

# City of Bradbury

## Climate Vulnerability Assessment

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## A. Introduction

Communities in California are increasingly vulnerable to the effects of climate change. California's Fourth Climate Change Assessment, conducted in 2018, identifies the Los Angeles Region as especially vulnerable to human-induced impacts to the climate since approximately half the population of the state calls the region home.<sup>1</sup> Climate change refers to changes in conditions that result from increased atmospheric greenhouse gas (GHG) concentrations, which are linked to an increase in average global temperature. The increase in global temperature and GHG result in a series of changes to the global climate, including shifts in: seasonal temperature patterns; altered precipitation timing, volume, and location; sea-level rise; ocean acidification due to increased carbon dioxide (CO<sub>2</sub>) absorption; and altered severe wind and storm event frequency, severity, and location. These outcomes interact, and the potential consequences may result not only in global climate shifts, but also changes to a variety of characteristics that define biophysical systems and human progress.

### What is a Climate Vulnerability Assessment?

The purpose of a Climate Vulnerability Assessment (CVA) is to inform City policies, plans, programs, and guidance to promote effective and integrated action to safeguard from climate change. In addition to increasing global average temperatures, climate change has the effect of intensifying the effects of many natural hazards, adding to concerns otherwise addressed in hazard mitigation planning. Climate change results in an increase in variance of climate patterns. The increase in variance means that extreme events may exhibit changes in frequency, severity, and location. The increased variance therefore creates challenges for hazard planning, which previously used historic recurrence rates to predict future events, and now must incorporate changes to frequency, severity, and location due to climate change influences.

### Addressing Climate Change

Climate change can be viewed from two scales: global and local. Addressing climate change relies on two high-level approaches at both scales: mitigation and adaptation. Climate change mitigation involves the reduction of GHG emissions, whereas climate adaptation aims to reduce harm from the effects of a changing climate. At the global scale, mitigation appears as less dependency on fossil fuels and a shift towards renewable energy; at the local scale, mitigation appears as multi-modal and active transportation networks, for one example. At the global scale, climate adaptation can be seen as expanded emergency response teams and climate refugee aid. At the local scale, adaptation can be the preparation taken for inevitable climate-induced emergencies and the spin-off social impacts that could emerge from them. Both approaches at both scales are necessary; however, this document focuses on identifying vulnerabilities and adaptation strategies on the local level within the City of Bradbury.

### Regulatory Framework

There are currently numerous laws and regulations set in place in the State of California that are aimed at reducing the impacts of climate change hazards. For decades, California has continued to adopt, update, and amend Senate and Assembly Bills; create monitoring and mitigation programs; and fund state, regional, and local agencies to promote environmental preservation. A list of relevant bills and documents

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<sup>1</sup> California's Fourth Climate Change Assessment, 2018. Accessed October 19, 2022. Available at <https://www.climateassessment.ca.gov/>.

adopted by the State, region, and City are included in [Appendix A](#). While these documents create general goals and guidelines for the State to achieve and follow, each municipality is unique and therefore can best thrive and meet environmental regulations in its own unique way. The regulatory documents included in [Appendix A](#) provide a framework for the direction Bradbury should be headed, but it is up to the City to implement programs and designs to reduce the effects of climate change.

## Assessing Vulnerabilities

The vulnerability that a community experiences as a result of climate change is a product of its biophysical setting in combination with the characteristics of the community, ranging from its built pattern to social, political, and economic characteristics. Put simply, the level of climate vulnerability can be calculated using the following formula:

$$\text{Exposure} + \text{Sensitivity} - \text{Adaptive Capacity} = \text{Vulnerability}$$

Where:

- **Exposure** refers to the nature and degree to which a system or sub-population is exposed to significant climatic variations.
- **Sensitivity** refers to the degree to which a system or sub-population is affected by climate-related stimuli.
- **Adaptive Capacity** refers to the adaptability of a system or sub-population to adjust to climate change, to moderate potential damages, or to cope with the consequences.

Example:

*It is 100 degrees Fahrenheit (exposure) on a playground at a Bradbury elementary school. Inside a classroom, Cindy is a student with a pre-existing condition (sensitivity) that leaves her at risk of hyperthermia; however, the classroom is air conditioned (adaptive capacity), so Cindy is able to continue learning with the rest of the students.*

As shown by the example above, many factors are at play when determining the level of climate vulnerability. The California Adaptation Planning Guide identifies five steps in assessing the vulnerability of a community to climate change:

1. **Exposure:** What climate change effects will a community experience?
2. **Sensitivity:** What aspects of a community (people, structures, and functions) will be affected?
3. **Potential impacts:** How will climate change affect the points of sensitivity?
4. **Adaptative capacity:** What is currently being done to address the impacts?
5. **Risk and onset:** How likely are the impacts and how quickly do they occur?

Not only do impacts vary, but vulnerability varies across specific areas and groups. For example, future climate changes, especially increases in extreme heat, are expected to disproportionately burden low-income residents and communities of color across the region. The City of Bradbury is home to an array of people and not all residents are expected to be equally impacted. This CVA describes vulnerabilities in terms of social vulnerabilities and physical vulnerabilities. Social vulnerabilities examine how populations,

communities, and social systems are affected by climate change. Physical vulnerabilities examine how infrastructure, critical facilities, and land are affected by climate change.

## B. Climate Impacts and Vulnerability Assessment

An assessment of a community's vulnerability to climate change begins with an understanding of local exposure to climate impacts. In addition, a primary objective of this document is to identify geographic areas, populations, and infrastructure in Bradbury with heightened risk to projected climate impacts. This section first describes the methodology used to obtain climate impact projections, then highlights each major impact projected in Bradbury and focuses on the following questions:

- What is the hazard?
- What is the local exposure?
- Where and when does this impact occur?
  - To what extent will the City be exposed to this impact?
  - Who (or what) is the most vulnerable?
- How does this impact affect or tie into other impacts or hazards?
- How is the City currently addressing this impact?

### Methodology

While the science is highly certain that California (and the world) will continue to warm and experience greater impacts from climate change in the future, specific outcomes are inherently uncertain. Future outcomes vary depending on the level of global GHG emissions. Accordingly, most climate models include a range of possible scenarios based on the level of global GHG emissions.

This document pulls data, and data analysis, from California's Fourth Climate Change Assessment published in 2018. The data discussed in the Assessment, derived from 32 coarse-resolution (~ 100 km) global climate models (GCMs), were bias corrected and downscaled using the Localized Constructed Analogues (LOCA) statistical method. The data cover 1950-2005 for the historical period and 2006-2100 for two future climate projections using medium and high GHG and aerosol emissions scenarios.

For City-specific predictions, this document uses climate modeling from Cal-Adapt – a tool that came about as a key recommendation of the 2009 California Climate Adaptation Strategy and created with oversight from the California Energy Commission and California Strategic Growth Council. Cal-Adapt makes two predictions for the period of 2006 to 2100 using medium and high GHG and aerosol emissions scenarios. These scenarios are known as Representative Concentration Pathways (RCP). Each RCP represents a standardized set of assumptions of humanity's trajectory in the coming years. The Medium Emissions Scenario (RCP 4.5) represents a mitigation scenario where global CO<sub>2</sub> emissions peak by 2040 and then decline. Statewide, temperature is projected to increase 3-7°F (or 2-4°C) for this scenario by the end of this century. The High Emissions Scenario (RCP 8.5) represents a scenario where CO<sub>2</sub> emissions continue to rise throughout the 21st Century. Statewide, temperature is projected to increase approximately 7-12°F (or 4-7°C) by the end of this century. Precipitation shows fewer wet days, wetter winters, drier springs and autumns, and an increase in dry years as well as maximum precipitation in a single day. Cal-Adapt also specifies that its data is derived from the 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment, observed historical data

is derived from Gridded Observed Meteorological Data, and the data presented are aggregated over all LOCA grid cells that intersect Bradbury's boundaries.

In addition to the range of potential outcomes, climate change can produce a variety of impacts depending on location. California is expected to experience warmer temperatures, increased drought, and more extreme weather events (IPCC, 2007). This is why climate change projections include both drought and increased precipitation leading to flooding. The range of impacts anticipated in Bradbury are summarized below.

The key hazards addressed in this Climate Vulnerability Assessment are those that pose a particular threat to the City. Various City documents were consulted to identify the key hazards. The Los Angeles County Climate Vulnerability Assessment and the Los Angeles Countywide Sustainability Plan (*Our County*) were consulted as well. The Los Angeles County CVA provides direction and information that this Bradbury CVA uses as a *jumping off point*. For consistency, and to better understand regional impacts, much of the regional discussion included here is inspired by the Los Angeles County CVA.

## Impacts

### Extreme Heat and Weather

#### *What is it?*

Climate change alters seasonal temperature patterns. Effects can include changes in average temperature, the timing of seasons, and the degree of cooling that occurs in the evening. In addition to new seasonal temperature patterns, extreme events such as heat waves are projected to occur more frequently and/or last for longer periods of time. In California, temperature increases are expected to be more pronounced in the summer and in inland areas, and many areas are losing even more of the already moderate winter conditions. Phenomena such as heat waves are projected to increase not only in frequency but in spatial extent (CNRA, 2009). The degree of change experienced partially depends on global GHG emissions and atmospheric concentrations. By 2050, however, temperature increases between 1.8°F to 5.4°F are projected under both emissions scenarios examined by the State (CNRA, 2009).

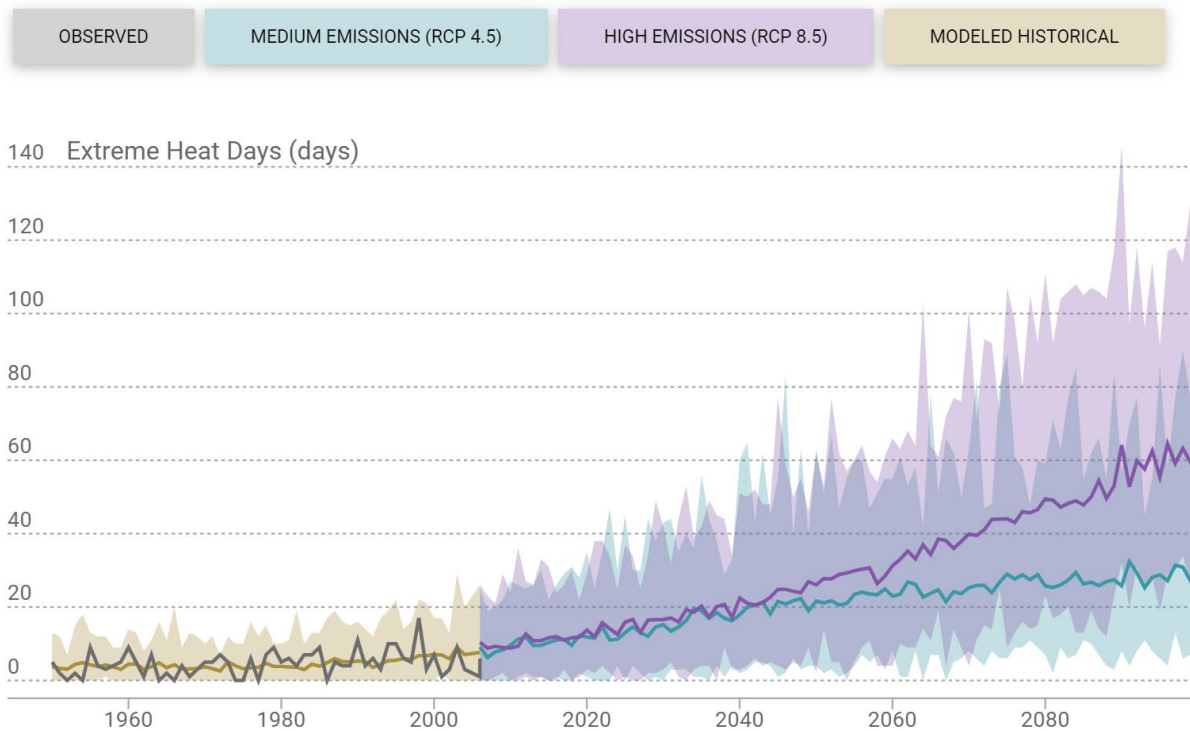
Extreme heat is projected to increase in frequency, severity, and duration, with the largest increases occurring in the Santa Clarita and San Fernando Valleys in the Greater Los Angeles County area. In addition to hot days, extended periods of extreme temperature, known as heat waves, can multiply the impacts of extreme heat. LA County has begun to experience more frequent, more severe, and longer heat waves. Countywide heat waves are projected to increase in frequency and duration by mid-century. By mid-century, projections suggest that most of the County will likely shift to moderate or high exposure to extreme heat, with the majority of LA County in high exposure by mid-century (LACCSO, 2021).

#### *Local Exposure/Environment*

Extreme heat and human safety, human health, and human productivity are inextricably linked (LACCSO, 2021). Temperatures in Bradbury are generally representative of those found throughout Southern California. In terms of extreme weather, extreme heat is looked at over other extreme weather and storm patterns due to the impact heat has within the City comparatively. Bradbury is not in a location subject to dangerous storms (hurricanes, tornados, blizzards, etc.), tsunamis, or intense winters. The average annual high temperature calculated from January 1917 to June 2016 for the San Gabriel Canyon area is 78.2°

Fahrenheit (°F), with higher temperatures in summer and early fall (June through October) reaching up to an average of 91.7°F. The average annual low temperature is 52.8°F and can reach an average low temperature of 47.2°F (Dudek, 2022). *Figure 1* shows the number of days in a year when the daily maximum temperature is above a threshold temperature of 100.3°F. This threshold temperature is the 98th percentile value of historical daily maximum/minimum temperatures (from 1961–1990, between April and October) observed in Bradbury.

*Figure 1: Extreme Heat Days in Bradbury*



Source: Cal-Adapt. Accessed October 7, 2022. Available at <https://cal-adapt.org/tools/local-climate-change-snapshot/>

As shown in *Figure 1*, climate change is expected to increase the frequency of extreme heat events per year in Bradbury. *Table 1* supports *Figure 1* and demonstrates this by showing the average number of days exceeding the 98th percentile summertime (April to October) high-heat threshold in the City. The Baseline (1961 to 1990) modeled historical data shows an average of four days that exceeded the 98th percentile high-heat threshold. By mid-century (2035 to 2064), the number of days exceeding 98th percentile high-heat threshold is expected to quintuple from the Baseline average (from 4 to 21 days) under the Medium Emissions scenario (RCP 4.5) and increase by three weeks (from 4 to 26 days) under the High Emissions scenario (RCP 8.5). By the end of the century (2070 to 2099), the average number of days is expected to increase by 23 days (from 4 to 27) and 47 days (from 4 to 51) past Baseline for Medium and High Emissions scenarios, respectively.

Table 1: Average Number of Days Exceeding 98th Percentile Summertime (Apr-Oct) High-Heat Threshold

Time Period	Scenario	30yr Average	30yr Range	Change from Baseline
Baseline (1961-1990)	Modeled Historical	4 days*	3-5 days	-
Mid-Century (2035-2064)	Medium Emissions (RCP 4.5)	21 days	13-48 days	+17 days
	High Emissions (RCP 8.5)	26 days	17-53 days	+22 days
End of Century (2070-2099)	Medium Emissions (RCP 4.5)	27 days	19-66 days	+23 days
	High Emissions (RCP 8.5)	51 days	36-102 days	+47 days

Source: Cal-Adapt. Accessed October 7, 2022. Available at <https://cal-adapt.org/tools/local-climate-change-snapshot/>

\* Observed 30-year average from 1961 to 1990: 4 days

### Who is Most Vulnerable?

Everybody can be affected by extreme weather and heat, but certain groups are more sensitive and thus more vulnerable. Social vulnerabilities include people with pre-existing health conditions; children and older adults; people who depend on walking, biking, or transit to get around; and people who work outdoors. Children are at a higher risk for being adversely affected by extreme weather because they spend much of their time outdoors playing or exercising thereby increasing their body temperature already; increased activity in more extreme weather more easily leads to dehydration and skin burning. Older adults are considered highly vulnerable to extreme heat and weather because a human body's regulatory and immune systems tend to deteriorate with age and are not as prepared to be resilient against drastic changes. The Southern California Association of Governments (SCAG) reports that Bradbury residents under the age of 20 comprise approximately 17 percent of the population as of 2018; and seniors (65 and above) make up approximately 22 percent of the City population (SCAG, 2019).

Furthermore, extreme heat can cause uncomfortable and even dangerous conditions for outdoor physical activity, making it harder for people to get the recommended amount of exercise and potentially leading to increased risk of long-term health effects related to a sedentary lifestyle. The health risks associated with exposure to extreme heat are intensified when compounded with other demographic factors. Hispanic and Latino people are overrepresented in other vulnerable populations, like outdoor workers and undocumented individuals. Approximately 12 percent of the Bradbury population is Hispanic or Latino (SCAG, 2019). Respite from heat is critical to outdoor workers to mitigate the potential health impacts of extreme heat. For this reason, both place of residence and place of occupation are important in understanding the overall risk (LACCSO, 2021).

Air pollution is linked to asthma and cardiovascular disease, both of which increase vulnerability to extreme heat. In return, extreme heat can contribute to and exacerbate the formation of ground-level ozone, which triggers asthma attacks (LACCSO, 2021). According to the California Health Interview Survey



(CHIS), organized by the UCLA Center for Health Policy Research, over 17 percent of the adult Bradbury population (18+) has been diagnosed with asthma at some point; this is similar to the rate found throughout the state which is approximately 16 percent.

Physical vulnerabilities include energy, water, and transportation infrastructure. As temperatures rise, an increased demand for cooling can cause strain on the energy grid and lead to blackouts. The effects of heat on the physical energy grid such as power lines can also cause strain and lead to fires. Parks and open space are also affected because extreme heat can harm vegetation and wildlife, causing the northern vast open spaces within the City to be highly vulnerable. Heat can cause transportation delays or malfunctions, or damage transportation infrastructure such as roads.

## Flooding

### *What is it?*

Increased flooding occurs when rain falls over a shorter period, even if there is less overall rain. Vegetated and pervious surfaces such as grass and soil do not have enough time to absorb the rainfall, overwhelming stormwater infrastructure capacity. In combination, changes in temperature and precipitation may exacerbate impacts. Heavy stormwater runoff can contaminate the surrounding bodies of water with environmentally and biologically harmful bacteria (Cal EMA, 2012). Intense rainstorms could require evacuation and temporary or permanent displacement of people and result in property damage or loss.

Flood-prone zones typically include areas within river floodplains or adjacent to drainage systems, low-lying areas where heavy rainfall can collect, and areas with inadequate storm drain infrastructure. Inland flooding can be exacerbated by high amounts of impermeable surfaces (LACCSO, 2021).

Data on exposure to extreme precipitation is limited to annual rainfall averages and does not capture the extreme precipitation events that can cause the most damage. Exposure to inland flooding is based on mapping of floodplains created by the Federal Emergency Management Agency (FEMA) (LACCSO, 2021).

### *Local Exposure/Environment*

Flooding has not been a serious hazard to Bradbury in several decades, and the risk of disastrous flooding in the City is considered minimal. Bradbury does not lie within a 100- or 500-year floodplain, as delineated by FEMA. However, according to the City's Local Hazard Mitigation Plan (2019), the potential for a localized flood event still exists within Bradbury. The elevated nature of the City removes Bradbury from flood danger from the San Gabriel River Channel (EPC, 2019). The built areas of the City are in "Flood Zone X" and "Flood Zone D". Zone X is defined as the area outside the 500-year flood and protected by levee from the 100-year flood. Zone D is defined as areas in which flood hazards are undetermined (i.e. no analysis of flood hazards has been conducted), but possible.

The average annual precipitation for the area is 22.28 inches, with the most rainfall concentrated in December (3.49 inches), January (4.40 inches), February (5.06 inches), March (3.50 inches), and April (1.69 inches). Rainfall is much less during June (0.19 inches), July (0.04 inches), and August (0.11 inches) (Dudek, 2022). Actual rainfall in the Southern California region tends to fall in large amounts during sporadic and often heavy storms rather than consistently over storms at somewhat regular intervals. In short, rainfall in Southern California might be characterized as feast or famine within any single year (EPC, 2019).

Much of Bradbury has steep topography and a minimal risk of flooding. However, there are a few low-lying areas in the City where stormwater can gravitate towards and build up. The steep slopes found throughout the City allow stormwater to gain momentum and pick up, and move, debris. Landslides and mudslides are a second type of risk in wildland-urban interface areas at the foothills of mountain ranges where there may be steep slopes. The congruence of post-wildfire debris and extreme precipitation in these sloped areas can have devastating impacts on developments in the down-slope areas (LACCSO, 2021).

The Los Angeles County Flood Control District maintains the City's public storm drain system. Channels and storm drain pipes comprise the flood control network. According to the General Plan Health and Safety Element, large agriculturally zoned and developed parcels either retain surface runoff on site or it is directed to public facilities by a system of privately owned and maintained drainage swales. Otherwise, the existing storm drain system collects runoff from streets and small parcels of land.

Localized flooding may occur in low spots or where infrastructure is unable to accommodate peak flows during a storm event. In most cases, water dissipates quickly after heavy rain ceases. The Bradbury Debris Basin and the Spinks Debris Basin and check dams also provide the City with protection from large scale floods. The City works with the U.S. Army Corps of Engineers and the Los Angeles County Flood Control District to ensure maximum functionality of all flood control facilities (EPC, 2019).

The City of Bradbury is also a participant in the National Flood Insurance Program (NFIP). Communities participating in the NFIP must adopt and enforce minimum floodplain management standards, including identification of flood hazards and flooding risks. This program helps incentivize people to develop less on historic floodplains.

While California does not see the average annual precipitation changing significantly in the next 50-75 years, precipitation will likely be delivered in more intense storms and within a shorter wet season (Cal-Adapt, 2022). [Table 2](#) shows the predicted increase in maximum one-day rainfall in Bradbury over the next century. The Baseline average is approximately 2.6 inches in one day. During the middle of the century (2035-2064), the average rainfall within a day is expected to increase approximately 0.2 inches under both the Medium and High Emissions scenarios. By the end of century (2070-2099), rain is predicted to fall an additional 0.3 inches under the Medium Emissions scenario and an additional 0.5 inches in one day under the High Emissions scenario. While these may not seem like exceptional increases on their own, the data must be observed on a larger scale and compounded with other climate change phenomena to predict the impact on the City and on the region.

Table 2: Maximum One-Day Precipitation

Time Period	Scenario	30yr Average	30yr Range	Change from Baseline
Baseline (1961-1990)	Modeled Historical	2.66 inches	2.26-3.01 inches	-
Mid-Century (2035-2064)	Medium Emissions (RCP 4.5)	2.83 inches	2.34-3.31 inches	+0.17 inches
	High Emissions (RCP 8.5)	2.89 inches	2.38-3.48 inches	+0.23 inches
End of Century (2070-2099)	Medium Emissions (RCP 4.5)	2.93 inches	2.48-3.43 inches	+0.26 inches
	High Emissions (RCP 8.5)	3.11 inches	2.41-4.15 inches	+0.48 inches

Source: Cal-Adapt. Accessed October 7, 2022. Available at <https://cal-adapt.org/tools/local-climate-change-snapshot/>

\* Observed 30-year average from 1961 to 1990: 2.795 inches

Agencies such as the Los Angeles County Public Works Stormwater Engineering Division have created plans that prepare the County, and subsequently the City, for potential flooding hazards (LA County Public Works EPD, 2022). The Los Angeles County Comprehensive Floodplain Management Plan aims to evaluate the impacts of urban stormwater discharge on receiving waters and communities. The Floodplain Management Plan is an important component of the County's participation in the National Flood Insurance Program and the Community Rating System (CRS), which are administered by FEMA (Tetra Tech, 2021).

The Municipal National Pollutant Discharge Elimination System (NPDES) Permit is issued to the County of Los Angeles and 84 cities (minus Avalon, Lancaster, Long Beach, and Palmdale) by the California Regional Water Quality Control Board, Los Angeles Region. The Los Angeles County Public Works Stormwater Engineering Division is the agency assigned as the Principal Permittee. The Division's goal is to improve the overall quality of life for residents of Los Angeles County (LA Public Works EPD, 2022).

#### *Who is Most Vulnerable?*

Flooding impacts generally are not linked to specific populations, such as seniors, children, or individuals with disabilities. However, older housing inventories are sometimes located in low-lying, more flood-prone areas, causing the units to be more susceptible to extreme conditions such as flooding. Beyond impacts to buildings, shelters, and occupants, inland flooding and extreme precipitation have the potential to impact transit and road infrastructure, causing service delays or shutdowns and road closures. One indicator of an area's potential for flooding is its ratio of permeable surfaces to impermeable surfaces. Maintaining as much permeable surface as possible by using permeable materials for new development can help ensure that stormwater will be absorbed into the ground and will filter through the soil to replenish groundwater (LACCSO, 2021).

## Drought

### *What is it?*

California's highly variable climate is susceptible to prolonged dry spells. A warming climate will compound drought impacts, as evidenced during recent precipitation deficits in the 2000s Southwest drought (Colorado River Basin), and during the 2012-2015 drought in California and neighboring states (Pierce, et al, 2018). Furthermore, recent research suggests that extended drought occurrence ("mega-drought") could become more pervasive in future decades (Pierce, et al, 2018). Drought is a climate hazard for which census tract-level mapping is not possible. The increase in frequency of transition between wet and dry extremes – or precipitation whiplash – makes the drought-flood cycle more dramatic in the Southern California region (LACCSO, 2021).

In addition to direct impacts on water supply, drought creates dry conditions that can lead to secondary impacts, including but not limited to: increased wildfire risk, reduced evapotranspiration (and thus less ability to mitigate periods of extreme temperatures), damage to habitats and vegetation, and higher volumes of dust. This phenomenon can quickly remove moisture from the soil, leading to compacted soil. In the case of a severe rain event, compacted soil will not allow for infiltration. Collectively, these conditions will contribute to decreased air quality and increased public health issues across LA County (LACCSO, 2021).

Drought vulnerability can be exacerbated by single-source dependency, increased groundwater contamination risk, water from small service providers, and location in areas with a projected increase in extreme heat days. Decreases in precipitation, from drought, and evaporation, caused by higher temperatures, may increase the concentration of pollutants and salinity in streams, reservoirs, and groundwater. More frequent and intense periods of drought could reduce the availability of imported water and drive an increasing use of groundwater. If not managed sustainably, groundwater overdrafts can permanently diminish aquifer capacity (LACCSO, 2021).

### *Local Exposure/Environment*

Potable water is provided to the City by California American Water Company. According to California American Water, the City is served entirely by groundwater sources from the main San Gabriel Basin (EPC, 2019). The California American Water Company also supplies water to service fire hydrants via underground pipes (General Plan, 2014). In order to replace aging infrastructure and improve water delivery service, California American Water upgraded 13,300 feet of water distribution mains in the cities of Bradbury, Duarte, and the Baldwin Hills area in unincorporated Los Angeles County in 2013 (EPC, 2019).

There is no history of severe drought (e.g., restaurants with restricted hours, emergency water distribution to residents, etc.) within the City of Bradbury. However, the City is designated on the U.S. Drought Monitor as experiencing an "exceptional drought". This designation comes from a combination of a significant decrease in rain combined with water supply restrictions resulting from the statewide California drought. These conditions were increasingly evident from 2012 to early in 2017 (EPC, 2019).

*Table 3* shows the differences in maximum dry spell lengths in Bradbury from Baseline measurements to predicted future variations. The Baseline scenario states that the 30-year average length of a dry spell was approximately 110 days. Dry spells are predicted to increase to six to eight days over Baseline conditions by the middle of the century (2035-2064), and seven to 15 days by the end of the century (2070-2099).

Table 3: Maximum Length of Dry Spell

Time Period	Scenario	30yr Average	30yr Range	Change from Baseline
Baseline (1961-1990)	Modeled Historical	108 days	95-120 days	-
Mid-Century (2035-2064)	Medium Emissions (RCP 4.5)	116 days	88–145 days	+8 days
	High Emissions (RCP 8.5)	114 days	81-143 days	+6 days
End of Century (2070-2099)	Medium Emissions (RCP 4.5)	115 days	93-133 days	+7 days
	High Emissions (RCP 8.5)	123 days	77–162 days	+15 days

Source: Cal-Adapt. Accessed October 7, 2022. Available at <https://cal-adapt.org/tools/local-climate-change-snapshot/>

\* Observed 30-year average from 1961 to 1990: 110 days

### Who is Most Vulnerable?

Extreme drought (and heat) decreases soil moisture and increases plant mortality. Plant die-offs cause a domino effect by reducing available shade and evaporative cooling, thereby raising surrounding temperatures and reducing the thermal comfort of pedestrians. The generally undeveloped ranch lands found throughout the City would be subject to impacts from drought conditions, and therefore contribute to the domino effect of reducing cooling and moisture retention.

People with pre-existing respiratory conditions are extremely vulnerable. In the absence of rainfall during prolonged periods of drought, the region could experience increased concentrations of resuspended road particulates (dust), which have adverse respiratory impacts (Hall, et al. 2018).

Another impact of drought on people in LA County is the increasing prevalence of Valley fever. Valley fever is a disease caused by inhaling fungus spores carried in soil dust. Arid and semiarid landscapes, dust storms, and warmer temperatures all contribute to conditions that lead to increases in Valley fever. The number of reported cases of Valley fever in California has steadily and significantly increased over the past 20 years. Populations at greater risk of severe disease from Valley fever include people who are Black or Filipino, older adults, pregnant women, infants, and people with diabetes or conditions that weaken the immune system. People who live or work in areas where soil is disturbed, such as near farming operations, are at higher risk of exposure (LACCSO, 2021).

Potential drought hazards can be curbed through proactive water management. Noting that all water used within the City is sourced from groundwater, water consumption, whether it be for personal, recreational, or agricultural use, must be used at a sustainable rate. To help protect this resource, Bradbury can enact varying water restrictions. Some water restrictions in place in other cities and counties in California include personal and individual restrictions and limitations or increased cost. Other restrictions are designed to limit commercial and industrial water use and water waste.

## Wildland Fire

### *What is it?*

As California is expected to experience increased temperatures and reduced precipitation, there will likely be more frequent and intense wildfires and longer fire seasons. Fires spread more quickly on dry, windy days and move more easily in an uphill direction and in areas with higher-density vegetation. Wildfires are a natural and important part of the ecosystem but can become more intense and dangerous as a result of climate change and land management. Wildfires are unplanned, naturally occurring fires and may be caused by lightning, accidental human ignitions, arson, or escaped prescribed fires. Weather is one of the most significant factors in determining the severity of fires; natural fire patterns are driven by conditions such as drought, temperature, precipitation, wind, vegetation, and fuel (i.e. biomass) availability. Wildfires pose a great threat to life and property, particularly when they move from forest or rangeland into developed areas.

Climate change is projected to increase the frequency of wildfire events, the extent of burned areas across California, and the duration of wildfire seasons. Wildfire seasons are projected to begin earlier in the spring due to drier and warmer spring conditions on average, potentially requiring longer periods for firefighting services. Greater inter-annual variability in temperature and precipitation may also affect wildfire intensity. For example, multiple wet years can result in larger fuel buildup in landscapes. This may result in increasingly intense and frequent wildfires, if followed by drought years. Wildfire risk will also vary depending on population growth and land use characteristics, including rates of residential expansion and infrastructure into fire prone areas over the next century.

### *Local Exposure/Environment*

Bradbury's location at the base of the San Gabriel Mountains creates a wildland-urban interface that makes Bradbury more susceptible to wildfires than cities that do not border the foothills. In fact, due to its weather, topography, and native vegetation, the majority of Los Angeles County is at risk from wildland fires (EPC, 2019). The San Gabriel Mountains, largely covered by the Angeles National Forest, have the highest degree of wildfire risk. On average, the San Gabriel Mountains are projected to experience an increase in wildfire burn area of approximately 40 percent and 50 percent in 2050 and 2080, respectively, under the RCP 8.5 scenario. By mid-century, wildfire events in LA County and across the state are projected to be considerably larger, more frequent, and more destructive (LACCSO, 2021).

The extended droughts characteristic of California's Mediterranean climate result in large areas of dry vegetation that provide fuel for wildland fires. Furthermore, the native vegetation of the region typically has a high oil content that makes it highly flammable. The area is also intermittently impacted by Santa Ana winds – the hot, dry winds that blow across southern California in the spring and late fall (EPC, 2019).

The State has charged CAL FIRE with the identification of Fire Hazard Severity Zones (FHSZ) within State Responsibility Areas. In addition, CAL FIRE must recommend Very High Fire Hazard Severity Zones identified within any Local Responsibility Areas (LRAs). The FHSZ maps are used by the State Fire Marshall as a basis for the adoption of applicable building code standards. [Figure 2](#) shows Fire Hazard Severity Zones within Bradbury (CAL FIRE, 2022). [Figure 2](#) illustrates that a majority of the City is considered to be within a Very High Fire Hazard Severity Zone; the VHFHSZ covers nearly all of the City of Bradbury, with the exception of the southeast and southwest corners of the City. The LACoFD is the responsible agency for fire protection within the City's VHFHSZ and follows the CAL FIRE VHFHSZ designation. The City abuts lands where the responsibility for fire protection lies with the Federal or State of California (FRA or SRA)

(Dudek, 2022). The closest fire station to the City is LA County Fire Department Station #44; it is located less than one mile (approximately 0.5 miles) directly south of Bradbury, in the City of Duarte.

The City and the surrounding landscape exhibit a complex wildfire environment that presents a significant risk to public and firefighter safety and the built and natural environment. This region of the San Gabriel Mountains has been subject to numerous damaging wildland fires, is influenced by local extreme wind and weather conditions (including Santa Ana wind events), has steep and varied terrain with a mosaic of different vegetation types, and is characterized by wildland-urban interface (WUI) development patterns that can exacerbate wildfire risk (Dudek, 2022).

The wildland-urban interface area of Bradbury runs across the entire north border of the City and includes populated residential properties. Almost all streets north of Royal Oaks Drive North in the City are considered to be in the Very High Fire Severity Hazard Zone and are at significant risk in the event of a wildland fire. Areas in the southern and western portions of the City are within the Moderate and/or High Fire Hazard Zone (EPC, 2019).

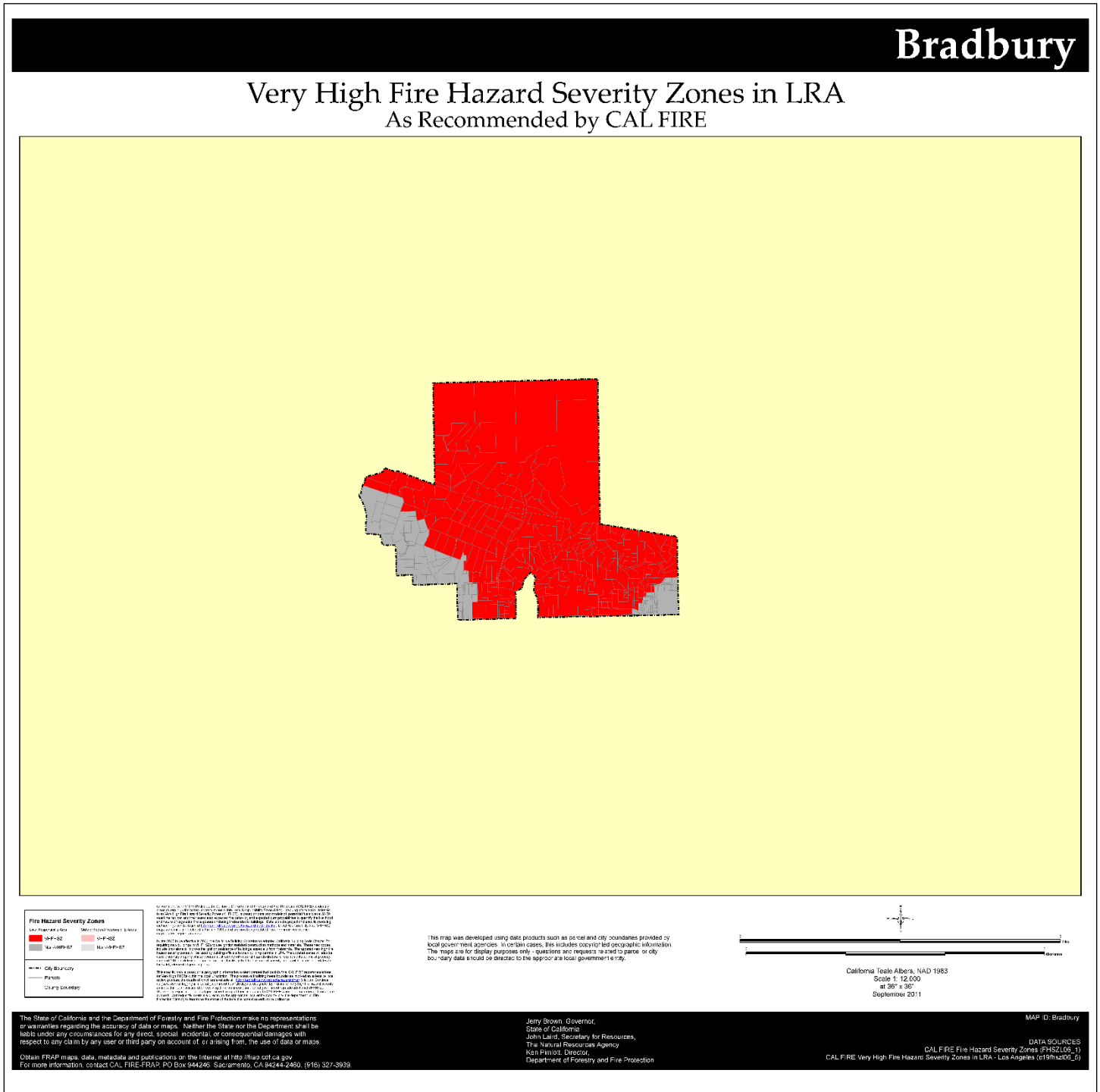
*Table 4* projects the average annual area burned over the next century in Bradbury. As shown, the City is expected to burn approximately four to ten acres more during the middle of the century (2035-2064) compared to the Baseline acreage. Similarly, the end of the century expects to see approximately the same number of acres (an additional seven to nine acres compared to the Baseline averages) burn.

*Table 4: Average Annual Area Burned*

Time Period	Scenario	30yr Average	30yr Range	Change from Baseline
Baseline (1961-1990)	Medium Emissions (RCP 4.5)	64.6 acres	59.4-67.0 acres	-
	High Emissions (RCP 8.5)	60.7 acres	54.9-62.8 acres	-
Mid-Century (2035-2064)	Medium Emissions (RCP 4.5)	68.5 acres	62.9-75.8 acres	+3.9 acres
	High Emissions (RCP 8.5)	70.8 acres	60.9-77.4 acres	+10.1 acres
End of Century (2070-2099)	Medium Emissions (RCP 4.5)	72.0 acres	68.7-77.0 acres	+7.4 acres
	High Emissions (RCP 8.5)	69.7 acres	63.3-74.2 acres	+9.0 acres

Source: Cal-Adapt. Accessed October 7, 2022. Available at <https://cal-adapt.org/tools/local-climate-change-snapshot/>

Figure 2: Very High Fire Hazard Severity Zones in Bradbury



Source: CAL FIRE, 2022.



It is crucial that transportation routes are able to safely and effectively operate in times of emergency. The City of Bradbury is comprised of 3.2 miles of public streets and privately owned and maintained roads, and does not intersect with any major freeways or highways. The nearest freeway access to the City includes the Mt Olive Drive/Huntington Drive ramps at the I-605/I-210 freeway interchange. Additional freeway access is provided by the Buena Vista Street and Mountain Avenue off-ramps on the I-210 freeway. The principal east-west major roadway that serves the City of Bradbury is Huntington Drive located in the City of Duarte, one-quarter mile to the south. This highway has an interconnected system of traffic signals which provides and maintains an efficient and reasonable flow of traffic. Royal Oaks Drive, an east-west secondary highway, is located at the City's southerly boundary (EPC, 2019).

### *Who is Most Vulnerable?*

Vulnerable populations include those that live within the Fire Hazard Severity Zones. As depicted in [Figure 1](#), nearly all land within Bradbury city limits is considered to be a Very High Fire Hazard Severity Zone. Almost all streets north of Royal Oaks Drive North in the City are considered to be in the VHFHSZ and are at significant risk in the event of a wildland fire. Further, areas in the southern and western portions of the City are considered a Moderate and/or High Fire Hazard Zone (EPC, 2019). Safe and adequate evacuation plans are crucial to ensuring that impacts are as minimal as possible. Individuals with physical disabilities or who live in isolation may have difficulty evacuating. The popular ranch-lifestyle found throughout Bradbury indicates that residents own several animals that are oftentimes larger, such as horses. Larger animals require equipment, such as trailers, for safe transportation. Ranch and farm equipment is often larger, heavier, and slower than a standard vehicle. When planning and preparing emergency evacuation operations, these factors must be taken into account.

Wildfires are big contributors to air pollution in the western United States and are responsible for an estimated 70 percent of PM 2.5 emissions during periods when fine particulate matter pollution levels are above the EPA standard. Wildfire-generated particulate matter are linked to respiratory complications like asthma, chronic obstructive pulmonary disease, pneumonia, bronchitis, and other infections. Wildfire can have grave impacts on people's livelihoods, homes, and health (LACCSO, 2021). Especially vulnerable people include individuals with pre-existing health conditions, such as asthma, who are more sensitive to hazardous air. The percentage of people diagnosed with asthma in Bradbury is similar to the rates in LA County; approximately 17 percent of Bradbury residents 18 years and older and 16 percent of LA County residents 18 years and older have been diagnosed with asthma at some point in their lives.

Wildfire smoke can travel great distances and affect people far from a wildfire's location (LACCSO, 2021). Bordering areas are highly prone to wildfires, and therefore the City is exposed to a threat from wildfires originating outside the City (EPC, 2019). Starting in 2008, the State of California began integrating wildfire protections and material requirements into building codes to ensure that newly constructed buildings or major renovations meet certain safety standards. Although these code requirements do not nullify the potential risks, these standards minimize the potential impacts on a building and its occupants. Communities in LA County with high wildfire exposure and old buildings have high risk of wildfire damage. These include Bradbury, Azusa, Glendora, Arcadia, Monrovia, and Sierra Madre – all communities along the San Gabriel Valley foothills (LACCSO, 2021).

In addition to personal impacts, wildfires can cause major community-wide disturbances, like evacuations, power outages, economic losses, road and school closures, losses to biodiversity and the natural

environment, and disruptions to recreational activities (LACCSO, 2021). Vulnerable infrastructure includes energy infrastructure (fires in other areas could cause damage to power plants or power lines causing blackouts), communications, and water (water quality reduced due to ash, etc.). Natural habitats and plants and animals are extremely vulnerable to wildfires; the foothills and open spaces found in, and surrounding, the City provide homes to plant and animal species, which are susceptible to fire hazards. Plant and animal life is at an even higher risk due to the fact that Bradbury is a wildland-urban interface.

## Windstorm

### *What is it?*

The combination of windspeed, topography, climate, and temperature can create deadly impacts under the right conditions. Hazardous wind events can include windstorms, tornados, or microbursts.

Tornadoes are spawned when there is warm, moist air near the ground, cool air aloft, and winds that speed up and change direction. An obstruction, such as a house, in the path of the wind causes it to change direction. This change increases pressure on parts of the house, and the combination of increased pressures and fluctuating wind speeds creates stresses that frequently cause structural failures (EPC, 2019).

Unlike tornados, microbursts are strong, damaging winds which strike the ground and often give the impression a tornado has struck. They frequently occur during intense thunderstorms. The origin of a microburst is downward moving air from a thunderstorm's core. But unlike a tornado, they affect only a small area (EPC, 2019). When the microburst wind hits an object on the ground such as a house, garage, or tree, it can flatten the buildings and strip limbs and branches from the tree. After striking the ground, the powerful outward running gust can wreak further havoc along its path. Damage associated with a microburst is often mistaken for the work of a tornado, particularly directly under the microburst. However, damage patterns away from the impact area are characteristic of straight-line winds rather than the twisted pattern of tornado damage. Tornados, like those that occur every year in the Midwest and Southeast parts of the United States, are a rare phenomenon in most of California with most tornado-like activity coming from microbursts (EPC, 2019).

### *Local Exposure/Environment*

Strong winds and topography of the area create the regional Santa Ana winds, which can result in disaster conditions, the most common being fire fanned by the high winds. These winds commonly occur between October and February, with December having the highest frequency of events. Summer events are rare. A Santa Ana wind event manifests as a dry northeasterly wind originating from the Great Basin and upper Mojave Desert. As the wind channels through the mountain passes and canyons of Southern California, the wind velocity increases. Wind speeds are typically 35 knots through and below passes and canyons with gusts to 50 knots. Stronger Santa Ana winds have gusts greater than 60 knots over widespread areas, and gusts greater than 100 knots in favored areas. Frequently, the strongest winds occur during the night and morning hours due to the absence of a sea breeze. The sea breeze, which typically blows onshore daily, can moderate the Santa Ana winds during the late morning and afternoon hours. Santa Ana winds are an important forecast challenge because of the high fire danger associated with them – with Santa Ana winds driving wildfire flames, the speed and reach of the flames is greater than in times of calm wind conditions (EPC, 2019).

Based on local history, most incidents of high wind in the City of Bradbury are the result of the Santa Ana and El Niño related wind conditions. While high impact wind incidents are not frequent in the area, significant wind events and sporadic tornado activity have been known to negatively impact the City (EPC, 2019).

Severe windstorms pose a significant risk to life and property in the City of Bradbury by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. High winds can and do occasionally cause tornado-like damage to local homes and businesses in and near the community. High winds have destructive impact, especially to trees, power lines, and utility services (EPC, 2019).

A windstorm in late November 2011, which caused winds in excess of 90 mph in the Pasadena, Sierra Madre, Arcadia, Monrovia, and Bradbury area, downed trees and resulted in extended power and utility outages. Based on previous windstorm history, it is not difficult to assume that a future windstorm event could generate similar damage. It is also possible that a strong Santa Ana wind condition could cause substantial damage in the City of Bradbury (EPC, 2019).

#### *Who is Most Vulnerable?*

Windstorms can affect the air quality of the general region. Strong winds can stir up dust, pollen, pollutants, and particulate matter. People with sensitive respiratory systems, or diseases such as asthma, can be put at greater risk for health complications due to strong wind events.

Windstorms damage buildings, power lines, and other property and infrastructure typically due to falling trees and branches. During wet winters, saturated soils cause trees to become less stable and more vulnerable to uprooting from high winds. When severe windstorms strike a city, downed trees, power lines, and damaged property can be major hindrances to emergency response and disaster recovery. Historically, falling trees are the major cause of power outages in the region. Windstorms such as strong microbursts and Santa Ana wind conditions cause flying debris and downed utility lines. Falling trees bring electric power lines down to the pavement, creating the possibility of lethal electric shock (EPC, 2019).

Structures with weak reinforcement, or structures that are older, are susceptible to damage from strong wind events. Wind pressure creates a direct and frontal assault on a structure, pushing walls, doors, and windows inward. Conversely, passing currents create lift suction forces that pull building components and surfaces outward. With extreme wind forces, the roof or entire building can fail causing considerable damage (EPC, 2019). Since approximately 65 percent of the existing housing stock in Bradbury was built prior to 1990, these units may be more susceptible to extreme wind conditions. Ensuring all new development, redevelopment, and retrofitting projects adhere to the most up to date State Building Codes and follow City development standards regarding slopes (Municipal Code Chapter 97, *Hillside Development Standards*), chances of hazardous impacts from windstorms decrease.

## C. Key Findings

The key findings for Bradbury are summarized below to assist in increasing the City's adaptive capacity.

- Climate change has the potential to increase the severity of various natural hazards and impacts in the City of Bradbury.
- Wildland fires represent the threat most likely to affect Bradbury as a result of climate change. While most likely to ignite within the CAL FIRE FHSZs, the effects of wildfire can adversely impact larger areas, cascading out towards the entirety of Bradbury and the surrounding cities, with smoke, ash, and poor air quality.
- The most vulnerable populations are those living in or adjacent to Very High FHSZs within the City. Other vulnerable populations include seniors and people with pre-existing health conditions such as asthma.
- The most vulnerable natural areas are the sensitive hillside areas (and wildlife within these environments) located in the northern portion of the City, which are within the Very High Fire Hazard Severity Zone. This largely undeveloped area contains the most open space and natural landscape in the City and consists of high amounts of often dry foliage that is highly susceptible to fires. As prolonged dry spells are predicted to lengthen, plants, animals, and habitats that receive less and less water are more likely to burn from wildfire, leave the area, or die out from lack of resources.
- The most vulnerable infrastructure are power and energy infrastructure, as well as homes (and businesses) within and bordering the Very High FHSZs. Extreme weather and heat conditions can increase the risk of fires, which can lead to the destruction of energy infrastructure such as power lines that are located in more remote (and more fire prone) areas. Since energy grids are interconnected and provide energy throughout the region, large parts of the Southern California population are expected to be impacted by distant fires or power outages. Closely located infrastructure, i.e. neighborhood homes within and bordering FHSZs can suffer brutal impacts, and possibly even total destruction.
- Regional drought is also a key hazard to Bradbury as the City is served entirely by groundwater sources from the main San Gabriel Basin. Drought may also result in increased tree mortality, which contributes to higher fuel loading and wildfire size and severity. As expected with climate change, droughts are expected to increase both in frequency and intensity.

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## Appendix A: Regulatory Setting

### State

#### California Air Resources Board

The California Air Resources Board is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), which was adopted in 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain the California Ambient Air Quality Standards by the earliest practical date. The act specifies that districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources and provides districts with the authority to regulate indirect sources.

#### California Strategic Fire Plan

This statewide plan guides fire policy for much of California. The plan is aimed at reducing wildfire risk through pre-fire mitigation efforts tailored to local areas. The most recent update is the 2018 Strategic Fire Plan. The 2018 Plan reflects CAL FIRE's focus on: 1) fire prevention and suppression activities to protect lives, property, and ecosystem services; and 2) natural resource management to maintain the state's forests as a resilient carbon sink to meet California's climate change goals and to serve as important habitat for adaptation and mitigation. There are also Unit Fire Plans produced under the Strategic Fire Plan that are localized to a county or region; the City of Bradbury falls under the Los Angeles County Fire Department Strategic Fire Plan.

#### State Water Resources Control Board/Regional Water Quality Control Board

In California, all wastewater treatment and disposal systems fall under the overall regulatory authority of the State Water Resources Control Board (SWRCB) and the nine California Regional Water Quality Control Boards (RWQCBs), who are charged with the responsibility of protecting beneficial uses of State waters from a variety of waste discharges, including wastewater from individual and municipal systems. The City of Bradbury falls within the jurisdiction of the Los Angeles Regional Water Quality Control Board (Regional Board 4).

The RWQCBs' regulatory role often involves the formation and implementation of basic water protection policies. These are reflected in the RWQCBs' Basin Plans, generally in the form of guidelines, criteria, and prohibitions related to the siting, design, construction, and maintenance of on-site sewage disposal systems.

#### State Water Board Storm Water Strategy

The Storm Water Strategy is founded on the results of the Storm Water Strategic Initiative, which serves to direct the State Water Board's role in storm water resources management and involves the Storm Water Program by: a) developing guiding principles to serve as the foundation of the Storm Water Program; b) identifying issues that support or inhibit the program from aligning with the guiding principles; and c) proposing and prioritizing projects that the Water Board could implement to address those issues. The State Water Board staff created a document called the Strategy to Optimize Resource Management of Stormwater (STORMS). STORMS includes a program vision, mission, goals, objectives, projects,

timelines, and consideration of the most effective integration of project outcomes into the Water Board's Storm Water Program.

#### Urban Water Management Planning Act

The Urban Water Management Planning Act's main objectives are the management of urban water demands and the efficient use of urban water. Under its provisions, every urban water supplier is required to prepare and adopt an urban water management plan. The plan must identify and quantify the existing and planned sources of water available to the supplier, quantify the projected water use for a period of 20 years, and describe the supplier's water demand management measures.

#### California Department of Public Health

The Department of Public Health contains the Division of Radiation Safety and Environmental Management (DRSEM), which is divided into three branches: the Radiologic Health Branch, the Environmental Health Branch, and the Drinking Water and Radiation Laboratory Branch. The Radiologic Health Branch enforces the laws and regulations designed to protect the public, radiation workers, and the environment. The Environmental Management Branch regulates the medical waste industry and recreational health (public swimming pools, ocean beaches, and organized camps); provides sanitary surveillance of state institutions; administers the Registered Environmental Health Specialist (REHS) program; oversees radiological cleanup at military base closure facilities; and coordinates the State's Indoor Radon Program, the Medical Waste Management Program, and California Department of Public Health's Nuclear Emergency Response Program. The Drinking Water and Radiation Laboratory Branch is the State's primary drinking water quality testing laboratory and is the state laboratory capable of measuring chemical, microbiological, and radiochemical contaminants in drinking water and drinking water supplies.

#### California Water Code

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and each of the Regional Water Quality Control Boards (RWQCBs) power to protect water quality and is the primary vehicle for implementation of California's responsibilities under the Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a Water Quality Control Plan (Basin Plan) for its region. The regional plans conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.



## California Building Code

The California Building Standards Code (CBSC) (California Code of Regulations, Title 24) is a statewide standard that is updated every three years, with the most recent update being in 2019. The CBSC is a compilation of three types of building standards from three different origins:

- Building standards that were adopted by state agencies without change from national model building codes;
- Building standards that were adopted from national model codes but modified to address California specific conditions;
- Building standards, authorized by the California legislature, that constitute amendments not covered by national model codes, that were created to address particular California concerns.

The CBSC specifies materials requirements, construction methods, and maintenance standards for earthquake protection and resiliency. All building occupancies in California are subject to national model codes adopted into the CBSC, and occupancies are further subject to amendments adopted by state agencies. State law also authorizes local governments to enact ordinances making building standards amendments to the CBSC to address local conditions. The law includes specific requirements for the basis for a local amendment, how the amendment language and documents must be prepared, and how the amendment must be filed with either the CBSC, the California Department of Housing and Community Development, or other state agencies as required. The City of Bradbury adopted the 2019 CBSC into the City Municipal Code under Section 17.01.010, *Adoption of Building Code*, of Title 17, *Building Regulations*.

## California Fire Code

The California Fire Code, as a part of Title 24, California Code of Regulations, establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises, and to provide safety and assistance to fire fighters and emergency responders during emergency operations. The provisions of this code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the State of California. The City of Bradbury has adopted the California Fire Code into Title 4, *Public Safety*, Chapter 3, *Fire Code*, of the Municipal Code.

## Wildfire Protection Responsibility in California

Local, state, tribal, and federal organizations all have legal and financial responsibility for wildfire protection. In many instances, two fire organizations have dual primary responsibility on the same parcel of land – one for wildfire protection and the other for structural fire protection. To address wildfire jurisdiction responsibilities, in 1981 the California State Legislature outlined various wildfire responsibilities, described below, in Cal. Pub. Res. Code § 4291.5 and Cal. Health & Safety Code § 13108.5.

### **Federal Responsibility Areas (FRAs)**

FRAs are fire-prone wildland areas that are owned or managed by a federal agency such as the U.S. Forest Service, National Park Service, Bureau of Land Management, U.S. Fish and Wildlife Service, or U.S.

Department of Defense. Primary financial and rule-making jurisdiction authority rests with the federal land agency. In many instances, FRAs are interspersed with private land ownership or leases. Fire protection for developed private property is usually the responsibility of the relevant local government agency, not the federal land management agency.

### ***State Responsibility Areas (SRAs)***

SRAs are lands in California where the California Department of Forestry and Fire Protection (CAL FIRE) has legal and financial responsibility for wildfire protection. CAL FIRE administers fire hazard classifications and establishes development and building standard regulations in these areas. SRAs are defined as lands that:

- Are in the unincorporated county areas
- Are not federally owned
- Have wildland vegetation cover rather than agricultural or ornamental plants
- Have row crops or seasonal crops, or
- Have watershed, range, or forage values

CAL FIRE adopts SRA boundaries and updates them every five years. Where SRAs contain structures or development, the relevant local government agencies have fire protection responsibility for those improvements.

### ***Local Responsibility Areas (LRAs)***

LRAs include land in cities, cultivated agriculture lands, unincorporated non-flammable areas, and lands that do not meet the criteria for SRA or FRA. LRA fire protection is typically provided by city or county fire departments, fire protection districts, or by CAL FIRE under contract to local governments. LRAs may include areas of flammable vegetation and WUI.

**The City of Bradbury’s VHFHSZ is a Local Agency VHFHSZ, as defined, and the City is considered an LRA. The LACoFD is the responsible agency for fire protection within the City’s VHFHSZ. The City abuts lands where the responsibility for fire protection lies with the Federal or State of California (FRA or SRA). The City released a Community Wildfire Protection Plan in August of 2022.**

### [Alquist-Priolo Earthquake Fault Zoning Act and Seismic Hazards Mapping Act \(1972\)](#)

The 1971 San Fernando Earthquake resulted in the destruction of numerous structures built along its fault. This led to passage of the Alquist-Priolo Earthquake Fault Zoning Act in 1972. This Act prohibits the construction of buildings for human occupancy across active faults in the state. Similarly, extensive damage caused by ground failure during the 1989 Loma Prieta Earthquake focuses attention on decreasing the impacts of landslides and liquefaction. This led to the creation of the Seismic Hazards Mapping Act (1990), which enhances construction standards at locations where ground failures are probable during earthquakes.

### [Senate Bill 610 and Assembly Bill 901 \(2001\)](#)

SB 610 and AB 901 both modify the Urban Water Management Planning Act. SB 610 requires additional information in an urban water management plan if groundwater is identified as a water source supplier.

It also requires that the plan include a description of all water supply projects and programs that may be undertaken to meet total projected water use. SB 610 also requires a city or county that determines a project is subject to CEQA to identify any public water system that may supply water to the project and to request identified public water systems to prepare a specified water supply assessment. The assessment must include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and water received in prior years pursuant to these entitlements, rights, and contracts.

AB 901 requires an urban water management plan to include information, to the extent practicable, relating to the quality of existing sources of water available to an urban water supplier over a given period of time. AB 901 also requires information on how water quality affects water management strategies and supply reliability. The bill requires plans to supplement a water source that may not be available at a consistent level of use, to the extent practicable. Additional findings and declarations relating to water quality are required.

#### [California Oak Woodland Conservation Act \(2001\)](#)

The California Legislature passed Assembly Bill 242, known as the California Oak Woodland Conservation Act, in 2001 as a result of widespread changes in land use patterns across the landscape that were fragmenting oak woodland character over extensive areas. The Act created the California Oak Woodland Conservation Program within the Wildlife Conservation Board. The legislation provides funding and incentives to ensure the future viability of California's oak woodland resources by maintaining large scale land holdings or smaller multiple holdings that are not divided into fragmented, nonfunctioning biological units. The Act acknowledged that the conservation of oak woodlands enhances the natural scenic beauty for residents and visitors, increases real property values, promotes ecological balance, provides habitat for over 300 wildlife species, moderates temperature extremes, reduces soil erosion, sustains water quality, and aids with nutrient cycling, all of which affect and improve the health, safety, and general welfare of the residents of the state.

#### [Assembly Bill 1007 \(2005\)](#)

Assembly Bill 1007 (Pavley, Chapter 371, Statutes of 2005) directs the California Energy Commission (CEC) to prepare a plan to increase the use of alternative fuels in California. As a result, the CEC prepares the State Alternative Fuels Plan in consultation with state, federal, and local agencies. The plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The plan assesses various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

#### [California Executive Order S-3-05 \(2005\)](#)

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by 2020, and 3) 80% below 1990 levels by 2050. While two of the benchmark years have passed, the City of

Bradbury, along with the rest of the state, can still aim to reduce GHG emissions 80% below the 1990 levels by the year 2050.

#### Assembly Bill 32 and Executive Order S-20-06 (2006)

In 2006, California adopted Assembly Bill (AB) 32, the Global Warming Solutions Act, as an effort to address the effects of climate change and help reach the goals presented in Executive Order S-3-05. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve “real, quantifiable, cost-effective reductions of greenhouse gases.”

Executive Order S-20-06 further directs State agencies to begin implementing AB 32, including the recommendations made by the State’s Climate Action Team.

#### Bioenergy Action Plan – Executive Order S-06-06 (2006)

Executive Order S-06-06 establishes targets for the use and production of biofuels and biopower. The order also directs State agencies to work together to advance biomass programs while providing environmental protection and mitigation. The executive order establishes targets to increase production and use of ethanol and biodiesel fuels by a minimum of 20% by 2010, 40% by 2020, and 75% by 2050. Additionally, the executive order sets targets for the state related to the use of biomass electricity and cogeneration facilities.

#### Senate Bill 375 (2008)

California’s Sustainable Communities and Climate Protection Act of 2008 (SB 375) requires transportation agencies to develop a regional “Sustainable Communities Strategy” of land use, housing, and transportation policies that will move the region towards meeting the GHG reduction target set by the CARB. On September 3, 2020, the Southern California Association of Governments (SCAG), the metropolitan planning organization responsible for Bradbury and surrounding regions, adopted Connect SoCal (2020-2045 Regional Transportation Plan/Sustainable Communities Strategy), which sets forth a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals.

#### Assembly Bill 162 (2009)

This bill requires, upon the next revision of the housing element, on or after January 1, 2009, the Conservation Element of the General Plan to identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for purposes of groundwater recharge and stormwater management. By imposing new duties on local public officials, the bill creates a state-mandated local program.

This bill also requires, upon the next revision of the housing element, on or after January 1, 2009, the safety element to identify, among other things, information regarding flood hazards and to establish a set of comprehensive goals, policies, and objectives, based on specified information for the protection of the community from, among other things, the unreasonable risks of flooding.

### Assembly Bill 341 California's Mandatory Commercial Recycling Law (2012)

The purpose of AB 341 is to reduce GHG emissions by diverting commercial solid waste to recycling efforts and to expand the opportunity for additional recycling services and recycling manufacturing facilities in California.

### California Sustainable Groundwater Management Act (2014)

On September 16, 2014, Governor Brown signed into law a package of bills (SB 1168, AB 1739, and SB 1319) collectively called the Sustainable Groundwater Management Act. The Act requires local governments and water agencies with high and medium priority groundwater basins to halt overdraft and bring basins into sustainable levels of pumping and recharge. For each basin, local agencies are required to form new groundwater sustainability agencies and prepare groundwater sustainability plans with quantifiable objectives for achievement of sustainability within 20 years.

### Senate Bill 379 (2015)

SB 379 revises Government Code Section 65302(g)(4) to require cities and counties to update their safety elements to address climate adaptation and resiliency strategies applicable to their jurisdiction. The updates are required at the next update of their local hazard mitigation plan (LHMP) on or after January 1, 2017. Local jurisdictions without an LHMP must update their safety elements beginning on or before January 1, 2022. The safety element update must include:

- A vulnerability assessment identifying the risks that climate change poses to the local jurisdiction
- A set of goals, policies, and objectives based on a vulnerability assessment for the protection of the community
- A set of feasible implementation strategies to carry out the goals, policies, and objectives

### Statewide Emergency Water Conservation Regulations (2016)

In 2016, the State Water Resources Control Board (SWRCB) adjusted emergency water conservation regulations in recognition of the differing water supply conditions and ongoing drought across the state to comply with the Governor's executive order declaring a drought emergency.

Executive Order B-37-16, Making Water Conservation a California Way of Life, updates temporary emergency water restrictions and transitions to permanent, long-term improvements in water use by:

- Providing for wiser water use
- Eliminating water waste
- Strengthening local drought resilience
- Improving agricultural water use efficiency and drought planning

In April 2017, a new Executive Order lifted the drought emergency, but retained many of the conservation requirements. Most regulations are still in effect except for water supply "stress test" requirements and conservation standards for urban water suppliers. The temporary restrictions established a baseline of the types of benefits that are possible from water conservation requirements.

### Senate Bill 1383 (2016)

In September 2016, Governor Brown signed SB 1383, Short-Lived Climate Pollutants: Organic Waste Methane Emissions Reductions, establishing methane emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants (SLCP) in various sectors of California's economy. The bill codifies the CARB's SLCP Reduction Strategy, established pursuant to SB 605 (2014), in order to achieve reductions in the statewide emissions of short-lived climate pollutants. Actions to reduce short-lived climate pollutants are essential to address the many impacts of climate change on human health, especially in California's most at-risk communities, and on the environment.

### California State Hazard Mitigation Plan (2018)

The 2018 California State Hazard Mitigation Plan is the State's primary hazard mitigation guidance document. It seeks to help communities with their mitigation and disaster resiliency efforts to reduce or eliminate potential risks and impacts of natural and human-caused disasters. The 2018 plan was approved by the Federal Emergency Management Agency (FEMA) on September 28, 2018, and includes:

- An updated statewide risk assessment, disaster history, and statistics
- Recent mitigation progress, success stories, and best practices
- Updated State hazard mitigation goals, objectives, and strategies
- Updated climate mitigation progress and adaptation strategies

### California Water Plan (2018)

The California Water Plan is the State's strategic plan for sustainably managing and developing water resources for current and future generations. Required by Water Code Section 10005(a), it presents the status and trends of California's water-dependent natural resources; water supplies; and agricultural, urban, and environmental water demands for a range of plausible future scenarios. The plan is updated every five years, with the most recent update occurring in 2018.

## Local

### City of Bradbury General Plan 2012-2030

A variety of goals, policies, and actions contained in the existing City of Bradbury General Plan address climate change vulnerabilities. Specific goals, policies, and implementation actions found within the General Plan that are most related to climate change include:

#### *Land Use Element*

- **Goal 2:** Preserve the identity, image and environmental quality of the hillside and open space areas in perpetuity by enforcing the Hillside Development Standards.
  - **Objective 1:** To maintain the existing character of the community and to preserve those environmental resources and amenities that make the City of Bradbury a desirable place to live.
    - **Policy 1:** The residential character of the community and environmental resources important to the City will be maintained.

- **Action 1:** Encourage as much hillside preservation as possible through the use of conservation easements, acquisition efforts by conservation organizations or preservation as natural preserves that promote the protection of natural hillsides as open-space in perpetuity.
- **Action 3:** Revise the City’s Design Guidelines to promote sustainable building and development design alternatives.

*Community Resources Element – Open Space*

- **Goal 1:** Protect and enhance Bradbury’s Open-Space.
  - **Objective 1:** Make open-space resources available to existing and future residents.
  - **Objective 2:** Make open-space resources accessible without the need to use motorized transportation.
    - **Policy 1:** Protect and preserve oak woodlands and mandate replacement planting of native oaks where oak woodlands are proposed for alteration.
    - **Policy 2:** Protect water quality.
    - **Policy 3:** Mandatory replacement planting of native trees and oaks.
    - **Policy 4:** Protect existing Blueline Streams.
    - **Policy 5:** Prevention of soil erosion.
    - **Policy 6:** Preservation of historically or culturally significant sites.
    - **Policy 7:** Protect wildlife and their habitats, including rare and endangered species.
    - **Policy 8:** Protection of rare and endangered plants.
    - **Policy 9:** Promote development and management of public and private parks, trails and recreational areas.
      - **Action 1:** Protect water quality.
      - **Action 2:** Avoid drainage run-off where possible.
      - **Action 3:** Promote landscaping efforts that comply with State water efficient standards, fire department standards, and protection of plant and wildlife communities.
      - **Action 4:** Prevent soil erosion.
      - **Action 6:** Promote public acquisition of open-space land by non-profit land trusts or conservation organizations.
      - **Action 7:** Use Specific Plans to set aside open-space areas as part of development proposals.
      - **Action 8:** Explore the use of transferring development rights to create and preserve open-space.
      - **Action 9:** Explore grant financing opportunities to acquire and development pedestrian and equestrian trails.

*Community Resources Element – Conservation*

- **Goal 1:** Maintain a healthy and clean city.
- **Goal 3:** Protect the valuable watershed and natural habitat areas.
- **Goal 4:** Protect and maintain the local water supply to ensure that the City’s growing demand for water is properly accommodated.

- **Goal 5:** Protect Bradbury’s environment through the use of renewable energy resources.
- **Goal 7:** Regulate future surface streets to minimize impacting natural open-space areas.
- **Goal 8:** Ensure that development in the steep foothill area is sensitive to the local environment.
- **Goal 9:** Maintain Land Use policies that have minimal impact on existing air quality.
- **Goal 10:** Maximize efforts to reduce air pollution from mobile sources.
- **Goal 11:** Strive to achieve ambient levels of particulate matter to meet State and Federal clean air standards.
  - **Objective 2:** Provide adequate waste disposal systems and increase the use of compatible renewable energy resources.
  - **Objective 5:** Continue to develop a comprehensive NPDES plan that meets State standards.
    - **Policy 1:** Protect water bodies, watersheds and courses from development impacts.
    - **Policy 3:** Protect surface water resources from contamination.
    - **Policy 5:** Conserve water supplies (ground and surface).
    - **Policy 6:** Conserve riparian vegetation.
    - **Policy 7:** Conserve wildlife habitat and assist residents in living with wildlife.
    - **Policy 8:** Conserve oak woodlands
    - **Policy 10:** Control and prevent erosion.
    - **Policy 11:** Enforce preservation landscape design programs.
    - **Policy 12:** Protect sensitive plant species and their habitats.
    - **Policy 13:** Protect rare, threatened, or endangered species.
    - **Policy 14:** Explore the use of Habitat Conservation Plans and Natural Communities Conservation Programs.
    - **Policy 15:** Eliminate identified water pollution sources.
    - **Policy 16:** Improve major sewer, water, and storm drainage systems.
    - **Policy 17:** Control hazardous materials in areas where water pollution is possible.
    - **Policy 18:** Implement and maintain flood management facilities.
    - **Policy 19:** Protect natural resources
    - **Policy 20:** Protect and improve air quality through coordinated efforts with other public agencies and jurisdictions.
      - **Action 6:** Promote green waste and recycling programs such as “green and clean” which increases the usage of green waste for compost and reduces the amount of green waste exported.
      - **Action 10:** Create and maintain renewable energy guidelines for residents.
      - **Action 11:** Plan and schedule implementation for additional TMDLs.
      - **Action 12:** Plan for measures to control pollutants in surface runoff.
      - **Action 13:** Develop public education and outreach programs with regard to surface runoff, catch basin and storm drainage system maintenance.
      - **Action 14:** Implement procedures to detect and eliminate illegal discharges and illicit disposal practices.
      - **Action 17:** Provide community residents with information as to how to peacefully coexist with the natural wildlife inhabiting the area.



*Health and Safety Element – Safety*

- **Safety Goal 1:** To protect the citizens, their property and public facilities from natural and manmade hazards.
- **Safety Goal 2:** To establish, maintain, and develop awareness on the part of all residents of Bradbury as to how to react and protect themselves and each other, in the event of a natural or manmade hazard or disaster.
- **Safety Goal 4:** To minimize the risk to persons and property due to seismic activity.
- **Safety Goal 5:** To minimize the risk to lives and property due to fire hazards.
- **Safety Goal 7:** Protect the community from flood and landslides.
- **Safety Goal 8:** Assure that existing and new development addresses fire protection in a proactive and preventative way.
  - **Safety Objective 1:** Prepare the community for expected or unexpected disasters resulting from natural or manmade causes.
  - **Safety Objective 3:** Communicate with Bradbury residents through all available media that safety personnel are properly trained to provide assistance in the event of a disaster.
  - **Safety Objective 4:** Implement the City’s Hazard Mitigation Plan in a timely manner.
  - **Safety Objective 6:** Assure that potential flooding and landslide hazards are reviewed during new development.
  - **Safety Objective 7:** Ensure that adequate service levels of fire protection are maintained in the City.
    - **Safety Policy 2:** Implement precautionary measures in high risk areas to reduce injury and loss of property caused by natural or manmade hazards.
    - **Safety Policy 4:** Provide adequate levels of service to ensure that the residents are protected to the best of the City’s ability from natural and manmade disasters.
    - **Safety Policy 5:** Cooperate with Federal, State, and County agencies responsible for the enforcement of all health and safety laws and regulations.
    - **Safety Policy 9:** Support continuing review and updating of the City’s Disaster Preparedness Program manual.
    - **Safety Policy 11:** Maintain and evaluate the level of safety services available to the community.
    - **Safety Policy 13:** Continue to support “mutual assistance” agreements between local and State fire fighting agencies.
    - **Safety Policy 14:** Continue to support programs to reduce fire hazards within the community.
    - **Safety Policy 20:** Require that all new development incorporate sufficient measures to mitigate flood and landslide hazards including but not limited to on-site drainage systems and grading of site to minimize stormwater runoff.
      - **Safety Action 4:** Update the hillside development standards which include fire prevention design measures.
      - **Safety Action 5:** Continue to make emergency and disaster preparedness a community priority.
      - **Safety Action 6:** Update and review the Emergency Operation Plan annually.

- **Safety Action 7:** City staff to continue to work with the LACFD on brush removal and weed abatement from April to June.
- **Safety Action 10:** Maintain and update the multi-hazard emergency plan for the City.
- **Safety Action 11:** Continue support and participation with the Emergency Response Committee.

#### *Climate Action Plan*

The Climate Action Plan is incorporated into the existing General Plan. The relevant goals, policies, and actions of the Climate Action Plan are:

- **Goal 1:** Preserve the energy efficiency of existing housing units within the community.
- **Goal 2:** Move toward net zero energy development to minimize additional energy demand within the community.
- **Goal 3:** Integrate innovative and cost effective water conservation efforts into new and existing development to conserve energy used to pump, treat, and convey water.
- **Goal 4:** Optimize shading and cooling to reduce community-wide energy demand.
- **Goal 5:** Conserve energy and limited fiscal resources through energy efficiency and conservation improvements at the Civic Center.
  - **Objective 1:** Reduce dependence on nonrenewable energy resources.
  - **Objective 2:** Reduce energy consumption by City owned facilities and equipment.
  - **Objective 3:** Reduce energy consumption by all residential dwellings.
    - **Policy 1:** Annually monitor and report the City's progress toward achieving the reduction target.
    - **Policy 2:** Regularly review and update the City's Greenhouse Gas (GHG) inventory, energy profile and Energy Action Plan.
    - **Policy 3:** Continue to develop collaborative partnerships that support implementation of the Energy Action Plan.
    - **Policy 4:** Support regional funding efforts to implement the Energy Action Plan.
    - **Policy 5:** Promote the reduction of dependency on motor vehicles by encouraging the use of alternate transportation modes.
      - **Action 1:** Recognize homeowners that have implemented cost effective energy efficiency improvements.
      - **Action 2:** Encourage homeowner associations to support community energy efficiency efforts such as an annual neighborhood energy conservation competition.
      - **Action 3:** Provide a residential energy efficiency checklist that prioritizes actions by return on investment to interested homeowners.
      - **Action 4:** Provide incentives to encourage various homeowners to participate in an energy audit that can be used as a case study for others.
      - **Action 5:** Encourage homeowners to participate in utility funded energy efficiency programs and retrofits such as Energy Upgrade California.
      - **Action 6:** Provide new construction owners with educational materials and resources that assist with energy efficiency improvements.

- **Action 7:** Create and enforce outdoor lighting efficiency standards.
- **Action 8:** Explore group purchase programs to reduce the cost of purchasing energy-efficient appliances, lighting, or pool equipment.
- **Action 9:** Encourage the use of smart grid-integrated appliances to allow for programming to operate appliances remotely or when energy costs are at their lowest.
- **Action 10:** Encourage the use of variable speed drive pumps for pools and spas.
- **Action 11:** Work with adjacent and regional governmental entities to pursue funding for residential audits and retrofits.
- **Action 12:** Pursue grants or other financial sources to fund showcase home energy retrofits.
- **Action 13:** Consider including the policies of the model energy efficiency code and checklist, prepared by the San Gabriel Valley Council of Governments, into the City's zone code and design guidelines where feasible.
- **Action 14:** Utilize improvement to City facilities such as landscaping to demonstrate the effective use of appropriate water-efficient vegetation.
- **Action 15:** Encourage the water purveyor to provide water efficiency kits or other resources to City residents.
- **Action 16:** Encourage the use of recirculating water systems for decorative water features.
- **Action 17:** Promote the retention of natural vegetation and the rural character of the community.
- **Action 18:** Promote the use of cool roofs, light-colored paved surfaces, and permeable pavement in new and existing residential projects.
- **Action 19:** Conduct an audit of City facilities every five years to assure peak energy performance and identify new technologies or appliances to be installed as they become cost-effective.
- **Action 20:** Participate in the San Gabriel Valley Council of Government's utility manager program, the Enterprise Energy Management Information System, to regularly track energy use and identify cost-saving opportunities through sub-metering and energy management.

#### City of Bradbury Municipal Code

Title IV of the Municipal Code is dedicated to Public Safety. Chapter 3, *Fire Code*, within this Title includes the adoption of the most recent (2019) California Fire Code (Section 4.03.010, *Adoption of Fire Code*), violation infractions, and responsibilities of specific parties. Title IV also contains Chapter 4, *Emergency Preparedness*; the purposes of this chapter are to provide for the preparation and carrying out of plans within the City in the event of an emergency; the direction of the emergency organization; and the coordination of the emergency functions of the City with all other public agencies, corporations, organizations, and affected private persons. Further, Chapter 5, *Floodplain Management*, is included in this Title as well. Chapter 5 discusses development regulations and procedures when potential flood

hazards are present; Article III, *Provisions for Flood Hazard Reduction*, establishes standards for construction and proposed new development.

Title IX, *Development Code*, discusses all aspects of development, from administrative organization to development code definitions, to development permit procedures, to site planning. The purpose of the regulations contained in this Title is to classify, designate, regulate, and restrict the use of buildings, land, and structures, in order to permit the optimum use of land within the City; to serve the needs of residential, agricultural, water conservation, and other purposes within the City; to regulate and limit the height, number of stories, size, and location of buildings and other structures, hereafter designed, erected, or altered; to regulate the size of yards and open spaces; to regulate and limit the density of population; to facilitate adequate provisions for community utilities and facilities, such as transportation, water, sewage, schools, parks, and other public requirements; to lessen congestion on streets; and to promote the public health, safety, welfare, and general prosperity with the aim of preserving a wholesome, serviceable, and attractive community.

Title XV, *Street and Public Works*, contains Chapter 3, *Stormwater and Urban Runoff Pollution Prevention Measures*, and Chapter 4, *Stormwater and Urban Runoff Pollution Control*. The purpose of Chapter 3, *Stormwater and Urban Runoff Pollution Prevention Measures*, is to protect the health, safety, and general welfare of the citizens of the City by:

- (1) Regulating the discharge of non-stormwater fluids into the municipal stormwater drainage system;
- (2) Providing for the control of spillage, dumping, or disposal of contaminants, chemicals, or materials into the municipal stormwater drainage system; and
- (3) Reducing pollutants in stormwater and urban runoff to the maximum extent practicable.

This Chapter regulates illicit discharge, illicit disposal, construction sites that require a building permit, penalties warranted for failing to comply with the Chapter, and fees.

The purpose of Chapter 4, *Stormwater and Urban Runoff Pollution Control*, is to ensure the future health, safety, and general welfare of the citizens of the City and the water quality of the receiving water of the County and surrounding coastal areas. The objective of Section 15.04.120, *Stormwater pollution control measures for development planning and construction activities*, is to establish requirements for construction activities and facility operations of development and redevelopment projects to comply with the current municipal NPDES permit, lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration, and rainfall harvest and use. LID shall be inclusive of SUSMP requirements. Section 15.04.130, *Stormwater pollution control requirements*, states that the site for every planning priority project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention, and/or rainfall harvest and use.

Title XVII, *Building Regulations*, contains the adoption of numerous state codes: Chapter 1, *Building Code*; Chapter 2, *Mechanical Code*; Chapter 3; *Plumbing Code*; Chapter 4, *Electrical Code*; Chapter 7, *Underground Utility Facilities*; Chapter 8, *Water Service Requirements*; Chapter 9, *Green Building*

*Standards Code*; Chapter 10, *Water Conservation/Water of Water*. Each code helps ensure safety, security, and reliability with regard to the operation of its respective field.

#### City of Bradbury Community Wildfire Protection Plan (2022)

The Bradbury CWPP was developed for the City with input and direction from stakeholders and the community. The purpose of this collaboratively prepared CWPP is to serve as a fire protection planning document that presents the City's physical characteristics, wildfire hazard, assets at risk from wildfire, vegetation/fuel management projects and specifications, and goals and action items intended to reduce wildfire risk in the City.

Development of the Bradbury CWPP included an assessment of wildfire hazard, which involved modeling potential fire behavior around the City under extreme wind and weather conditions, consistent with conditions experienced during a Santa Ana wind event. Other wildfire hazard variables were evaluated (terrain, weather, fuels, development patterns, fire department response, structure density, etc.) to identify the Very High Fire Hazard Areas adjacent to the City.

The CWPP outlines a series of policies and action items which are intended to guide implementation of the CWPP. The policies and actions focus on codes and standards, funding, fire rehabilitation, evacuation, fire protection, vegetation/fuels management, and public education. Action items identify tasks to be implemented by the City and the LACoFD, and other responsible City Departments, to achieve the stated goal of protecting lives, property, and natural resources threatened by wildland fire.

#### City of Bradbury Local Hazard Mitigation Plan (2019)

The Local Hazard Mitigation Plan (LHMP) provides a framework for planning for natural hazards. The resources and background information in the plan are applicable City-wide and to City-owned facilities outside of the City boundaries, and the goals and recommendations provide groundwork for local mitigation plans and partnerships. The LHMP is divided into four parts: Planning Process, Risk Assessment, Mitigation Strategies, and Appendix.

The LHMP was prepared in response to the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 (also known as Public Law 106-390) requires state and local governments to prepare mitigation plans to document their mitigation planning process, and identify hazards, potential losses, mitigation needs, goals, and strategies. This type of planning supplements the City's comprehensive land use planning and emergency management planning programs. The document is a federally mandated update to the City of Bradbury 2007 Natural Hazard Mitigation Plan and ensures continuing eligibility for Hazard Mitigation Grant Program (HMGP) funding.

#### Los Angeles County Operational Area Emergency Response Plan (2012)

The Los Angeles County Operational Area Emergency Response Plan (OAERP) provides guidance and procedures for the County and the County as the Operational Area (OA) to prepare for and respond to natural, technological, conflict-related, and human-caused incidents creating situations requiring a coordinated response. It provides guidance for management concepts, identifies organizational structures and relationships, and describes responsibilities and functions of the emergency organization to protect life and property. The plan describes the emergency organization and the process of preparing, responding to, and recovering from disasters.

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