Culver CITY

GENERAL PLAN UPDATE

CLIMATE HAZARDS SUMMARY

EXISTING CONDITIONS REPORT | JULY 2020

COVID-19 and the Culver City General Plan Update Existing Conditions Reports

As part of the General Plan Update (GPU), the City of Culver City produced a series of stand-alone technical reports describing existing conditions and future trends for topics critical to the General Plan. Findings from these reports will inform future phases of the update process, including the creation of alternative land use and transportation scenarios, policy development, and environmental analysis. These reports represent conditions in Culver City that were current as of fall 2019 and early 2020 when most of the analysis was undertaken. The existing conditions reports are meant to reflect a snapshot in time and thus will not be updated throughout the rest of the GPU process.

Before publishing the existing conditions reports in spring 2020, COVID-19 emerged as a threat to global public health crisis that changed all aspects of daily life. Because most of the analysis in these reports had been completed before the pandemic, many important issues that have emerged in recent months are not covered in these reports. Nevertheless, the GPU Team is monitoring the crisis as it develops and is designing engagement opportunities to ensure it hears all stakeholders' experiences and needs, existing before and through this crisis, through the planning process.

The GPU is our opportunity to make Culver City a place where everyone thrives. The pandemic has shown us that everything and everyone—from housing to parks, from our cultural vibrancy to our bustling economy, to our natural assets and community residents, workers, and visitors—are critical to shaping and realizing this vision into the future.

As we continue to follow the Safer at Home Orders, many issues from the existing conditions reports have been magnified. The City, with support and leadership from community members, has begun to respond in ways that align with Culver City's vision for the future. These include but are not limited to:

- **Housing** – As economic activity has declined or shifted, unemployment rates have risen dramatically and more residents than before are in the economically precarious situation of being rent-burdened. Culver City has responded by extending temporary renter protection measures and creating several opportunities for community-wide conversations about long-term solutions. To address housing affordability during this economic downturn, the City has also been working on new affordable housing measures including an inclusionary ordinance, a linkage fee, rental assistance, and an affordable accessory dwelling unit program.

- **Economic Development** – Culver City created an Economic Recovery Task Force that applies an equity lens when developing opportunities for the business community to recover, ensuring that residents and visitors have equitable access to services. As part of the economic recovery effort, the City has been issuing temporary use permits to allow business expansions on private property and the public right of way, passed a commercial eviction moratorium, has relaxed parking standards and intensification of uses.

- **Mobility** – The City has been implementing lane closures in the Downtown area and the Arts District to accommodate outdoor dining and other activities; is reviewing the deployment of Slow Streets on residential streets with low traffic volumes and speeds to provide for more outdoor space for residents while practicing social distancing; and is planning a pilot Downtown-E Line tactical mobility lane to accommodate the movement of transit buses, bicycles, scooters, and emergency vehicles.

- **Parks and Open Space Programming** – School closures and physical distancing rules for parks and open space have limited the number of recreational activities for families. To support those with young children through summer activity cancelations, the Parks, Recreation, and Community Services Department made summer camps virtual. To support seniors, meal delivery has changed from in-person pickup to a delivery service, that protects vulnerable residents. At the same time, food service provision extended to support more community members in need, regardless of age. From March 15 to May 15, 2020, 7,458 meals were delivered to seniors, 195+ grocery based sere delivered, 9,542 community calls made, 6,000 senior Safer at Home Guides mails, 6,000 postcards sent, 106 links provided for the virtual recreation center, and 810 acres were mowed at our parks to allow for social distancing.

While these changes have been significant, at this moment it is not possible to fully predict COVID-19's impact over the next 25 years. Projections and trends described in these existing conditions reports may differ from future conditions if there are long-lasting fundamental shifts in the economy and society. Thus, the COVID-19 pandemic has sparked questions for the Culver City GPU, including:

- What innovative ways are there to maintain or stimulate the local economy when implementing new, possibly permanent restrictions on how business needs to be conducted?
- What are some creative solutions to deal with the potential impacts of changing demand for commercial space?
- What lessons can be learned from the safer at home orders on how the City addresses mobility?
- How should we design shared spaces, from affordable multifamily housing projects to the public realms, to allow for physical distancing?
- How does the City build resilient systems and protocols to ensure it can continue to provide essential services despite disruptions?
- How can the General Plan guide equitable recovery and resiliency efforts during and after crises?
- How can the General Plan define actionable steps to implement policies and programs while allowing for flexibility in an era of uncertainty and rapid change?

To answer these questions, we need everyone engaged in sharing their different perspectives and unique stories so that, together, we can plan and build a vibrant Culver City for all.

Contact City staff at Advance.Planning@culvercity.org or by calling tel:1-310-253-5740 if you have any questions. Visit the GPU's Picture Culver City project website for more information about the project, where you can find the existing conditions reports, take surveys related to existing conditions, watch summary videos of existing conditions, send the GPU Team a message, sign up for updates, learn about upcoming events, and much more.

The City of Culver City continues to cooperate with the Los Angeles County Department of Public Health and the Centers for Disease Control and Prevention (CDC) to respond to the spread of the novel coronavirus (COVID-19) in Los Angeles County.

For updates on the City's response to COVID-19, please visit the City's Coronavirus webpage.

Para leer esta información en español, por favor visite la página web de Coronavirus de la ciudad.

July 2020

Climate change presents Culver City with a series of overlapping challenges. Both gradual climate change and climate hazard events can expose people, infrastructure, economy, building and property, and ecosystems to a wide range of stress-inducing and hazardous situations. These hazards and their impacts are likely to affect the most sensitive populations in the city disproportionately.

This chapter provides an overview of historical and projected trends for climate hazards within Culver City, summarizing the best available data for temperature and precipitation change, urban flooding, extreme heat, drought, air quality, and the nature, frequency, and magnitude of the hazards in the region.[1] Establishing an understanding of climate hazards based on a review of observed records and future projections is the first step to understanding the vulnerability of populations, infrastructure, ecosystems, economy, buildings and property, and other assets to climate change, and developing and prioritizing adaptation strategies and investments.

ISSUES AND OPPORTUNITIES

The following summarizes key findings for climate hazards in Culver City and provides an example of the potential impacts of climate change in the area. These findings are consistent with trends across California (Table 1) and in the Los Angeles region.

- **Rising temperatures.** Average temperatures will continue to rise in Culver City. Annual maximum temperatures are projected to increase between 3.7°F and 4.4°F by mid-century (2040-2060) and between 3.3°F and 8.3°F by the end of the century (2080-2100).[2]
- **Extreme heat.** Extreme heat days will increase considerably in Culver City. Historically, the city experienced one extreme heat day annually. Under a business-as-usual scenario by mid-century, the city will experience four extreme heat days annually, and by the end of the century, nine extreme heat days annually. Extreme heat is one of the most significant health impacts of climate change. In the US, extreme heat causes more deaths annually than floods, storms, and lightning combined.[3]
- **Changes in precipitation and flooding**. While Culver City can expect about the same amount of annual precipitation as the past several decades, dry and wet extremes are anticipated to increase. Annual stormwater runoff volume in the Los Angeles Basin is projected to increase significantly, increasing the likelihood of urban flooding and risk of property and infrastructure damage.
- **Increasing drought.** Droughts are expected to increase in Culver City. The last 6-year drought (2012-2015) was the driest recorded period in California's history. Decreasing snowmelt, reduced precipitation, and higher temperatures, along with increasing populations and related water demand in Southern California, may result in water shortages for city residents.[4]
- **Changes in wildfire risk and air quality.** Projections suggest that wildfire risk will continue to increase in Southern California. Increased regional wildfires, higher ozone concentrations,

1 Climate hazards information is based on the best available information at the time of publication and consistent with California's 4th Climate Assessment and the Los Angeles Region Report. Data is generally based on the Los Angeles region or Culver City, unless otherwise indicated.

2 Temperature change range represents lower and higher-emissions scenarios for Culver City. California Energy Commission. 2017. Cal-Adapt. Retrieved from: http://cal-adapt.org/.

3 Berko, Jeffrey, Deborah D. Ingram, Shubhayu Saha, and Jennifer D. Parker. 2014. "Deaths Attributed to Heat, Cold, and Other Weather Events in the United States, 2006-2010." National Health Statistics Reports, no. 76 (July): 1–15.

4 Michael Baker International. 2017. City of Culver City and Culver City Unified School District Multi-Jurisdictional Hazard Mitigation Plan.

and worsening allergens may exacerbate respiratory illness, school and work days missed, and allergies.

Table 1: Current Understanding of Historical and Expected Climate Impacts in California

Climate Change Hazards	Historical Trend	Future Change	Confidence for Future Change
Primary			
Average temperature	Warming (last 100+ years)	Warming	Very high
Extreme heat	Rising (last 100+ years)	Rising	Very high
Annual precipitation	No significant trends (last 100+ years)	Unknown	Low
Heavy precipitation events	No significant trends (last 100+ years)	Increasing	Medium-high
Secondary			
Drought	No significant trends (last 100+ years)	Increasing	Medium-high
Air quality	Improving (30+ years)	Worsening	Low
Wildfire	Increasing (last 30+ years)	Increasing	Medium-high

Source: Adapted from California's Fourth Climate Change Assessment (2018).[5]

5 Hall, Alex, Neil Berg, Katharine Reich. (University of California, Los Angeles). 2018. Los Angeles Summary Report. California's Fourth Climate Change Assessment. Publication number: SUM-CCCA4-2018-007.

CLIMATE CHANGE PROJECTIONS

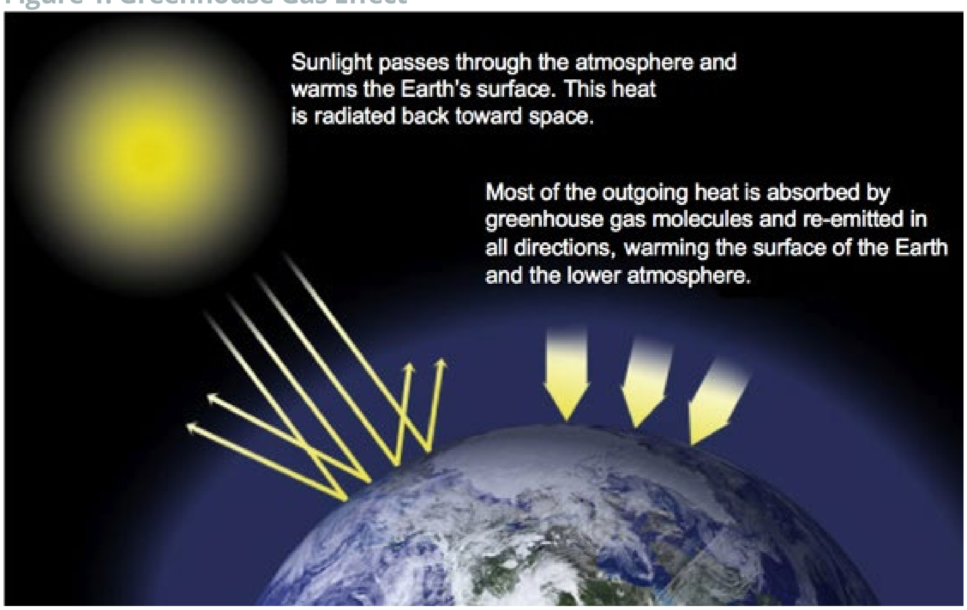
Climate is the long-term behavior of the atmosphere – typically represented as averages – for a given time of year, including average annual temperature, snowpack, or rainfall. The data, maps, and analysis presented within this summary include historical information about the climate and projections of future climate.

Climate projections cannot predict what will happen at a certain date, but projections can provide cities with information about what to expect from the climate in the future. For example, climate projections can estimate how much warmer the temperature will be in summer or how many more extreme weather events are likely to occur in the future. Climate projections, however, cannot forecast with precision when those events will occur.

Future climate projections are created using global climate models. These models simulate climate conditions both in the past and in the future. Climate scientists can use these models to test how the climate will or won't change based on scenarios of greenhouse gas (GHG) emissions.

Human emissions of carbon dioxide and other GHG emissions are important drivers of global climate change. GHGs trap heat in the atmosphere, resulting in warming over time, as shown in Figure 1.

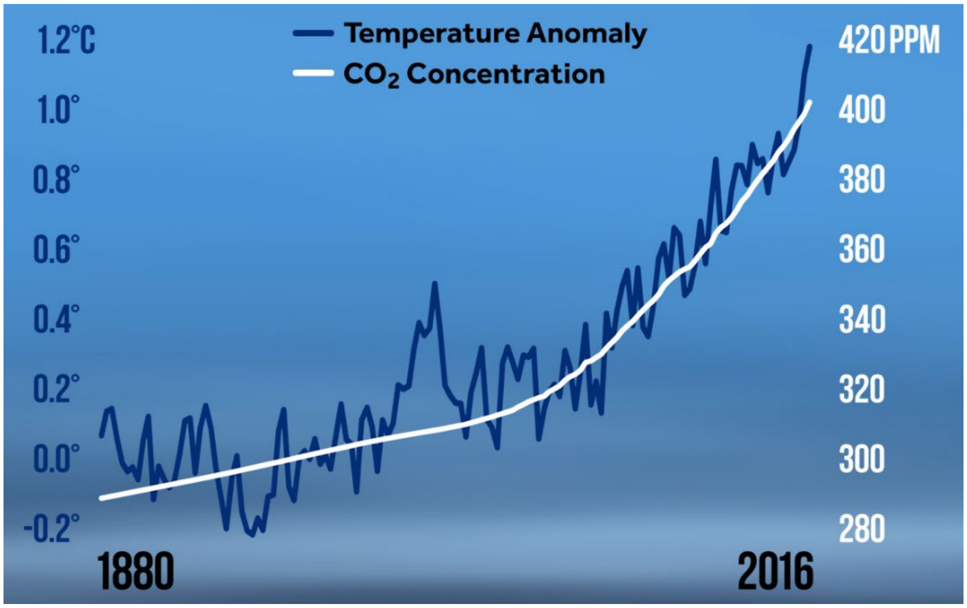
Figure 1: Greenhouse Gas Effect



Source: NASA (2018).

This atmospheric warming leads to other changes in the earth's systems, including changing patterns of rainfall and snow, melting of glaciers and ice, and warming of oceans. Figure 2 shows the closely related historic trends in carbon dioxide (CO_2) and global temperatures since 1880.

Figure 2: Global Temperatures and GHG Emissions



Source: Climate Central (2018).

The extent of climate change in the future depends in part on the amount of GHG emissions now and in the future. GHG emissions are driven by economic systems, land use patterns, transportation and energy systems, and other social and political factors. As such, climate scientists cannot be certain how emissions and the climate will change in the future.

Therefore, scientists use GHG emission scenarios to understand a range of potential climate projections. These include a higher emission (or business-as-usual) scenario where emissions continue to rise, along with population growth through 2050, and plateau around 2100 and a lower-emissions scenario where emissions peak around mid-century then decline, due to worldwide efforts to reduce them. This Climate Hazard Summary for Culver City typically includes data and forecasts representing an average climate model for the higher-emissions scenario (business-as-usual scenario).

TEMPERATURE

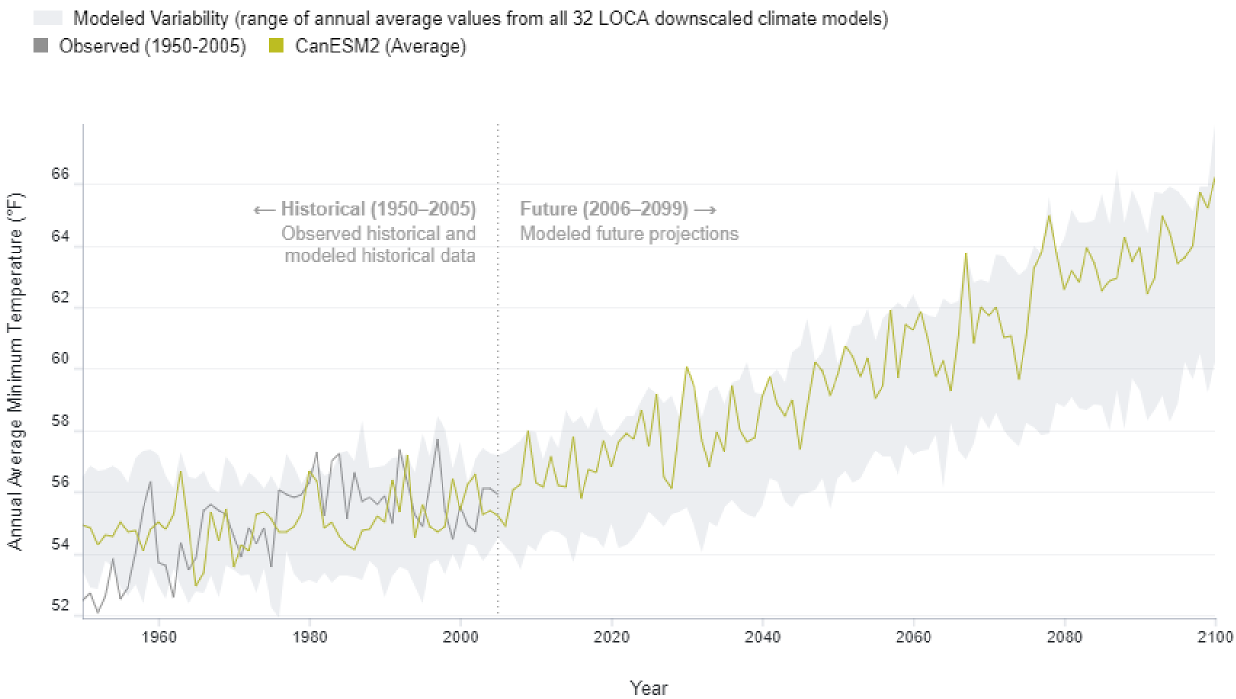
During the last century, average surface temperatures in California rose steadily. Between 1918 and 2006, the average minimum temperature increased by 0.3°F per decade, and the average maximum temperature increased by 0.13°F per decade. The rate of warming intensified from 1970 to 2006, with average minimum temperatures increasing 0.56°F per decade and average maximum temperatures rising 0.49°F per decade. The average minimum and maximum temperatures in Southern California rose faster than the State. Between 1970 and 2006, the average minimum temperature rose by 0.67°F per decade and the average maximum temperature increased by 0.74°F per decade across the region.[6]

6 Cordero, E. C., W. Kessomkiat, J. Abatzoglou, and S. A. Mauget. 2011. The identification of distinct patterns in California temperature trends. Climatic change 108:357– 382.

The top five warmest years, in terms of annual average temperature, have all occurred since 2012; 2014 was the warmest, followed by 2015, 2017, 2016, and 2012.

Climate change models indicate that temperatures will continue to rise in Culver City (Figures 3 and 4). Annual maximum temperatures are projected to increase between 3.7°F and 4.4°F by mid-century (2040-2060) and between 3.3°F and 8.3°F by the end of the century (2080-2100).[7] By the end of the century, the average future temperature in the climate scenario with the least warming is greater than the very warmest year of the historical record.[8] Figures 3 and 4 show the projected change in average annual minimum and maximum temperatures. The grey lines illustrate the observed, past temperature and the green line shows the climate scenario projection.

Figure 3: Projected Change in Average Annual Minimum Temperatures in Culver City



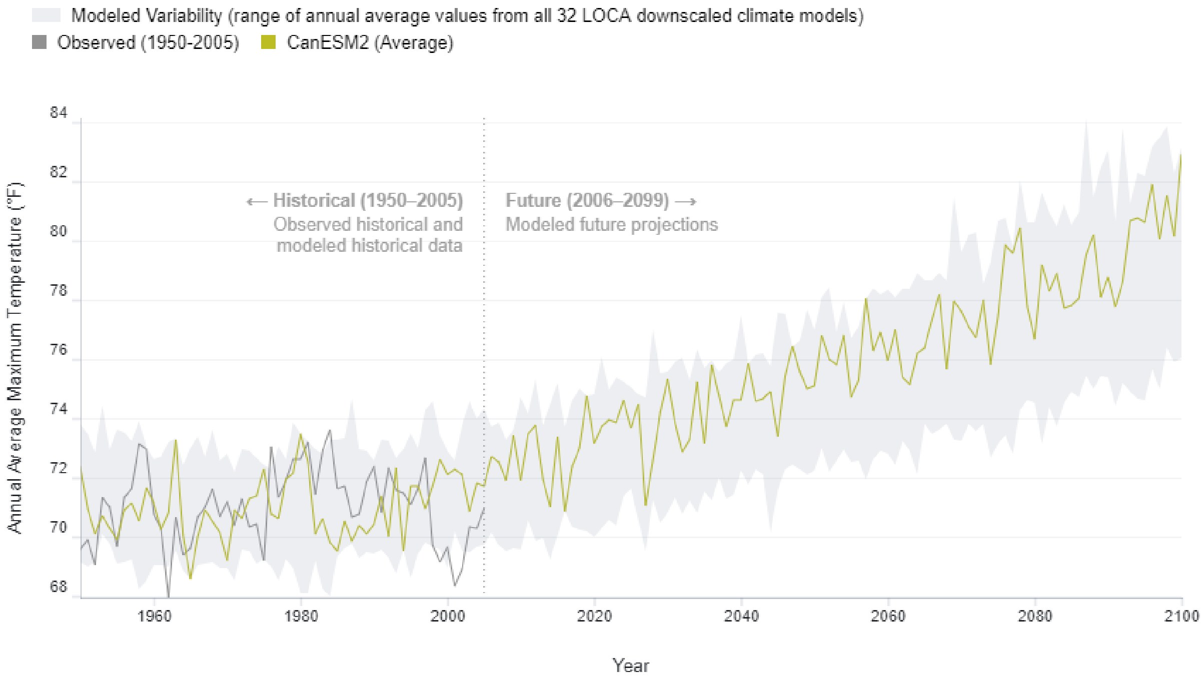
Note: Data is shown for Culver City under the RCP 8.5 scenario in which emissions continue to rise strongly through 2050 and plateau around 2100. Business as Usual Scenario (High Emissions), CanESM2 Model (Average).
Source: CalAdapt (2018).[9]

7 Temperature change range represent lower and higher-emissions scenario for Culver City. California Energy Commission. 2017. op. cit.

8 Fengpeng S, et al. 2015. A Hybrid Dynamical–Statistical Downscaling Technique. Part II: End-of-Century Warming Projections Predict a New Climate State in the Los Angeles Region. Journal of Climate. 28:4618-4636.

9 CalAdapt. 2018. Business as Usual Scenario (High Emissions), CanESM2 Model (Average). Retrieved from: https://cal-adapt.org/tools/annual-averages/

Figure 4: Projected Change in Average Annual Maximum Temperatures in Culver City



Note: Data is shown for Culver City under the RCP 8.5 scenario in which emissions continue to rise strongly through 2050 and plateau around 2100. Business as Usual Scenario (High Emissions), CanESM2 Model (Average). Source: CalAdapt (2018).[10]

EXTREME HEAT DAYS

With climate change, extreme heat events in California and Culver City are becoming more frequent, more intense, and longer-lasting. An extreme heat day is defined as a day between April and October when the maximum temperature exceeds a given heat threshold.[11] Heat waves, defined as three or more days with temperatures above 90°F, are also projected to occur more frequently by the end of the century.

Extreme heat days and heat waves can negatively impact human health. While the human body has cooling mechanisms that help auto-regulate body temperature within one or two degrees of 98.6 degrees, heat stress can cause fatigue, headaches, dizziness, nausea, and confusion. The combination of heat and high humidity is particularly lethal as it can result in heat stroke, which can lead to death, even among healthy people.[12] Historically, the city experiences one extreme heat day annually.

10 ibid.

11 This threshold is often calculated as the 98th percentile of historical maximum temperatures between April 1 and October 31 based on observed daily temperature data.

12 Brink, S. 2013. How 100 Degrees Does a Number on You." National Geographic. Retrieved from: https://news.nationalgeographic.com/news/2013/07/130716-heat-wave-dehydration-stroke-summer-sweat/

Extreme heat days and heat waves are predicted to impact larger areas, last longer, and have higher temperatures. Coastal areas in Southern California are projected to experience an increase in humid nighttime heat waves.[13]

The number of extreme heat days is anticipated to increase significantly across the Los Angeles region during the next century, but more so in inland areas than coastal cities. By mid-century, Culver City is expected to have four extreme heat days under a business-as-usual scenario. By the end of the century, Culver City is projected to experience nine extreme heat days.

URBAN HEAT ISLAND

Urban areas are typically warmer than their rural surroundings, a condition known as the "heat island effect." In Southern California, urban areas experience a higher frequency of extreme heat events compared to non-urban areas.[14] Mature cities, like Culver City, usually have less vegetation and more ground area covered by paving and buildings. This results in less shade and moisture to keep urban areas cool and contributes to elevated temperatures. Building and construction materials also influence the development of urban heat islands, reflecting and absorbing the sun's energy. The urban heat island effect can exacerbate extreme heat events in large urban areas.[15] The urban heat island effect tends to increase during heat waves, meaning that urban areas are hit harder than surrounding areas during extreme heat events.

PRECIPITATION

Between 1950 and 2005, the historic annual precipitation mean in Culver City was approximately 14.9 inches.[16] Annual precipitation, however, varies significantly between years. In the present-day climate, the region experiences wide swings in precipitation from year-to-year, and this variability is expected to continue under climate change with fluctuations between wet and dry years.[17] Southern California's annual variability originates primarily from fluctuations of the biggest storms, with much of the variability coming from the wettest 5% of wet days.[18] Therefore, drought happens during years without a few large storms and wet years occur with large storms. Figure 5 shows the projected annual variability in precipitation, which is relatively consistent with historical observations. The grey lines illustrate the observed, past precipitation, and the green lines show the scenario projection.[19]

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13 Gershunov, A., and Guirguis, K. 2012. California heat waves in the present and future. Geophysical Research Letters, 39(18), 7.

14 Mishra, V., Ganguly, A. R., Nijssen, B., & Lettenmaier, D. P. 2015. Changes in observed climate extremes in global urban areas. Environmental Research Letters, 10(2), 024005.

15 US Environmental Protection Agency. 2017. Climate Change and Heat Islands. Retrieved from: https://www.epa.gov/heat-islands/climate-change-and-heat-islands.

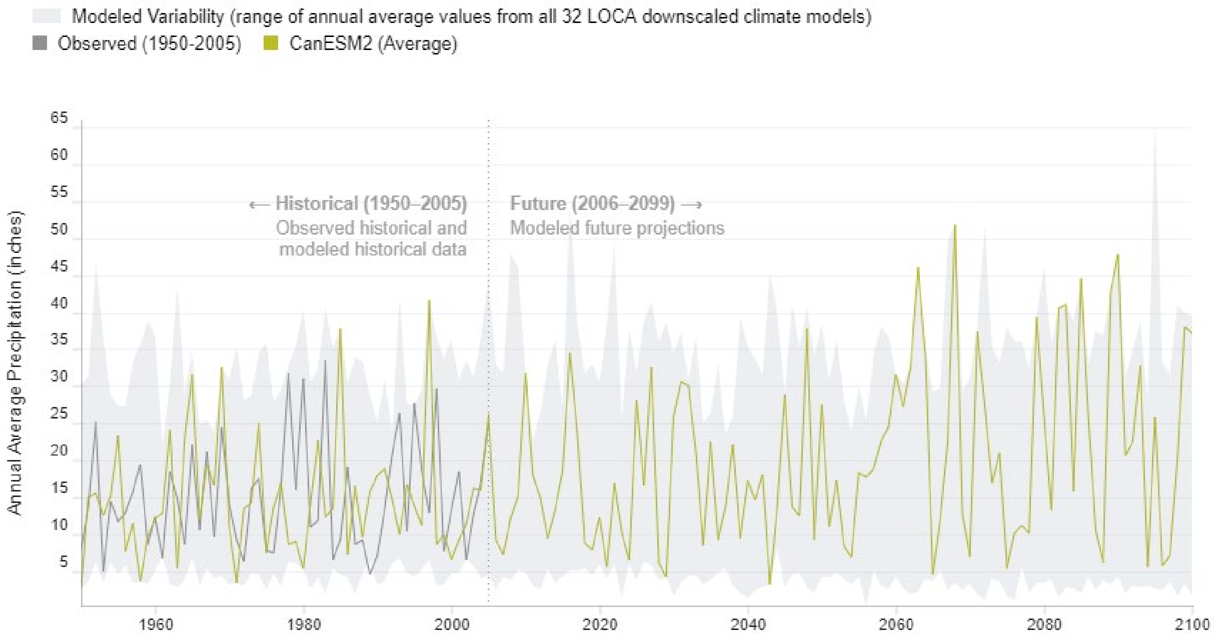
16 California Energy Commission. 2017. op.cit.

17 Berg, N, et al. 2015. Twenty-Frist Century Precipitation Changes over the Los Angeles Region. Journal of Climate. 28: 401 – 421.

18 Dettinger, M.D., and Cayan, D.R. 2014 Drought and the California Delta—A matter of extremes: San Francisco Estuary and Watershed Science, 12(2).

19 California Energy Commission. 2017. op. cit.

Figure 5: Culver City Annual Precipitation Variability - 1950 to 2100



Note: Data is shown for Culver City under the RCP 8.5 scenario in which emissions continue to rise strongly through 2050 and plateau around 2100. CanESM2 Model (Average).
Source: CalAdapt. (2018).[20]

Overall, changes in future precipitation are highly variable among climate models and relatively uncertain. Some precipitation projections for the region show a slight increase in annual rainfall, others show a slight decrease, and others show no change at all.[21] During the next century, Culver City can expect approximately the same amount of total annual precipitation as it has received in the last few decades of the 20th century.

DROUGHT

A drought occurs during an extended period in which a region experiences below-average precipitation, which results in a reduced supply of surface and groundwater. Climate change is likely to increase the duration and severity of droughts in California. Increasing temperatures and changing precipitation patterns can create periods of abnormally dry weather that produce hydrologic imbalances and result in water supply shortages. Reduced water supplies can have direct and indirect impacts on natural vegetation, wildlife, agricultural yields, and shortages in regional water supply can translate into local water supply shortages for jurisdictions. Figure 6 graphically depicts Los Angeles County's drought conditions from 2000-2020. Five historic drought periods in Southern California and Culver City between 1928 and 2017 are described below:

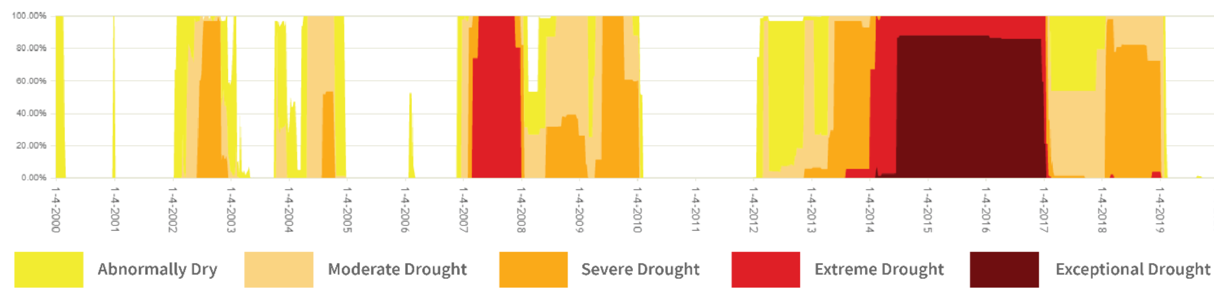
- **1928 – 1937**: This drought was remembered for its length and severity. It was the longest drought in California's history and occurred at the same time as the "Dust Bowl."

20 Cal-Adapt. 2018. op. cit.

21 Berg, N, et al. 2015. Twenty-Frist Century Precipitation Changes over the Los Angeles Region. Journal of Climate. 28: 401 – 421.

- **1976 – 1977:** These are two of the 30 driest years on record in California. Los Angeles County was included in a federally declared drought disaster. Across the State, a federal report placed the economic losses of the impacts on agriculture and ranching at more than $1 billion.22
- **1987 – 1992**: The State underwent one of the longest periods of drought in its history. The Antelope Valley region experienced severe flooding in 1980, 1983, and 1987.
- **2000 – 2002**: The State underwent a period of severe drought, particularly in Southern California.
- **2007 – 2009**: This is the 12th driest three-year period in recorded history.23 The year 2007 included significant wildfires in Southern California.
- **2011 – 2015**: This drought was considered the driest period in the State's recorded rainfall history. In 2013, California received less rain than in any year since becoming a state in 1850. Governor Brown declared a statewide drought emergency in January 2014, enacting 25 percent mandatory water use reductions by April 2014.

Figure 6: Percent of Los Angeles County in Drought Conditions 2000 – 2020



Source: Drought Monitor Time Series (2020).[24]

FLOODING

Flooding occurs when a waterway, either natural or artificial, receives more water than it is capable of conveying, causing the water level in the waterway to rise. Depending on how long these conditions last and the amount of water the waterway receives in proportion to its capacity, the rising water level may eventually overtop the waterway's banks or any other boundaries to the drainage area, resulting in flooding in the surrounding area. A flood event's severity depends on the local topography and ability of the soil in the area to absorb water. Floods often occur during heavy precipitation events, when the amount of rainwater exceeds the capacity of storm drains or flood control channels. Floods can also happen when infrastructure, such as levees, dams, or culverts fail, or when a section of

22 Grad, S and Harrison, S. 2015. California Retrospective: 3 Crippling Droughts that Changed California. Los Angeles Times. Retrieved from: http://www.latimes.com/local/california/la-me-california-retrospective-20150413-story.html.

23 Christian-Smith, J. 2011. Impacts of the California Drought from 2007 – 2009. Pacific Institute. Retrieved from: http://pacinst.org/app/uploads/2013/02/ca_drought_impacts_full_report3.pdf.

24 Los Angeles County Drought Monitor Time Series. 2019. National Drought Mitigation Center. Retrieved from: https://droughtmonitor.unl.edu/Data/Timeseries.aspx

drainage infrastructure fails, and water cannot be drained from an area fast enough. These failures can be linked to precipitation events or can be a consequence of other disasters such as earthquakes.

The main waterway in the city is Ballona Creek, which runs approximately nine miles from the Mid-Wilshire neighborhood of Los Angeles through Culver City and out to the Pacific Ocean at Marina Del Rey. Ballona Creek was channelized, straightened, and deepened in the 1930s to control flooding. A tributary of Ballona Creek, Centinela Creek, runs along part of the community's southern border and was channelized in the 1960s.

Culver City has been relatively free of major flood events in previous years, although small-scale flooding has occurred during intense precipitation.[25] According to the Federal Emergency Management Agency (FEMA), the northern part of the city is at an elevated risk for flood, as shown in Figure 7. A small area, bordered roughly by Ballona Creek, Fairfax Avenue, and Adams Boulevard lies within a 100-year flood zone. This means that there is a one in 100 chance that a flood event causing one to three feet of inundation will occur in any given year (FEMA Zone AO). Two additional areas nearby, one between Eastham Drive and Ballona Creek and the second in the area immediately adjacent to Ballona Creek between National Boulevard and Sentney Avenue, are also within a 100-year flood zone.

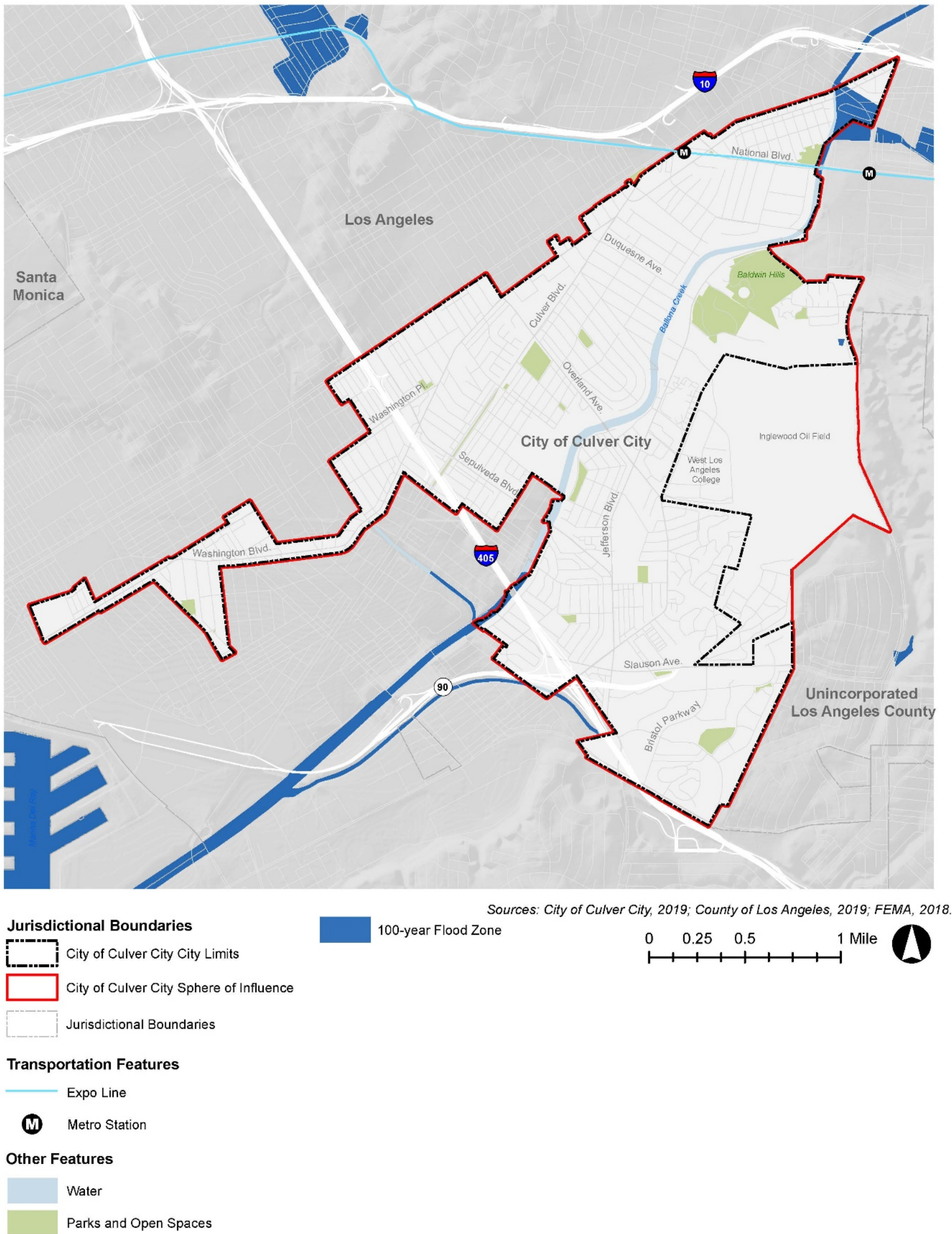
Some evidence suggests that climate change may increase the number of more intense storms, which would increase flooding risk in the city. Due to anticipated warmer temperatures under climate change, more precipitation will fall as rain instead of snow. This will lead to an increase in winter runoff, which may impact flood risk. Annual stormwater runoff volume in the Los Angeles Basin is projected to increase between 4 and 37 percent by 2100, and peak flow rates are projected to increase by 6 to 48 percent.[26] Increased runoff volume and higher peak flow rates are anticipated to increase flood risk.[27]

25 Michael Baker International. op.cit.

26 Alexanderson, L., & Bradbury, D. 2013. Los Angeles Basin Stormwater Conservation Study: Hydrologic Modeling Report: USDI Bureau of Reclamation; County of Los Angeles Department of Public Works; Los Angeles County Flood Control District, Watershed Management Division.

27 Blickenstaff, K., Gangopadhyay, S., Ferguson, I., Condon, L., & Pruitt, T. 2013. Climate Change Analysis for the Santa Ana River Watershed: Bureau of Reclamation: Water and Environmental Resources Division.

Figure 7: Culver City Flood Hazard Zones



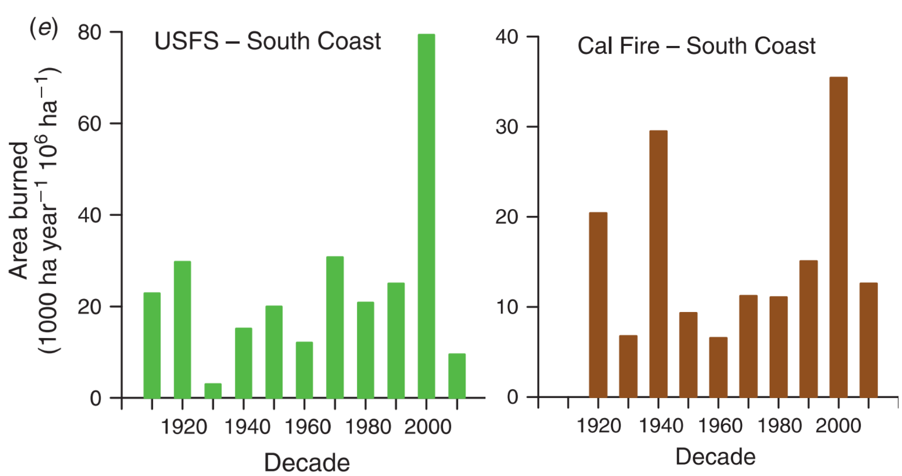
WILDFIRE HAZARDS

Wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions. The most common conditions include hot, dry, and windy weather; the inability of fire protection forces to contain or suppress the fire; the occurrence of multiple fires that overwhelm committed resources; and a large fuel load (dense vegetation). Once a fire has started, several conditions influence its behavior, including fuel topography, weather, drought, and development.

The wildland-urban interface (WUI) is present in the eastern portion of the city. Wildlands located within Los Angeles County are directly adjacent to the neighborhoods of Blair Hills and Culver Crest. CalFire prepares fire hazard severity maps, including mapping areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors, referred to as Fire Hazard Severity Zones (FHSZ). According to the Los Angeles County FHSZ map, the eastern portion of the city is located in a Very High Fire Severity Zone (VHFSZ), which includes portions of the Culver Crest neighborhood and the Inglewood Oil Field as shown in Figure 9. The Inglewood Oil Field is considered at WUI. The remainder of Culver City is not under significant wildfire hazard risk. The sparse vegetation and urban development do not provide significant fuel for wildfire propagation.

Wildfires have increased over the Western US and Southern California in recent decades. These changes in wildfire patterns are often attributed to climate change, fire prevention success, fire suppression effectiveness, and vegetation management practices, among other factors. As shown in Figure 8, the South Coast region, which includes Culver City, had significant peaks in the area burned in the 1920s, 1940s, 2000s in CalFire state lands and 1920s, 1970s, and 2000s in US Forest Service (USFS) federal lands. The South Coast region was among the few areas within the State that had an increase in burned areas in recent decades.[28]

Figure 8: Decadal Burning on US Forest Service and Cal Fire Managed Lands

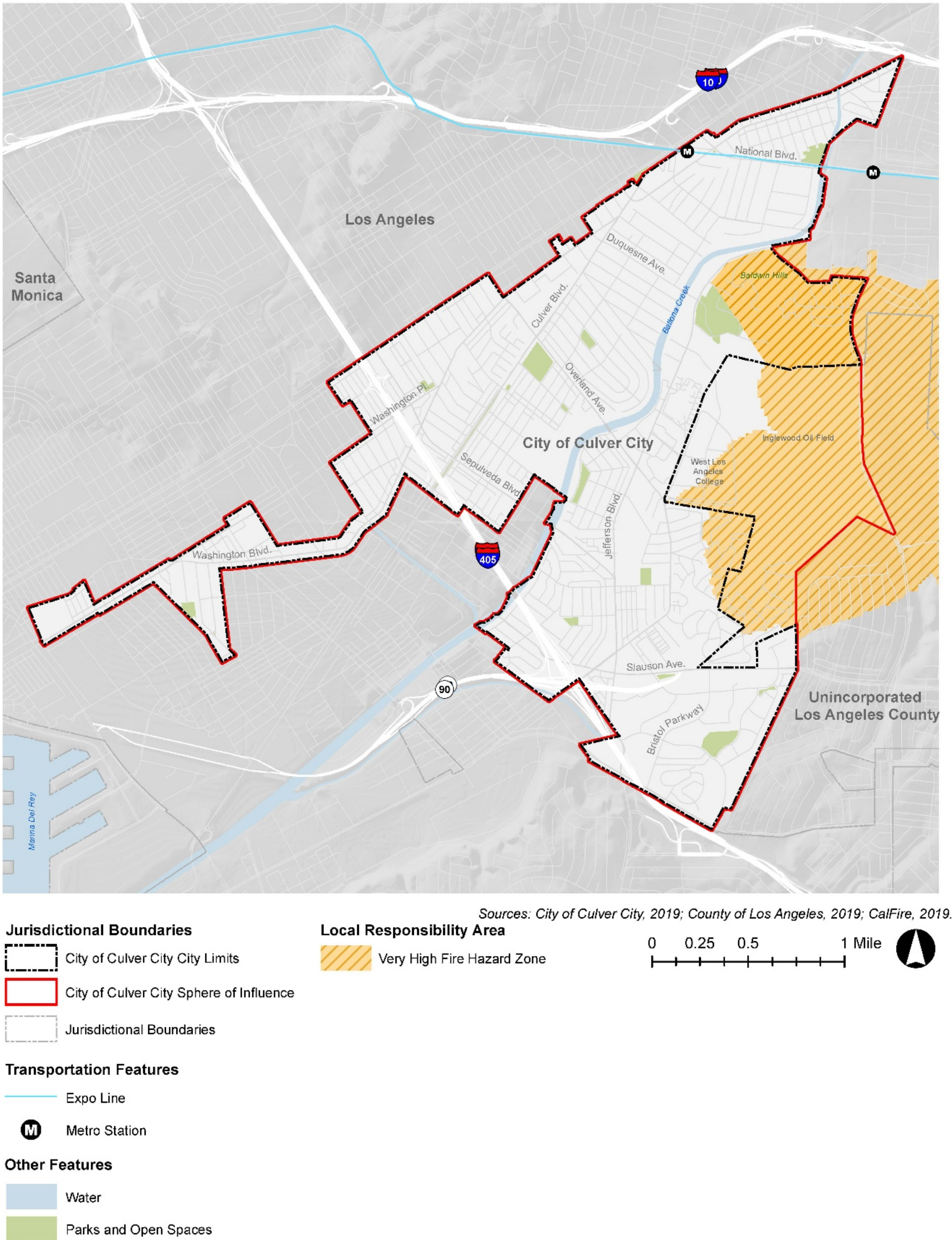


Source: Keeley, J.E. and A.D. Syphard (2017).[29]

28 Keeley, JE, AD Syphard. 2017. Different historical fire–climate patterns in California. International Journal of Wildland Fire 26(4): 253-268.

29 Ibid 28.

Figure 9: Fire Hazard Severity Zones



Sources: City of Culver City, 2019; County of Los Angeles, 2019; CalFire, 2019.

Under many climate scenarios, wildfires are projected to increase in the future. Warmer, drier summers, high wind events, such as the Santa Ana winds, and increased vegetation growth, can create conditions suitable for wildfires.[30] Although the average area burned by wildfire adjacent to Culver City is not expected to increase,[31] scientists expect an increase in the frequency, extent, and severity of fires through increased temperatures and drought in the region.[32] Wildfires can be a significant source of air quality pollution in Southern California. Wildfires burning within 50 to 100 miles of a city routinely cause air quality to be 5 to 15 times worse than normal, and often two to three times worse than the worst non-fire day of the year.[33] Emissions from wildfires can lead to excessive levels of particulate matter, ozone, and volatile organic compounds,[34] resulting in increasing asthma, respiratory infections, heart attacks, strokes, and adverse birth outcomes.[35]

AIR QUALITY

Air quality is expected to worsen with climate change. Air quality is strongly dependent on weather, and climate change is expected to impact air quality through warming temperatures and more frequent episodes of stagnant air. Many strategies used to reduce GHGs will also reduce emissions of air pollutants, such as ozone and particulate matter.

Climate change will generate multiple pollution stressors on the environment. Air quality could worsen with the increased occurrence of stagnation events. This term describes the phenomenon of contaminated air lingering over a region combined with a lack of rain and wind.[36] Stagnation events lead to an increased concentration of pollution exposure, and thus, increased risk of heart disease and respiratory illnesses. Additionally, ozone production generally increases with hotter temperatures, which can result in the number of ozone days increasing up to nine days by 2050.[37]

In California, rising temperatures could also see an increase between 22 to 30 days in the annual number of ozone days with over 90 parts per billion (ppb).[38] The current EPA standard for ground-level ozone is 70 ppb, based on scientific evidence of the effects of ozone on public health, including asthma attacks, emergency room visits, and premature death.

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