shade and noise reduction, heat island cooling and improved air quality.

1 "Cool pavements" refers to a type of pavement technology that better reflects solar radiation and stays cooler in the sun than traditional pavements. Pavement reflectance is enhanced by using a reflective aggregate, clear binder, or reflective surface coating. While hot pavements aggravate the urban heat island effect by warming the local air and contribute to global warming by radiating heat into the atmosphere, cool pavements store less heat, increase the solar reflectance of roads and lower surface and air temperatures. Thereby, cooling stormwater run-off, to reduce the damage to local watersheds; slowing atmospheric chemical reactions that create smog; offsetting warming caused by greenhouse gases; and saving energy on street lighting and air conditioning that will reduce the emissions of greenhouse gases and other pollutants.

A well designed parking lot that includes many of the features called for in the design guidelines. In particular, this lot has canopy shade trees and thematic signage and lighting.

Clearly defined pedestrian walkways in the parking lot with a change in paving materials.

- Parking lots shall include trees to provide shade and reduce temperature, consistent with Zoning Code standards. Tree selection, planting approach and irrigation should provide for rapid growth and sustained health of shade trees. Small ornamental trees are appropriate for accent planting but should not be used as shade trees.
- Trees and landscaping elements shall be used to organize large parking areas into recognizable smaller segments that reflect pedestrian circulation and site organization and scale.
- Lighting in parking areas should be LED lights or other acceptable high energy efficiency light, with automatic controls to dim lights after certain hours or when no one is present. Lighting shall be adequate to provide for a safe environment.
- Create textures, patterns, and colors in the design of paved parking areas, entries, or other high traffic pedestrian paths, to create visual interest and distinguish pedestrian routes from other paved areas. Do not design large monolithic areas of single color untextured paving.
- Use accent paving such as textured paving and paving blocks in driveways. Use of permeable concrete, cool pavements and pavers is desirable.
- Incorporate storm water quality measures into the parking areas to treat the storm runoff and enhance the parking areas by providing shade and reducing the amount of paving.
- Where feasible, provide for electric vehicle fast-charging stations, car and bike share locations, and other alternatives such as zip car.
- Bike racks shall be designed with the most current designs that provide secure locking features and are attractive. Many bike racks double as public art to add interest.
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4.2.6 Drive-Through Businesses and Automobile Service Stations

This section provides guidance for the development and review of drive-through businesses, as well as automotive service stations, automobile repair centers, and automobile washes, which are frequently provided in combination with each other. The County Zoning Code classifies and defines the following auto service uses:

- Automobile service stations address gas stations and convenience stores of all types, including:
  - » "Primary automobile service stations," stand alone facilities devoted primarily to the retail sales of gasoline and similar motor fuels and the sale of travel aides and automobile accessories to the public, with auto service, repair, maintenance facilities hydrogen fueling stations, and electric vehicle charging stations as incidental or secondary uses; and
  - » "Secondary automobile service stations," where the retail sales of gasoline and similar motor fuels, hydrogen fueling, or electric vehicle charging stations for the public is an incidental or secondary use to a primary commercial or business establishment, such as a grocery store or government center.
- Automobile repair centers, in which the primary use is repair of automobiles, are classified and defined in the County Zoning Code as "major automobile repairs" and "minor automobile repairs."
- Automobile washes are facilities designed for the purpose of either self-service or automatic washing of automobiles, either as stand alone uses or as secondary uses to an automotive service station or other primary land use.

The design guidelines are flexibly structured to respond to varying site conditions and neighborhood settings. Automobile service stations in the County come in a variety of forms:

- Standalone neighborhood convenience gas stations and convenience stores;
- Traveler centers that may be combined with other services (typically restrooms, convenience retail, automated teller machines, automobile washes, food service, drive through restaurants, hydrogen fuel, and/or electric vehicle charging stations);
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- Service station pump island canopies, including supporting columns and ancillary buildings should be architecturally compatible with the primary service building(s) in color, materials and building design.
- Drive-through elements should be architecturally integrated into the building rather than appearing to be applied or appear as an appendage to the building.
- All sides of a building should express consistent architectural detail and character. All site walls, screen walls, and pump island canopies, and other covered outdoor areas should be architecturally integrated with the building, with similar materials, colors, and details.

Landscaping

- The design of stand alone automobile service stations should conform to the dominant existing or planned character of the surrounding neighborhood. This can be accomplished through the use of similar forms, materials, and colors . In areas where no existing or little context exists, project applicants should work with the County to determine the character and design theme for the project.
- Incorporate landscaping that is compatible with the public realm landscape image and dominant existing or planned streetscape character of the commercial or neighborhood district.
- Landscaping should be provided near the primary building(s) to soften the structure and integrate it with the surrounding environment. Landscaping should be provided in accordance with the landscape requirements in the County Zoning Code.
- Trees should be provided along pedestrian pathways to provide shade, reduce heat island effects, particularly in parking lots, and reduce glare.
- Where site constraints require the location of the drive-through lanes, drive through areas, driveways, or parking areas between the street and the building, the view of the lanes should be minimized with the use of screening, landscaping, and other design elements, such as low decorative walls. Plant street trees, shrubs or other vegetation along the edge of the street. Use trees, shrubs and low walls to screen automobiles and automobile lights from view, while allowing visibility into the site.
- Landscaping and other screening should be installed to control the effects of facility operations, such as light, noise and vehicular movement adjacent to an existing residential or agricultural-residential use or zoning district and other sensitive uses. Refer to the County Zoning Code for landscape buffer and screening requirements adjacent to residential and agricultural-residential zoning districts.

4.3 Landscaping/Site Elements

Landscape design should be a defining feature for every project that contributes to the community's health, sustainability, image, and pedestrian activity, safety, access and comfort. Landscaping should promote pedestrian activity and provide for pedestrian safety, access, comfort and connections while contributing to overall placemaking and image objectives for village districts. Landscaping and trees can be used to complement buildings and to make a positive contribution to the aesthetics and function of the specific site and area. These aesthetics contribute to the mental and emotional well-being of customers, and support economic activity. Landscaping helps reduce storm water runoff, filters water and captures carbon and air particulates to improve air and water quality, provides shade during summer months and lowers temperatures reducing heat island impacts.

Design Guidelines

- The design of landscaping for commercial projects should reduce the creation of heat islands and filter harmful greenhouse gas and smog. Landscaping should provide softscape areas in place of paving and create shade. All site areas not covered by structures, walkways, driveways and parking should be landscaped.
- Site landscaping should include stormwater quality treatment features, such as vegetated swales, to attenuate flows and remove pollutants from runoff before it leaves the site, consistent with the County's stormwater quality control measures.
- New and renovated commercial projects should use landscaping to reinforce overall site and architectural design concepts for the project and surrounding neighborhood. This includes a hierarchy of canopy trees, accent/flowering trees, shrubs and groundcover. Drought tolerant planting should be used consistent with the County Water Conservation Ordinances. Special hardscape, such as pavers, stained concrete, and stone, should be used to identify pathways and gathering places in projects. Ungrouted pavers and permeable pavements are encouraged to reduce runoff.
- Incorporate appropriate landscaping that includes a variety of trees, shrubs, and other plantings. Utilize Sacramento County's River Friendly Landscape (RFL) Guidelines for plant material selection, placement and maintenance. The sustainable RFL guidelines are water and energy efficient, reduces maintenance, improves air quality and diverts green waste from the landfills.

New and renovated commercial projects should use landscape to reinforce overall site and architectural design concepts for the project and surrounding neighborhood.

- Landscaped storm water quality design measures shall provide multiple public benefits and be integrated into open space areas to provide storm water quality benefits and landscaping benefits.
- Provide on-going maintenance to identify and ensure the timely replacement of any dead or diseased vegetation.
- Design landscaping to be compatible with building design. Use trellises, arbors, cascading landscaping, vines and perimeter garden walls wherever suitable.
- Consider security issues in the landscape design of the site, including creation of barriers and screening.
- Do not allow landscaping to impede fire access to hydrant connections.
- Preserve and incorporate existing and native trees within the project site design to the greatest extent possible.
- Retain existing mature trees in landscape and building location plans to the greatest extent possible. Where existing trees must be removed, trees shall be replaced on-site or in another location, acceptable to the Planning Director, to compensate for the loss in canopy and environmental benefits. Participation in the County's Tree Mitigation program to compensate for canopy loss is also acceptable.
- Provide all landscaped areas with irrigation systems as needed to sustain the landscape. Comply with the County's Landscape Ordinance.
- Landscaping should be used to enhance and soften screening of loading and parking areas. It should also be used to help frame views and edges.
- The design of any non-building structures such as entry gateways, pavilions, or walkway trellises shall complement their related commercial center or building design and/or theme.
- Artwork and other amenities, such as benches, murals, sculptures and fountains, are encouraged in public areas of projects. The landscape plan should identify locations and infrastructure support (i.e., lighting, power, water, etc.). Placement of amenities should not adversely impact people with disabilities by encroaching into walkways.

- Tree plantings used to satisfy the county parking shade requirements should be located in an ordered pattern that enhances the overall site image, reduces the visual impact of large parking areas, and reflects the pedestrian movement from car to buildings and communal open spaces.

- Mature trees, rock outcrops, creeks and other desirable natural site features should be preserved and incorporated into the landscape plan. Projects located adjacent to open space, creeks or wetlands should include a landscape interface that is coordinated and consistent with natural areas. A vegetative buffer should be included to treat runoff before it reaches the natural area.

- Use of known high allergen plantings is discouraged.

Drainage/Flood Facilities:

- Neighborhood parks are encouraged to be centers of neighborhood activity and could be combined with schools, community recreation centers, libraries and other civic uses.

- To encourage sufficient usage, parks and open space should be strategically located in or near residential areas and commercial districts and be accessible via roadways, transit routes, and off-road pedestrian and bicycle trails and paseos (walkways).

- Size, type, and location shall be sized and located as to support the community master plan goals.

- Flood protection and drainage facilities shall be designed to provide multiple public benefits wherever possible. Facilities shall include multi-purpose improvements consisting of recreation, the environment, storm water runoff, water reclamation, infiltration, groundwater recharge, flood control, etc. Attractive joint use basins, such as parks (in addition to Quimby land dedication requirements) or parkways with trails that also convey water to water quality basins or similar facilities and provide some water quality treatment are examples of desired multiple public benefit facilities.

- Public safety is a high priority and Crime Prevention Through Environmental Design (CPTED) principles should be applied.

- Open space should be connected to provide habitat corridors through urban environments.

Outdoor sitting and gathering places with public art add to the quality of the shopping experience, create a social focus for the project and adjacent neighborhoods, and add value to tenants that benefit from sharing patrons.

- The interface of office, business park, institutional, and industrial developments with other types of uses, particularly residential, should be planned carefully. The transition in scale, use, visual privacy, noise, odors, operational hours and traffic flow should respect the needs and livability of adjacent neighborhoods.
- Industrial parks or projects should be clearly separated from residential areas with adequate buffers to them from noise, vehicular, and development scale impacts.
- Projects should have signage and graphic identity concepts that supports the project's planning objectives and design themes.

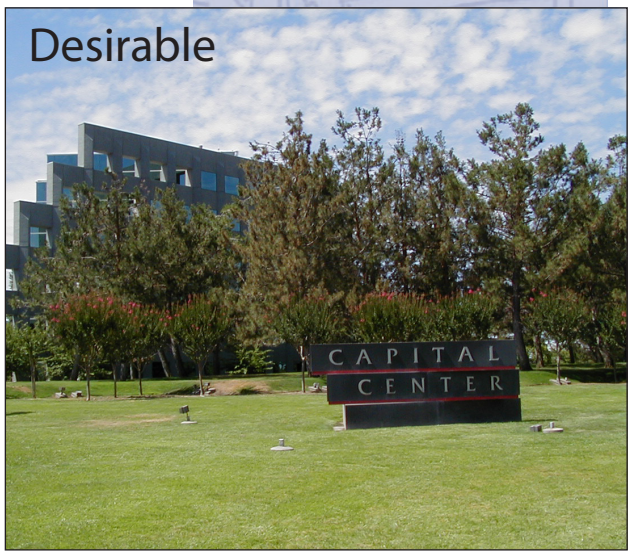
5.2.2 Roadway Design and Streetscape

Streets should be designed to reflect both the placemaking and circulation objectives for new and existing business districts or neighborhood areas.

Design Guidelines

- Business district designs should have complete streetscape concepts and strategies that contribute to their identity, safety and comfort.
- Streets should have a design hierarchy. Primary address streets should demonstrate a "higher order" of streetscape, setbacks, medians and other distinctive features. Projects should be sited and designed to address the surrounding street hierarchy and context.
- Functional street requirements for truck and emergency vehicle access should be accommodated and not over-sized. Streets should not be used for queuing or backing into loading and service yard areas.
- All streets should be designed to encourage pedestrian and transit use, with transit access in close proximity to buildings. The design of raised sidewalks and planting strips should contribute to the comfort and safety of walking in business districts and connectivity to neighboring areas or uses.
- Traffic calming techniques, such as a change in elevation and paving materials, should be used at crosswalks, drop-offs and lobby zones – in addition to appropriate signage and speed limits.

These photos show two business park streetscapes that provide a deliberate gateway and distinctive entry design.



- Special hardscape, such as pavers, stained concrete, and stone, should be used to identify pathways and gathering places in projects. Use of permeable pavers, permeable concrete, and cool pavements is highly recommended for all pedestrian facilities, in parking lots, plazas, building entrances, public use and other suitable areas.
- Construct and utilize green street design practices to the greatest extent practicable. Curb cuts into landscaped drainage swales and medians are part of green street design that is encouraged.
- Streetscape concepts and themes should be a distinctive feature for business districts. This includes tree selection, lighting, furniture, signage, decorative walls, arbors, pylons, trellis, art and other design elements.
- Streetscape should reinforce urban design concepts for the business district or neighborhood. This includes creation of gateway elements, defining focal points, framing views and edges, and highlighting architectural design features.
- Paseos should be utilized to provide common outdoor spaces and allow for pedestrian access through the development, and connection to adjacent developments.
- When necessary, streetscape should screen views of parking lots and loading areas. Berms or shrubs should be used to screen parking lots.
- Street and parking lot trees with large canopies should be planted to increase the amount of shade and reduce heat in project developments.
- Trees should not block the visibility of identification signage.

5.3 Landscaping/Site Elements

On-site landscaping should reinforce overall site and architectural concepts; increase walkability, pedestrian safety, access, health and comfort; reduce heat gain, water consumption and pollution/flooding from stormwater runoff.

Design Guidelines

- Landscaping should contribute to the "sense of place." It should enhance the definition and distinctiveness of courtyards, plazas and other public spaces.
- Ancillary elements such as patio shelters, outdoor furniture, trash and recycle containers, storage sheds, bicycle enclosures shall be integrated into the overall landscape concept and be architecturally compatible with the project design.
- Landscaping should reinforce the project's site entry concepts.
- Planting in front and side yards should reinforce the business district's streetscape concept.
- Foundation planting and accent planting should be used to enhance architectural and massing concepts for buildings.
- Accent planting and color should reinforce architectural and site design entry expression.
- Screen planting should be used around parking lots and to block undesirable views. Parking lot screen planting should be approximately 30 inches tall, provide adequate security and visibility, and not obstruct security cameras and lighting.
- Grading should be done to fulfill functional and drainage requirements while reinforcing site planning and architectural design concepts. Grading can provide elevation changes that bring interest to design concepts.
- Drought tolerant landscaping should be used in accordance with the County Water Conservation and Landscape Ordinance. Irrigation plans should provide for use of recycled water and minimize the use of potable water.
- The design of landscaping should reduce the creation of heat islands caused by roadways, buildings,

rooftops and parking lot paving.

- Rainwater collection systems should be used to offset the water required for landscape irrigation. Consider the use of rainwater collection barrels to provide non-potable water for irrigation purposes. Rainwater harvesting systems should be designed to capture 50% of the total roof area (including surface runoff and/or roof runoff) for landscape irrigation use.
- Parking lots shall include shade trees, per Zoning Code standards. Tree selection, planting approach and irrigation should provide for rapid growth and sustained health of shade trees. Small ornamental trees are appropriate for accent planting but should not be used as shade trees. All trees and landscaping shall be maintained. In the event a tree is removed, it shall be replaced by a tree with similar benefits.
- Site landscaping shall include stormwater quality treatment features, such as vegetated swales, to attenuate flows and remove pollutants from runoff before it leaves the site, consistent with the Guidance Manual for On-site Stormwater Quality Control Measures. Use of the River Friendly Landscape Designs Guidelines will provide stormwater quality treatment while; conserving water, improving air quality, reducing maintenance needs and reducing greenwaste. These guidelines are referenced in the Appendix.
- An automatic irrigation system-requirements should be consistent with the Zoning Code.
- Flood protection and drainage facilities shall be designed to provide multiple public benefits, wherever possible. Facilities shall include multi-purpose improvements consisting of recreation, the environment, storm water runoff, water reclamation, infiltration, groundwater recharge, flood control, etc. Attractive joint use basins, such as parks (in addition to Quimby land dedication requirements) or parkways with trails that also convey water to water quality basins or similar facilities and provide some water quality treatment are examples of desired multiple public benefit facilities.
- Public safety is a high priority and Crime Prevention Through Environmental Design (CPTED) principles should be applied.
- Special hardscape, such as pavers, stained concrete, and stone, should be used to identify pathways and gathering places in projects. Use of permeable pavers, permeable concrete, and cool pavements is highly recommended for all pedestrian facilities, in parking lots, plazas, building entrances, public use and other suitable areas.
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- Roof-mounted equipment should be screened from view with enclosures that are consistent with the building architecture.
- Industrial buildings should be designed and configured to reflect how they function as well as business district and site design objectives. Industrial building facades should incorporate design features, including window canopies, structural plasters or columns, window mullions, and mechanical equipment screens.
- Buildings should be sited and oriented to create and activate public spaces. Building massing should provide an appropriately scaled edge for pedestrians.
- Wherever possible utilities shall be undergrounded.

5.4.2 Architectural Design and Features

Architectural design features and themes should provide a pleasing composition of elements and support massing concepts.

A. General Design Guidelines

- In business districts or neighborhoods where an architectural theme or style has not been established, the project proponent shall define an appropriate theme or style for the community or neighborhood.
- The architectural appropriateness of buildings should be considered. This includes the choice of materials, architectural design features, proportions and other desirable attributes appropriate to the use.
- The vertical and horizontal bay spacing should have a pleasing rhythm and composition in building elevations. Articulation of building and structural elements, including windows, entries, and bays is desirable. Design features such as canopies, trellis, and grillwork should be designed as part of the building's composition of design elements. Poorly proportioned "tacked-on" elements that do not fit the building's character are discouraged.
- Lobbies and entries should be featured in the design of all building elevations. For buildings within a business district, the scale and pedestrian use of entries shall provide a connection to the rest of the district.

cafeterias, and other shared use facilities or amenities.

- Site entries for vehicular and pedestrian access shall be clearly demarcated, easily accessible, and minimize pedestrian, and vehicular conflicts.
- Where feasible, parking lots should be divided into a series of connected smaller lots. Landscaped bulb-outs or planting wells should be incorporated to provide shade and reduce the urban heat island effect in paved areas.
- Site features, such as bicycle racks, waste and recycling bins, planters, and benches should be integrated into the site development.
- Service or storage areas that can be viewed from above are encouraged to incorporate roof structures or other design approaches to screen the contents of the enclosure from view.
- Service and loading areas should be avoided from predominantly residential streets, when possible.

Architecture

Building design should address the general design guidelines for building form and massing in Section 5.4.1; the guidelines for architectural design and features in this section; guidelines for materials and colors in Section 5.4.3; and the following guidelines.

- Buildings within a business district should be compatible with the design elements and style of the business district.
- Architectural elements, including massing, roof forms, entries, and architectural details should complement the architectural style and proportion of the building.
- Building forms should exhibit a discernable base, middle, and roof line, using colors and materials that complement these parts. Darker colors and/or heavier materials are encouraged to be provided at the base and supporting lighter colors and materials used above it.
- Building entries should be a major focal point of buildings, designed as an integral part of the building form. Building entries should be easily identified and emphasized through building massing, architectural details, and materials.

5.4.3 Materials and Colors

Material and color selection of buildings should reinforce the overall massing and architectural concepts of the business district or neighborhood, while portraying a sense of high quality and permanence.

Design Guidelines

- Architectural materials should convey an image of high quality and durability. Preferable facade materials include plaster, articulated pre-cast concrete panels, certain metals, such as steel and aluminum, natural stone, and masonry (e.g., brick, tile, and glass block). Curtain wall systems with large continuous surfaces are discouraged. Concrete block, if used, should be split-faced. Precision blocks should be used sparingly only as color or texture accents. Combining materials should support the overall architectural concept.
- Use sustainable building materials that are high quality, durable, provide energy efficiency benefits, require low maintenance, and complement the design of the building. Use of quality recycled products is encouraged. Products shall be of a quality that is durable and not readily show signs of weathering and aging.
- Use of "Permanent" and/or cool roof products and materials with reflective surfaces are desirable because of their low maintenance, energy conservation and insulation values.
- Material selection for buildings should be appropriate for building type, location and context. Materials that have an inherently residential or garish quality are discouraged.
- Discouraged roofing materials: composite shingles, painted or glazed tiles.
- Discouraged wall materials: metal siding, plywood, hardboard or vinyl materials.
- Similar quality materials and colors should be used on all sides of office, institutional, and industrial buildings.
- Window glass should be lightly tinted or clear. Reflective and very deeply tinted glass is discouraged. Windows should be oriented or shaded to minimize heat transfer from summer sun. Provide natural lighting features where possible.
- Reflective materials, such as mirrored glass and unpainted steel siding or roofs, are discouraged.
- Use of solar and wind turbines is encouraged, should be properly placed to obtain premium results and designed to support the overall architectural context.

6.0 Village Centers/Mixed-Use Design Guidelines

By planning and developing residential and commercial land uses together, projects can be better connected to the community and provide pedestrian-friendly central places.

The purpose of this Chapter is to provide design principles and guidelines for mixed-use village centers and projects that provide an integrated mix of uses including residential, office, retail, and civic activities. These centers and projects provide a social, healthy, sustainable and economic focus for Sacramento County's communities and commercial corridors.

Mixed use may be created as part of New Communities, or may evolve within larger infill sites and redeveloped older commercial sites. Pedestrian and transit-oriented designs are integral within the buildings and include horizontal or vertical mixed use. New mixed use projects are a major element in creating and fostering a sense of place within their segment and the related community.

There are three types of Mixed Use Centers, as outlined in the Zoning Code. These types include: 1) Neighborhood Mixed Use Centers (NMC), Community-Regional Mixed Use Centers (CMC), and Corridor Mixed Use Centers (CMZ).

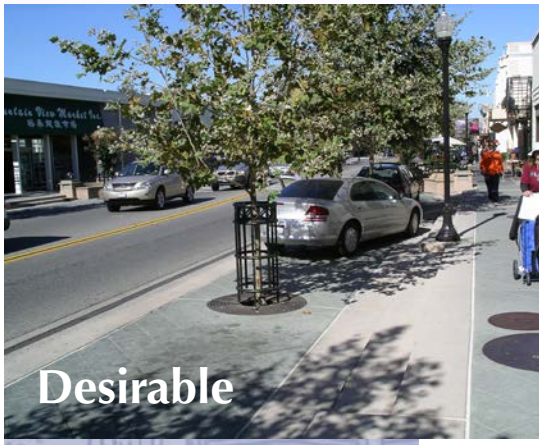
6.1 Understanding Context: Village Center Districts

Village center projects provide a social and economic focus for surrounding communities. Each project should contribute to the streetscape, pedestrian and auto access objectives, architectural and signage design objectives for the site and surrounding area. They should establish and reinforce a sense of place for their project area. Project sponsors need to consider the following questions.

- Site connections: How can driveway, sidewalk and other perimeter areas provide connections to increase the connectivity and accessibility to the site from adjacent neighborhoods and development? How can the district attract and benefit from public transportation access?
- Building alignments and orientation: How can building alignments, orientation and transparency contribute to pedestrian attraction and usages? What should be the building and landscape setbacks?

6.2.5 Parking

These photos show desirable ways to treat on-street parking. The top photo shows parallel on-street parking with street trees, sidewalks and lighting. The bottom photo shows angled on-street parking.



Parking in village center projects should support commercial and residential requirements but with less visual prominence than auto-oriented strip commercial centers.

Design Guidelines

- Solutions that minimize the visual impact of residential and commercial driveways should be used, including sharing driveways, using alleys, or other innovative design approaches.
- Parking for commercial uses in villages should be located next to or behind buildings. These parking areas should be divided up into smaller, landscaped lots with defined pedestrian connections.
- Parking lots on corner sites should not be located near the intersection and occupy space for streetfront buildings or open space features.
- Residential parking for mixed-use village developments should be located in courts that are not visible from public streets; broken up with shade trees and landscaping; and use a variety of paving materials. For residential uses, a maximum of four garage doors (spaces) should be allowed without a five-foot break between groups of doors.
- Mixed-use village projects involving a planned development process should consider alternative parking solutions including tandem parking, remote parking, single car garages and other methods of reducing the visual presence of parking and cars from the street.
- Parking areas should incorporate designs that include: trees, lighting, landscaped storm water features, cool and pervious pavement and pavers. Plant trees and shrubs to soften the overall impact of parking areas and to provide shade and noise reduction, heat island cooling and improved air quality.
- Flexible use of parking areas provides opportunities for additional social interaction between businesses, customers, and residents by providing space for large special events and festivals.

6.2.6 Streetscape and Landscaping

Streetscape and landscaping should promote pedestrian activity and provide for pedestrian safety, access, comfort and connections while contributing to overall placemaking and image objectives for village districts. Landscaping and trees can be used to complement buildings and to make a positive contribution to the aesthetics and function of the specific site and area. These aesthetics contribute to the mental and emotional well-being of customers, and support economic activity. Landscaping helps reduce storm water runoff, filters water and captures carbon and air particulates to improve air and water quality, provides shade during summer months and lowers temperatures reducing heat island impacts.

Design Guidelines

- Landscape concepts should enhance the linkages between residential and commercial uses.
- All streetscape improvements must meet the Sacramento County Improvement Standards. Larger trees will require wider planting strips.
- Mixed-use village developments should provide a comprehensive streetscape plan. The plan should satisfy street design; pedestrian safety, access and comfort; and visual amenity objectives for the village. Signage, lighting and landscaping should provide a thematic identity for mixed-use sites. The use of green and sustainable development standards and practices in planning, design, construction and renovation of new and existing buildings should be used wherever possible.
- Streetscape should enhance the identity of the village center by employing a variety of trees and other plant material that contributes to each street's identity and character.
- Along streets with greater than 50,000 vehicles ADT, plant trees conducive to absorbing particulates including deodar cedar, valley oak, and redwoods. Utilize canopy trees for pedestrian areas to increase shading, cool the pavement and support walking.
- In residential areas, projects should include at least one street tree per lot or 30' of lot frontage, whichever is smaller. Trees should be placed in planting strips, sidewalk tree wells or front yards in a manner that supports the village comprehensive streetscape plan.
- Sidewalks adjacent to storefronts should be wide enough to accommodate outdoor sitting areas and landscape. This should include a combination of at least four feet for planting, eight feet for sitting, and

Streetscaping should enhance the identity of the village center by employing a variety of trees and other plant material that contribute to each street's identity and character.

six feet clear for walking.

- Street trees with large canopies are required for sidewalk areas. Trees should be spaced 25-30 feet on center and be coordinated with the bay spacing and storefront design of the project.
- Include street furniture and pedestrian-scale lighting in planning and development of mixed-use projects.
- Landscaped storm water quality design measures provide multiple public benefits and should be integrated into open space areas to provide storm water quality benefits and landscaping benefits.
- Incorporate appropriate landscaping that includes a variety of trees, shrubs, and other plantings. Utilize Sacramento County's River Friendly Landscape (RFL) Guidelines for plant material selection, placement and maintenance. The sustainable RFL guidelines are water and energy efficient, reduces maintenance, improves air quality and diverts green waste from the landfills.
- Provide on-going maintenance to identify and ensure the timely replacement of any dead or diseased vegetation.
- Design landscaping to be compatible with building design. Use trellises, arbors, cascading landscaping, vines and perimeter garden walls wherever suitable.
- Consider security issues in the landscape design of the site, including creation of barriers and screening.
- Do not allow landscaping to impede fire access to hydrant connections.
- Preserve and incorporate existing and native trees within the project site design to the greatest extent possible.
- Retain existing mature trees in landscape and building location plans to the greatest extent possible. Where existing trees must be removed, trees shall be replaced on-site or in another location, acceptable to the Planning Director, to compensate for the loss in canopy and environmental benefits. Participation in the County's Tree Mitigation program to compensate for canopy loss is also acceptable.

Appendix D: Active Design

Active Design for a Healthy Sacramento County

Active Design Guidance: Purpose

Active design strategies are identified by this icon.

The purpose of this chapter is to promote quality design that enhances community aesthetics, reflects the community character and reinforces the community's and County General Plan goals of sustainable design. When these guidelines are properly applied to projects, we achieve quality design and we also improve the public's health, safety and livability. There is a need to improve the health of our communities. Application of the Active Design strategies will help to achieve these goals, provide overall planning and design principles, and guidelines for commercial districts.

Decisions on how and where to build homes, businesses, shopping centers, parks and schools all have significant impacts on human health. Mixed land uses (job/housing/retail proximity), densities, community connectivity, and active transportation (walking and bicycling) choices can all promote and increase walking and physical activity. By incorporating Active Design strategies into the built environment, physical activity and improved health can be achieved.

Active Design is not only healthy, it is also sustainable design. While enhancing the public's health, it also reinforces the goals of environmental sustainability by reducing energy consumption and greenhouse gas emissions, improving air and water quality, and preserving the natural environment. These strategies and guidelines are grounded in the data that the design of the built environment can have a crucial and positive influence on improving public health and is an essential tool in reversing the most pressing public health problems of our time.

landscaping and the clear differentiation between public and private space is used to limit or control access and reduce the opportunity for crime. This can be achieved by providing sidewalks, pathways, pavement, lighting, landscaping and signage that clearly guide the public to and from entrances and exits.

By clearly delineating private space, a sense of ownership among residents is established, and creates an environment where "intruders" are more easily identified. Buildings, low fences, landscaping and other features can be used to express ownership and define public, semi-public and private spaces. Territorial reinforcement can be achieved with pavement treatments, landscaping, elevated porches, steps, signage, screening and fences that define and outline ownership of property.

Parking Design that Considers Active Transport

In general, when parking is available, people use it. Research in California indicates that increased parking supply may result in reduced active transportation and public transit use.[29] An oversupply of parking increases the walking distances between business and other destinations, and reduces land available for other uses. Furthermore, parking lots increase heat island effect. This effect occurs when on hot, sunny days the sun heats dry, exposed surfaces, such as roofs and pavement, to temperatures hotter than the air, while shaded or moist surfaces — often in more rural surroundings — remain close to air temperatures. Heat island effect can compromise human health, contributing to respiratory difficulties, heat cramps and exhaustion, non-fatal heat stroke, and heat-related mortality.[30] Heat island effect can also increase air pollution and impacts to water quality. Well-designed car parking will reduce unnecessary automobile travel, particularly when walking, bicycling, and public transit are convenient alternatives. Pedestrian and bicycle access points should be well identified. Parking should be provided for people with disabilities to support their needs for access and physical activity.

In multifamily and commercial settings:

- Parking located behind or on the side of buildings, with adequate lighting and security provided for safety will provide access to buildings but will not dominate the frontage along a street. If parking must be placed next to sidewalks it should be buffered with landscaping or low walls.

29 Lund H, Wilson RW, Cervero R. A reevaluation of travel behavior in California TODs. Journal of Architectural and Planning Research. 2006;23(3): p. 247–263.

30 US EPA. "Heat Island Effect: Basic Information" http://www.epa.gov/hiri/about/index.htm

- Well-designed pedestrian access and connectivity from transit stops through parking lots to retail and businesses is important in providing safe passage and encouraging people to walk and utilize transit for their shopping trips.

Sustainable Landscaping

Native, water-efficient, and climate-appropriate landscaping is a site design feature that offers numerous health benefits. Sustainable landscaping practices lower heat island temperatures and improve air and water quality. In various settings, views that include landscaping have a positive impact on health: College students with more natural views from their dorm windows score higher on attention tests; [31] workers with a view of nature from their desks claimed 23% fewer sick days than workers without views of nature; [32] patients recovering from surgery in hospital rooms with window views of natural scenes had shorter postoperative hospital stays, received fewer negative evaluations in nurses' notes, and took fewer potent painkillers than matched patients in similar rooms with windows facing a brick wall. [33]

Trees can play an important role in reducing crime rates and domestic violence, and can also increase social ties. In a study of Chicago public housing residents, University of Illinois researchers found that buildings with high levels of greenery had 52% fewer property and violent crimes than apartment buildings with little or no vegetation. Green spaces draw people outdoors, increasing surveillance and discouraging illegal activity. The green and groomed appearance of an apartment building is a signal that owners and residents care about a property, and watch over it and each other. Greener common areas also facilitated stronger social ties. The more trees and landscaping in the common spaces, the more those spaces were used by residents. Those individuals living closer to green spaces enjoyed more social activities, had more visitors, knew more of their neighbors, and reported committing fewer acts of aggression toward household members than those living near barren spaces. [34]

31 Tennessen, Carolyn M., and Bernadine Cimprich. "Views to Nature: Effects on Attention." Journal of Environmental Psychology 15.1 (1995): 77-85.

32 Kaplan, Rachel, and Stephen Kaplan. The Experience of Nature: a Psychological Perspective. Cambridge: Cambridge UP, 1989. Web. \.

33 Ulrich, R. S. "View through a Window May Influence Recovery from Surgery." Science 224.4647 (1984): 420-21.

34 Human – Environment Research Laboratory, University of Illinois at Urbana Champaign.

Sacramento County Zoning Code

The Sacramento County Zoning Code provides the bedrock of regulating standards for development in unincorporated Sacramento County. The Zoning Code provides regulations for permitted uses and development form for all development types. While the Countywide Design Guidelines are largely suggestive in nature (with the exception of Multifamily development), compliance with standards in the Zoning Code are mandatory and require an entitlement to deviate from.

Excerpted here are Zoning Code standards related to landscaping and parking lot shade.

The Sacramento County Zoning Code can be accessed in full HERE.

5.2.4. Landscape Standards

5.2.4.A. Purpose

Landscape standards in this Section apply to all new development, buildings, or structures that may be erected or enlarged, and/or the maintenance of existing landscaping for all zoning districts in the unincorporated area of the County, unless otherwise noted in this Section. Landscape standards are provided to:

- Ensure the use of native and/or drought tolerant landscaping which is appropriate to the climate and conditions in the County, provide shade, screen loading and services facilities, help frame views and edges, and provide natural transitions that enhance the quality, walkability, safety and aesthetics of the surrounding built environment;
- Ensure the healthy establishment and appropriate long-term care and maintenance of all existing and new landscaping provided for all types of development;
- Promote sustainable landscaping practices that lower urban heat island temperatures, improve air quality, conserve water and energy, restore, and enhance environmentally sensitive areas; and emphasize the use of river friendly landscaping practices and stormwater best management practices.
- Set provisions for the removal and replacement of unhealthy trees and/or hazardous conditions and proper pruning of trees to remove hazardous obstructions; and
- Protect the function of trees for shading, carbon and particulate capture, water quality, energy conservation, and aesthetics while ensuring adequate clearance and visibility for safety, lighting of merchant signage, and balancing other needs and functions of the property.

5.2.4.B. Requirements for Institutional, Commercial, Industrial, and Multifamily Residential Use Categories [AMENDED 09-09-2022]

1. General Requirements

a. Unless otherwise indicated, the minimum container sizes for trees shall be 24-inch box for 35 percent of the trees, and the remainder shall be 15-gallon. The minimum container sizes for shrubs shall be five-gallon for 70 percent of the shrubs, and the remainder shall be one-gallon. The minimum container sizes for groundcovers shall be one-gallon. The required percentages may be considered for adjustment as part of the Design Review process.

b. Unless otherwise indicated, tree plantings for all projects shall include 40 percent evergreen species. The required percentage may be considered for adjustment as part of the Design Review process.

c. Varied tree and plant species shall be used throughout the site. No one species shall comprise more than 75 percent of trees, shrubs, or groundcovers proposed for the site.

d. All landscape and streetscape improvements must meet the County's Improvement Standards, unless otherwise approved by an adopted streetscape plan, corridor plan, or other special area zoning code; and shall be consistent with the current

edition of the County's Design Guidelines and the following standards.

e. Use of irrigation may be waived in the event of mandatory water conservation measures by the water purveyor for the community in which the property is located. Trees and shrubs shall be watered in a manner to keep them alive.

2. Landscaping of Setback and Frontage Areas. All areas between the edge of the street right-of-way and the building or parking lot, and visible from the public street, except for driveways and screen areas, shall be landscaped. See Section 5.2.4.F for parking lot landscaping requirements.

a. Frontage Landscaping Adjacent to Parking Lots and Driveways

i. A planter at eight feet wide excluding curbing, shall be provided between the edge of parking areas and: 1) sidewalks, where sidewalks are detached from curb and gutter, or 2) street right-of-way where sidewalks are attached. In addition, where the ultimate right-of-way is located behind a public sidewalk or curb, any area within the street right-of-way shall be developed as a planter or landscaped area in conjunction with the required eight foot area in this subsection. The planter shall be designed to comply with parking lot shading and street tree requirements in this Chapter.

ii. Within this planter, trees approved by the Planning Director shall be planted no further than 30 feet on-center and at least four feet but not further than 10 feet from the back of the sidewalk. The planter shall also include shrubs, ground covers, and other natural growth, or stormwater quality features and drainage treatments. Nothing in this Section shall preclude the installation of additional landscaping and the planting of additional trees so long as it is consistent with the visibility regulations for the County.

iii. Bus shelters may be located within this planter if approved by the Director of the Department of Transportation or his or her designee and the regional transit agency, but shall not be placed so as to reduce the number of trees which are otherwise required by this Section.

b. Frontage Landscaping Adjacent to Buildings. Within the area between the right-of-way and buildings, trees approved by the Planning Director shall be planted no further than 30 feet on-center and at least four feet but not further than 10 feet from the back of the sidewalk. The planter shall also include shrubs, ground covers, and other natural growth, or stormwater quality features and drainage treatments. Nothing in this Section shall preclude the installation of additional landscaping and the planting of additional trees so long as it is consistent with the visibility regulations for the County.

c. Landscaped Parkways. When required by the County's Improvement Standards, a six to eight-foot landscaped parkway shall be provided between the curb (i.e., edge of the street right-of-way) and detached sidewalk.

i. Landscape parkways may include earth berms, hedges, fences, or walls, in combination with trees and plantings, and may be used for stormwater purposes.

ii. Alternative landscaping methods and landscape parkway requirements may be considered as part of the Design Review process.

iii. Street Trees. Approved trees for planting in County right-of-way and public

easements shall be subject to the County's Improvement Standards. Trees not listed in the Improvement Standards, may be planted with the approval of Planning and Environmental Review for tree selections that can provide the greatest benefits (i.e., benefits to shading, health, air quality, water, and energy conservation) is recommended. The planting of street trees applies to new construction or major reconstruction.

d. Clustering and Alternative Design. Alternative design approaches, such as clustering of trees, may also be approved during Design Review.

e. Pedestrian Walks and Connections. Required landscape areas should include pedestrian walks and well-marked paths of travel and connections, steps, and similar hard surface areas, provided that such hard surface areas do not cover more than 25 percent of the required landscape areas. A barrier free, four-foot wide paved walk may be provided through the required planter at street and driveway intersections to provide unencumbered access for people with disabilities from the sidewalk to the parking lot. Such walk shall be located so as to facilitate the most direct movement of persons using sidewalk curb ramps, if such are provided.

3. Landscape Screening Along Interior Property Lines.

a. No landscape planter shall be required for Institutional, Commercial, or Industrial Uses when adjacent to Commercial, Industrial, Institutional or Agricultural uses.

b. A minimum seven-foot wide continuous landscaped planter area shall be required for Institutional, Commercial, or Industrial uses when along property lines shared with any Agricultural-Residential or Residential zoning district.

c. A minimum seven-foot wide continuous landscaped planter shall be required for Multifamily Residential Uses in all cases.

d. Landscaping within this planter shall consist of screen trees approved by Planning and Environmental Review, spaced 30-feet on center, in combination with other plant materials to provide a dense visual screen. Trees shall be planted a minimum of five feet and no further than 10 feet from the required fencing. Fencing requirements for specific uses can be found in Section 5.2.5.

4. Landscape Screening from Public Right-of-Ways and Within Scenic Corridors.

a. For industrial uses visible from a public right-of-way, not otherwise screened by required landscaping, a 10-foot wide landscaped area shall be provided adjacent to the right-of-way. Landscaping shall include a combination of trees and shrubs at sufficient intervals to achieve the desired screening. Trees shall be planted at least 30 feet on-center. The right-of-way elevation, relative to elevations in the adjoining property, shall be a consideration in selecting landscape plants which can accomplish appropriate visual screening.

b. For properties within a scenic corridor, contiguous to a freeway right-of-way, not otherwise screened, a 15-foot wide landscaped area shall be provided adjacent to all freeway rights-of-way in the scenic corridor. Landscaping shall include a combination of trees and shrubs at sufficient intervals to achieve appropriate screening. Trees shall be planted at least 30 feet on-center. The freeway elevation, relative to elevations in the adjoining property, and air quality benefits shall be a consideration in selecting landscape plants which can accomplish appropriate visual screening.

c. Shrubs and other natural growth, combined with berms and other landscape features, at least three feet in height, shall be designed to enhance, soften, and visually screen loading and parking areas, trash enclosures, mechanical equipment, walls, and other unsightly uses visible to public right-of-way, except near street and driveway intersections where landscaping shall not exceed 2.5 feet in height in accordance with the visibility regulations of the Sacramento County Improvement Standards. Consideration shall be given to public safety as part of the design and maintenance of these areas.

d. A five foot landscape planter shall be installed around the perimeter of trash enclosures if visible from public right-of-way.

5. **Landscape Maintenance.** All landscaped areas shall be moved, trimmed, and/or maintained as often as necessary to prevent overgrowth and blight. No junk, debris, or other similar materials may be stored in landscaped areas. Refer to Section 5.2.4.G for additional standards on landscape care and maintenance.

6. **Stormwater Quality Landscaping**

   a. On-site stormwater quality landscaping, approved in setback areas or public right-of-way or integrated into the project may count toward required landscaping.

   b. Pervious pavement and permeable pavers may be a substitute for impermeable hard surfaces but may not substitute for required landscaped planting areas. Ornamental or landscape rock and gravel areas, artificial turf, or areas covered with other artificial materials may be combined with landscape areas, provided that they are approved through the Design Review process.

7. **Access for People with Disabilities.** The design of landscaping shall provide for the access needs, safety, and comfort of persons with disabilities in conformance with the standards of the Americans with Disabilities Act (ADA).

8. **Tree Preservation.** Existing mature and native trees and shrubs shall be preserved and incorporated within the project site design to the extent feasible. Removal of protected trees shall be consistent with the County General Plan, the County Tree Ordinance, Section 5.2.4.H of this Code, and applicable project-specific CEQA mitigation measures.

9. **Sustainable Design.** Landscaping for projects shall be designed to integrate principles of sustainability to the greatest extent feasible. This includes principles of water conservation, the use of trees for energy conservation and to improve air quality, and the use of storm water control features for treatment and run-off reduction, with an emphasis on the use of drought-tolerant and/or native plants. Landscaping plans shall cohesively incorporate the following requirements and guidelines:

   a. The County of Sacramento Water Efficient Landscape Ordinance.

   b. The County-Wide Design Guidelines.

   c. The Sacramento Stormwater Quality Partnerships River-Friendly Landscape Guidelines - Sustainable Practices for the Landscape Professional.

   d. The Stormwater Quality Design Manual for the Sacramento and South Placer Regions.

   e. The County of Sacramento Zoning Code, including this Section and the Parking Section 5.2.4.F.

f. The integration of these practices shall not compromise requirements for landscaping as established by the Code and the Water Efficient Landscape Ordinance.

10. Irrigation

a. All landscaped areas shall be provided with a permanent or temporary irrigation system, demonstrated on site plans, to ensure the establishment and ongoing maintenance of landscaping. Alternative and innovative methods of irrigation such as use of cisterns for rainwater harvesting and other techniques that recycle water on-site, is encouraged when feasible.

b. Drip irrigation systems are recommended for water conservation and run-off reduction for more efficient means of watering trees, shrubs, groundcovers, perennials, and ornamental grasses than a conventional spray system. However, if proper maintenance of drip irrigation systems cannot be provided, a conventional spray or bubbler system is preferred.

c. Turf and groundcover areas are more effectively irrigated with efficient, low angle spray heads. Head-to-head spray coverage is recommended. Avoid overspray onto sidewalks and adjacent properties.

d. All trees, shrub and groundcover areas, and lawn areas shall be irrigated separately to allow individual control of the irrigation needs for these plant types. Tree irrigation systems shall include bubblers, drip, or similar application, located within a watering basin for each tree.

11. Design Review. Preliminary Landscape Plans shall be required and reviewed as part of the Design Review process. For existing buildings and uses, additional landscaping may be required in order to meet the intent of these requirements.

5.2.4.C. Requirements for All Residential Use Categories, Except Multifamily and Mobile Home Parks [AMENDED 09-09-2022]

The following landscape requirements address required front and side-street yard areas:

1. Trees. The developer/home builder shall plant a minimum of one tree in the front yard of every built lot, except as follows:

a. For small lot developments, provide one tree per lot in common open space or landscaped areas.

b. Should a tree in the front yard interfere with solar panel placement, the tree may be placed in a side or rear yard if sufficient area is available.

c. For lots of 7,500 square feet or more that meet or exceed the minimum street frontage requirements measured at the public rights-of-way line, a minimum of two trees shall be planted in the front yard.

d. One street tree in planted landscape areas between the curb and sidewalk, in the front yard of the lot, may count toward the minimum street tree requirements for single-family or multifamily housing.

2. [**DELETED 09-09-2022**]

3. Required Yard Area Hardscape Restrictions. The maximum amount of paving and hardscape is regulated by Section 5.9.3.C.

4. Landscape and Maintenance Requirements. Notwithstanding 5.9.3.C.a, the remaining

unpaved or uncovered portion of the required setback area shall be landscaped, irrigated, and maintained.

a. Landscaping may consist of a combination of grass, annuals, perennials, groundcover, shrubs, trees, edible gardens, and any other recognized landscape material as approved by the Planning Director.

b. Landscape design elements such as rocks, planters, and mulch may be used, provided that living vegetation is the primary groundcover.

5. **Irrigation.** An automatic irrigation system shall be installed in the front yard of new construction to provide consistent coverage of all planted areas. A home on a corner lot shall have an automatic irrigation system that covers the yard fronting both streets. Automatic controllers with rain shut-off valves or microclimate sensing capabilities provide greater water conservation.

6. **Vehicle Parking Requirements.** Vehicles, including, but not limited to, automobiles, boats, campers, trailers and other recreational vehicles must be parked on a surfaced area in conformance to this Code (See Section 5.9.3.C. for parking standards) and may not be parked within the required landscaped area.

7. **Landscape Alternatives.** In the case of a circular driveway that may exceed the maximum hardscape restriction for the yard area, off-setting landscaping may be provided in the area between the required yard area and the dwelling. Other options for landscaping the required yard areas, including the use of additional hardscape materials, artificial turf, or other landscape elements may be approved through the Design Review process.

8. [**DELETED 09-09-2022**]

9. **Landscaping Adjacent to Soundwalls.**

a. Earthmounds. When the sound and visual attenuation requires a wall exceeding six feet above the grade of the adjacent roadway, earthmounds or terraced landscaping shall be used such that no more than six feet of the wall is visible from the roadway. The mounds shall not exceed a 3:1 slope. The mounds may support the wall or be placed against the wall on the street side. Drainage shall be contained.

b. Landscaping. All setback areas shall be landscaped with groundcover, shrubs, vines, mounds and trees such that at least 50 percent of the wall shall be screened from the adjacent public street within five years. Trees shall be placed so as to cover the 50 percent of the total landscaped area with a shade canopy within 15 years of planting. 30 percent of the trees shall be evergreen.

c. Maintenance. An automatic sprinkler system shall be installed and a maintenance program shall be established to provide ongoing maintenance of the wall and landscaped area. The proposed maintenance program shall be submitted with the application and may consist of one, or a combination, of the following:

i. A homeowners association agreement;

ii. An assessment district, Lighting and Landscape Act District, or similar district;

iii. Other viable alternative presented in public hearing and found acceptable to the appropriate authority. The proposed maintenance program shall be

submitted with the application.

5.2.4.D. Additional Requirements for Industrial Zoning Districts

[DELETED/STANDARDS CONSOLIDATED IN SECTION 5.2.4.B.4]

5.2.4.E. Additional Requirements for Commercial Zoning Districts

[DELETED/STANDARDS CONSOLIDATED IN SECTION 5.2.4.B.4]

5.2.4.F. Parking Lot Landscaping [AMENDED 07-16-2020] [AMENDED 09-09-2022]

The landscape construction standards of Table 5.2 apply to parking lot areas in all zoning districts.

Table 5.2 Parking Lot Landscaping Construction Standards [1]

Standard	Minimum Requirement
Interior Planter Requirements - General	1. No planter shall be less than six feet wide or have an area less than 40 square feet, excluding curbing. Shade trees having larger canopies may require larger planter areas. Landscaping strips that incorporate stormwater management shall be at least 12 feet wide. 2. Landscape islands shall be installed every eight stalls. Alternatively, planter strips may be installed between rows of parking stalls. 3. Planters of at least eight feet in width shall be installed at the end of every parking row. A parking row is defined as a minimum of five spaces. Excludes curbing. Shade trees having larger canopies may require larger planter areas.
Interior Planter Requirements - Additional for Multifamily Residential and Mixed-Use Developments	1. Rows of parking stalls, either open or covered, shall be broken up by a tree planting every seven spaces. 2. Units and parking/driveway areas shall have a minimum five foot landscaped separation, exclusive of vehicular overhang, but in general are encouraged to be located as far apart as possible.
Curbing	All landscaping shall be within planters bound by a curb at least six inches high. Curbs separating stormwater management landscaping or other landscaped area intended to filter runoff, from parking areas, shall provide curb cuts to allow stormwater run-off.
Irrigation System	Required, unless otherwise permitted in Section 5.2.4.B.9.

Table 5.2 Parking Lot Landscaping Construction Standards [1]

Standard	Minimum Requirement
Hardscape	Not more than 25 percent of the parking landscaped area may be covered with gravel, landscaping rock, or concrete or other impervious materials.
Shading - Location	Shade trees shall be placed within perimeter and interior landscape planters.
Shading - Amount [2]	50%
Shading - Tree Selection	Tree selection, planting approach, and irrigation shall be designed to provide for the rapid growth and sustained health of shade trees and shall comply with the County's water efficient landscape ordinance. Small ornamental trees are appropriate for accent planting but shall not be used to meet shading requirements.
Alternative Standards for "Carport" Type Accessory Solar Facilities	Alternatives to these standards for new parking lots, where ground mounted "carport" type accessory solar facilities are utilized, may be considered through the Design Review process.

[1] Applicable to all use types in all zoning districts where there are more than five parking spaces on the entire site, except for existing parking lots where compliance with interior landscaping standards would result in the loss of existing required parking spaces.

[2] Shaded area calculated as total parking area (excluding drive aisles) covered with tree canopy within 15 years of securing a building permit.

5.2.4.G. Landscape Care and Maintenance [AMENDED 04-07-2016]

This Section addresses the appropriate long-term care and maintenance of all landscaping provided for commercial, multifamily, industrial, and institutional developments. It is also intended to set provisions for the removal and replacement of unhealthy trees and or hazardous conditions and provide adequate clearance and visibility of merchant signage, when the aesthetics of the tree and shading requirements will not be reduced.

1. Care and Maintenance

a. All required landscaping and irrigation shall be maintained for the life span of the project and in such a manner so as to not create hiding places or hinder visibility.

b. All plant materials (trees, shrubs, and groundcovers) shall be maintained free from physical damage or injury arising from vehicle encroachment, lack of water, weather events, chemical damage, insects and other pests, and diseases. Plant materials showing such damage shall be replaced with the same or similar species. Planting

areas shall be kept free from weeds, debris, and undesirable materials which may be detrimental to safety, drainage, or appearance.

c. It is the responsibility of the property owners to seek professional advice and spray and treat trees, shrubs, and groundcover for diseases which can be successfully controlled if such untreated diseases are capable of destroying an infected tree or other trees within a project.

d. Property owners may refer to the integrated pest management strategies in the Sacramento Stormwater Quality Partnership's River-friendly Landscape Guidelines and can cooperate with the University of California Agricultural Extension Service and the County Agricultural Commission on methods and procedures by which infestations can be reduced or retarded.

2. Tree Pruning

a. Prior to pruning, trenching, or grading within the drip line of any required tree, a County Tree Pruning Permit shall be approved by the Planning Director or his or her designee, and the County Tree Coordinator. Tree Pruning shall be performed by a person certified by the International Society of Arboriculture (ISA) as a Certified Tree Worker or Certified Arborist or by the American Society of Consulting Arborists as a Registered Consulting Arborist. A Tree Pruning Permit is issued for one or more trees at a single site and is valid for one year, and can be amended or extended by the Tree Coordinator. The Planning Director or his or her designee shall require the following information upon submitting the Tree Pruning Permit request:

i. A site plan indicating the type of tree, size, and location of the trees to be pruned;

ii. Reasons for pruning;

iii. Evidence that the pruning shall be performed by an ISA Certified Arborist, ISA Certified Tree Worker, or Registered Consulting Arborist.

iv. Number of trees to be pruned.

b. Tree pruning shall be consistent with the most recent American National Standards Institute (ANSI) Pruning Standards and is limited to any of the following:

i. Removal of dead wood and diseased, crowded, and weakly attached branches which create a hazard to private property and citizens;

ii. Providing adequate clearance and visibility for safe use of parking stalls, travel ways, and walkways for the passage of persons and vehicles;

iii. Removing visibility obstructions to traffic signs;

iv. Providing adequate visibility for security patrols;

v. Repair of split trees and limbs in order to save the tree and its appearance;

vi. Removing or pruning roots of trees which are causing damage to public or private property such as curbs, gutters, sidewalk, drainage lines, and parking lot surfaces;

vii. Providing visibility for merchant signage and parking lot lighting only when the natural growth form of the tree is retained and the parking lot shading requirements will not be reduced.

c. Tree pruning is exempt from Zoning Code requirements for a Tree Pruning Permit if it is consistent with the specifications in Section 5.2.4.G.2., and meets all of the following requirements:

i. Less than 15 percent of the canopy of the tree is removed per year; and

ii. The diameter of the tree's roots and branches being pruned are less than one quarter of the diameter of the tree's trunk measured at 4.5 feet off the ground. For example, a permit would not be required to prune limbs less than one inch diameter for a tree with four inch trunk diameter; and

iii. The tree's roots and branches being pruned are less than two inches diameter, and

iv. No heading, topping, or hat-racking shall occur.

d. Pruning native oaks is subject to Title 19 of the SCC. This includes valley oak (*Quercus lobata*), interior live oak (*Quercus wislizeni*), blue oak (*Quercus douglasii*), or oracle oak (*Quercus morehus*).

5.2.4.H. Removal and Replacement of Landscaping [AMENDED 04-07-2016]

1. All required plant material removed shall be replaced with the following replacement sizes: shrubs (five-gallon size), groundcover (flats). Replacement of trees shall be as specified in Section 5.2.4.I.

2. Tree removal shall be limited to trees which are in poor health, structurally distressed, or imminently hazardous to persons or property and shall be in compliance with the regulations and procedures for tree preservation and protection in Title 19 of the SCC. The removal of a tree shall be the final recourse upon determining that it is infeasible to save the tree by any other method (e.g., pruning, treatment of diseases, fertilizing). Prior to the removal of any tree, a Tree Removal Permit shall be approved by the Planning Director and the County Tree Coordinator or his/her designee.

3. The following information shall be required:

a. A statement of the health and condition of the trees to be removed by a Certified Arborist or licensed Landscape Architect;

b. Reasons for removal; and

c. Landscape Plan indicating size, quantity, species, and location of the trees to be removed and replaced.

4. Failure to obtain an approved tree removal permit prior to removing a tree shall require the owner of the project to replace the removed tree as stated in the Replanting Requirements in Section 5.2.4.I.

5.2.4.I. Replanting Requirements and Replacement Fee [Amended 07-16-2020]

Replacement trees shall be required for trees removed with or without a Tree Removal Permit, as set forth below.

1. Trees removed with a Tree Removal Permit shall be replaced by 24-inch box specimen trees. A 15-gallon size tree may be used as a replacement tree with an additional replacement fee. The replacement fee is based on the difference of the wholesale value between a 24-inch box and a 15-gallon tree as set forth in a fee schedule approved by the Board of Supervisors. The replacement fee may be waived by the Planning

Director if the loss of the tree resulted from causes completely out of the control of the property owner.

2. Trees removed without a Tree Removal Permit or severely and improperly trimmed with or without a Tree Pruning Permit shall be replaced and a replacement fee may be required. The replacement tree is based according to the size of the tree removed or damaged as indicated in Table 5.3.

Table 5.3 Size of Required Replacement Trees

Size of Damaged/Removed Trees	Replacement Tree Required
2 inches	24-inch box
4 inches	36-inch box
6 inches or greater	48-inch box

3. A 15-gallon size tree may be used as a replacement with an additional replacement fee, as set forth in a fee schedule approved by the Board of Supervisors. Replacement fees shall be deposited into a Parking Lot Shade Tree Violation account. Fees shall be used for tree planting/tree care on public property and for public education on tree planting and care, as determined by the Board of Supervisors.
4. Mitigation Monitoring and Reporting Program (MMRP). Prior to accepting an application for tree removal or pruning, the County Tree Coordinator, or his or her designee shall determine if there is an active MMRP that affects the proposal. If there is an active MMRP, an application will not be required and the applicant is to be referred to the County Division of Planning and Environmental Review.

5.2.5. Development Standards for Walls and Fences

All proposed walls and fences shall comply with the requirements of this section.

5.2.5.A. General Standards [AMENDED 06-07-2018]

1. **All Fences Adjacent to Drives and Street Intersections.** When fences, walls, and/or landscape screening are adjacent to street intersections and points of ingress and egress the visibility requirements of the Sacramento County Improvement Standards shall be adhered to. Application of CPTED strategies shall be considered in the design of these features.
2. **Perimeter Fences for Swimming Pools.** Perimeter fences shall be required around private pools, not otherwise restricted from unauthorized access from the public, subject to the construction requirements contained in the California Building Code Section 3109.4.4.3.
3. **Masonry Walls.** A graffiti-resistant aesthetic surface treatment, appropriate to the location, shall be required. Long spans of masonry walls or fences shall provide breaks for pedestrian connections at least every 300 feet. Application of CPTED strategies shall be considered in the design of these features.

Government Activity
State Level Context

The following **state regulations** affect both the City of Sacramento and Sacramento County's planning practices as they relate to incorporating **urban heat measures**. These regulations are intended to help spur **much-needed housing development** across California, though also may also make it a challenge to mitigate urban heat by **prioritizing density** with less room for tree planting, cool building features, and other cooling measures.

SB 9, which allows for ministerial approval of duplexes and lot splits on single-family parcels to create up to 4 housing units, has opened the door for **incremental density increases in established neighborhoods**.

SB 684 and SB 1123, which requires local agencies to ministerially approve the subdivision of vacant, residentially zoned lots to allow for up to 10 units. The bills prohibit the imposition of any development standards that would physically preclude the development of the project built to a specific density. **This includes any standards that would require tree coverage or heat mitigation**.

Statewide Accessory Dwelling Unit (ADU) laws (Chapter 13 of the California Government Code) have removed many barriers to constructing secondary units, helping homeowners create new housing options with minimal procedural delay. Recent changes in state guidance allow for any property developed with a single-family home to create an additional three ADUs. Properties developed with existing multifamily developments are also permitted to add up to 8 detached ADUs ministerially. **State ADU law allows for greater densification of all residential development by-right, with minimal avenues for local agencies to require heat mitigation**.

State Density Bonus Law (Government Code §65915) requires the ministerial approval of increased density, the granting of concessions or incentives, and the waiver of development standards for residential projects that provide deed restricted affordable housing. **The law allows for a density bonus of up to 80 percent and waiver of any and all development standards that would physically preclude the development from achieving the desired density**. For projects in Sacramento County, the removal of required landscaping and tree plantings is often the first development standard waived by applicants looking to maximize the density of their development.

Government Activity
State Context continued

AB 306:
Assembly Bill 306 was adopted as part of the Budget Trailer bill (AB 130 of 2025) and effective June 30, 2025. The bill imposes a six year pause on state level updates to building standards affecting residential units and prohibits local amendments to those standards. Updates to the Planning and Development code and Design Guidelines are not within the purview of this bill and still permitted, but local amendments to the California Building Standards Code to implement more stringent standards will not be permitted until 2031, with some exceptions that might enable implementation of General Plan policy adopted prior to June 10, 2025.

Government Activity
Federal Context

The City of Sacramento has largely relied on grant funding to advance climate action and adaptation projects, including urban forestry initiatives.

EPA Government to Government Grant
The Sacramento Neighborhood Resilience Pilot Project is a collaborative initiative focused on urban cooling and resiliency strategies to counter the urban heat island effect and extreme weather events in vulnerable, low-income areas. This Project was funded by a $981,042 grant from the U.S. EPA through the Environmental Justice Government-to-Government (EJG2G) Program. Project activities started in June 2024 and were expected to continue through May 2027; however, in March 2025 the U.S. Environmental Protection Agency (EPA) terminated the grant agreement.
The City has since joined a nationwide class action lawsuit challenging the federal government's decision to terminate the EPA's Environmental and Climate Justice (ECJ) Grant program, which was authorized by Congress through the Inflation Reduction Act under Section 138 of the Clean Air Act and includes the City's EJG2G grant funding.

This project is contingent on the availability of external funds and will not move forward unless funding is resumed or new funding is identified.

Quick Links--City of Sacramento

Adopted Policies

- City of Sacramento 2040 General Plan
- City of Sacramento Climate Action & Adaptation Plan
- City of Sacramento Urban Forest Plan

City Codes and Guidelines

- City of Sacramento Planning and Development Code--Landscape Standards
- City of Sacramento Design Guidelines
- City of Sacramento Parking Lot Shading Ordinance
- City of Sacramento Tree Protection Ordinance
- City of Sacramento Missing Middle Interim Ordinance (minimum tree requirements)

Projects

- SacAdapt Transportation Adaptation Plan
- City of Sacramento Street Design Standards Update

Quick Links--Sacramento County

Adopted Policies

- Sacramento County General Plan of 2005-2030
    - Environmental Justice Element
- Sacramento County Climate Action Plan
- Sacramento County Active Transportation Plan
- Infill Program Update

County Codes and Guidelines

- Sacramento County Zoning Code
    - Landscape Standards (SZC 5.2.4)
    - Residential Development Standards (SZC 5.4)
- Sacramento County Design Guidelines
- Sacramento County Tree Preservation and Protection Ordinance
- Sacramento County Improvement Standards

Additional Resources

- UC Davis Voluntary Local Review of UN Sustainable Development Guidelines: Heat Mitigation Strategies for Sacramento (Storymap)
- ULI Houston Final TAP Report
- Sacramento Urban League Final TAP Report
- Capital Region Urban Heat Island Mitigation Project Summary Report
- Extreme Heat and Social Vulnerability in Sacramento, CA (storymap)
- Sacramento Urban Development: Quantifying and Mapping Urban Heat to Support Urban Planning Initiatives in Sacramento, CA
- Additional Demographic information from GO Biz

Conclusion

While both the City and County of Sacramento are two separate jurisdictions, they are both affected by the same heat and temperatures are anticipated to keep rising. Concurrently, the population within the Sacramento region is also expected to increase, and both agencies are working to accommodate future growth with policies and guidelines in place to guide development in a way that best suits the needs of their current and future residents. However, conflicts persist between these policies and how they are implemented in reality.

We intend for the TAP to be able to provide recommendations that can effectively implement these policies without undermining future development. We intend to draw from best practices from other communities and experiences that could guide practical solutions and help meet our climate objectives.

If you have any questions about the content presented within this briefing booklet, you may contact:

City of Sacramento
Vic Randall
Senior Planner
vrandall@cityofsacramento.org

Sacramento County
Joelle Inman
Principal Planner
inmanj@saccounty.gov