

Existing Conditions

This section asks five familiar questions for each issue area: what, when, where, who, and how. For each hazard, this assessment explains what the hazard is and what causes it to occur in El Cajon.

- Explains when the hazard occurs, including if the hazard is seasonal or is forecasted to get worse as a result of climate change.
- Maps where in El Cajon this hazard is most likely to occur.
- Explains who is most vulnerable to each hazard.
- Explains how the City is already addressing this hazard and how this can be built upon and improved in the future.

This section address six hazards: air pollution, extreme heat, flooding, geologic hazards, hazardous materials, and wildfires.

Air Pollution

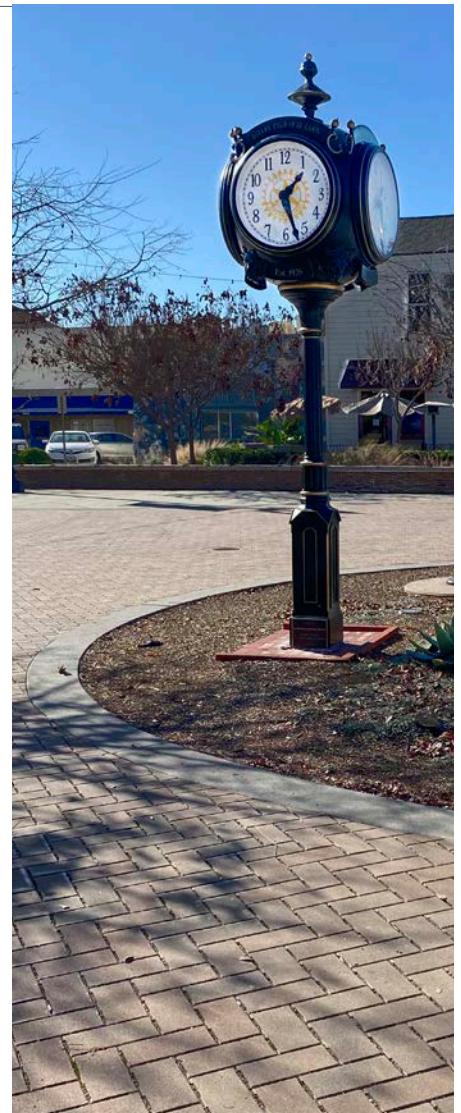
WHAT

Ten air pollutants are measured by the State of California. These pollutants are measured separately and are compared to the healthy level determined by the State. Air is considered polluted when it does not meet the standards set by the State or Federal government. In San Diego County, three pollutants—ozone, coarse particulate matter (PM10), and fine particulate matter (PM2.5)—are in violation of either the State or Federal standard. Air pollution varies locally as it moves away from the source of pollution. Locally, air pollution is measured at Lexington Elementary School, which is surrounded by residential uses and is approximately 1.5 miles from State Route 67 and 1 mile from Interstate 8. Air pollution is likely worse in communities closer to Interstate 8 and State Route 67.

OZONE

Ground-level ozone is most commonly known as smog. Smog is caused by a chemical reaction when sunlight interacts with nitrogen oxides (NOx) and volatile organic compounds (VOCs), both of which are emissions from cars. As temperatures increase, it is also anticipated that the amount of ground-level ozone will increase if the amount of car traffic and other sources of NOx and VOCs do not decrease.¹ At the Lexington Elementary School Station, ozone exceeded the 1-hour State standard once and exceeded the State and Federal 8-hour standard 12 times in the past 3 years measured, from 2016 to 2018.²

Some main contributors to the pollutants that form ground-level ozone in El Cajon are cars, trucks, and industrial processes, specifically near Interstate 8 and State Route 67. There are no industrial processes in the vicinity of the Lexington Elementary School Station. Ground-level ozone can cause health issues such as difficulty breathing, coughing, inflamed airways, asthma attacks, and heart disease.



1 U.S. Environmental Protection Agency. 2018. "Ground-level Ozone Basics." Accessed July 16, 2020. <https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics>.

2 California Air Resources Board. 2020. "iADAM: Air Quality Data Statistics." Accessed July 16, 2020. <https://www.arb.ca.gov/adam>.

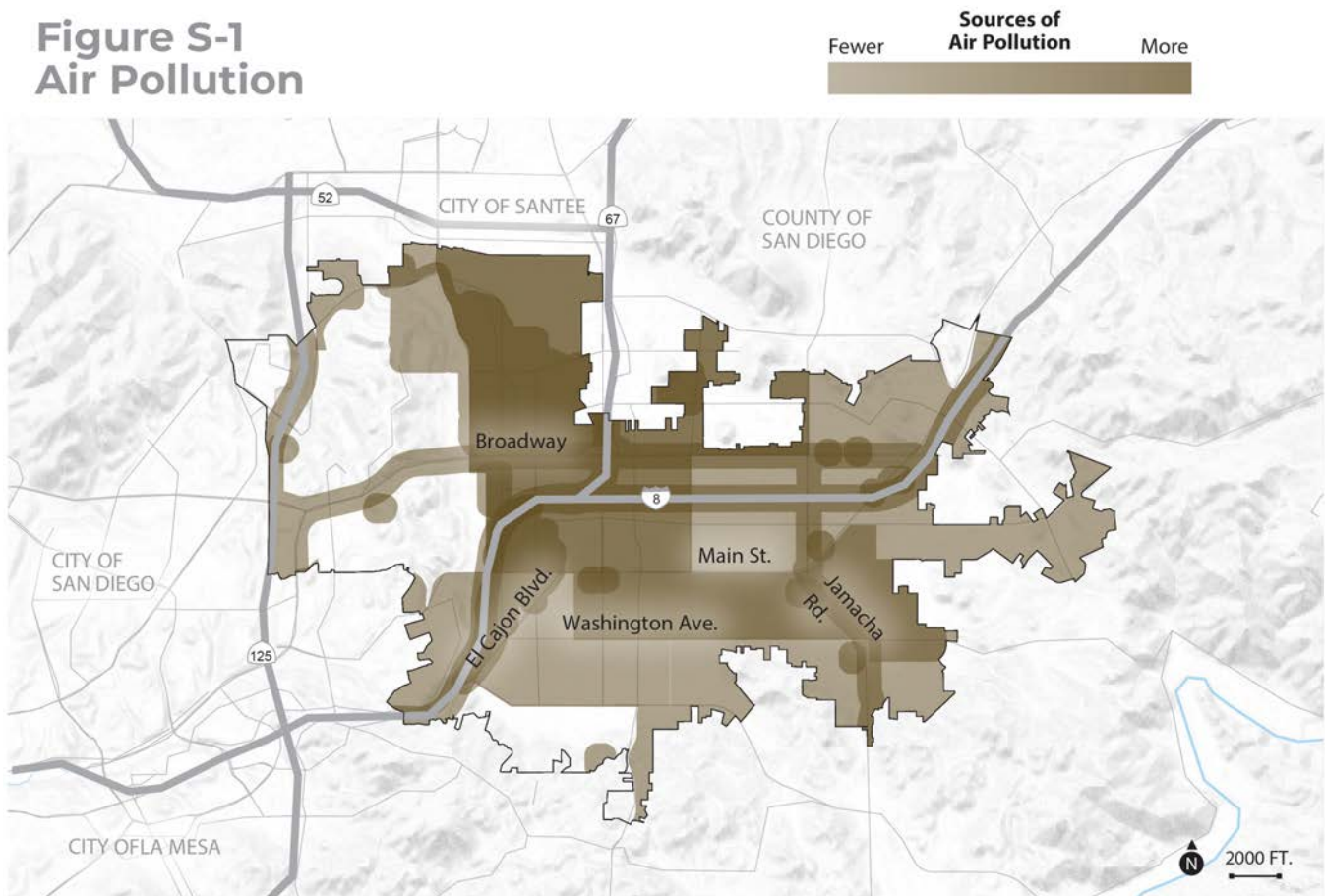
PARTICULATE MATTER

Particulate matter is made of microscopic solids and liquids in the air that are small enough to breathe. PM10 is particulate matter 10 microns or less in diameter, which is approximately 1/7th the thickness of a human hair, and PM2.5 is 2.5 microns or less in diameter, which is approximately 1/28th the thickness of human hair. PM10 is often made up of dust and ash, and PM2.5 results from burning fuel for cars, trucks, and industrial processes. PM2.5 is small enough to get into the human blood stream and poses a greater risk to human health than PM10.³ Similar to ozone, particulate matter causes asthma and heart disease.

WHEN

El Cajon already experiences air pollution, which will get worse as a result of climate change and likely have the greatest impact in summer when temperatures are higher. Longer warm seasons can mean longer pollen seasons, which can increase allergies and asthma episodes. Higher temperatures associated with climate change can also lead to an increase in ozone. The future level of air pollution will depend, in part, on State laws mandating standards such as fuel efficiency and potential electrification of cars and trucks; however, the current air quality in El Cajon does not meet State standards, and the entire San Diego region, including El Cajon, receives an “F” from the American Lung Association.⁴

**Figure S-1
Air Pollution**



Source: California Office of Environment Health Hazard Assessment, (2020). CalEnviroScreen. Retrieved July 09, 2020, from <https://oehha.ca.gov/calenviroscreen>. PHASC (Public Health Alliance of Southern California) and VCUCSH (Virginia Commonwealth University Center on Society and Health). "HPI Map." California Healthy Places Index. 2019. Accessed August 14, 2019. <https://healthylacesindex.org/map/>.

- 3 U.S. Environmental Protection Agency. 2018. "Particulate Matter (PM) Basics." Accessed July 16, 2020. <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics>.
- 4 American Lung Association. 2020. "Report Card: California." American Lung Association, State of the Air Website. Accessed July 16, 2020. <http://www.stateoftheair.org/city-rankings/states/california/>.

WHERE

Air pollution is higher in communities with low tree cover, limited park access, and high levels of traffic. In El Cajon, communities with these attributes are located in central El Cajon,⁵ as shown in **Figure S-1**.

WHO

People with existing health conditions, such as asthma and heart disease, are more sensitive to air pollution. These conditions are also often caused by living near sources of air pollution, such as in **fenceline communities**. The average rate of asthma hospitalization varies widely in El Cajon, with the highest rates in census tracts near freeways. Air pollution, health effects, and limited green space are elevated issues in El Cajon’s DACs, which is discussed in detail in the Environmental Justice Element of the General Plan. Additionally, people who spend more time outdoors, including young children, people who work outdoors, and households without cars, are often exposed to polluted air at higher rates.

HOW

This section describes how the City addresses air pollution through its built environment and planning documents.

Traditional **gray infrastructure** is usually responsible for causing air pollution by providing roads for cars to drive on and providing infrastructure for industrial processes that release toxic chemicals into the air. It is important that these sources of pollution not be located near housing, schools, playgrounds, and senior centers. **Green infrastructure** can reduce air pollution by providing trees and parks that filter out air pollutants, and by providing places to walk, bike, and play away from busy roads. As shown in **Figure S-1**, the communities surrounding Interstate 8 have a higher level of pollution, coupled with less tree canopy and fewer parks. Increasing the number of trees and parks in these communities can reduce existing air pollution.

The City has multiple policies in its adopted Sustainability Initiative to reduce air pollution from vehicles. These strategies include increasing the use of electric vehicles; improving traffic circulation; and encouraging more trips by foot, bike, and public transportation. The City has also adopted the Mixed-Use Overlay Zone and Transit District Specific Plan, which focus new housing in areas served by public transit. The Transit District Specific Plan also contains policies and future projects to “green” streets by planting street trees, installing landscaping, and improving areas for biking and walking. Air pollution is often not considered a hazard, even though it has profound negative effects on public health. This classification is largely because most air pollution is a chronic hazard released slowly over time from cars, trucks, airplanes, power plants, and other polluters, and not in a large emergency event. Due to its chronic nature, air pollution is most effectively addressed by reducing those everyday sources of pollution. In addition, hazardous air days from wildfire smoke and weather conditions should be treated as serious hazard events. The Sustainability Initiative includes tree planting requirements in new development and parts of El Cajon that are regularly used for walking; however, no plans address hazardous air days.

FENCELINE COMMUNITIES

Fenceline communities are neighborhoods near sources of industrial pollution, such as ports, refineries, and major transportation routes.

GRAY INFRASTRUCTURE

Gray infrastructure consists of urban structures and systems often built of concrete, including roads, sidewalks, and storm drains.

GREEN INFRASTRUCTURE

Green infrastructure is a nature-based solution that allows sequestration of carbon, creates lower surface temperatures, and allows water to drain naturally. Green infrastructure can include parks, trees, and rain gardens.

5 California Office of Environment Health Hazard Assessment. 2020. CalEnviroScreen. Accessed July 9, 2020. <https://oehha.ca.gov/calenviroscreen>.

Extreme Heat

WHAT

Extreme heat is hot days, warm nights, and heat waves that can result in heat-related illness and hospitalization. Extreme heat is measured locally because communities are acclimatized to their past environment. An extreme heat day is one that is in the hottest 2% of days observed between 1960 and 1990. In El Cajon, an extreme heat event is a day above 97°F.⁶

Heat waves and extreme heat days are made worse by the **urban heat island effect**. The urban heat island effect inflates average annual urban air temperatures by 1.8°F–5.4°F, making urban areas warmer than other areas. Heat islands also increase energy demand for air conditioning. **Figure S-2** illustrates the urban heat island effect.

URBAN HEAT ISLAND EFFECT

The urban heat island effect occurs when dark urban surfaces, such as roofs and roads, absorb heat and slowly release the heat over time. At night, these surfaces slowly transfer heat to the air, creating warm nights that do not allow people to cool off and making heat waves more dangerous.

WHEN

Extreme heat occurs in the summer and early fall in El Cajon. Climate change is expected to increase the average temperature year-round, including the frequency of extreme heat days. Historically, El Cajon had 4 extreme heat days per year and is projected to experience 9 extreme heat days a year by 2050.⁷ Historically, heat waves last 2.2 days, but they are projected to increase to 3.3 days by 2050.

WHERE

El Cajon has more asphalt, more buildings, and less vegetation in urban areas. As shown in **Figure S-3**, these communities are clustered in central El Cajon.

WHO

People can be adversely affected by extreme heat if they have existing health conditions or spend increased time outdoors working, commuting, or playing. People who depend on walking, biking, or transit to get around; older adults; and young children are at risk for heat stroke. Specifically, residents of Downtown are less likely to own a car and more likely to walk, bike, or take public transportation to work. This means they often cannot avoid times outdoors during heat waves when doing important daily errands.

As discussed in the Air Pollution section above and shown in **Figure S-3**, the dense communities around Interstate 8 and Downtown have fewer trees and parks, and have more asphalt, resulting in higher temperatures and warmer nights. Heat in these communities can be up to 22°F hotter than their neighbors on the same summer day.⁸

HOW

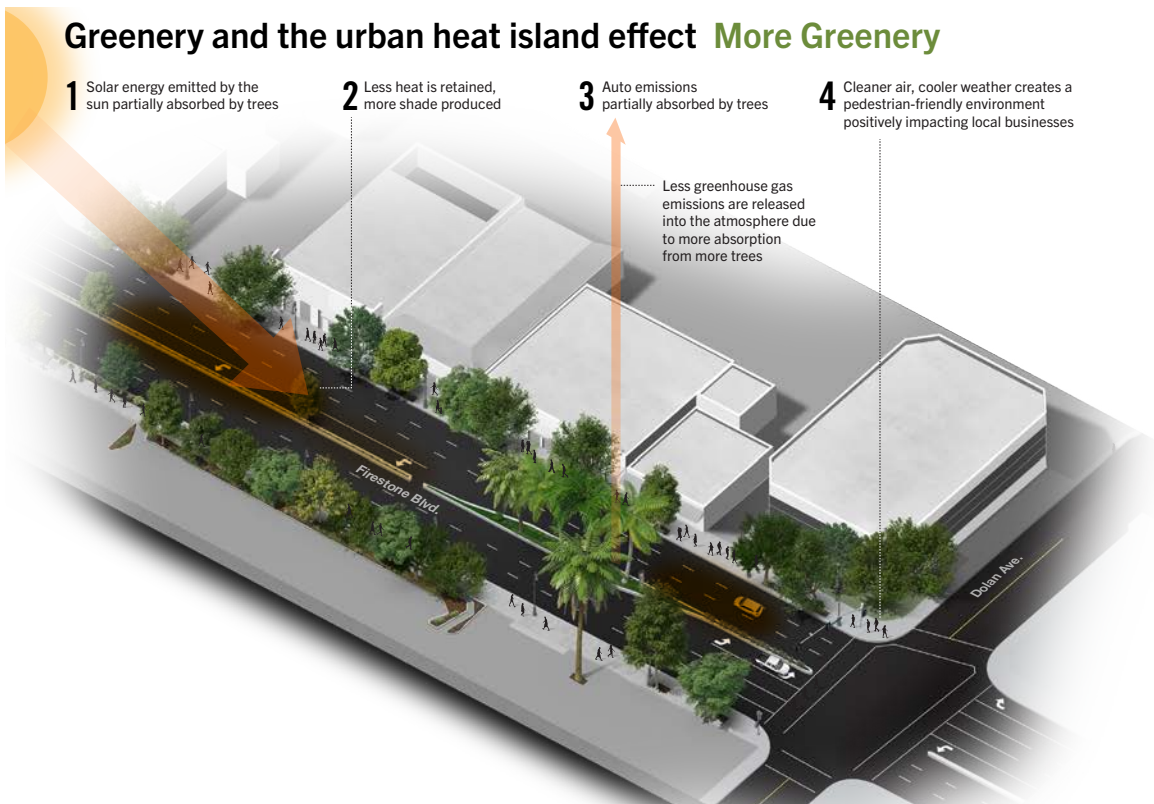
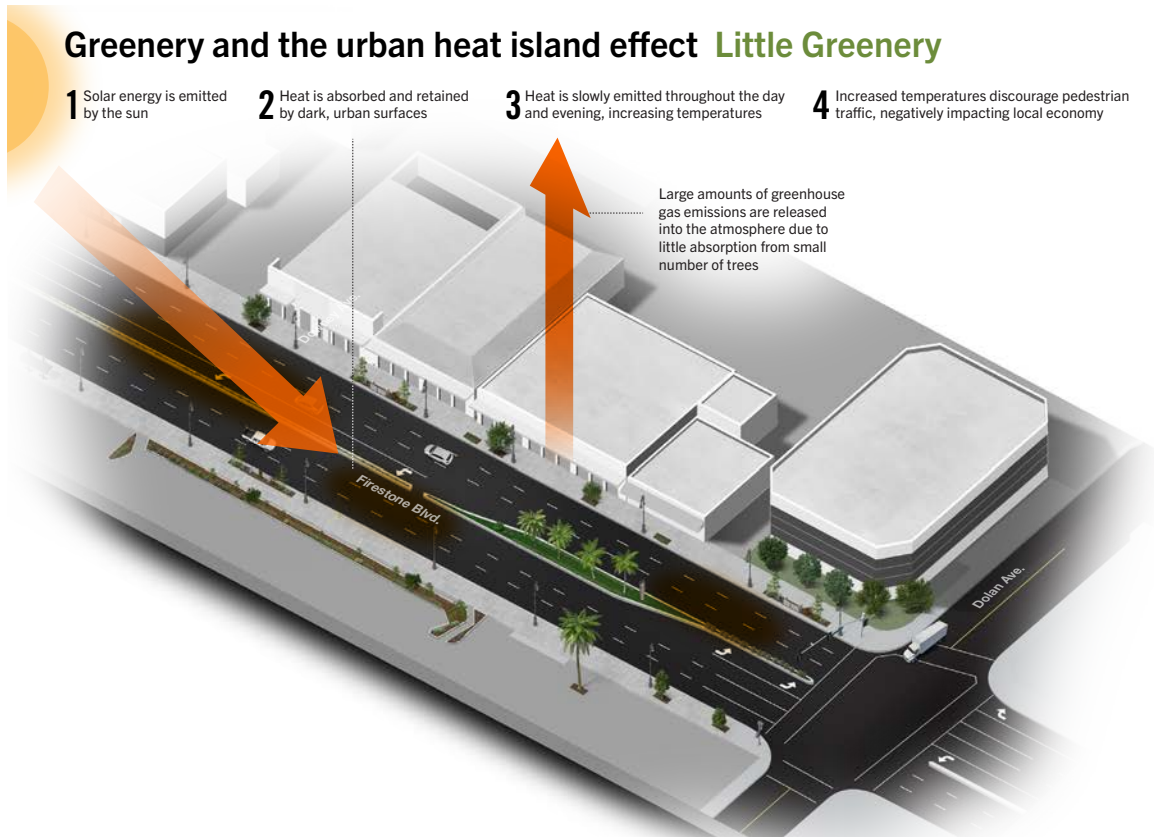
The County of San Diego designates “Cool Zones” throughout the San Diego region during the hottest summer months. Cool Zones, which are often libraries and other community facilities, are air-conditioned and open to the public during extreme heat events. People can use Cool Zones to escape the heat if they do not have

6 Cal-Adapt. 2020. “Extreme Heat Days and Warm Nights.” Accessed July 16, 2020. <https://cal-adapt.org/tools/extreme-heat/>.

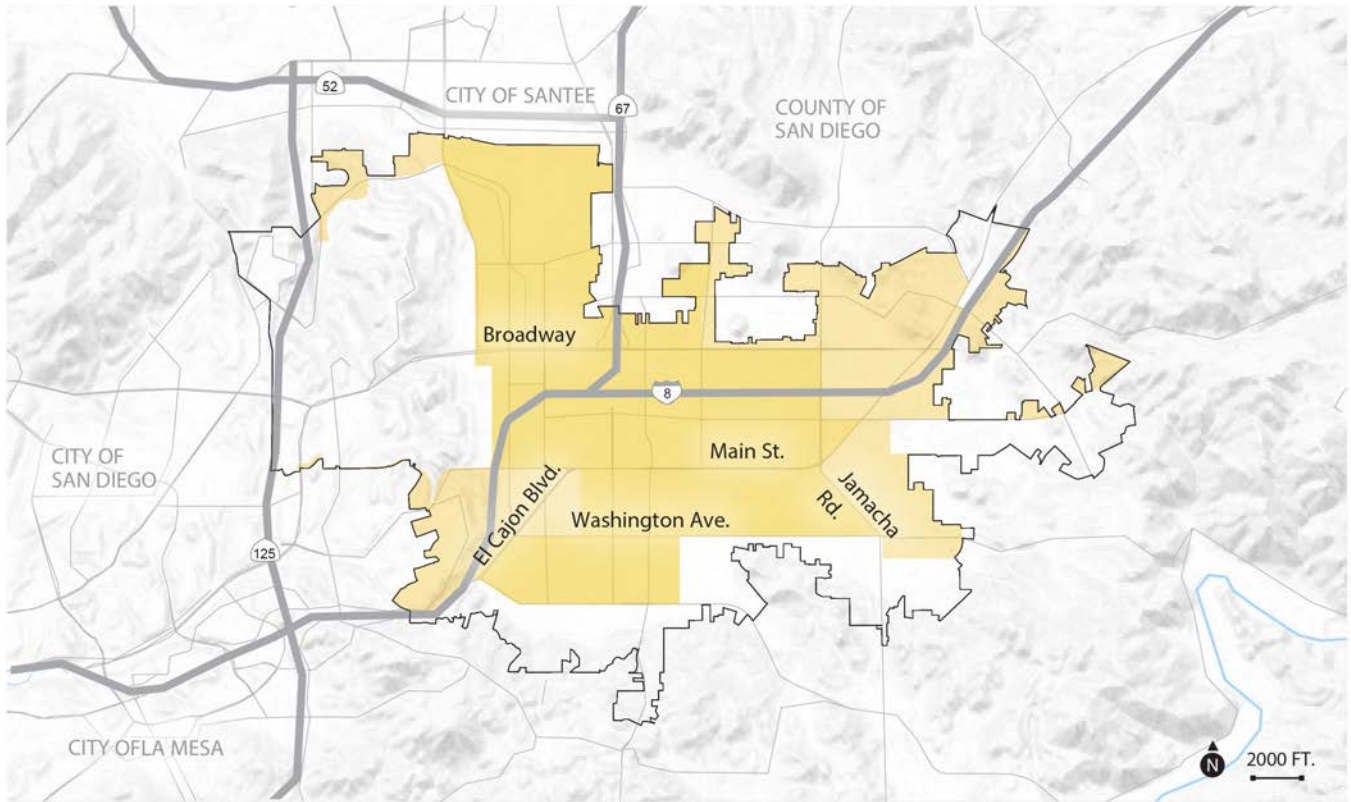
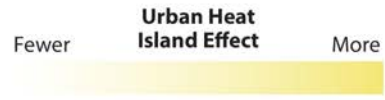
7 Cal-Adapt. 2020. “Extreme Heat Days & Warm Nights.” Accessed July 16, 2020. <https://cal-adapt.org/tools/extreme-heat/>.

8 U.S. Environmental Protection Agency. 2020. “Heat Island Impacts.” June 25, 2020. Accessed July 16, 2020. <https://www.epa.gov/heat-islands/heat-island-impacts>.

Figure S-2 Urban Heat Island Effect



**Figure S-3
Urban Heat Island**



Source: PHASC (Public Health Alliance of Southern California) and VCUCSH (Virginia Commonwealth University Center on Society and Health). "HPI Map." California Healthy Places Index. 2019. Accessed August 14, 2019. <https://healthyplacesindex.org/map/>.

access to air conditioning or cannot afford it. The El Cajon Branch Library is often used as a Cool Zone and is located close to the neighborhoods in Downtown.

The City’s Sustainability Initiative includes recommendations to develop tree-planting requirements. Community members recommend that tree planting be concentrated in areas with high levels of walking, which would help alleviate heat Downtown. Additionally, the Sustainability Initiative recommends planting one tree per five parking spots in surface-level lots, and planting one tree per 30 feet of street frontage.

Flooding

WHAT

Flooding is caused by increased rain, causing rivers and urban drainage basins to fill and overflow. Increased flooding occurs when rain occurs over a shorter period, even if there is less overall rain, because the soil does not have enough time to absorb the rainfall. Flooding occurs in low-lying areas near creeks and other waterways; this area adjacent to a river or stream is called the floodplain. Generally, the floodplain most often refers to the area that would be inundated by a 100-year flood, or the flood that has a 1% chance of occurring in any year. The 500-year floodplain is the area that has a 0.2% chance of being flooded in any year. These estimates are based on historical data and observations, but these flood events are projected to happen

EXISTING CONDITIONS

more frequently as climate change causes more intense rainfall and increased **urbanization** covers natural areas with **impervious surfaces**, which causes even small amounts of rain to runoff and potentially cause flooding.

WHEN

Flooding occurs in the winter months when the San Diego region receives the most rain. Climate change is predicted to increase the number of extreme rain events, when large amounts of rain falls over a short period of time, which does not allow it to soak into the ground and overwhelms stormwater infrastructure. In recent years, the region has experienced an increase in flash flood events, which could become a more regular occurrence in the wet winter season.

WHERE

As shown in **Figure S-4**, much of central urbanized El Cajon and along the Interstate 8 corridor is within a 500-year floodplain. Much of this area has been developed as industrial, commercial, and multifamily housing, causing more than 70% of the land in these areas to be covered in impervious surfaces. These areas are more likely to have small, localized flooding events that block streets and cause minor damage due to the lack of natural drainage.

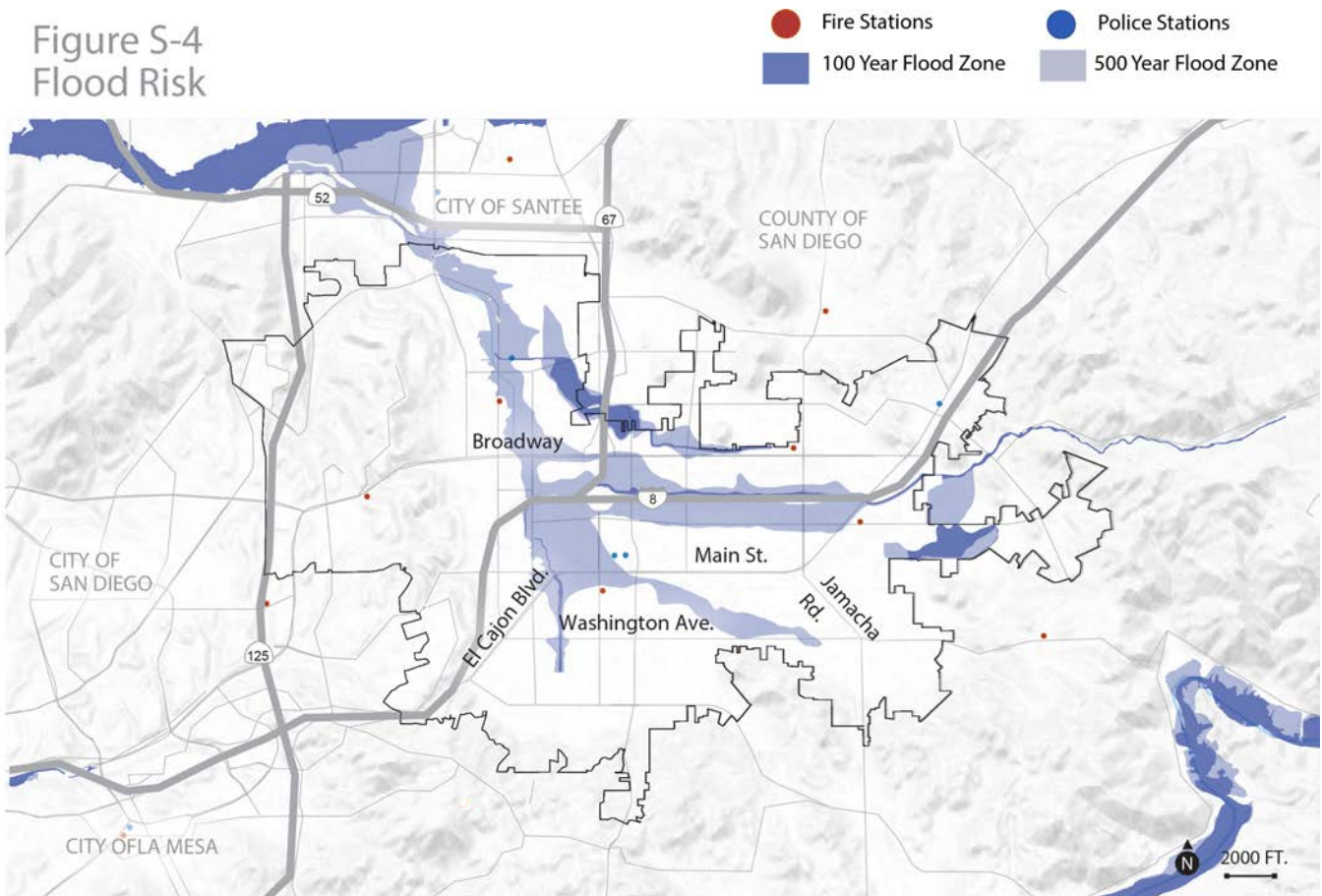
URBANIZATION

Urbanization is an increase in homes and other built structures (e.g., schools, fire structures) built on existing open space.

IMPERVIOUS SURFACES

Impervious surfaces, such as asphalt and concrete, block rain and flood water from absorbing into the ground, causing runoff.

Figure S-4
Flood Risk



Source: Federal Emergency Management Agency, (2020). National Flood Hazard Layer Status. Retrieved July 09, 2020, from <https://www.floodmaps.fema.gov/NFHL/status.shtml>
Note: The police stations include City of El Cajon Police Department, County of San Diego Sheriff's Department and California Highway Patrol

WHO

People can be vulnerable to flooding due to social isolation or physical disabilities, leading to difficulty evacuating during a flood event. Additionally, low-income renters can face increased challenges in recovering from flood events, as they are less likely to have renter's insurance and can face higher levels of displacement and homelessness if their residence is damaged during a flood event. Downtown residents are much more likely to be renters than the rest of El Cajon and are, therefore, more vulnerable to flooding. Over 30% of renters across El Cajon spend more than half their income on rent; this means that renters throughout El Cajon may have difficulty recovering from a flood event.

HOW

The Downtown El Cajon Police Station and 11 schools are all within the 500-year flood zone, making them slightly vulnerable to flooding.

The San Diego County Multi-Hazard Mitigation Plan (SDMHMP) includes multiple flooding-related policies. Many of these policies include developing future plans. In the SDMHMP, the policies most relevant to this General Plan include limiting development in hazard areas, using social media to alert residents to hazardous conditions, improving public facilities for use as shelters, and minimizing repetitive loss from flooding. Additionally, new projects on natural land or large redevelopment projects over 5,000 square feet must prepare a stormwater conceptual plan, outlining design features that will capture and filter rainwater on site.⁹

Geologic Hazards

WHAT

Geologic hazards are natural geologic processes with the ability to impact life, health, or property.¹⁰ El Cajon is vulnerable to geologic and seismic hazards that include landslides and slope instability, earthquakes, and liquefaction.

LANDSLIDES/SLOPE INSTABILITY

Landslides are a geological hazard caused by disturbances in the natural stability of a slope. Different types of landslides vary in speed, as do the possible effects of the landslide. While slower-moving landslides can cause gradual damage, rapid landslides, such as mudslides, can quickly destroy property and become life-threatening.

WHEN

Landslides can be triggered by numerous, often interconnected, factors such as droughts, heavy rain, soil erosion, earthquakes, or human activity. For example, surface runoff may be intensified by paved roads and parking lots in urban areas due to the surface material's inability to naturally drain. This can cause a heavier load to be placed on potential landslide zones and amplifies risk of a landslide event. Landslides are often unpredictable and pose a threat because of their capacity to occur without warning and quickly destroy structures and threaten lives.

WHERE

Historically, significant landslides have occurred in areas in and around El Cajon. This includes in the Fletcher Hills area along Fletcher Parkway, as well as in western Santee. The landslides along the western slopes of

9 City of El Cajon. 2012. *Storm Water Mitigation Plan*. August 2012. <https://www.cityofelcajon.us/Home/ShowDocument?id=394>.

10 OES San Diego (County of San Diego, Office of Emergency Services). *Multi-Jurisdictional Hazard Mitigation Plan*. October 2017. https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2017/County-HazMit-Plan-2017-Sections-1-7-with-Appendixes-BOS-Approved.pdf.

El Cajon Valley are slow, **rotational slides** which are a danger to structures and foundations over time, rather than immediate dangers to life. Landslide risk assessments can be performed by understanding where landslides have occurred in the past and compiling factors such as slope steepness and rock strength. Landslides are more likely to occur in steep slopes, than on the valley floor.

ROTATIONAL SLIDES

Rotational slides are a slow-moving form of landslide where soil in an unstable area is displaced mostly by rotation parallel to the slope due to the shape and curve of the stable soil bed under the unstable soil.

WHO

Landslide risk areas occur throughout El Cajon but the most risk exists in the northwestern portion of El Cajon. Much of this area is developed as single-family residential neighborhoods, with related neighborhood commercial uses. Because landslides have the ability to be fast-acting hazards, there may be little time for evacuation if a landslide event occurs. This means that those with lesser ability to evacuate, such as older adults and those without access to a car, are most vulnerable to landslides.

HOW

The San Diego Multi-Hazard Mitigation Plan includes scheduled investigation of potential flood areas and analysis of sites that present the possibility of repetitive losses to landslide events. The SDMHMP includes relevant policies regarding minimizing losses through the improvement of storm drains in potential landslide areas, development of efficient evacuation procedures, and implementation of a hazard awareness program to minimize vulnerability to landslide events in El Cajon.

Earthquakes and Seismic Hazards

WHAT

Earthquakes are sudden ground-shaking events caused by the release of pressure in the earth. This quick release of pressure poses a safety risk to both people and structures due to the unpredictability of both magnitude and timing.

WHEN

Earthquakes can occur without warning. There are no U.S. Geological Survey-approved methods of predicting a major earthquake before the event occurs; and therefore, earthquake events pose a major threat to both structures and people. It is currently only possible to calculate the probability that a major earthquake event will occur in an area within a given number of years, making long-term earthquake forecasts unreliable and often incorrect.¹¹

WHERE

Major active faults in San Diego County include Rose Canyon, La Nación, Elsinore, San Jacinto, Coronado Bank, and San Clemente Fault Zones. Of these faults, the La Nación Fault is the closest, occurring approximately 10 miles to the west. Documents indicate a 6.0-magnitude earthquake was felt in San Diego on May 27, 1862, which damaged Old Town. This earthquake was centered on either the Rose Canyon or Coronado Bank Faults. More recently on July 13, 1986, a 5.3-magnitude earthquake occurred 25 miles west of Solana Beach originating from the Coronado Bank Fault.¹²

11 USGS (U.S. Geological Survey). 2020. "Can you predict earthquakes?" Accessed July 16, 2020. [https://www.usgs.gov/faqs/can-you-predict-earthquakes?.](https://www.usgs.gov/faqs/can-you-predict-earthquakes?)

12 OES San Diego (County of San Diego, Office of Emergency Services). 2017. *Multi-Jurisdictional Hazard Mitigation Plan. October 2017.* https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2017/County-HazMit-Plan-2017-Sections-1-7-with-

Active faults are identified by the U.S. Department of Conservation, and a zone around them is disallowed from construction of new developments to prevent repetitive loss of structures and threats to safety of occupants. The unsafe areas around active faults are regulatory zones referred to as **Alquist-Priolo earthquake fault zones**. The Alquist-Priolo Special Studies Zone Act (1994) defines an active fault as one that has ruptured in the last 11,000 years, and the act provides mapping resources for the public to strengthen awareness and prevent unsafe construction in these areas.¹³ There are no Alquist-Priolo Earthquake Fault Zones or **Quaternary faults** within city limits.

WHO

Due to their unpredictability, sensitivity to seismic hazards is different from many other hazards. Older buildings are more likely to have serious damage from earthquakes, as newer buildings were built to meet higher earthquake standards. Low-income homeowners are more vulnerable, as they may not have enough money to rebuild. Other facilities at risk to earthquakes include emergency services and public utilities, as they are critical in responding to earthquakes and related hazard events, involuntary occupancy structures such as hospitals and jails, and high-occupancy structures like high rises.

According to the County of San Diego's Multi-Jurisdictional Hazard Mitigation Plan, El Cajon does not have any critical facilities at risk from a **100- or 500-year earthquake**. However, potential exposure and losses from **annualized earthquake hazards** were also estimated and show that El Cajon has over 35,000 residential buildings at risk, amounting to an estimated more than \$10 billion of potential exposure. Older residential structures are at a greater risk than ones built to more recent building codes. Additionally, 1,360 commercial buildings are at risk from earthquakes, with this potential exposure amounting to more than \$6 billion.¹⁴

HOW

The San Diego Multi-Hazard Mitigation Plan references Building Codes and Standards for new and existing buildings to meet seismic standards and specialized reports where necessary.

PEAK LOAD WATER REQUIREMENTS

Helix Water District and Padre Dam Water District provide water to El Cajon, the Cities of La Mesa and Lemon Grove, and unincorporated areas of San Diego County.

The forecasted annual regional water demand is 33,316 acre-feet per year (which is equal to an average day demand of 29 million gallons per day). This represents a 9% water savings reduction from current per-capita demand. El Cajon's existing water supply comes from the Colorado River and its delta in the Gulf of California, and is supplemented by projects, including the Imperial Irrigation Conservation and Transfer Agreement, Carlsbad Desalination Project, All American Canal project, and Coachella Canal Relining Project.

100- OR 500-YEAR EARTHQUAKE

A 100-year earthquake is a major earthquake event that is calculated to have a 1% chance to occur each year and theoretically occurs every 100 years. Likewise, a 500-year earthquake is one of such a magnitude that it has a 0.2% chance of occurring each year and theoretically occurs every 500 years.

ANNUALIZED EARTHQUAKE HAZARDS

Annualized earthquake hazards are long-term calculations of the probability of a given earthquake hazard event in any given year based on historical earthquake events.

Appendixes-BOS-Approved.pdf.

13 DOC (California Department of Conservation). 2019. "Alquist-Priolo Earthquake Fault Zones." Accessed July 16, 2020. <https://www.conservation.ca.gov/cgs/alquist-priolo>.

14 OES San Diego (County of San Diego, Office of Emergency Services). 2017. *Multi-Jurisdictional Hazard Mitigation Plan*. October 2017. https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2017/County-HazMit-Plan-2017-Sections-1-7-with-Appendixes-BOS-Approved.pdf.

EXISTING CONDITIONS

It is important to identify peak load water supply when discussing seismic risks, because large seismic events have the potential to destroy or incapacitate the normal water supply. If a local earthquake occurs, local water piping would be at risk, and water from the Colorado River could become temporarily out of service. Earthquakes farther away could also impact the State Water Project.¹⁵

It is also important to mention trends surrounding water supply. The State Water Project and Colorado River provide 75%–95% of San Diego’s water as a region. With climate change projected to reduce snowpack and increase the frequency and severity of droughts, it is likely that water supplied by these sources will be reduced. Additionally, the vulnerability of levees protecting the State Water Project must also be considered.¹⁶

In the event of a loss of water sources, the City has an emergency connection with Helix Water District-maintained supplies of local raw and treated water and interconnections with agencies bordering the district to provide a treated emergency water supply through the Water Conservation District or State Water Project subcontractors.

El Cajon is working to have a resilient water source that would reduce reliance on imported water. The East County Advanced Water Purification Program is a collaborative effort between Padre Dam Municipal Water District, the City of El Cajon, the County of San Diego and Helix Water District. It will create a new, local, sustainable and drought proof drinking water supply using state-of-the-art technology to purify East County’s recycled water. This water recycling opportunity will diversify East County’s water supply, reduce dependence on imported water and produce up to 30 percent of East County’s current drinking water needs.

Liquefaction

WHAT

Liquefaction occurs when soil is saturated with water and subject to a destabilizing force such as an earthquake, resulting in the soil losing the ability to support its own weight. This causes the soil to behave as a fluid, potentially destroying structures built upon it and threatening the safety of people in a liquefaction zone.

WHEN

Liquefaction generally occurs during significant earthquake activity and has been a major cause of earthquake damage in Southern California. The duration and magnitude of an earthquake are important factors in causing liquefaction; ground-shaking events continually build pressure in saturated soil, and if that pressure exceeds the bond between soil materials, it will collapse and behave as a liquid. Soils that are saturated and fine-grained, such as silt or sand, can be at risk of liquefaction due to the decreased amount of pressure required to destroy the bond in fine soil material.

WHERE

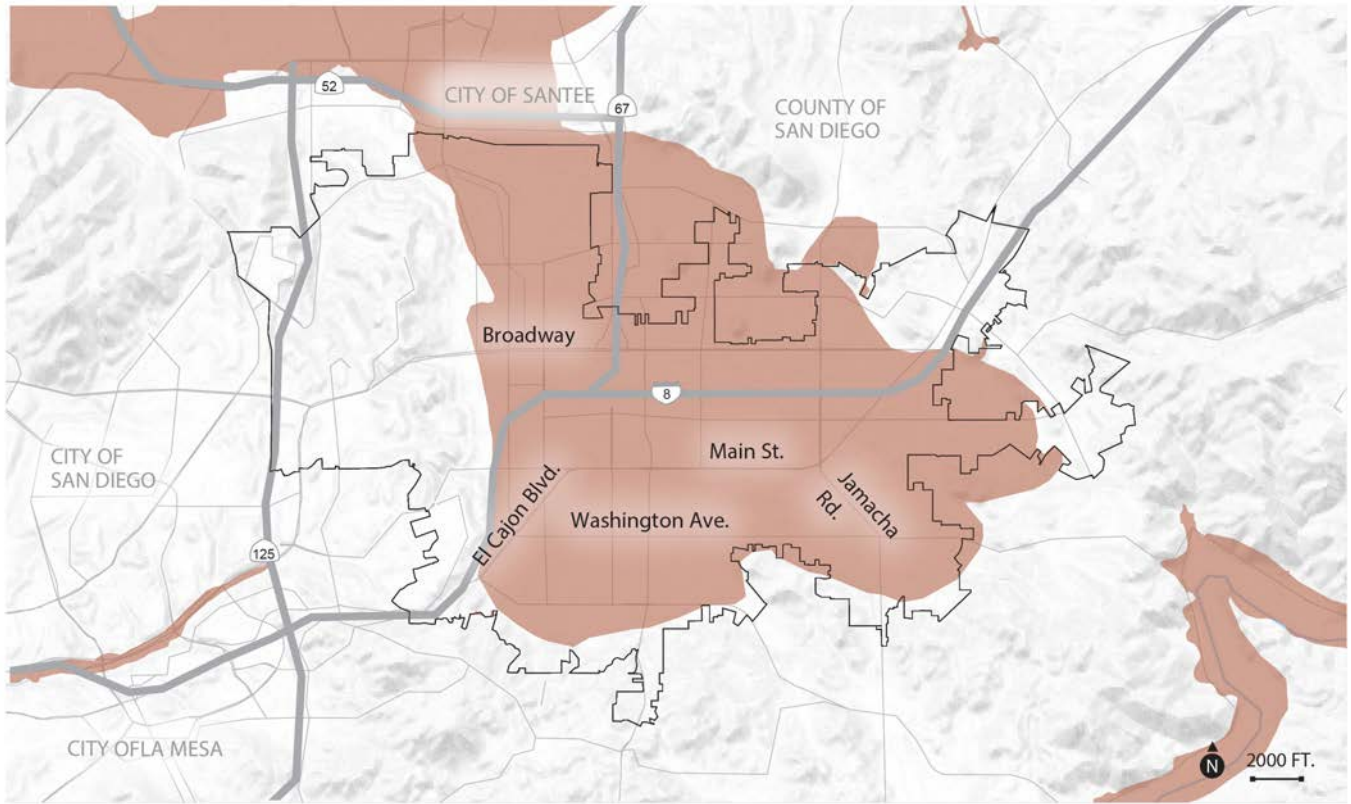
Liquefaction is not known to have occurred historically in San Diego County. Historically, earthquakes have not been powerful enough to trigger liquefaction; however, areas at risk of liquefaction due to soil composition and heightened exposure to runoff still cover over half of El Cajon as seen on **Figure S-5**. Much of the area in El Cajon with liquefaction risk is located east of Cuyamaca Street. Because over half of El Cajon is in a liquefaction risk area, the majority of structures within city limits are vulnerable to liquefaction. It is especially important to consider public facilities and emergency response structures vulnerable due to their need when responding and recovering from earthquakes.

15 Helix Water District. *Urban Water Management Plan 2015*. July 2016. https://hwd.com/wp-content/uploads/2016/05/2015-HWD-UWMP_Adopted-1.pdf.

16 OES San Diego. 2017. *Multi-Jurisdictional Hazard Mitigation Plan*. October 2017. https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2017/County-HazMit-Plan-2017-Sections-1-7-with-Appendixes-BOS-Approved.pdf.

**Figure S-5
Liquefaction**

 Liquefaction Zone  El Cajon City Limits



Source: SANDAG (San Diego Association of Governments). 2017. "GEO_POTENTIAL_LIQUEFACTION_CN". <https://sangis.org/download/index.html>

WHO

Structures located in areas with high liquefaction risk may experience significant damage during an earthquake if structural foundations are insufficient to handle the liquefying of the soil underneath. Older homes are more susceptible to liquefaction damage as well, as foundational materials have likely not been sunk beneath the potential liquefaction layer.

HOW

The SDMHMP combines liquefaction and earthquakes, in many cases referring to both in the same policies, as liquefaction is caused by earthquakes. The SDMHMP includes relevant policies relating to the enforcement of the most current earthquake and liquefaction building codes, designing new development to withstand earthquake and liquefaction events, and identifying existing structures that should be retrofitted to prevent loss in a liquefaction event.

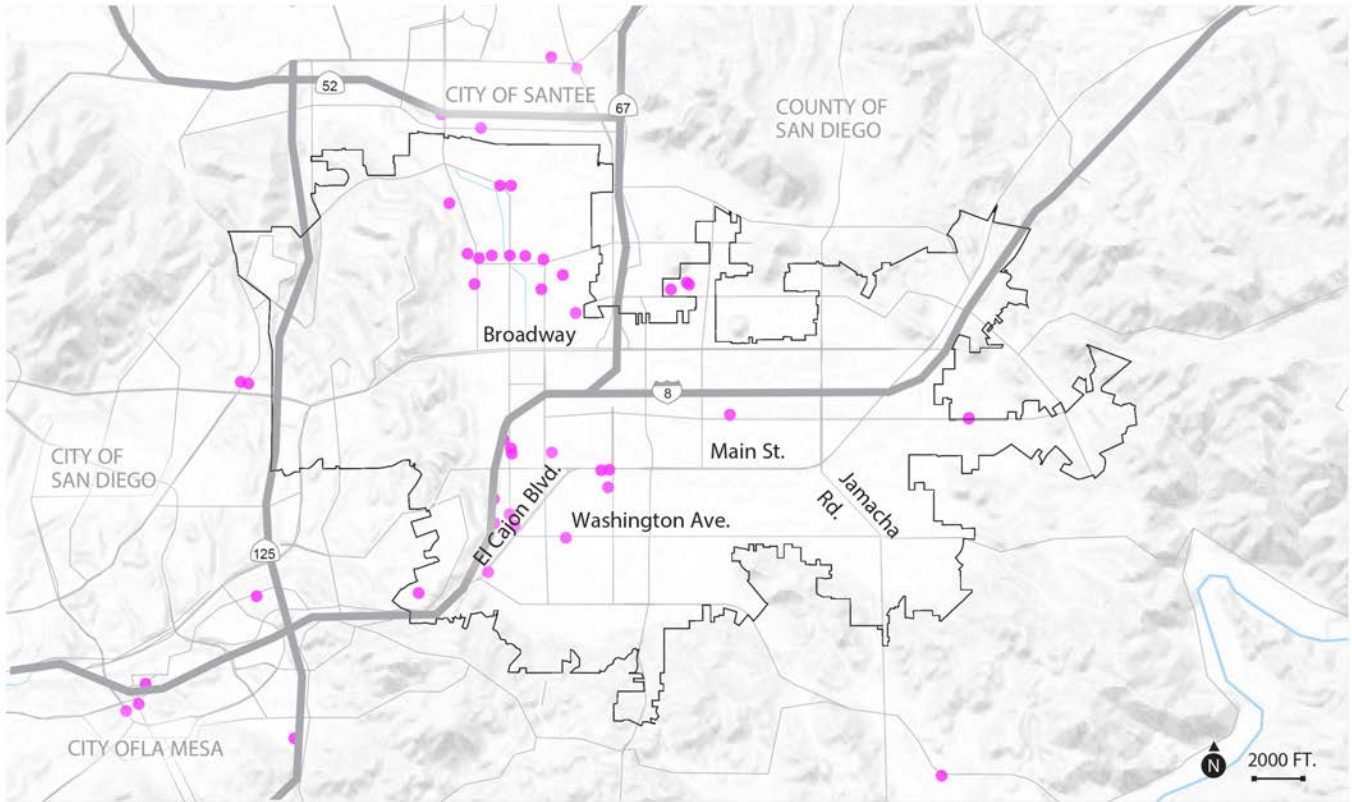
Hazardous Materials

WHAT

Hazardous materials are substances that can cause death, serious illness, or hazard to human health or the environment when it is not properly treated, stored, transported, or disposed of. Many household substances are considered hazardous, including gasoline, refrigerants, paint, and some gardening supplies. Nearly all households and businesses have some amount of hazardous waste. Certain businesses, such as gas stations, auto repair, and dry cleaners, generate larger amounts of hazardous waste. Hospitals, clinics, and laboratories

**Figure S-6
Hazardous Waste Cleanup Sites**

● Envirostar Hazardous Waste Clean Up Sites
 □ El Cajon City Limits



Source: California Department of Toxic Substance Control. "EnviroStor". 2018. https://www.envirostor.dtsc.ca.gov/public/data_download

generate medical waste, which can also be hazardous. Hazardous waste is hazardous material that no longer has practical use, but has not yet properly been disposed of.

WHERE

Hazardous materials can potentially be found anywhere as a result of improper disposal or storage; however, sites with large concentrations of hazardous materials are catalogued by EnviroStor. EnviroStor is a data management program operated by the Department of Toxic Substances Control that is utilized to monitor, investigate, permit, and cleanup sites with known contaminants. El Cajon has 34 sites listed by EnviroStor that contain hazardous materials requiring cleanup. These sites are primarily located in the industrial areas of El Cajon surrounding Gillespie Field. Industrial uses are also more likely to store large amounts of hazardous materials on site than commercial or residential uses.

The largest hazardous materials site is located at 790 Greenfield Drive. Historic water, soil, and air pollution affect the adjacent Magnolia Elementary School and mobile home park. There is ongoing groundwater treatment, soil vapor sampling, and indoor air quality monitoring. Public outreach related to the site was last conducted in 2018 and informational material in English and Spanish was last provided to the community in February of 2020 to include details of current testing. The site has been considered active since 1994.¹⁷

17 DTSC (Department of Toxic Substances Control). 2021. "Ketema Areosace & Electronics (37370033)." Accessed January 12, 2021. https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=37370033.

WHO

Of the 34 hazardous waste cleanup sites within city limits, 24 of them are located in low-income communities or DACs. El Cajon’s DACs face a higher proportion of waste and groundwater threats than the rest of California, because of the tendency for industrial sites and other pollutant-producing uses to be located near low-income residential areas. The industrial area between Cuyamaca Street and State Route 67 is exposed to the highest waste and groundwater threats in El Cajon, higher than 96% of California. There are no residential neighborhoods in this area. The area between State Route 67 and North Mollison Avenue, including Magnolia Elementary School, is also disproportionately affected by harmful waste and risk of groundwater contamination, falling into the 85th percentile for both risks. **Figure S-6** shows active hazardous waste cleanup sites in El Cajon.

HOW

The City requires any property converting to from a commercial or industrial use to a residential use to prepare a **Phase I Environmental Site Assessment**. Additionally, any new industrial or commercial that abuts residential must provide a setback and wall between the new use and the existing housing. The Transit District Specific Plan, which aims to add transit-supportive land uses including housing along with existing commercial and industrial land uses, includes buffer requirements to protect residential uses from hazardous materials, noise, and air pollution.¹⁸

PHASE I ENVIRONMENTAL SITE ASSESSMENT

A Phase I Environmental Site Assessment is a review of past uses of a property to determine if there was an industrial process that would have contaminated the soil and/or water.

Wildfires

WHAT

Wildfires are most commonly caused by lightning or humans via electrical equipment and vehicles, and often start unnoticed. They are known to 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.

WHEN

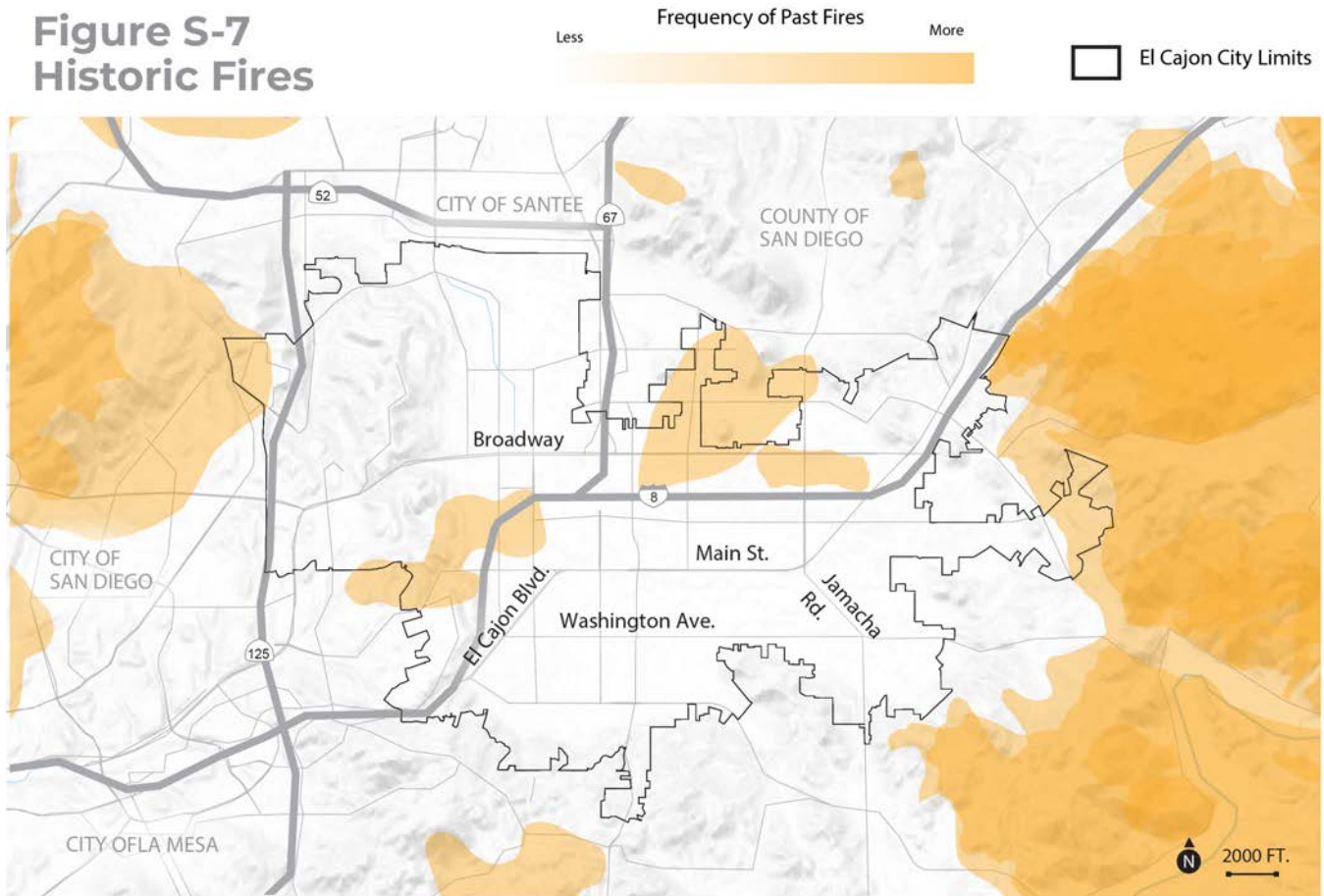
Small fires should occur regularly in San Diego’s natural chaparral landscape; however, years of fire suppression can create a dangerous buildup of fuel. Climate change is likely to intensify the fall fire season by extending the dry season further into Santa Ana wind season, which drives most wildfires in the region.¹⁹ The Fire and Resource Assessment Program (FRAP) compiled a statewide spatial database of fire perimeters from Bureau of Land Management (BLM), National Parks Service (NPS), United States Forest Service (USFS) and CAL FIRE fires, which represents fire perimeters throughout the State from 1950 to present.²⁰ According to this database, approximately nine fires have occurred within El Cajon. Within the San Diego region, major fires in 2003 and 2007 caused dangerous air pollution, mass evacuations, loss of property, and loss of life.

18 City of El Cajon. 2018. *Transit District Specific Plan*. Accessed April 8, 2021. <https://www.cityofelcajon.us/home/showpublisheddocument?id=18727>.

19 Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. *San Diego Summary Report. California's Fourth Climate Change Assessment*. University of California, San Diego, Publication Number SUM-CCCA4-2018-009.

20 CAL FIRE (California Department of Forestry and Fire Protection). 2019. "State of California Fire Perimeters: Wildfire 1950-2018." May 2019. https://frap.fire.ca.gov/media/10302/firep_18_map_ada.pdf.

**Figure S-7
Historic Fires**



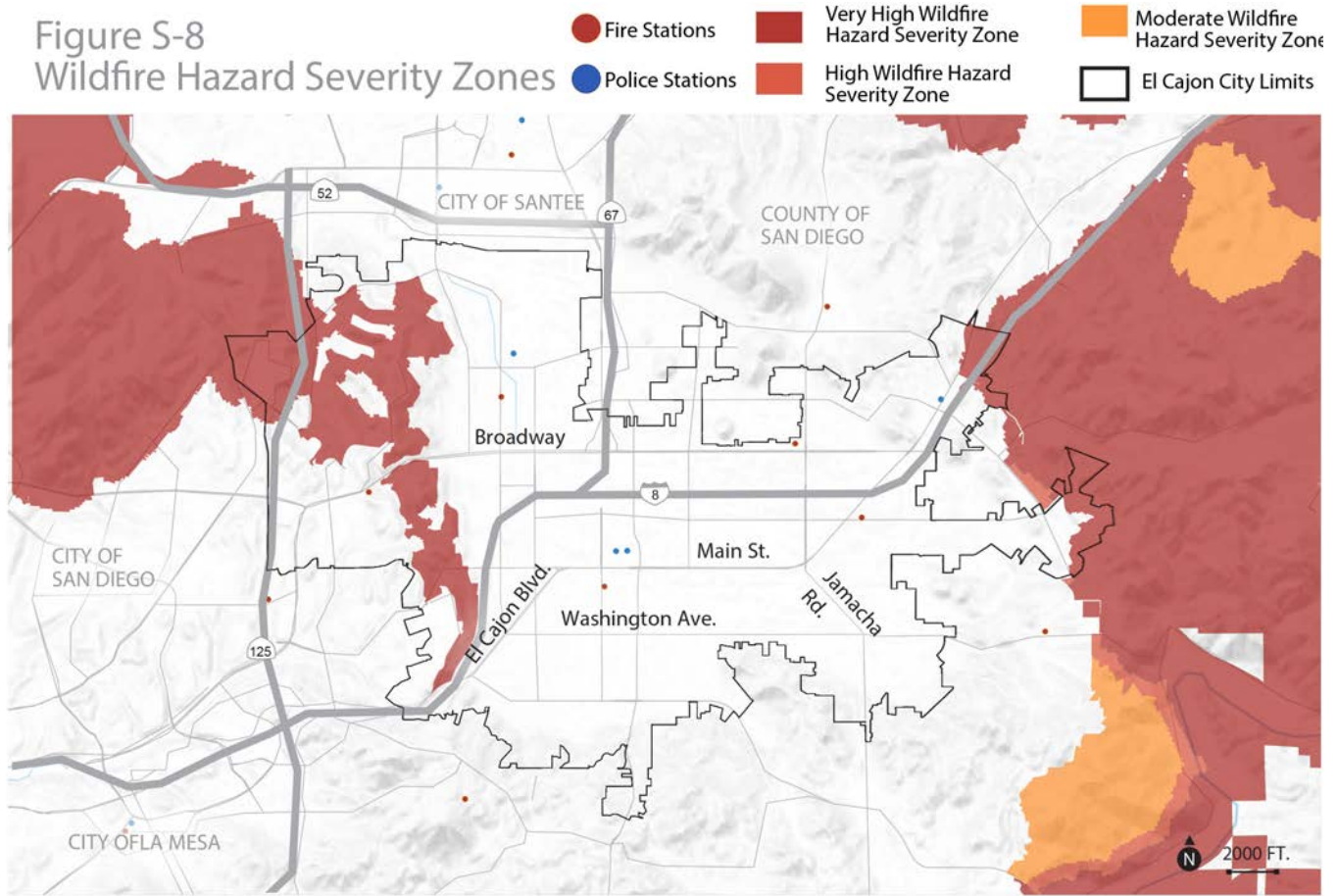
Source: Cal FIRE. 2019. Fire Perimeters. <https://frap.fire.ca.gov/frap-projects/fire-perimeters/>

WHERE

Most of El Cajon is built out and outside of fire risk areas. Natural lands in the County of San Diego to the east and north of El Cajon in high fire severity zones pose the greatest risk to El Cajon. Wildfires can start outside and spread into El Cajon, or can create dangerous air pollution by blowing ash into El Cajon. Developed areas such as El Cajon have a lower fire risk than the rural areas in the mountains where regionally wildfires usually begin (**Figure S-7**). Portions of east and west El Cajon are located in high fire severity zones (**Figure S-8**).

Existing uses in the Very High Fire Hazard Severity Zone (VHFHSZ) include Grossmont College, portions of Christian Unified Schools, and single-family homes. All of the residential areas are within a 2-minute drive of a secondary major roadway that would allow for multiple dynamic evacuation routes. Due to current buildout conditions, development out of this range of evacuation would not occur. One major electric transmission line runs through the VHFHSZ on the eastern side of El Cajon. This transmission line is operated by SDG&E. Approximately 15 miles of roads are within the City’s VHFHSZ’s, with the vast majority of those being local roads. Two major roads run through El Cajon’s VHFHSZ’s, including California State Route 125 and Kumeyaay Highway. There are no planned additional land uses in the VHFHSZ. The entire City is located in a Local Responsibility Area (LRA), and fire risk reduction and suppression are the responsibility of the City and Heartland Fire. Lands directly adjacent to the City in the County of San Diego are in a State Responsibility Area (SRA), which is the financial responsibility of the State. Fires can quickly move from the SRA to the LRA and coordination between local and State officials is important to reduce wildfire risk.

Figure S-8
Wildfire Hazard Severity Zones



Source : Cal FIRE. 2020. California Fire Hazard Severity Zone Viewer. <https://ais.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414>

WHO

Similar to flooding, people can be vulnerable to wildfire due to social isolation or physical disabilities that lead to difficulty evacuating. People with pre-existing health conditions, such as asthma, are more sensitive to hazardous air. Additionally, households without access to a car can face difficulty getting groceries or meeting daily needs during hazardous air events.

Future emergency service needs are anticipated to stay relatively stable due to El Cajon’s built out nature. Population impacts on emergency services are currently evaluated on a project-by-project basis through the development review process.

HOW

In 2015 the City approved the adoption of state designated VHFHSZ’s within the LRA. As recently as 2019 the City has adopted the California Fire Code and California Building Code by reference in the Municipal Code (Chapter 15.56 California Fire Code and Chapter 15.04 California Building Code). Municipal code has been amended with references to California Building Code and California Fire Code throughout. These regulations meet the SRA FHSZ regulations for defensible space and building requirements for LRA VHFHSZ’s.

The County’s Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) is currently undergoing revision for its next 5-year update. This update will reflect changes to the hazards facing San Diego County, the cities found within, and the programs that have been put in place to help minimize or eliminate these hazards. A key function of the Safety Element is the integration of the MJHMP to ensure compliance with the California Government Code (GC). Compliance with GC Section 65302.6 allows a community to adopt a local hazard mitigation plan

(LHMP) into its Safety Element, using the LHMP to satisfy state requirements for Safety Elements. The San Diego MJHMP qualifies as an LHMP for El Cajon, and by incorporating the MJHMP into it there is a stronger mechanism for implementation due to the more fluid nature of LHMPs. The San Diego County MJHMP has been incorporated into this element by reference, and Policy S-3.7 identifies the City's intent to incorporate future updates and ensure compliance GC § 65302 (g) requirements.

Planning for both evacuation and creating defensible spaces in new and existing development are key to mitigating the risk of wildfire. The City utilizes the San Diego County Emergency App for smartphones, as well as social media, to alert the public of hazards which is available in all relevant languages. Additionally, the City incorporates policies from the MJHMP to improve accessibility for emergency vehicles, enforce defensible space standards, and educate residents on risks and response to fire-related hazards. The MJHMP also contains policies regarding the creation of a county-wide vegetation management plan, development and updates to fuel modification ordinances, and educational resources for residents pertaining to safety and responsible actions to take during a wildfire event.

The MJHMP contains relevant policies that disallow new development in areas at high risk of wildfire, maintaining hazard monitoring and decreasing hazard response time in the event of a wildfire. Infrastructural improvements can include defining emergency response vehicle routes and ensuring that they will have space to maneuver and operate in all high-risk areas and sites.

Due to its built out nature and lack of large open spaces, El Cajon does not have any community fire breaks within city limits. There are four fuel breaks that can be found to the east of El Cajon in unincorporated communities. As the City is relatively built out, there isn't a major opportunity for fuel breaks. There is no Community Wildfire Protection Plan in place for El Cajon, and no Fire Safe Council for El Cajon. These are common conduits for fire mitigation or prevention funding such as grant money for fire breaks or fuels reductions. The nearest CWPP is for the unincorporated community of Crest, just east of El Cajon. Crest is also home to the El Cajon's closest fuel break. The maintenance of the Crest Community Fuel Break is performed by Cal Fire's San Diego Unit Battalion 2.

Emergency Response

The City of El Cajon Police Department and Heartland Fire District respond to small- and large-scale hazard events in El Cajon. In large emergency events, such as a regional wildfire, County resources, including multilingual evacuation notifications are also deployed. As stated in the San Diego County Emergency Operations Plan Appendix B, Fire and Rescue Mutual Aid Operations, any fire department can request assistance from other fire departments throughout the county simply by requesting those assets through existing agreements or from the Operational Area (OA) Fire and Rescue Coordinator dispatch center.²¹ In hazard events, an emergency operations center is set up well outside the hazard area, which could include locations outside El Cajon. Currently, El Cajon's response capacity meets the needs of the community; however, hard to reach populations with functional and medical needs still face challenges evacuating. Additionally, Heartland Fire trains residents to respond to emergencies through their Community Emergency Response Team (CERT) raining program. CERT programs educate volunteers about disaster preparedness, basic response skills – such as fire safety and medical response. The El Cajon CERT program has 50 participants that represent a large range of the community. CERT also trained 300 people on hands on CPR at the 2019 America on Mainstreet festival. The Heartland Fire District has long standing cooperation and training with the East County bordering agencies of Santee, Lakeside, San Miguel, and La Mesa, and El Cajon maintains participation and leadership in San Diego County Operations and Training as well as the County Fire Chief's Association. Multi-company drills

21 Unified San Diego County Emergency Services Organization and County of San Diego, 2018. Operational Area Emergency Operations Plan, Appendix B Fire and Rescue Mutual Aid Operations. September 2018. https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/plans/op-area-plan/2018/2018-Annex-B-Fire-Rescue-Mutual-Aid-Operations.pdf.

EXISTING CONDITIONS

have been conducted which can include live fire scenarios, vehicle extraction, firefighter rescue, technical rope rescue, multi-casualty incidents, wildland fire operations, hazardous material response operations, and emergency scene management simulations. The fire department has goals for response times which include at least 90% of emergency incidents first responded to within 7 minutes, and at least 90% of working fire incidents responded to with 17 personnel within 10 minutes and 30 seconds.²²

El Cajon's Municipal Code contains language regarding address identification, which is an important part of emergency response. Design requirements regarding size and visibility for addresses were amended from the California Building Code and can be found in Title 15, Chapter 4, Section 70 of the Municipal Code. Additionally, the Municipal Code has amended the California Fire Code regarding road dimensions.²³ These dimensions include both width and vertical height, and are meant to limit structures and vegetation from interfering with emergency response. Roadside vegetation maintenance can be performed by the City Public Works Department, CalTrans, or private road owners depending on the road type. Additionally, SDG&E can provide fuels reduction grants which can attend to roadside fuel treatment or other fuel treatments.²⁴

Major evacuation routes near or in the City that could be activated in the case of an evacuation include Interstate 8, Route 67, Route 52, Route 125, and Route 54. El Cajon Boulevard/Main Street and 2nd Street were identified as the two major transportation thoroughfares in El Cajon, which each have mean peak hourly capacities over 2,000 vehicles per hour. The average freeway can accommodate 2,200 vehicles per hour per lane at a speed of 30 mph.²⁵ Refer to the most recent County of San Diego EOP for the most up to date information on County evacuation routes.



22 City of El Cajon. 2020. "Adopted Annual Budget." January 31, 2020. <https://www.cityofelcajon.us/home/showpublisheddocument/24362/637368800153000000>.

23 Ordinance 5094 § 4, 2019.

24 SDG&E (San Diego Gas & Electric). 2021. *2020-2022 Wildfire Mitigation Plan Update*. , 2021. <https://www.sdge.com/sites/default/files/regulatory/SDG%26E%202021%20WMP%20Update%2002-05-2021.pdf>.

25 County of San Diego. 2018. *Operational Area Emergency Operations Plan*. September 2018. https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/plans/op-area-plan/2018/2018-Annex-Q-Evacuation.pdf.

3

GOALS, POLICIES, AND ACTIONS



Goals, Policies, and Actions

Goal 1: Protect the health of community members by improving air quality.

Policy 1.1: Reduce Air Pollution from Mobile Sources.

Action 1.1a: Electric Vehicle Charging Stations. Promote the installation of electric vehicle charging stations at important destinations such as civic buildings, parks, and commercial hubs.

Action 1.1b: Plan for Walking and Biking. Complete an Active Transportation Plan with a sidewalk master plan and updated bicycle master plan.

Action 1.1c: Fleet Management. Develop a fleet management program to increase the fuel efficiency and reduce emission of municipal vehicles.

Action 1.1d: Preferential Parking. Amend the zoning code to identify preferred locations for clean air vehicle parking required for new development.

Action 1.1e: Transit-oriented development. Promote transit-oriented development that reduces the need for parking and vehicle trips.

Action 1.1f: New auto-oriented uses. Discourage the location of auto-oriented uses in close proximity to residential neighborhoods where frequent trips or idling could result in air quality impacts.

Policy 1.2: Reduce Localized Air Pollution Exposure Near Major Roads.

Action 1.2a: Clean Air Development. Conduct a public information campaign to let residents living within 1,000 feet of a freeway know what the risks are and what mitigation measures they can take. These would include things such as installing high-efficiency air filters, keeping windows closed in the early morning, refraining from outdoor exercise in the mornings, installing thick landscaping, reducing driving, and using public transport.



