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# Local Hazard Mitigation Plan

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City of Fullerton

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Final City Council Draft  
(Adopted)

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May 21, 2020

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## ABBREVIATIONS

AB: Assembly Bill

AR: Atmospheric River

CAL FIRE: California Department of Forestry and Fire Prevention

Cal OES: California Governor’s Office of Emergency Services

CDH: California Department of Public Health

CEC: California Energy Commission

CFR: Code of Federal Regulations

CGS: California Geological Survey

ENSO: El Niño Southern Oscillation

EF: Enhanced Fujita (scale)

EPA: United States Environmental Protection Agency

FEMA: Federal Emergency Management Agency

FHSZ: Fire hazard severity zone

FRA: Federal Responsibility Area

IPCC: Intergovernmental Panel on Climate Change

LRA: Local Responsibility Area

MMI: Modified Mercalli Intensity (scale)

MMS: Moment Magnitude Scale

MWD: Metropolitan Water District of Southern California

MWDOC: Municipal Water District of Orange County

NOAA: National Oceanic and Atmospheric Administration

NWS: National Weather Service

OCFA: Orange County Fire Authority

OCFCD: Orange County Flood Control District

OCTA: Orange County Transportation Authority

OCWD: Orange County Water District

SB: Senate Bill

SCE: Southern California Edison

SCEDC: Southern California Earthquake Data Center

SoCalGas: Southern California Gas Company

SRA: State Responsibility Area

UCERF3: Third Uniform California Earthquake Rupture Forecast

USGS: United States Geological Survey

WRCC: Western Regional Climate Center

WUI: Wildland-urban interface

## GLOSSARY

**100-year flood:** A flood that has a 1 percent chance (one in 100) of occurring in any given year.

**500-year flood:** A flood that has a 0.2 percent chance (one in 500) of occurring in any given year.

**ARkStorm:** An emergency planning scenario that modeled a repeat of California's 1861–1862 winter storms, which caused unprecedented flooding throughout the state.

**Atmospheric river:** A narrow band of very moist air in the atmosphere that can generate intense storms. Up to 50 percent of California's annual rainfall comes from the relatively small number of atmospheric storms.

**Climate change:** Long-term changes in the average meteorological conditions (temperature, precipitation, wind, etc.) of an area.

**Critical Facility:** Typical critical facilities include hospitals, fire stations, police stations, storage of critical records, and similar facilities. These facilities should be given special consideration when formulating regulatory alternatives and emergency management plans. For purposes of this plan, critical facilities include locations that serve an emergency support function within the City and should be able to remain operable not only through a hazard event but also after a hazard event has already occurred.

**Derecho:** A type of intense windstorm that blows in a straight line, caused by a strong, large thunderstorm.

**Downburst:** A type of intense windstorm that descends from a strong thundercloud and then gusts out in all directions.

**El Niño Southern Oscillation:** A natural cycle of wind and water temperatures in the eastern tropical areas of the Pacific Ocean that affects global weather patterns, including precipitation levels in California. Consists of a warm phase (El Niño), a neutral phase, and a cool phase (La Niña).

**Epicenter:** The point on the surface of the ground below which an earthquake begins.

**Facility of Concern:** A facility that is not critical in nature but is identified by the City because it plays a significant role in emergency response and recovery.

**Fault line:** A boundary between sections of the earth's surface.

**Fault rupture:** An event in which sections of the earth's surface suddenly move past each other along part or all the length of a fault. The sudden movement generates the shaking that we perceive as an earthquake.

**Flash flood:** A dangerous type of flood that occurs very quickly, with little warning. Usually a result of sudden, intense precipitation.

**Flood plain:** The area that may be affected by a flood, usually named by the type of flood that can occur there (e.g. a 100-year flood plain).

**Katabatic wind:** A hot dry wind, caused when areas of high pressure occur over an area of high elevation, and lower pressure zones form over lower elevations. As the wind descends, it heats up, becomes drier, and can increase in speed.

**Liquefaction:** A phenomenon in which loose, wet soil is suddenly shaken, causing the soil to behave more like a fluid and lose its stability. Often caused by earthquakes.

**Microburst:** A downburst that affects a small area, although the wind speeds are not necessarily less intense than a full-scale downburst.

**Modified Mercalli Intensity scale:** A way of measuring the intensity of an earthquake based on the damage it causes at a specific location. As a result, an earthquake will register a different rating on the Modified Mercalli Intensity scale in different places.

**Moment Magnitude Scale:** A way of measuring the intensity of an earthquake based on the amount of energy released by the fault rupture. A replacement for the Richter Scale.

**Ponding:** A type of flooding caused when water collects in a low-lying area.

**Rupture:** See “Fault rupture.”

**Santa Ana winds:** A type of katabatic wind that affects the coastal areas of southern California. They are commonly known for fanning wildfires.

**Sea level rise:** A global increase in the level of the ocean, driven by melting land ice and increases in water temperature as a result of climate change.

**Snowpack:** Snowfall that accumulates in cold mountain areas and remains frozen for a long period of time. In California, snowpack in the Sierra Nevada provides a large amount of water to the state during the summer and early autumn months as it melts.

**State Water Project:** An extensive system of aqueducts and pumps that conveys water from the northern Sierra Nevada to cities and agricultural lands throughout California, including the Los Angeles region.

**Subduction zone:** A location where two tectonic plates come together, one moving underneath the other. Strong earthquakes in these regions are responsible for most major tsunamis.

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# CHAPTER 1

## INTRODUCTION

### PLAN PURPOSE AND AUTHORITY

Hazard events can lead to injuries or death, affect overall health and safety, damage or destroy public and private property, harm ecosystems, and disrupt key services. Although the hazard event itself often gets the most attention, it is only one part of a larger emergency management cycle.

Emergency planners and responders can take steps during the response, recovery, mitigation, and preparedness phases of the cycle to minimize the harm caused by a disaster. This Local Hazard Mitigation Plan (LHMP or Plan) focuses on optimizing the mitigation phase of the cycle. Mitigation involves making a community more resilient to disasters so that when hazard events do ultimately occur, the community suffers less damage and is able to recover more effectively. It differs from preparedness, which is planning in advance for how best to respond when a disaster occurs or is imminent. For example, a policy to make homes structurally stronger so they suffer less damage during an earthquake is a mitigation action, while fully equipping shelters to accommodate people who lose their homes in an earthquake is a preparedness action. Some activities may qualify as both.

Fullerton, like all other communities, could potentially suffer severe harm from hazard events, and although large disasters may cause widespread devastation, even smaller disasters can have substantial effects. Fullerton cannot make itself completely immune to hazard events, but this Plan can help make the community a safer place to live, work, and visit. This Plan provides a comprehensive assessment of the threats that Fullerton faces from natural and human-caused hazard events and a coordinated strategy to reduce these threats. It identifies resources and information that can help community members, City staff, and local officials understand local threats and make informed decisions. The LHMP can also support increased coordination and collaboration between the City, other public agencies, local employers, service providers, community members, and other key stakeholders.



#### KEY TERMS

**Hazard event:** An emergency as a result of a natural or human-caused event that has the potential to cause harm.

## FEDERAL AUTHORITY

Fullerton is not required to prepare an LHMP, but state and federal regulations encourage it. The federal Robert T. Stafford Disaster Relief and Emergency Act, amended by the Disaster Management Act of 2000, creates a federal framework for local hazard mitigation planning. It states that jurisdictions that wish to be eligible for federal hazard mitigation grant funding must prepare a hazard mitigation plan that meets a certain set of guidelines and submit this plan to the Federal Emergency Management Agency (FEMA) for review and approval. These guidelines are outlined in the Code of Federal Regulations, Title 44, Part 201, and discussed in greater detail in FEMA’s Local Mitigation Plan Review Tool.

## STATE AUTHORITY

### California Government Code Sections 8685.9 and 65302.6

California Government Code Section 8685.9 (also known as Assembly Bill 2140) limits the State of California’s share of disaster relief funds paid out to local governments to 75 percent of the funds not paid for by federal disaster relief efforts, unless the jurisdiction has adopted a valid hazard mitigation plan consistent with the Disaster Management Act of 2000 and has incorporated the hazard mitigation plan into the jurisdiction’s general plan. In these cases, the State may cover more than 75 percent of the remaining disaster relief costs.

All cities and counties in California must prepare a general plan, which must include a safety element that addresses various hazard conditions and other public safety issues. The safety element may be a stand-alone chapter or incorporated into another section, as the community wishes. California Government Code Section 65302.6 indicates that a community may adopt an LHMP into its safety element as long as the LHMP meets applicable state requirements. This allows communities to use the LHMP to satisfy state requirements for safety elements. As the General Plan is an overarching long-term plan for community growth and development, incorporating the LHMP into it creates a stronger mechanism for implementing the LHMP.

### California Government Code Section 65302 (g)(4)

California Government Code Section 65302 (g)(4), also known as Senate Bill (SB) 379, requires that the safety element of a community’s general plan address the hazards created or exacerbated by climate change. The safety element must identify how climate change is expected to affect hazard conditions in the community and include measures to adapt and be more resilient to these anticipated changes.

Because the LHMP can be incorporated into the safety element, including these items in the LHMP can satisfy the state requirement. SB 379 requires that climate change must be addressed in the safety element when the LHMP is updated after January 1, 2017, for communities that already have an LHMP, or by January 1, 2022, for communities without an LHMP.

### KEY TERMS

**Mitigation:** Actions that increase resiliency and reduce the harmful effects of a hazard.

**Resilient:** Better able to avoid or lessen the harmful effects of a hazard.



This LHMP is consistent with current standards and regulations, as outlined by the California Office of Emergency Services (Cal OES) and FEMA. It uses the best available science, and its mitigation measures reflect best practices and community values. It meets the requirements of current state and federal guidelines and makes Fullerton eligible for all appropriate benefits under state and federal law and practices. Note that while FEMA is responsible for reviewing and certifying this LHMP, and Cal OES is responsible for conducting a preliminary review, this Plan does not grant FEMA or Cal OES any increased role in the governance of Fullerton or authorize either agency to take any specific action in the community.

## PLAN ORGANIZATION AND USE

The Fullerton LHMP is both a reference document and an action plan. It has information and resources to educate readers and decision makers about hazard events and related issues, and a comprehensive strategy that the City and community members can follow to improve resiliency in Fullerton. It is divided into the following chapters:

- **Chapter 1: Introduction.** This chapter discusses the purpose and authority of the LHMP, its goals, how to use the Plan, and how it was developed.
- **Chapter 2: Community Profile.** This chapter provides an overview of the history of Fullerton, its demographics, the local economy, and its land uses and infrastructure.
- **Chapter 3: Hazard Assessment.** This chapter summarizes the various hazard conditions in Fullerton, their history, the risk of future occurrence, and any effects of climate change on their frequency and intensity. It also discusses how hazards were selected and prioritized for inclusion in this Plan.
- **Chapter 4: Threat Assessment.** This chapter discusses the threat to community members, buildings, and infrastructure posed by individual hazard types. It also summarizes the methods and approach used to prepare the threat assessment.
- **Chapter 5: Hazard Mitigation Strategy.** This chapter contains specific hazard mitigation actions to improve resiliency in Fullerton and a discussion of how the mitigation actions were developed.
- **Chapter 6: Plan Maintenance:** This chapter discusses how the Plan will be implemented and summarizes how Fullerton can monitor and update the Plan in future years.



## Local Mitigation Planning Handbook

March 2013



FEMA's Local Mitigation Planning Handbook, last updated in 2013, is one of the key guidance documents for local communities in preparing hazard mitigation plans.

- **Chapter 7: References:** This document contains all the references and images used throughout the document.

## PLAN GOALS

This Plan was developed to broadly increase resiliency in Fullerton. There are five key goals for Fullerton's LHMP:

- Reduce and isolate threats to public safety and property in Fullerton.
- Maintain government operations and provisions of essential services to residents and stakeholders during and after a hazard event.
- Protect the natural environment through responsible stewardship of air, water, and open spaces in Fullerton.
- Promote resiliency and climate action in Fullerton through resilient infrastructure, responsive governance, and vibrant civic participation.
- Partner with surrounding local, regional, state, and federal jurisdictions in hazard mitigation efforts.

## PLANNING PROCESS

State and federal guidance for local hazard mitigation plans do not require that jurisdictions follow a standardized planning process. FEMA encourages communities to create their own planning process that reflects local values, goals, and characteristics. FEMA does suggest a general planning process:



The rest of this section describes the process used by the City to develop its LHMP.

## HAZARD MITIGATION PLANNING COMMITTEE

The City established a Hazard Mitigation Planning Committee. The Committee is made up of representatives from key City departments as well as stakeholder members that include residents, representatives from local and regional agencies, and companies that are key to hazard mitigation activities. These stakeholders are identified by asterisks (\*). The City also informed other emergency managers from surrounding cities.

These members make up the Committee:

- Heather Allen, Planning Consultant, Fullerton Community Development
- Matt Foulkes, Planning Manager, Fullerton Community Development
- Adam Loeser, Deputy Chief, Fullerton Fire Department
- Kathy Schaefer, Division Chief, Fullerton Fire Department
- Pamela Mackie, Risk Management Specialist, Fullerton Human Resources
- Olga Vellanoweth, Risk Management Specialist, Fullerton Human Resources
- Alice Loya, Manager, Fullerton Parks and Recreation
- Doug Pickard, Parks Project Specialist, Fullerton Parks and Recreation

- Rhonda Cleggett, Lieutenant, Fullerton Police Department
- Dan Diaz, Street Division Superintendent, Fullerton Public Works
- Kevin Kwak, Senior Civil Engineer, Fullerton Public Works
- Wayne Elms, Landscape Supervisor, Fullerton Public Works
- William Roseberry, Sewer Superintendent, Fullerton Public Works
- Yelena Voronel, Principal Civil Engineer, Fullerton Public Works
- Hye Jin Lee, Water Systems Manager / Assistant City Engineer, Fullerton Public Works
- Laurie Bruneau, Risk Manager, Fullerton School District\*
- Pearl Boelter, Environmental Health and Safety Director, Cal State Fullerton\*
- Julie Lugaro, Associate Transportation Planner, Caltrans\*
- Larry Lara, Director of Facilities, Fullerton College\*
- Arlen Beck, Planning Technician, City of Placentia\*
- Carlos Jaramillo, Deputy Director of Community Development, City of La Habra\*
- Ian Whyte, Emergency Management Program Manager, Metropolitan Water District\*
- Rudy Davila, Engineer, Orange County Sanitation District\*
- Carl Erickson, Director of Human Resources and Risk Management, Fullerton Joint Unified School District\*
- Hector Campos, Security Manager, St. Jude Medical Center\*
- Rebecca Marsile, Health Educator, Orange County Health Care Agency\*

The Committee held four meetings throughout the plan development process to lay out the methods and approach for the Plan, draft and review content, make revisions, and engage members of the public.

- **Committee Meeting #1 (June 14, 2018):** The Committee members confirmed the project goals and the responsibilities of the Committee. They revised the community engagement and outreach strategy, confirmed and prioritized the hazards to be included in the Plan, and identified critical facilities for the threat assessment.
- **Committee Meeting #2 (July 12, 2018):** Members held a detailed discussion about the results of the hazards assessment and mapping that showed the areas facing an elevated risk. The Committee also reviewed the hazard prioritization results.

- **Committee Meeting #3 (August 9, 2018):** The Committee reviewed the results of the risk assessment to identify the populations and assets that may face greater harm in a hazard event. The Committee also discussed potential hazard mitigation actions to address vulnerabilities.
- **Committee Meeting #4 (September 13, 2018):** The Committee reviewed the draft mitigation measures, made revisions, and assigned priorities.

Invitation to Committee meetings were provided via email with an accompanying calendar invitation. **Appendix A** contains copies of meeting agendas and sign in sheets for the Hazard Mitigation Planning Committee meetings.

## PUBLIC ENGAGEMENT

Under FEMA guidelines, local hazard mitigation planning processes should create opportunities for members of the public to be involved in plan development—at a minimum, during the initial drafting stage and during plan approval. The Committee chose to go beyond minimum standards and conduct more extensive community outreach to help ensure that the LHMP reflects community values, concerns, and priorities. The Committee developed a community engagement and outreach strategy to guide all public engagement activities. **Appendix B** contains a copy of the strategy.

### Public Input Meeting

An in-person public meeting was a central component of the City’s engagement efforts. This meeting provided an opportunity for members of the public to learn about the LHMP in depth—the plan development process, the hazards of concern, and the mitigation strategy and individual actions. At this meeting, members of the public could speak directly to City staff and other stakeholders and provide detailed feedback. The City held one public meeting prior to public review. Notices of this meeting were widely distributed in advance, in accordance with City notification requirements, the engagement strategy, legal requirements, and best practices.

- **Public Input Meeting (October 10, 2018):** This meeting was held concurrently with the City of Fullerton Planning Commission meeting. Project staff from PlaceWorks and City staff gave a presentation to the members of the Commission and members of the public in attendance. Speakers discussed the process of the Plan development, the importance of having an LHMP, and took questions and comments from the Commission members. No additional public comments were submitted during the meeting.

### Online Engagement

The City recognized that not all community members are able to attend public meetings and conducted public engagement through social media and online platforms. City staff set up a project website as a simple, one-stop location for community members to learn about the LHMP. The website included information about what an LHMP is and why the City prepared one. It had links to materials and plan documents as they became available and allowed members of the public to receive notifications about upcoming events. City staff also used social media accounts, such as Facebook, Twitter, and NextDoor, to send quick notifications or bursts of information about the Plan and the development process.

A central part of the online engagement was an online survey. This survey asked community members about their experience and familiarity with emergency conditions, their level of preparedness for future emergencies, and preferred actions for the City to take to increase resiliency in Fullerton. The survey had responses from 137 community members; those responses are summarized here:

- Most survey respondents (81 percent) indicate that they have not been impacted by a hazard event.
- The top three hazards that have impacted the most residents are: (1) Seismic hazards (52 percent of respondents), (2) Disease/pests (30 percent of respondents), and (3) Severe weather (30 percent of respondents).
- Most respondents express concern (36 percent very concerned and 35 percent somewhat concerned) that climate change could introduce new hazards or make existing hazards in Fullerton worse. 1 in 4 respondents are not at all concerned (25 percent).
- Nearly half of all homeowner respondents report having adequate homeowners' insurance to cover the hazards that could potentially impact their home (48 percent). Only a miniscule amount of homeowners report having no insurance policy (1 percent).
- While most respondents indicate not having flood insurance for their home, they indicate they are interested (70 percent). About 1 in 4 respondents already have flood insurance (26 percent).
- Among the disaster preparedness household items, the top three items residents indicate they already possess are: (1) can opener (93 percent), (2) cooking and eating utensils (88 percent), (3) battery-powered flashlight (86 percent).
- Most respondents are uninvolved and uninterested in their local Community Emergency Response Team (CERT) (65 percent). Roughly 1 in 4 respondents are uninvolved but want more information about CERT.
- The overwhelming majority of respondents convey that the most effective strategy to help them become better prepared for a disaster includes effective emergency notification and communication (86 percent).
- Most respondents (71 percent) work for an employer who has a disaster recovery plan.

**Appendix B** contains copies of materials used for public outreach, including the full results of the community survey.

## **PUBLIC REVIEW DRAFT**

On March 14, 2019, Fullerton released a draft copy of the LHMP for public review and comment. The document was posted electronically on the City's website, and hard copies were made available at the Fullerton Public Library, City Clerk's Office, and the Community Development Department. The City distributed notifications about the public review draft through social media accounts and other online sources. Members of the Hazard Mitigation Planning Committee were notified via email and provided a

link to the project webpage. Additionally, community members who completed the online survey and provided an email address to receive additional information will be notified of the release of the draft.

## PLAN REVISION AND ADOPTION

One public comment was received during the public review period. The comments received focused on technical accuracy and organization of the document. In response to these comments, some of the sections of the document were re-organized to flow better and better describe the issues within the plan. Upon completion of these revisions, the Plan was submitted to Cal OES and FEMA. Upon receipt of approval from state and federal agencies, the final draft was submitted to City decision makers. Upon adoption of the Plan, the Fullerton City Council conducted a hearing, whereby the public was invited to submit final comments or concerns regarding the document.

The Fullerton City Council adopted the final LHMP on May 19, 2020. **Appendix C** contains a copy of the adoption resolution.

## PLAN RESOURCES

The Committee used a number of different plans, studies, technical reports, datasets, and other resources to prepare the hazard assessment, mapping, threat assessment, and other components of this Plan. **Table 1-1** provides some of the primary resources the Committee used to prepare this Plan.

**TABLE 1-1: KEY RESOURCES FOR PLAN DEVELOPMENT**

Section	Key Resources	Example Uses
Multiple sections	<ul style="list-style-type: none"> <li>• Cal-Adapt</li> <li>• California Department of Conservation</li> <li>• California Geological Survey</li> <li>• California Office of Emergency Services</li> <li>• California State Hazard Mitigation Plan</li> <li>• City of Fullerton General Plan (The Fullerton Plan)</li> <li>• City of Fullerton 2010 Local Hazard Mitigation Plan</li> <li>• FEMA Local Hazard Mitigation Plan Guidance</li> <li>• National Oceanic and Atmospheric Administration</li> <li>• National Weather Service</li> <li>• US Geological Survey</li> <li>• US Census Bureau 2011-2015 American Community Survey</li> </ul>	<ul style="list-style-type: none"> <li>• Science and background information on different hazard conditions.</li> <li>• Records of past disaster events in and around Fullerton.</li> <li>• Current and anticipated climate conditions in and around Fullerton.</li> <li>• Projections of future seismic conditions and events.</li> <li>• Prior mitigation actions and strategies to verify the progress achieved</li> </ul>
Community Profile	<ul style="list-style-type: none"> <li>• City of Fullerton financial and economic reports</li> <li>• California Energy Commission</li> <li>• Fullerton Public Library</li> </ul>	<ul style="list-style-type: none"> <li>• Demographic information for Fullerton and Orange County.</li> <li>• History of the region.</li> <li>• Economic trends in Fullerton.</li> <li>• Commute patterns in Fullerton.</li> <li>• Local land uses patterns.</li> <li>• Background information on utilities serving Fullerton.</li> </ul>
Hazard Assessment (Dam Failure)	<ul style="list-style-type: none"> <li>• LIDAR survey</li> <li>• Orange County Water District</li> </ul>	<ul style="list-style-type: none"> <li>• Mapping of dam failure inundation areas.</li> </ul>

**TABLE 1-1: KEY RESOURCES FOR PLAN DEVELOPMENT**

Section	Key Resources	Example Uses
	<ul style="list-style-type: none"> <li>US Army Corps of Engineers</li> </ul>	<ul style="list-style-type: none"> <li>Profiles and conditions of dams in and around Fullerton.</li> </ul>
Hazard Assessment (Disease and Pest Hazards)	<ul style="list-style-type: none"> <li>California Department of Public Health</li> <li>Centers for Disease Control</li> <li>World Health Organization</li> </ul>	<ul style="list-style-type: none"> <li>Science and historical records of disease outbreaks.</li> </ul>
Hazard Assessment (Fire Hazards)	<ul style="list-style-type: none"> <li>California Department of Forestry and Fire Prevention</li> <li>Fire and Resource Assessment Program</li> </ul>	<ul style="list-style-type: none"> <li>Records of past fire events.</li> <li>Location of fire hazard zones in and around Fullerton.</li> </ul>
Hazard Assessment (Flood Hazards)	<ul style="list-style-type: none"> <li>FEMA Map Service Center</li> <li>Orange County Flood Control District</li> </ul>	<ul style="list-style-type: none"> <li>Records of past flood events in and around Fullerton.</li> <li>Locations of flood-prone areas in Fullerton.</li> </ul>
Hazard Assessment (Human-Caused Hazards)	<ul style="list-style-type: none"> <li>City of Fullerton Airport Master Plan</li> <li>Global Terrorism Database</li> </ul>	<ul style="list-style-type: none"> <li>Historical records of terrorism.</li> <li>Flight paths over Fullerton.</li> </ul>
Hazard Assessment (Hazardous Materials Release Hazards)	<ul style="list-style-type: none"> <li>Agency for Toxic Substances and Disease Registry</li> </ul>	<ul style="list-style-type: none"> <li>Location and dates of past hazardous materials release.</li> <li>Effects of hazardous materials release.</li> </ul>
Hazard Assessment (Seismic Hazards)	<ul style="list-style-type: none"> <li>Southern California Earthquake Data Center</li> <li>The Third California Earthquake Rupture Forecast (UCERF3)</li> </ul>	<ul style="list-style-type: none"> <li>Locations of fault zones.</li> <li>Records of past earthquakes.</li> </ul>
Hazard Assessment (Severe Weather Hazards)	<ul style="list-style-type: none"> <li>California Department of Water Resources</li> <li>US Drought Monitor</li> <li>Western Regional Climate Center</li> </ul>	<ul style="list-style-type: none"> <li>Science and background information of severe weather events.</li> <li>Historical record of severe weather events in and around Fullerton.</li> </ul>

Note: Sections that are not individually called out in this table relied primarily on sources identified in multiple sections.



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# CHAPTER 2

## COMMUNITY PROFILE

This chapter of the LHMP is a summary of Fullerton’s physical setting, history, economy and demographics, current and future land uses, and key infrastructure. The community profile establishes the baseline conditions that inform the development of the hazard mitigation actions in **Chapter 5**.

### SETTING AND LOCATION

Fullerton is in northern Orange County approximately 22 miles southeast of downtown Los Angeles. The community is bordered by the cities of Placentia to the east, Anaheim to the south, Buena Park and La Mirada to the west, and La Habra and Brea to the north. The southern portion of the City lies on flat land; the northern half rises into sloping hills, known as the West Coyote and East Coyote Hills.

### HISTORY

Human settlement in what is now Fullerton dates back to 5,000 BC, or potentially earlier. These early residents were largely nomadic, depending primarily on hunting, fishing, and gathering plants for survival. Eventually the Tongva (Gabrielino) and Acjachemen (Juañeno) Native American cultures developed across much of the area encompassing modern-day Greater Los Angeles, including the area where Fullerton is situated today.

The first documented European in Orange County was Spanish explorer, Gaspar de Portolá, in 1769; the European presence was made more permanent in 1776 with the establishment of Mission San Juan Capistrano to the south. After Mexico (including California) became independent from Spain in 1821, the missions were secularized, and large portions of land were granted to prominent figures. The area of modern-day Fullerton became part of the Rancho San Juan Cajón de Santa Ana grant given to Juan Pacifico Ontiveros in 1837 (Orange County Archives n.d.a, n.d.b).

After Mexico ceded California to the United States, the state began to connect to the rest of the country via the railroad. Land speculation opportunities in the burgeoning state attracted people from the eastern United States, like George and Edward Amerige. They bought land to the north of the town of Anaheim with the goal of founding a settlement and allocating a portion of the land to the California Central Railroad. In 1887, the Amerige brothers established their settlement, naming it after the President of the Pacific Land and Improvement Co., George H. Fullerton. Agriculture, especially orange growing, became the most prominent industry in Fullerton soon after the City’s founding. Oil production became a leading industry in Fullerton in the late nineteenth and early twentieth centuries, driving much of the early growth of the community. In the mid-twentieth century, the City set aside the southern portion of Fullerton nearest the railway as an industrial-only area, leading to the mass consolidation of manufacturing in the area (Fullerton 2010).

After the Second World War, there was high demand by veterans and their families for new housing in southern California. Fullerton was one of many communities in the area that experienced a construction boom of new housing developments (Fullerton 2010). It was also during this time, in 1957, that the State of California established Orange County State College (today California State University, Fullerton) (CSUF 2009). In the same year, St. Jude Hospital (now St. Jude Medical Center) was opened (St. Jude 2018). This period of intense building and development lasted nearly thirty years, from the late 1940s to the 1970s. In the 1980s and 1990s, the City revitalized its downtown area and upgraded existing and constructed new public facilities, including libraries, parks, natural areas, and general city services. Today, Fullerton is a community with vibrant education and healthcare sectors, a bustling manufacturing area, thousands of homes, and a renewed downtown center (Fullerton 2010).



Intersection of Commonwealth and Harbor in 1886. Image from the Fullerton Public Library



Cal State Fullerton under construction in 1963. Image from the Fullerton Public Library

## DEMOGRAPHICS

The US Census Bureau’s American Community Survey estimates Fullerton’s population at 138,976 residents as of 2015. It is the seventh largest of Orange County’s 34 cities by population (US Census Bureau 2015a).

Compared to Orange County as a whole, Fullerton residents are younger, with a lower median household income and a lower level of home ownership. **Table 2-1** shows the basic demographics for Fullerton and Orange County.

**TABLE 2-1: BASIC DEMOGRAPHICS, FULLERTON AND ORANGE COUNTY (2015)**

	Fullerton	Orange County
Total population	138, 976	3,116,096
Percent of residents that are children (less than 10 years)	12.4%	12.4%
Percent of residents that are senior citizens (65+ years)	12.5%	12.8%
Median age	34.5	37.1
Total households	47,319	1,009,353
Median household income	\$65,974	\$76,509
Percent of rental households	48.3%	42.3%

Source: US Community Census 2015a, 2015b, 2015c.

A smaller proportion of Fullerton residents identify as white compared to Orange County residents. Approximately 40 percent of Fullerton residents identify as nonwhite, compared to approximately 37 percent of Orange County residents. **Table 2-2** shows the racial and ethnic composition in Fullerton and Orange County.

**TABLE 2-2: RACIAL AND ETHNIC COMPOSITION, FULLERTON AND ORANGE COUNTY (2015)**

Race or Ethnicity	Fullerton		Orange County	
	Population	Percentage	Population	Percentage
White	77,137	59.3%	1,970,000	63.2%
Black or African-American	3,357	3.3%	51,816	1.6%
American Indian and Alaska Native	362	1.2%	12,476	0.4%
Asian	34,490	26.8%	590,342	18.9%
Native Hawaiian and Other Pacific Islander	368	0.7%	9,529	0.3%
Other race	17,252	13.4%	368,220	11.8%
Two or more races	6010	2.7%	113,686	3.6%
Hispanic or Latino (of any race) *	48,974	35.2%	1,064,499	34.1%
<b>Total</b>	<b>138,976</b>	<b>100%</b>	<b>3,116,096</b>	<b>100%</b>

Source: US Census Bureau 2015d, 2015e.

\* The US Census Bureau does not currently count persons who identify as Hispanic or Latino as a separate racial or ethnic category. Persons who identify as Hispanic or Latino are also included in the other racial or ethnic categories.

Fullerton residents' level of educational attainment is on a par with the average Orange County resident. Approximately 46 percent of adults 25 years of age or older in both Fullerton and Orange County have obtained a college degree. Approximately 13.4 percent of Fullerton adults have not finished high school, compared to 15.7 percent of Orange County adults. **Table 2-3** shows educational attainment for adults in Fullerton and Orange County.

**TABLE 2-3: EDUCATIONAL ATTAINMENT OF RESIDENTS 25+ YEARS OF AGE, FULLERTON AND ORANGE COUNTY (2015)**

Educational Attainment	Fullerton		Orange County	
	Population	Percentage	Population	Percentage
Less than 9th grade	6,558	7.3%	182,478	8.7%
9th grade to 12th grade (no diploma)	5,510	6.1%	144,383	6.9%
High school graduate or equivalent	16,702	18.6%	367,556	17.6%
Some college (no degree)	19,416	21.6%	436,584	21.0%
Associate's degree	6,962	7.7%	162,649	7.8%
Bachelor's degree	21,875	24.3%	506,749	24.3%
Graduate or professional degree	12,873	14.3%	277,384	13.3%
<b>Total</b>	<b>89,896</b>	<b>100%</b>	<b>2,077,783</b>	<b>100%</b>

Source: US Census Bureau 2015f.

Spanish is the most commonly spoken language in Fullerton after English, followed by Korean, Chinese, and Tagalog. Among residents at least five years of age, approximately 52 percent of Fullerton residents speak English at home, compared to approximately 69 percent of Orange County residents. Among speakers of the more common languages in Fullerton other than English, over half of Spanish and Tagalog speakers are fluent in English, but English fluency rates are lower among speakers of Korean and Chinese.

**Table 2-4** shows the language proficiency among residents five years of age and older in Fullerton and Orange County.

**TABLE 2-4: LANGUAGE PROFICIENCY OF RESIDENTS 5+ YEARS OF AGE, FULLERTON AND ORANGE COUNTY (2015)**

Language Spoken at Home	Fullerton		Orange County	
	Number of Speakers	Percent Not Proficient in English	Number of Speakers	Percent Not Proficient in English
English	67,986	-	1,587,426	-
Spanish	32,704	41.4%	770,012	44.5%
Korean	13,510	58.7%	76,934	58.1%
Chinese	4,692	57.8%	71,112	48.9%
Tagalog	2,219	23.2%	48,176	26.7%
All other languages	9,128	40.0%	371,309	44%
<b>Total</b>	<b>130,239</b>	<b>-</b>	<b>2,294,969</b>	<b>-</b>

Source: US Census Bureau 2015g.

## ECONOMY AND COMMUTE PATTERNS

Fullerton's economy features a robust education sector. According to the US Census, nearly 8,500 jobs are in educational services (approximately 16 percent of all jobs in Fullerton). Other major economic sectors are manufacturing (approximately 15 percent), healthcare and social assistance (approximately 14 percent), and retail trade establishments (approximately 12 percent) (US Census 2017). Most of Fullerton's largest employers are in education, healthcare, and aerospace. **Table 2-5** shows the major employers in the community.

**TABLE 2-5: TEN LARGEST EMPLOYERS IN FULLERTON (2017)**

Employer	Industry	Number of Employees	Percent of Total Employees
California State University, Fullerton	education	3,450	4.8%
St. Jude Medical Center	healthcare	1,963	2.7%
Raytheon Systems Co.	aerospace	1,320	1.8%
Albertsons Regional Office	retail	950	1.3%
Alcoa Fastening Systems	metals	750	1.0%
City of Fullerton	government	713	1.0%
St. Jude Heritage Health	healthcare	604	0.8%
Kimberly-Clark	personal care	440	0.6%
Vista Paint Corporation	construction	440	0.6%
Morningside of Fullerton	healthcare	403	0.5%
Total (Top 10 employers)	-	11,033	15.5%
All other employers	-	59,967	84.4%
<b>Total jobs</b>	<b>-</b>	<b>71,000</b>	<b>100%</b>

Source: Fullerton Comprehensive Annual Financial Report 2017.

Fullerton residents are mostly commuters—approximately 90 percent of employed residents travel outside of the community for work. They mostly travel to Anaheim, Santa Ana, Irvine, Costa Mesa, and other Orange County communities. Similarly, approximately 90 percent of people who work in Fullerton

come from other communities, predominantly from Anaheim, Los Angeles, and Santa Ana as well as other communities in Orange County (US Census 2017).

With major employers in the education, healthcare, and aerospace fields as well as the significant employment base throughout the City, Fullerton experiences a large increase in daytime population due to employee and student commutes. In 2018, CSU Fullerton had an enrollment of over 39,000 students, of which approximately 99% live off campus. In addition, Fullerton Community College is located several miles west of CSU Fullerton and has a total enrollment of approximately 24,000 students of which roughly one-third are considered full time with the remaining considered part time students.

## LAND USES

The Fullerton Plan identifies the land uses allowed in the City (**Figure 1**). A majority of city land is designated for residential use. Other major uses designated throughout the City include Greenbelt Concept and Parks and Recreation, which contain large areas of active and passive open space, as well as industrial areas within the southern portions of the City. Other uses of significance include School, Government, and Religious Institution. (Fullerton 2016).

## DEVELOPMENT TRENDS

Current development activities in the city typically involve residential or mixed-use infill development, usually on low-density commercial centers or parking lots, or rehabilitation of existing structures. In 2018, there were 33 development projects in progress under the supervision of the Community Development Department. These development projects include adaptive reuse of existing structures, commercial redevelopments, residential subdivisions, and mixed-use developments. Development of this plan has taken this new development into account and is informing land use planning decisions as these projects continue through the entitlement process. As a result, no further risks to Fullerton from these developments has resulted since the preparation of the previous LHMP. **Table 2-6** shows the number of developments in Fullerton by type:

**TABLE 2-6: DEVELOPMENT CATEGORIES**

Development Type	Number
Active Transportation	1
Adaptive Reuse	2
Apartment/Multifamily	7
Commercial	12
Industrial/Institutional	5
Mixed-Use	3
Single-Family Residential	2

Source: Fullerton 2018.

Notes of August 20, 2018.

## INFRASTRUCTURE ASSESSMENT

### ELECTRICITY

Fullerton receives its electricity from Southern California Edison, which is one of California's four major investor-owned utility companies and the largest electrical supplier in the state (CEC 2016).<sup>1</sup> Southern California Edison sources electricity from power plants throughout California and neighboring states and delivers it through a network of large-scale power lines and substations (CEC 2015a).



Electrical substations are vital facilities to ensure that electrical service is safe and reliable. Image from Paul Chernikhowsky.

The one registered commercial power plant in the city is the CSUF Trigenation natural gas plant on the CSUF campus. There are also a number of noncommercial plants in Fullerton, including the CSUF State College solar photovoltaic plant, a natural gas plant on the Kimberly-Clark campus in southeastern Fullerton, and a number of small-scale solar panel installations. Fullerton has seven power substations: the Norweld, Gilbert, Sunnyhills, Basta, Fullerton, Paper, and Titans Substations. All of these substations are operated by Southern California Edison. There are also a number of nearby substations outside the city that are operated by Southern California Edison or by other providers. The major transmission lines in Fullerton run along Walnut Avenue, Orangethorpe Avenue, and Imperial Highway (State Route 90) and connect Fullerton to substations outside of the city. While these are not all of the transmission lines running through the City, these external connections provide Fullerton with some redundancies against power outages in the event that individual power lines are damaged, although damage to a substation or more widespread damage to power lines could result in a greater loss of power (CEC 2015b, 2017a).

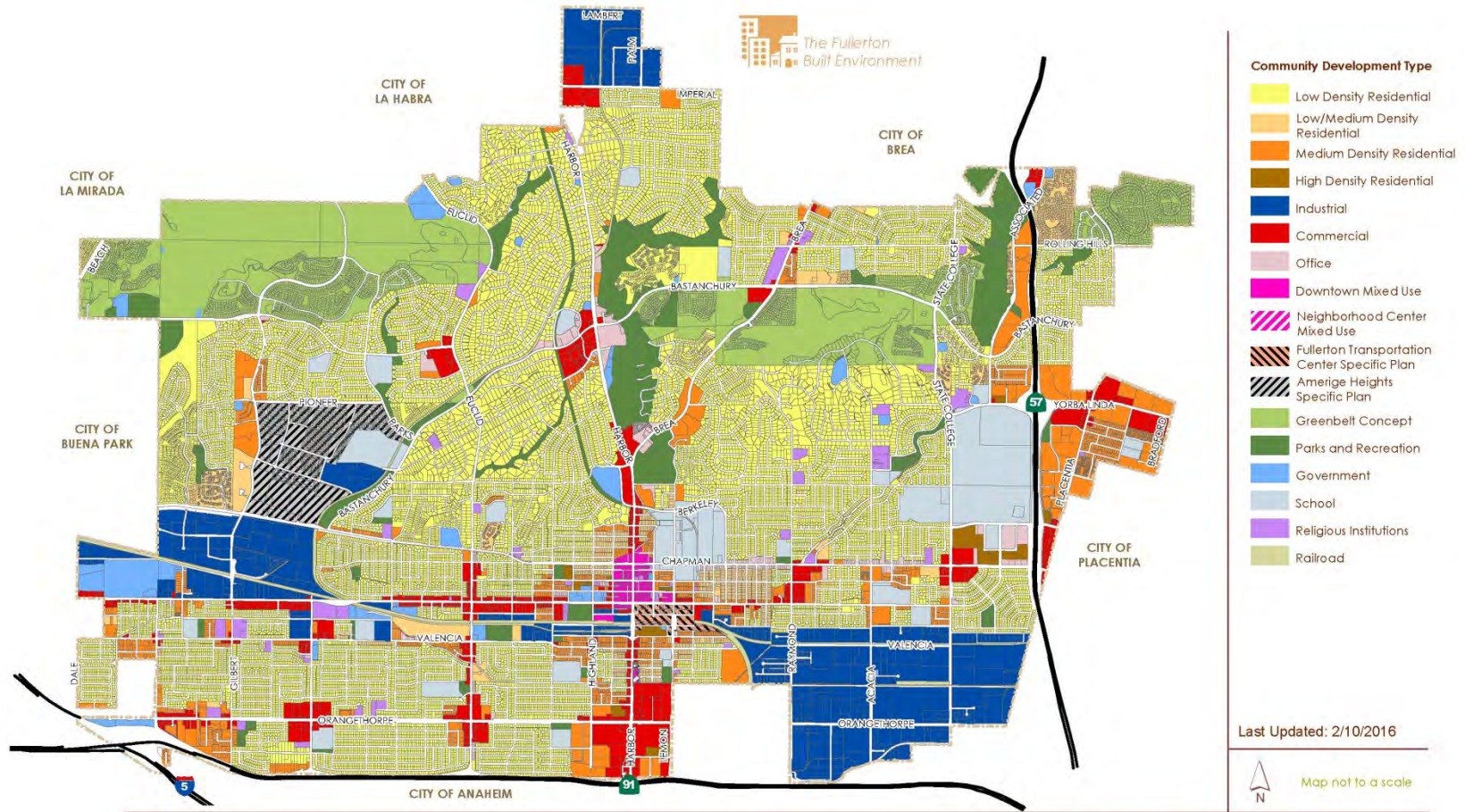
### NATURAL GAS AND OIL

Natural gas service in Fullerton is provided by the Southern California Gas Company. There is one major transmission line running along S Placentia Avenue as well as a high-pressure distribution line with branches running along Brookhurst Street, W Valencia Drive, S Placentia Avenue, and Nutwood Avenue. No other large pipelines are present (SoCalGas 2018; CEC 2017b). Various facilities in neighboring Placentia, Anaheim, Brea, and other surrounding communities help to keep the natural gas flowing safely and reliably (CEC 2017b). Oil pipelines run through the neighboring cities of Buena Park and Brea; however no major transmission lines run through the City. Damage to transmission lines in Fullerton or to facilities in surrounding communities could impact services in Fullerton. Because natural gas is highly flammable and potentially combustible, any rupture in a natural gas pipeline or an accident that causes a spark around natural gas could lead to a fire or explosion. Similarly, an oil pipeline breach in neighboring cities could also lead to a fire that could impact Fullerton.

<sup>1</sup> As of 2015, as measured by the amount of electricity supplied.



Figure 2-1: General Plan Land Use Map



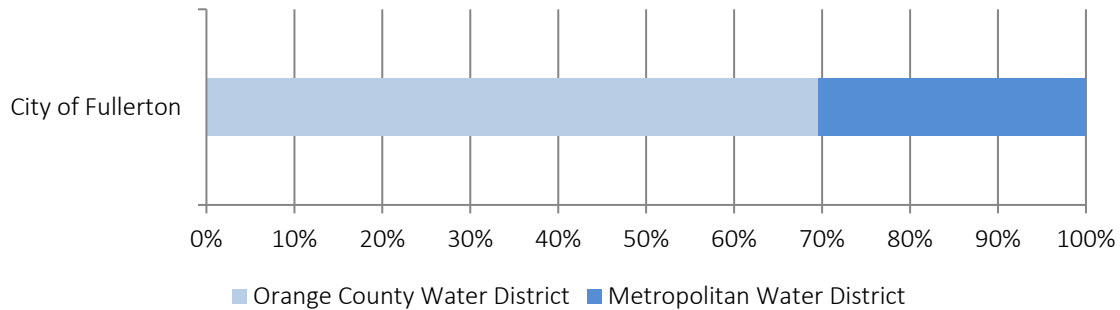
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## WATER AND WASTEWATER

Most of Fullerton’s water is groundwater supplied by the Orange County Water District; the remaining water is imported from the State Water Project and Colorado River and is supplied to Fullerton through regional agencies. **Figure 2** shows the proportions of water sources for the City (Fullerton 2015).

**Figure 2-2: Water Sources in Fullerton**



Sources: Fullerton 2012, 2015.

Because some of the water used in Fullerton does not come from sources within the community, there is a risk that damage to local pipelines and pumping stations may interrupt the residents’ water supply. Imported water or groundwater pumped from elsewhere in Orange County may be affected by damage to water treatment plants and delivery infrastructure in the county. Water infrastructure damage in the Los Angeles Basin or the major aqueducts that supply the region may affect imported supplies.

According to Fullerton’s 2015 Urban Water Management Plan, the City maintains 15 storage reservoirs with a capacity of 69.5 million gallons. With a daily water demand of 223 gallons per capita per day (GPCD) and using the City’s 2015 population of 138,976 people, the City has enough reserves to supply everyone’s needs for roughly two days (Fullerton 2015).<sup>2</sup> This assumes no restrictions are enacted or that GPCD does not decrease. The City maintains connection to a regional pipeline network that allows it to receive water from other Orange County water suppliers in the event of short-term emergencies.

Wastewater service in the community is supplied by the Orange County Sanitation District (OCSD). The City operates miles of sewer lines and pump stations that collect wastewater from buildings and facilities in Fullerton and conveys it to regional wastewater treatment facilities. The nearest wastewater treatment facility is the OCSD Plant in Fountain Valley. Damage to the City-owned

<sup>2</sup> This is determined by dividing the amount of reserve water by the GPCD multiplied by the City’s 2015 population. It can be expressed as the following equation: Reserve Capacity / (GPCD x 2015 population) = reserve duration period.

sewer system or to OCSF facilities may reduce treatment capacity or cause a leak, which in turn may pose a hazard to human and environmental health (Fullerton 2012a, 2015).

## TRANSPORTATION

A system of major and primary arterial highways provides vehicular circulation throughout the city. The east-west highways providing access to/from and through the city are Imperial Highway (State Route 90), Bastanchury Road, Malvern/Chapman Avenue, Commonwealth Avenue, and Orangethorpe Avenue. Similarly, Beach Boulevard (State Route 39), Euclid Street, Harbor/Brea Boulevard, State College Boulevard, and Placentia Avenue provide the north-south highways. The Orange Freeway (State Route 57) runs along Fullerton's eastern border and the Riverside Freeway



The pedestrian bridge over the tracks at the Fullerton Station. Image from PlaceWorks.

(State Route 91) runs along the southern border of Fullerton, and the Santa Ana Freeway (Interstate 5) runs nearby the southwest city limits. In the event of an emergency, most community members would likely evacuate in either direction along any of these arterial highways. If any of these routes become inaccessible, the other roadways and local streets could easily become congested. Use of the roadway system as evacuation routes will be based on the incident occurring and areas of the city impacted.

The Orange County Transportation Authority runs bus lines that connect Fullerton with cities in Los Angeles and Orange Counties. Fullerton's rail station in the downtown area is served by Metrolink commuter trains, Amtrak's Pacific Surfliner route, and the long-distance Southwest Chief Amtrak train. Freight rail service is provided by BNSF Railroad and Union Pacific Railroad. The nearest airports with commercial service are John Wayne International Airport and Long Beach Airport. The Fullerton Municipal Airport serves general aviation aircraft.

# CHAPTER 3

## HAZARD ASSESSMENT

This chapter discusses the types of hazards that might reasonably happen in Fullerton. It describes these hazards and how they are measured, where in Fullerton they may occur, a history of these hazards in and around Fullerton, and the future risk they pose. The discussion of future risks includes any changes to the frequency, intensity, and/or location of these hazards as a result of climate change. This chapter also discusses how the Hazard Mitigation Planning Committee selected and prioritized the hazards in this Plan.

### KEY TERM

**Risk:** The chance of a hazard happening—especially one of a particular size or intensity.

### HAZARD IDENTIFICATION

Federal Emergency Management Agency (FEMA) guidance identifies a number of hazards that communities should evaluate for inclusion in a hazard mitigation plan. Communities may also consider additional hazards for their plans. The Committee reviewed an extensive list of hazard events and excluded the ones that do not pose a threat to Fullerton. **Table 3-1** lists the hazards considered by the Committee and indicates which ones have been included in the plan. The table also shows if a hazard is recommended for consideration by FEMA and if it is included in the 2013 “California Multi-Hazard Mitigation Plan.”

**TABLE 3-1: HAZARD EVALUATION FOR FULLERTON LHMP**

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
Agricultural pests	California plan	No	No major agricultural activity or resources in Fullerton.
Air pollution	California plan	No	Air pollution is a state and regional issue that is addressed through plans and regulations administered by the South Coast Air Quality Management District and/or California Air Resources Board.
Aircraft incident	California plan	Yes	Aircraft incidents are a potential risk to Fullerton.
Avalanche	FEMA guidance California plan	No	Avalanches do not happen in Fullerton.
Civil Disturbance or Riot	California plan	Yes	The Committee determined that civil disturbances should be included in the LHMP.
Climate change	California plan Orange County HMP	Yes (as a function of other hazard discussions)	Climate change contributes to the frequency, intensity, and/or location of other hazards. It is not a stand-alone hazard. It will be discussed as a factor for future hazards rather than as an event.
Coastal flooding and storms	FEMA guidance California plan	No	Fullerton is not a coastal city and is not affected by coastal flooding and storms.
Cyber Threats	California plan	Yes	The Committee determined that cyber threats should be included in the LHMP.
Dam failure	FEMA guidance California plan Orange County HMP	Yes	Fullerton is within the dam inundation areas for multiple dams in the region.

**TABLE 3-1: HAZARD EVALUATION FOR FULLERTON LHMP**

<b>Hazard</b>	<b>Recommended for Consideration</b>	<b>Included in LHMP?</b>	<b>Reason for Inclusion or Exclusion</b>
Drought	FEMA guidance California plan Orange County HMP	Yes	Droughts are a recurring and potentially severe hazard in Fullerton.
Earthquake	FEMA guidance California plan	Yes	Fullerton is in a seismically active area and has been impacted by earthquakes.
Energy shortage	California plan	No	Fullerton is not responsible for supplying energy to the community.
Epidemic in Vector-Borne Disease	California plan Orange County HMP	Yes	The Committee determined that epidemics and vector-borne diseases should be included in the LHMP.
Erosion	FEMA guidance California plan	Yes	Erosion has occurred in certain areas of Fullerton and occasionally threatens property and human health.
Expansive soil	FEMA guidance	No	There are no expansive soil issues identified in Fullerton.
Extreme cold	FEMA guidance California plan	No	Temperatures in Fullerton rarely become cold enough to pose a threat to health or safety.
Extreme heat	FEMA guidance California plan	Yes	The Committee determined that extreme heat is a hazard of concern to Fullerton.
Flood	FEMA guidance California plan Orange County HMP	Yes	Flooding has occurred in certain areas of Fullerton and occasionally threatens property and human health.
Fracking	California plan	No	While petroleum production occurs in and around Fullerton, fracking is not widely used enough within the city to pose a hazard to be included.
Hail	FEMA guidance	No	Hail that is severe enough to pose a threat to people and property is too rare in Fullerton to be included.
Hazardous materials release	California plan	Yes	The Committee determined that hazardous material releases are a hazard of concern.
Hurricane	FEMA guidance	No	Fullerton has never been significantly affected by a hurricane.
Infrastructure failure	California plan	No	The Committee determined that any sizeable risks posed by infrastructure failures are adequately addressed by other hazards in this LHMP.
Landslide	FEMA guidance California plan Orange County HMP	Yes	Landslides can occasionally occur in Fullerton.
Levee failure	FEMA guidance California plan	No	The committee determined that hazards related to levee failure are not an issue of concern for the City.
Lightning	FEMA guidance	No	Although lightning occurs occasionally in Fullerton, it is not sufficiently threatening to be separately included in this Plan. Any risks are addressed by other hazards in this LHMP.
Metal theft	California plan	No	This issue was not identified by the Committee as a concern in Fullerton.
Methane-containing soils	FEMA guidance Regional hazard plans	No	There are no methane-containing soil issues identified in Fullerton
Nuclear hazard	California plan	No	Nuclear hazards were not identified as a hazard of concern in Fullerton.
Sea level rise	FEMA guidance California plan	No	Fullerton is not a coastal city and therefore cannot be inundated by sea level rise in the foreseeable future.
Severe wind	FEMA guidance	Yes	Severe winds occasionally blow in Fullerton and pose a threat to people and property.

**TABLE 3-1: HAZARD EVALUATION FOR FULLERTON LHMP**

<b>Hazard</b>	<b>Recommended for Consideration</b>	<b>Included in LHMP?</b>	<b>Reason for Inclusion or Exclusion</b>
Severe weather and storms	FEMA guidance	Yes	Fullerton is at risk from severe weather and storms that threaten public safety and property.
Storm surge	FEMA guidance	No	Fullerton is not a coastal community and cannot be plausibly affected by storm surge.
Subsidence	FEMA guidance	Yes	Fullerton could be at risk of being affected by some subsidence that could endanger property.
Terrorism	California plan	Yes	The Committee determined that terrorism should be included in the LHMP.
Thunderstorm	FEMA guidance California plan	Yes	Thunderstorms could pose a danger to Fullerton's residents and property. This hazard is discussed as part of the severe weather hazard.
Tornado or Water Spout	FEMA guidance	Yes	This hazard is discussed as part of the severe weather hazard.
Transportation crashes	California plan	Yes	Fullerton is frequently impacted by transportation incidents.
Tree Mortality	California plan Orange County HMP	Yes	This hazard is discussed as part of the drought and severe weather hazards.
Tsunami	FEMA guidance California plan Orange County HMP	No	Fullerton is not a coastal city and therefore cannot be impacted by tsunamis.
Urban Fires	California Plan Orange County HMP	Yes	Fullerton has a history of urban fires that can endanger public safety and health. This is jointly discussed with wildfires under Fire Hazards.
Volcano	FEMA guidance California plan	No	There are no volcanoes near enough to Fullerton to reasonably pose a threat.
Wildfires	California plan Orange County Plan	Yes	Wildfires in Fullerton are likely due to a large amount of open and natural spaces in the city, such as the Coyote Hills. This is jointly discussed with urban fires under Fire Hazards.

The Hazard Mitigation Planning Committee combined multiple selected hazards into a single category, renamed some hazard types, and discussed some hazards with multiple subcategories in order to streamline the list and make it more accurately reflect the conditions in Fullerton.

- Fire Hazards: combines urban and wildland fires.
- Geologic Hazards: includes landslides/mudflows and subsidence
- Human-Caused Hazards: features aircraft incidents, civil disturbance or riot, transportation crashes, terrorism, and cyber threats.
- Seismic Hazards: addresses fault ruptures, seismic shaking, and liquefaction.
- Severe Weather: includes severe wind, extreme heat, heavy rain, lightning and tornadoes.

After hazard evaluation and the organizational changes made by the Committee, this Plan discusses 10 hazard types:

- Dam Failure
- Disease/Pests
- Drought
- Fire
- Flood
- Geologic Hazards
- Hazardous Materials Release
- Human-Caused Hazards
- Seismic Hazards
- Severe Weather

## HAZARD SCORING AND PRIORITIZATION

The Committee followed FEMA guidance for hazard mitigation plans and prioritized each of the 10 hazards. In the initial step, the Committee assigned a score of 1 to 4 in four criteria for each of the 10 hazards. The four criteria are:

- **Probability:** The likelihood that the hazard will occur in Fullerton in the future.
- **Location:** The size of the area that the hazard would affect.
- **Maximum probable extent:** The severity of the direct damage of the hazard to Fullerton.
- **Secondary impacts:** The severity of indirect damage of the hazard to Fullerton.

The Committee assigned a weighting value to each criterion, giving a higher weight to the criteria deemed more important, and multiplied the score for each criterion by the weighting factor to determine the overall score for each criterion. The weighting values were recommended by FEMA:

- Probability: 2.0
- Location: 0.8
- Maximum probable extent: 0.7
- Secondary impacts: 0.5

**Table 3-2** shows the rubric used to assign a score for each criterion.

**TABLE 3-2: CRITERION SCORING**

<b>Probability</b>		<b>Maximum Probable Extent (Primary Impact)</b>	
<i>The estimated likelihood of occurrence based on historical data.</i>		<i>The anticipated damage to a typical structure in the community.</i>	
Probability	Score	Impact	Score
Unlikely—less than a 1 percent chance in a given year.	1	Weak—little to no damage	1
Occasional—a 1 to 10 percent chance in a given year.	2	Moderate—some damage, loss of service for days	2
Likely—a 10 to 90 percent chance in a given year.	3	Severe—devastating damage, loss of service for months	3
Highly likely—more than a 90 percent chance in a given year.	4	Extreme—catastrophic damage, uninhabitable conditions	4
<b>Location</b>		<b>Secondary Impact</b>	
<i>The projected area of the community affected by the hazard.</i>		<i>The estimated secondary impacts to the community at large.</i>	
Affected Area	Score	Impact	Score
Negligible—affects less than 10 percent of the planning area.	1	Negligible—no loss of function, downtime, and/or evacuations	1
Limited—affects 10 to 25 percent of the planning area.	2	Limited—minimal loss of functions, downtime, and/or evacuations	2
Significant—affects 25 to 75 percent of the planning area.	3	Moderate—some loss of functions, downtime, and/or evacuations	3
Extensive—affects more than 75 percent of the planning area.	4	High—major loss of functions, downtime, and/or evacuations	4

After calculating the overall score for each criterion for each hazard, the scores for location, maximum probable extent, and secondary impact were summed to determine the total impact score for each hazard. FEMA guidance recommends multiplying the total impact score by the overall probability score to determine the final score for each hazard. A final score between 0 and 12 is considered a low-threat hazard, 12.1 to 42 is a medium-threat hazard, and a score above 42 is considered a high-threat hazard. This final score determines the prioritization of the hazards.



Earthquakes are high priority hazards because they are likely to happen, affect a wide area, and can be very damaging. Image from FEMA (FEMA News Photo).

Table 3-3 shows the individual criterion scores, the final score, and the threat level for each hazard based on the above prioritization process.

**TABLE 3-3: HAZARD SCORES AND THREAT LEVEL**

Hazard Type	Probability	Impact			Total Score	Hazard Planning Consideration
		Location	Primary Impact	Secondary Impacts		
Seismic Hazards	4	4	4	4	64.00	High
Fire (Urban/Wild)	4	2	3	3	41.60	Medium
Drought	3	4	2	2	33.60	Medium
Severe Weather (Heat, Wind, Rain)	3	4	2	2	33.60	Medium
Dam Failure	2	3	4	4	28.80	Medium
Human-Caused Hazards (Aircraft, Civil Disturbance, Transportation Accidents, Terrorism, Cyber)	3	3	2	2	28.80	Medium
Geologic Hazards (Landslide/Mudflows, Subsidence)	3	2	2	3	27.00	Medium
Flooding	3	2	2	2	24.00	Medium
Hazardous Materials Release)	3	2	2	2	24.00	Medium
Disease/Pests	2	2	2	2	16.00	Medium



## HAZARD PROFILES

### DAM FAILURE

#### Description

A dam failure occurs when a dam holding back the waters of a reservoir is no longer able to control the collection of the water. A dam failure could result from a dam breach in which a section of the dam disintegrates, allowing the reservoir's waters to escape. A flood caused by a dam breach can move swiftly and be very powerful. Other hazardous situations, such as a major flash flood or strong earthquake, can trigger a dam failure, especially if the dam is aging or deteriorating. A mechanical malfunction can also cause a dam failure if the dam is not maintained or operated correctly. When assessing dam failure hazards, it is assumed that impacts occur based on a full reservoir.

#### Location and Extent

Dam inundation maps show areas downstream that would be inundated by water from an unintentional release of water from a dam's reservoir. All owners of High-Hazard Potential (HHP) dams have the legal liability to provide a map of inundation areas as part of an Emergency Action Plan. **Figure 3-1** shows the areas in Fullerton that could flood as a result of dam failure. These maps were created using a combination of LIDAR and field survey, in conjunction with US Army Corps of Engineers software. The areas that could flood in the case of a dam breach are not necessarily the same areas that could be inundated by a 100-year or 500-year flood.

The Army Corps of Engineers uses the Dam Safety Action Classification (DSAC) scale to measure the potential for dam breach. **Table 3-4** shows the DSAC ratings.

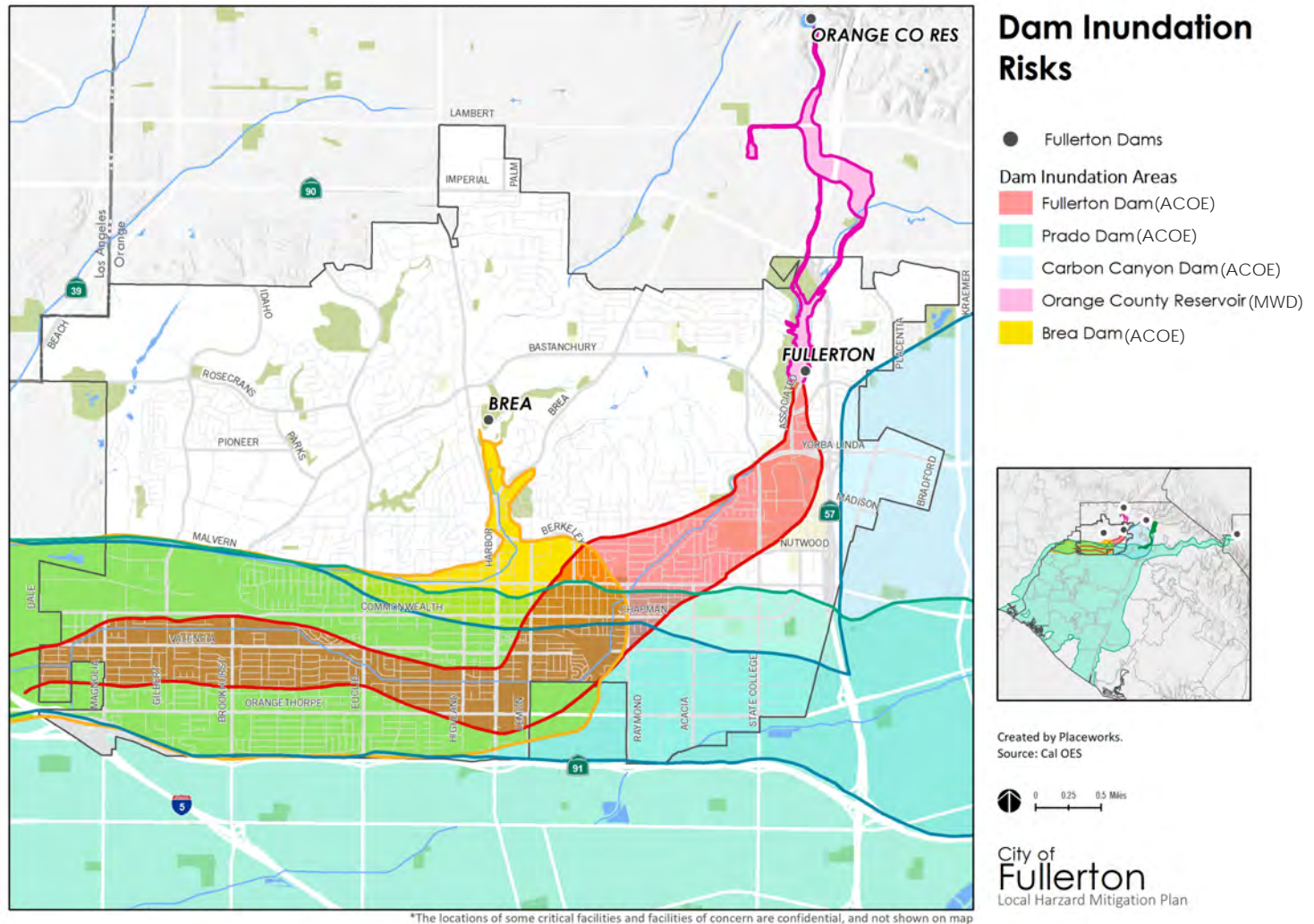
**TABLE 3-4: DAM SAFETY ACTION CLASSIFICATION (DSAC) RATINGS**

Rating Numeral	Rating Name	Description
I	Urgent and Compelling (Unsafe)	Dams where progression toward failure is confirmed to be taking place under normal operations, and the dam is almost certain to fail under normal operations within a time frame from immediately to within a few years without intervention; or the combination of life or economic consequences with probability of failure is extremely high.
II	Urgent (Unsafe or Potentially Unsafe)	Dams where failure could begin during normal operations or be initiated as the consequence of an event. The likelihood of failure from one of these occurrences, prior to remediation, is too high to assure public safety; or the combination of life or economic consequences with probability of failure is very high.
III	High Priority (Conditionally Unsafe)	Dams that have issues where the dam is significantly inadequate or the combination of life, economic or environmental consequences with probability of failure is moderate to high.
IV	Priority (Marginally Safe)	Dams are inadequate with low risk such that the combination of life, economic or environmental consequences with a probability of failure is low, and the dam may not meet all essential USACE engineering guidelines.
V	Normal (Adequately Safe)	Dams considered adequately safe, meeting all essential agency guidelines, and the residual risk is considered tolerable.

Source: Army Corps 2018e.

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Figure 3-1: Dam Failure Inundation Zones



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## Past Events

While California's dam infrastructure is fairly recent in the state's history, there have already been major catastrophic dam failure events. One of the earliest in Southern California was the failure of the San Francisquito Canyon Dam. The dam experienced a structural failure as a result of insufficient geotechnical engineering by the then-Los Angeles Bureau of Water Works and Supply. At midnight of March 13, 1928, the 205-foot-tall structure gave way, unleashing a 120-foot-high wave of water traveling 18 miles per hour down the canyon. By 5:30 AM, the wave had traveled 54 miles from the dam site to the Pacific Ocean, killing at least 438 people, razing towns, and destroying infrastructure. It was reported that the bodies of victims were recovered from the ocean as far south as the Mexican border. The disaster is considered one of the worst engineering failures in US history (Dam Safety Officials 2018a; Rogers 2013).



The Brea Dam in Fullerton with the basin partially filled. Image from Fullerton Walks.

Another, more recent, dam failure in the region occurred at the Baldwin Hills Dam. On December 14, 1963, a structural failure in the dam caused a breach that unleashed 250 million gallons of reservoir water. Diligent work by maintenance crews detected the developing failure in the dam four hours before it breached, and they, with the cooperation of local law enforcement, were able to successfully evacuate and save nearly 1,500 people downstream from the reservoir. Five lives were lost in the ensuing wave of water, 65 homes were destroyed, and nearly \$11 million worth of property damage was incurred (Dam Safety Officials 2018b; CLUI 2018).

In Fullerton itself, only one dam incident has occurred, which involved an extensive episode of winter rains in 2005 inundating the Brea Dam reservoir, causing water to spill over its crest. The Fullerton Golf Course and sections of Bastanchury Road were flooded with water, but no lives were lost. The golf course was damaged, and an adjacent storm channel was eroded by the flood waters (Fullerton 2010).

## Risk of Future Events

Due to the presence of several dams within and near Fullerton, large areas of the city could be at risk of inundation in the case of significant dam failure. Some of the potential consequences of dam failure are death or injury, people displaced from their homes, damage to existing public and private buildings, damage to infrastructure, loss of services from utilities, loss of government services, and economic losses.

The US Army Corps of Engineers (ACOE) evaluates and rates dams based on confirmed or unconfirmed safety issues, probability of failure, and the potential consequences.

**Prado Dam** is an earth-filled dam built in 1941 by the Army Corps of Engineers on the Santa Ana River near the city of Corona in Riverside County. It is the primary flood control facility of the Santa Ana River watershed and has an area of approximately 10,000 acres. The Army Corps of Engineers Dam Safety Program has given the dam a DSAC III rating, which means it poses a moderate to high potential for

damage if it fails. Generally, there is water impounded behind the dam during most of the year but during drought events the reservoir can be empty (OCWD 2016; Army Corps 2018a).

**Brea Dam** is a flood control dam built in 1942 and owned by the Army Corps of Engineers. Located in Fullerton, it controls the flow of water from Brea Creek and its tributaries. This dam and its reservoir are normally empty and intended to detain waters from a rainstorm.

The dam has received a DSAC III rating, which means it poses a moderate to high potential for damage if it fails. The dam has a potential for failure from the erosion of the embankment, overtopping from flooding, and erosion of the flood control channel (Army Corps 2018b).

**Carbon Canyon Dam**, which completed construction in 1961, is a flood risk management project operated by the Army Corps of Engineers, Los Angeles District. It is near the northern edge of Orange County in Yorba Linda (Army Corps 2018c). The Army Corps of Engineers Dam Safety Program has given the structure a DSAC II rating, which means it means it has a high risk of failure without remediation efforts. The dam has a high potential for failure due to erosion of the embankment (Army Corps 2018c). This dam and its reservoir are normally empty and intended to detain waters from a rainstorm.

**Fullerton Dam** is a single purpose flood control dam that was built in 1941 as part of the Santa Ana River Mainstem project and is in the eastern section of Fullerton (Army Corps 2018d). The dam was constructed to provide flood risk protection for Fullerton. The dam has a flood risk rating of DSAC IV, which means it is inadequate but poses a low threat to life, the economy, or the environment. The risks of dam failure are related to the potential for seepage and piping along embankment and the outlet conduit (Army Corps 2018d). This dam and its reservoir are normally empty and intended to detain waters from a rainstorm.

The **Orange County Reservoir**, built in 1941, is an earthen-filled dam in the City of Brea. It is owned by the Metropolitan Water District of Southern California and manages water supply. This dam has not been evaluated by the Army Corps of Engineers so there is no corresponding DSAC rating for this facility. This dam and its reservoir are normally empty and intended to detain waters from a rainstorm.

### Climate Change Considerations

Climate change could increase the risk of a dam failure. More frequent and intense episodes of rain storms may increase the likelihood that the reservoir infrastructure of California could become overwhelmed, including the dams that control floodwaters from inundating Fullerton and the rest of Orange County. Indirectly, increased climate change-induced rains may cause more erosion which could compromise the structural integrity of the dam or the foundation it sits on.

## DISEASE/PESTS

### Description

An epidemic is when an infectious disease spreads beyond a local population, reaching people in a wide geographical area. A disease that reaches global proportions is considered a pandemic. The two main categories that impact the spread of disease are the ease with which a pathogen moves from person to person, and the behavior of individuals and societies.



Vaccination is one method to address the threat of diseases in Fullerton. Image from TODAY

Pests are organisms whose presence is seen as a nuisance since they are capable of being vectors for certain diseases. Examples include insects or rodents.

Vector-borne diseases are spread by pests to animals and humans. Sometimes the disease is not spread directly from vector to human but can jump first to an intermediary, like a domesticated animal, where it evolves into a form that can be hosted by humans. These kinds of diseases are referred to as zoonoses.

Diseases and pests of concern in Fullerton include:

- **Influenza (the Flu)** is a virus that leads to illness in humans, with such symptoms as fever, cough, headache, sore throat, muscle and joint pain, or runny nose. It is one of the most common infections worldwide and kills up to 500,000 people each year (WHO 2014).
- **Mosquitoes** are an insect that feeds upon the blood of humans. In so doing, mosquitoes leave itchy bites but can also transmit diseases to their victims. Examples of some of these diseases include West Nile Virus and Zika, though West Nile Virus is the more recurrent of the two.
- **Mice and rats** are pests that can transmit diseases or be a vector for other disease-carrying organisms. The most well-known example of this is Bubonic Plague, which was transmitted by fleas burrowed into the fur of rats and mice.

### Location and Extent

Diseases can be spread virtually anywhere and are not bound to specific locations in Fullerton. As long as humans are present in a certain area, there is the potential for disease. Some vector-borne diseases, however, may be more prevalent in certain areas of the city. For example, street catch basins, storm drains, roadside ditches, flood channels, ravines, and similar places on the public right-of-way can put the Fullerton community at risk of mosquito-borne diseases because these places are breeding grounds for mosquitoes (Fullerton 2010). Garbage dumpsters or open waste may also attract mice and rats.

Most diseases do not have a particular scale to measure their severity or extent, with the exception of influenza. Influenza is measured using the Pandemic Influenza Phases scale established by the World Health Organization (WHO). **Table 3-5** shows this scale and describes each phase.



**TABLE 3-5: PANDEMIC INFLUENZA PHASES**

<b>Phase</b>	<b>Description</b>
Phase 1	No animal influenza virus is known to have caused infection in people.
Phase 2	An animal influenza virus has caused infection in people. There is a potential pandemic threat.
Phase 3	An animal influenza virus has caused occasional infections or infections in small groups. There may be limited human-to-human transmission, but nothing large enough to sustain community-level outbreaks.
Phase 4	Human-to-human transmission is able to sustain community-level outbreaks. There is a significantly higher risk of a pandemic.
Phase 5	Human-to-human transmission in at least two countries in the same region. A pandemic is likely imminent.
Phase 6	Human-to-human transmission in at least two countries in the same region and in at least one other country outside of the region. A pandemic is underway.
Post-peak	Transmission levels are declining below peak levels, although second waves may occur and transmission could return to previous levels or higher.
Post-pandemic	Transmission levels have returned to normal levels for seasonal influenza outbreaks.

Source: WHO 2017.

### Past Events

Vector-borne disease and epidemics have struck Fullerton and/or greater Southern California. Some major cases include:

**H1N1:** The 2009 H1N1 flu virus, also known as the swine flu, caused global health impacts and illustrated the risk of emerging viruses. In Orange County, there were 226 severe<sup>3</sup> and 57 fatal cases of the H1N1 virus, tracked by the Orange County Health Care Agency (OCHCA) (OCHCA 2009).

**Hepatitis A:** There was a hepatitis A outbreak that began in San Diego County in November 2016 and later spread to Santa Cruz, Los Angeles, and Monterey counties. The majority of people infected were homeless persons or those using drugs. In October 2017, Governor Brown issued an emergency proclamation that allows the state to increase its supply of hepatitis A vaccines in order to control the ongoing outbreak (County of San Diego 2018)

**Measles:** In 2015, a measles outbreak began, linked to Disneyland in Anaheim. The cause of the outbreak was likely a person infected with measles who visited Disneyland and infected other park visitors who were not vaccinated, most of whom were under 18 years old. By the end of 2015, the OCHCA had tracked 35 reported cases. By 2016, however, all cases had been remedied and the number returned to zero (CDC 2015; OCHCA 2017).

**West Nile Virus:** Between 2013 and 2017, the number of cases of West Nile Virus decreased. The height of West Nile Virus infections was in 2014 with a peak of 280 reported cases. The following year there was a dramatic reduction to 97 reported cases. This trend continued into 2017, when only 38 cases were reported (OCHCA 2017).

### Risk of Future Events

All of Fullerton is at risk of being affected by a disease or by pests carrying diseases. While the City and regional jurisdictions can take precautions to reduce the spread of diseases, the spread of disease cannot

<sup>3</sup> Severe case being defined as one needing intensive care.



entirely be eliminated. Some diseases such as influenza return every year since the virus that causes influenza evolves very rapidly. Others such as the measles can be contained so long as the general population remains inoculated against the viruses that cause them.

An especially severe flu pandemic could lead to a high number of illnesses, deaths, and hospitalizations. Students who are unvaccinated may be excluded from school for several days, as was the case in 2015 (CDC 2015; OCHCA 2017). Restrictive measures may have to be placed on public transportation, health care, food delivery, or other services that could potentially spread the disease.

### **Climate Change Considerations**

Climate change is expected to bring warmer temperatures to Fullerton, which may cause the insects, pests, and other vectors that carry disease to remain active for a larger part of the year. This could likely lead to an increase in the threat of exposure. Furthermore, pathogens and vectors not currently in Fullerton may migrate into the area in association with the warmer temperatures. As an example, mosquitoes contaminated with yellow fever, dengue fever, and Zika now have an extended range, not seen previously, due to climate change (Mckenna 2017). It is also anticipated that warmer winters will increase the number of early and severe epidemics (Towers 2013).

## **DROUGHT**

### **Description**

A drought is a long period during which precipitation levels are significantly below normal. The most common effect is that plants dry out and become more susceptible to agricultural pests or diseases. An abundance of dry plant matter may also increase the risk of wildfires or cause fires to be more intense.

In severe cases, droughts can affect urban areas. A significant drought can lead to water shortages, which may force local water suppliers to institute mandatory restrictions on nonessential water use. In extreme cases, there may not be enough water to meet basic health and hygienic needs, requiring communities to find alternative water supplies. Since many communities receive their water from far-away sources, such as the Sierra Nevada or Colorado River, it is common in California to experience “long-distance droughts,” where precipitation levels may be normal in the community itself, but low at the source of the community’s water.

### **Location and Extent**

Droughts are large-scale events, and so drought risks and conditions are generally equal across all of Fullerton. Furthermore, since Fullerton sources approximately 30 percent of its water non-locally, a drought in those areas could impact Fullerton as well. When precipitation levels are normal or above normal in Fullerton, a drought in the areas where Fullerton’s water comes from can still affect Fullerton’s residents.

The US Drought Monitor Classification Scheme is a common scale used to measure the impact of droughts in different communities across the United States. See **Table 3-5** for a complete description of each drought event classification.

**TABLE 3-6: US DROUGHT MONITOR CLASSIFICATION SCHEME**

Category	Description	Possible Impacts
D0*	Abnormally dry	Slower growth of crops and pastures.
D1	Moderate drought	Some damage to crops and pastures. Water bodies and wells are low. Some water shortages may occur or may be imminent. Voluntary water use restrictions can be requested.
D2	Severe drought	Likely crop and pasture losses. Water shortages are common, and water restrictions can be imposed.
D3	Extreme drought	Major crop and pasture losses. Widespread water shortages and restrictions.
D4	Exceptional drought	Exceptional and widespread crop and pasture losses. Emergency water shortages develop.

Source: US Drought Monitor 2018a.

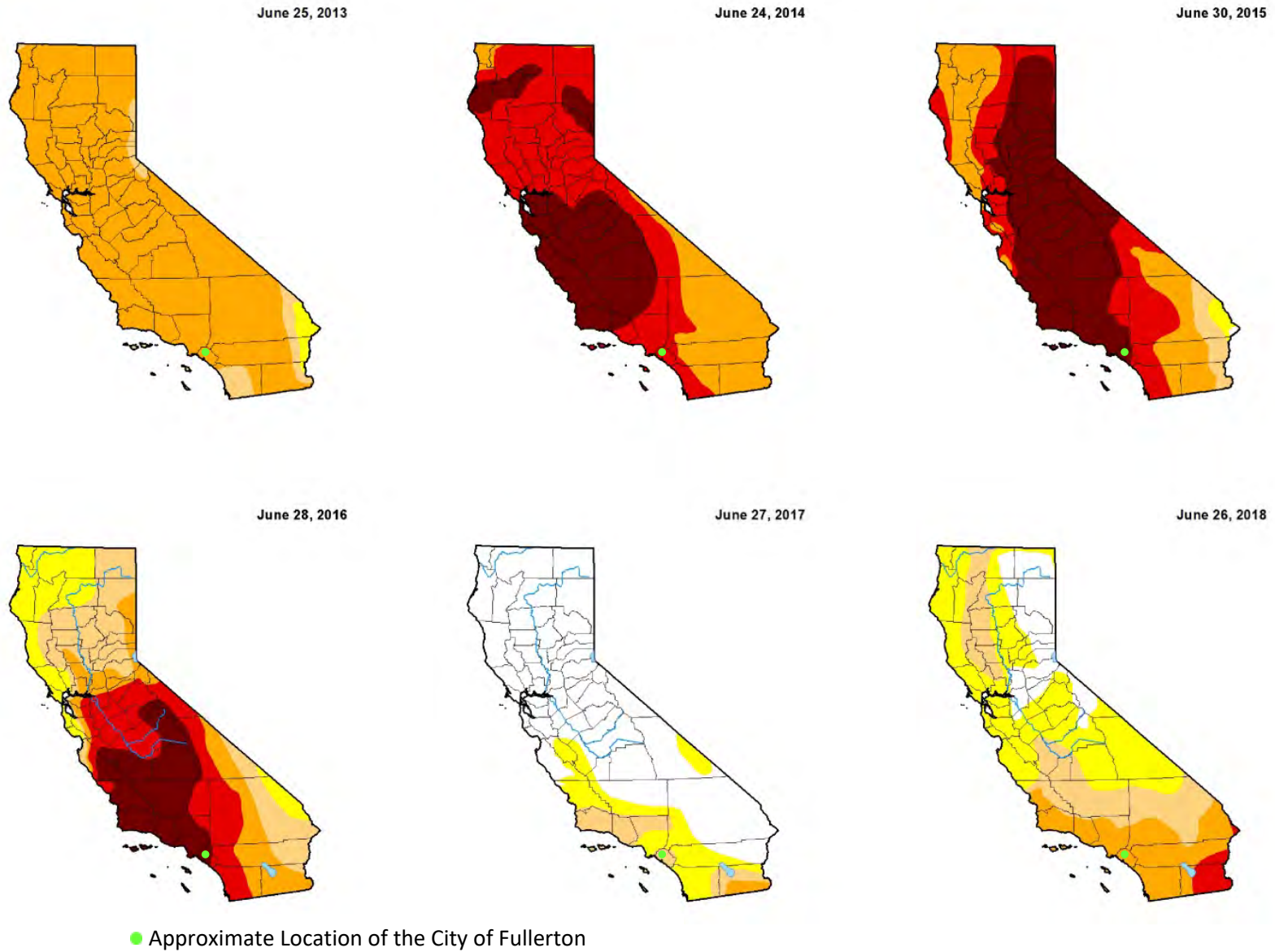
\* D0 areas are those under “drought watch” but not technically in a drought. They are potentially heading into drought conditions or recovering from drought but not yet back to normal.

### Past Events

Fullerton, like the rest of California, has experienced numerous droughts over its history. Each drought event has varied in its length, severity, and frequency. One of the earliest recorded droughts in settled California history is the “Great Drought” of 1863 and 1864, which led to the decline of California’s cattle industry. From 1928 to 1935, the “Dustbowl Droughts” greatly affected the state’s agricultural sector, setting the stage for the development of water infrastructure like the State Water Project and the California Aqueduct. Contemporary statewide water conservation practices have their roots in a severe drought that began in 1976 and ended in 1977. More recent droughts occurred from 1987 to 1992 and in the first decade of the 21st century, from 2007 to 2009 (Cal OES 2018; Kotin and Marion 2014; DWR 2015).

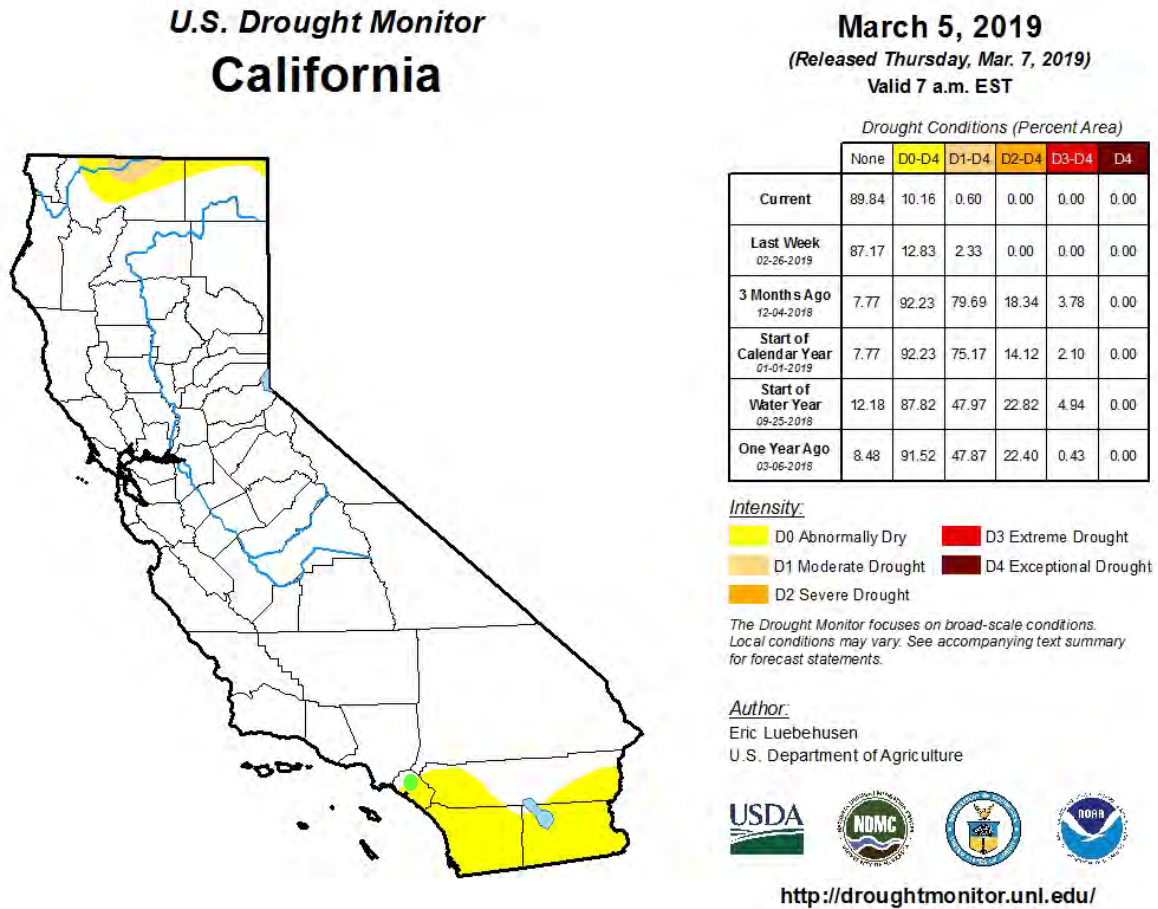
The most recent drought in California’s history was also one of the most severe, beginning in 2012 and ending in 2017. All areas of the state were affected by the drought, and by its second year it was already determined to be the worst drought on record in the last 1,200 years (Griffin and Anchukaitis 2014). By summer 2014, nearly the entire state was experiencing D2 (severe drought) conditions. Fullerton, all of Orange County, and more than 75 percent of California was ranked as having D4 (extreme drought) conditions. Water-saving mandates from the State were in place by 2015, which required all municipalities, including Fullerton, to reduce their water consumption rates by 25 percent (Megerian et al. 2015). Heavy rainfall in the winter of 2016-2017 effectively ended the drought across the state (Boxall 2017), although low levels of precipitation in the winter of 2017-2018 have caused a return of more moderate drought conditions across large sections of California. **Figure 3-2** shows the progression of the drought starting in the summer of 2013 and ending with the most recent drought conditions.

Figure 3-2: Statewide Drought Conditions from 2013 to 2018



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Figure 3-3: Statewide Drought Conditions as of March 5, 2019



As of March 2019, approximately 1 percent of California was experiencing at least D1 (Moderate Drought) conditions, and approximately 10 percent of the state was experiencing at least D0 (Abnormally Dry) conditions, which usually is considered to be a “drought watch” period. Large sections of Southern California, including most of Orange County, were experiencing D0 (Abnormally Dry) or greater conditions. **Figure 3-3** shows statewide drought conditions as of March 5, 2019.

**Risk of Future Events**

As droughts are expected to continue across California, it is also anticipated that droughts and drought conditions will continue to occur in Fullerton. Areas of concern where drought could impact the community, include vegetation within natural areas and landscaped areas (parks, medians, managed open space areas).

**Climate Change Considerations**

Climate change is anticipated to affect water supply in Fullerton. Much of Southern California’s water supply comes from the snowpack of the Sierra Nevada in Northern California. It is expected that a warming climate will melt the Sierra Nevada snowpack sooner into the year, shortening the amount of time that the snowpack remains into the spring and summer seasons. Warmer temperatures are also expected to

cause more precipitation to fall as rain rather than snow, further decreasing the size of the snowpack. As a result, it is likely that less water will be flowing into the reservoirs and aqueducts that supply Southern California. This could add stress to the City's water supplies, potentially putting more stress on existing groundwater resources within the region. Climate change is projected to cause an increase in the frequency and intensity of extreme precipitation events, which includes droughts as well as intensive flooding. Additionally, hotter temperatures are expected to increase demand for water supply for landscape maintenance in urban areas. Fullerton's natural areas in the Coyote Hills are likely to be at risk of being negatively impacted by more frequent and severe droughts in the future.

## FIRE

Fire hazards occur when fuel, such as dead vegetation, industrial materials, or buildings, ignite and catch fire. Without human intervention, fire hazards can spread rapidly and affect large swaths of land, both wild and developed. In general, there are two kinds of fires: urban and wild.

### Description

**Urban fires:** Urban fires are fires that emerge in developed areas of a community or city. Generally, these fires affect residential properties, businesses, public spaces, and government facilities. They are capable of inflicting heavy damage, injury, or even death. Urban fires have a number of causes, but some example ignition sources include: downed power lines, breached gas pipelines, improper storage of hazardous or flammable material, or lack of building maintenance. Urban fires may also be intentionally started through arson.

**Wildfires:** Wildfires begin in natural, undeveloped land. Wildfires sometimes ignite due to natural circumstances, such as intense heat combined with masses of dead vegetation, or lightning strike. Dry vegetation is highly combustible when the weather is hot and dry. Fires can also ignite under windy conditions from the friction caused by vegetation rubbing together. Humans can also start wildfires, either intentionally or unintentionally. A downed power line in a wind event, for example, could catch the surrounding landscaping or buildings on fire, or an unextinguished cigarette tossed into dry grass may ignite and cause a wildfire. Sometimes humans intentionally burn wild landscapes, often for land management purposes.

Topography can play a role in influencing the speed and direction of a wildfire. Because heat rises, fires move faster uphill, so a steep slope can make a fire spread faster. Thus, fires are a greater risk in mountainous areas.

The space between the urban and wild zones of land is referred to as the Wildland-Urban Interface (WUI). The WUI is where the fringe of an urbanized region meets natural landscapes. While some of the land in the WUI has been developed, there is likely to be wildland in the periphery containing vast quantities of fuel that could ignite. The residents and property owners in these areas are most at risk for incurring property damage or suffering physical harm from fires.

In California, fires are one of the most common hazards in the state, with nearly 5,400 wildland fires and more than 156,000 acres burned between 2011 and 2015 alone (CAL FIRE 2018a).



## Location and Extent

There is no specific scale of measurement for fires apart from the destruction they cause (acres burned, structures razed, injuries, deaths, cost of damage, etc.). The risk level for wildland areas with an elevated chance of wildfires is measured using a three-tier scale of fire hazard severity zones (FHSZs)—very high, high, and moderate. Areas at elevated risk of fire are also classified by the corresponding fire response jurisdiction. Federal Responsibility Areas (FRAs) are under the purview of the United States government, including such agencies as: the US Forest Service, the Bureau of Land Management, and the National Park Service. State Responsibility Areas (SRAs) are governed by the California Department of Forestry and Fire Protection (CAL FIRE), and Local Responsibility Areas (LRAs) are responsibility of local governments, such as counties and municipalities. **Figure 3-4** shows areas in Fullerton are designated fire hazard severity zones.

All of Fullerton is potentially at risk of some type of fire hazard. Since 90 percent of the City's land is currently built-out, mostly with wooden-frame construction (Fullerton 2012b), there is potential for fires to emerge at any location in the city. Several rights-of-way bisect Fullerton, including freeways and railroads. It is possible that an auto collision or rail incident could start a fire that could spread to any of the developments adjacent to the right-of-way. Additionally, Fullerton's location next to Carbon Canyon and Puente Hills—places where fires are prone to erupt, according to CAL FIRE—means that a fire could start in one of these undeveloped areas and spread to or affect nearby communities, including Fullerton (CAL FIRE 2011b).

Wildfires are a greater risk where there is a diversity of materials that can fuel a fire (OC HMP 2015). The construction of residential development near undeveloped land covered in chaparral, such as in the East and West Coyote Hills, creates a condition highly prone to wildfires (RSG 2018). Many species of chaparral are coated with flammable oils and resins. The presence of this type of brush in Southern California's natural areas makes the region as a whole at risk of wildfires (NPS 2018).

The East and West Coyote Hills have been designated a very high FHSZ by CAL FIRE (CAL FIRE 2011a). These hills are one of the few remaining open spaces in Fullerton. Other sections of the city have been designated high and moderate FHSZ. These areas include residential developments at the base of the West Coyote Hills and the area surrounding Brea Dam. The St. Jude Medical Center, as well as several City-owned or -operated youth facilities, are also within this elevated fire risk area.

Santa Ana winds, a weather phenomenon described in detail in the "Severe Weather" section are known to exacerbate fire conditions in California. Because Santa Ana events generally occur in the fall and winter seasons, the time when there is usually the greatest amount of fuel available for fires in Southern California, they are particularly dangerous (Abatzoglou et al. 2013). Given Fullerton's position between the coast and the inland areas combined with the fuel found in the adjacent Puente Hills and Carbon Canyon, the city is at risk of being impacted by fires amplified by the Santa Ana winds.

## Past Events

Some of the most recent fires have also been the largest. In fact, the top five largest fires in California have all occurred since the year 2000 (See **Table 3-7**).

**TABLE 3-7: TOP FIVE LARGEST FIRES IN CALIFORNIA SINCE 2000**

Fire Name	Date	Acres Burned	Structures Razed	Deaths
Mendocino Complex	July 2018	459,123	280	1
Thomas	December 2017	281,893	1,063	2
Cedar	October 2003	273,246	2,820	15
Rush	August 2012	271,911 (in-state), 43,666 (out-of-state)	0	0
Rim	August 2013	257,314	112	0

Source: CAL FIRE 2018b.

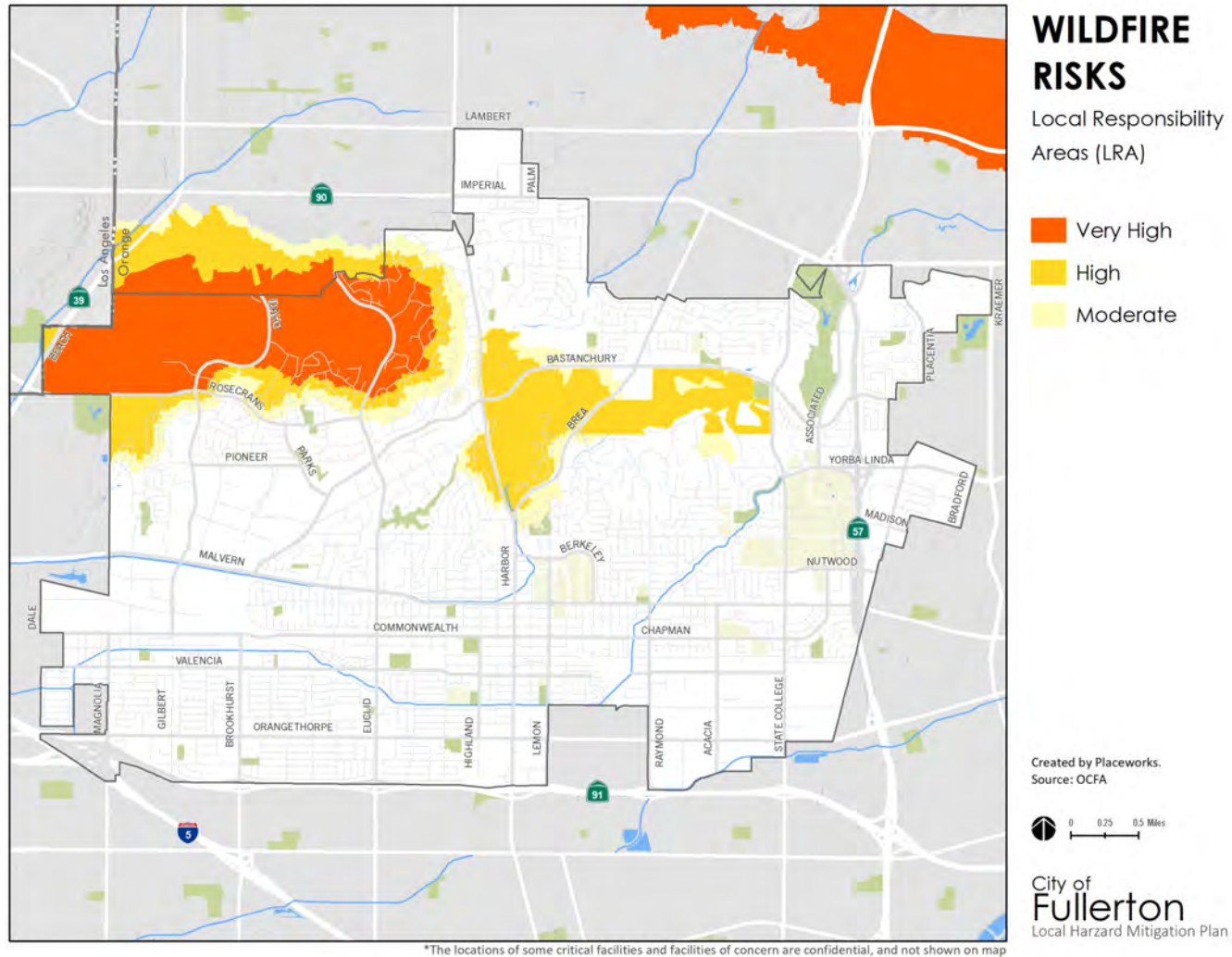
In November 2008, dry conditions and Santa Ana Winds ignited the “Freeway Fire” in Corona which was spread by Santa Ana Winds in excess of 60 mph across the region, including the neighboring Orange County communities of Yorba Linda, Brea, and Anaheim. Upon containment, it was determined that more than 30,000 acres of land had been scorched, 381 buildings burned, and numerous city and state parks destroyed (OCFA 2018). Between the fall and winter months of 2017-2018, a torrent of fires swept across wildland and urban areas in both northern and southern California. They included the Thomas Fire, which burned through 281,893 acres in both Ventura and Santa Barbara Counties, and at the time was California’s largest known wildfire. (It was surpassed by the Mendocino Complex wildfires seven months later.) Multiple wildfires also burned in the northern San Francisco Bay Area during this time, which collectively were the deadliest wildfires in California’s history (CAL FIRE 2018b). Communities near Fullerton were also affected when “Canyon Fire 2” began October 9, 2017 in the neighboring Anaheim Hills and went on to burn 9,217 acres, destroying 25 structures and damaging 55 others. The fire was contained more than a week later on October 17 through multijurisdictional cooperation between CAL FIRE, Orange County Fire Authority, California Highway Patrol, Orange County Sheriff, Caltrans, SoCalGas, and many local fire and police departments (CAL FIRE 2018c).



Santa Ana Winds from the Great Basin are known to contribute to wildfire risk.



Figure 3-4: Fire Hazard Zones



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Fullerton has also seen smaller-scale urban and wildfire events in recent years. In 2015, following a prolonged period of drought throughout the state, a wildfire burned through dry vegetation near the Brea Dam, causing evacuations of the Fullerton Sports Complex and Fullerton Golf Course (Vives 2015). Between 2016 and 2017, it was suspected that a serial arsonist was igniting a series of fires in trash bins in Fullerton. There were more than 15 such fires ignited in a five-month period (CBS Los Angeles 2017) In August 2017, a condominium complex in Fullerton caught fire during the night, causing damage to all three units. The complex was evacuated, and although nobody was injured, the fire caused nearly \$200,000 in property damage (Schwebke 2017). In December 2017, a small, half-acre brush fire erupted in Fullerton causing damage to one building. No injuries were reported, and multiple agencies responded to the fire from surrounding local and county jurisdictions (Patch 2017).

### **Risk of Future Events**

There is nothing to suggest that the frequency of fires in Fullerton will diminish in the future. The mostly built-out nature of the city indicates that it is likely that buildings will continue to catch fire. Fullerton's recent history with arson in 2015 indicates that more arsonists could emerge in both the near- and long-term future. The various natural and undeveloped areas both within and around the City also present the risk that a wildland fire could ignite and affect Fullerton.

### **Climate Change Considerations**

Climate change is expected to exacerbate fire hazards by creating more of the conditions under which they begin. With climate change, overall temperatures and the likelihood of drought in Fullerton will increase, leading to an increased amount of dry vegetation. More intense rain storms as a result of climate change may also create more fuel for wildland fires to burn through. Climate change is also likely to lead to more severe weather events, involving Santa Ana winds which will exacerbate wildfire risk. The link between climate change and urban fire is not well understood, but it is feasible that a severe, climate change-intensified drought could lead to limited water supplies, reducing the effectiveness of firefighting crews responding to urban fires in Fullerton.

## **FLOOD**

### **Description**

A flood occurs when land that does not normally have bodies of water becomes suddenly inundated with water. Flooding can occur after periods of heavy rainfall, whether it occurs as a single extreme episode or as a series of storms. Drainages and stream courses may flood their banks and shores if their capacity is exceeded by rainwater. When heavy rainfall hits an area where the ground is already saturated, the risk of flooding is high. In developed areas, the presence of pavement and other impervious surfaces means that the ground is less able to absorb water. As a result, rainwater must be carried away in storm channels or waterways.

Floods pose a number of threats to communities and public safety. Flooding can cause property damage, destroy homes, and carry away vehicles or other large debris. Topsoil and vegetation can be swept away by floodwaters, leading to erosion. Floodwaters may impede the movement of victims fleeing a flood or of first responders attempting to reach people in need of help.

**Location and Extent**

Flood events are measured by their likelihood of occurrence. For instance, a 100-year flood is a flood that has a 1 in 100 (1.0 percent) chance of occurring in any given year. A 500-year flood is a flood that has a 1 in 500 (0.2 percent) chance of occurring in any given year. The 100-year flood has been designated as the benchmark for major flood events, and thus 100-year floods are referred to as “base floods.”

Floodplains are areas that experience frequent flooding. While it is possible for areas outside of these designated floodplains to experience flooding, the areas most likely to experience future flooding are low-lying areas near bodies of water. FEMA is the governmental body responsible for designating which areas of the United States can be classified as floodplains. The three most common designations are:

- Special Flood Hazard Area: The area within a 100-year floodplain.
- Moderate Flood Hazard Area: The area outside of the 100-year floodplain but within the 500-year floodplain.
- Minimum Flood Hazard Area: The area outside of the 500-year floodplain.

Within these three designations, FEMA has multiple floodplain categories for each unique environment.

Table 3-8 shows these detailed floodplain categories.

**TABLE 3-8: FEMA FLOOD PLAIN CATEGORIES**

Category	Description
A	Within a 100-year flood plain, but the water height of the 100-year flood is not known.
A1-30 or AE	Within a 100-year flood plain and the water height of the 100-year flood is known.
AO	Within a 100-year flood plain, and the water height of the 100-year flood is between one and three feet but not specifically known.
A99	Within a 100-year flood plain, protected by flood protection infrastructure such as dams or levees.
AH	Within a 100-year flood plain, and the water height of the 100-year flood is between one and three feet and is specifically known.
AR	Within a 100-year flood plain, protected by flood protection infrastructure that is not currently effective, but is being rebuilt to provide protection.
V	Within a 100-year flood plain for coastal floods, but the water height of the flood is not known.
V1-30 or VE	Within a 100-year flood plain for coastal floods and the water height of the flood is known.
VO	Within a 100-year flood plain for shallow coastal floods with a height between one and three feet.
B	Within a 500-year flood plain, or within a 100-year flood plain with a water height less than one foot (found on older maps)
C	Outside of the 500-year flood plain (found on older maps)
X	Outside of the 500-year flood plain (found on newer maps)
X500	Within a 500-year flood plain, or within a 100-year flood plain with a water height less than one foot (found on newer maps)
D	Within an area with a potential and undetermined flood hazard.
M	Within an area at risk of mudslides from a 100-year flood event.
N	Within an area at risk of mudslides from a 500-year flood event.
P	Within an area at risk of mudslides from a potential and undetermined flood event.
E	Within an area at risk of erosion from a 100-year flood event.

Source: CFR 2016.

In Fullerton the 100-year floodplain is not a contiguous area but consists instead of various pockets across the city. These include a residential area northeast of the intersection of I-5 and SR-91, a swath of land abutting Bastanchury Road between Parks Road and W Malvern Avenue, and other small pockets throughout the Coyote Hills. In contrast, the 500-year floodplain covers a large section of Fullerton. Most of the city south of Malvern Avenue and Chapman Avenue, a multifamily neighborhood across SR-57 from California State University, Fullerton (CSUF), and sections of Harbor Boulevard south of the Brea Dam are included in the 500-year floodplain category. **Figure 3-5** shows the mapped flood hazard zones for 100-year and 500-year flood events in Fullerton.

Floodplain mapping studies are provided by the National Flood Insurance Program. Fullerton participates in the program by adopting FEMA-approved floodplain studies, maps, and regulations. These studies may be funded through federal grants; state, city, and regional agencies; and private parties. The program is designed for flood insurance and floodplain management applications.

Public comments from the online survey suggest that flooding and ponding, has been known to occur following a rainstorm on the following major thoroughfares:

- The intersection of Orangethorpe Ave. and Raymond Ave,
- The length of Commonwealth Ave. from S. Richman Ave. to Euclid St.
- The length of Brookhurst Road between Orangethorpe Ave. and SR-91

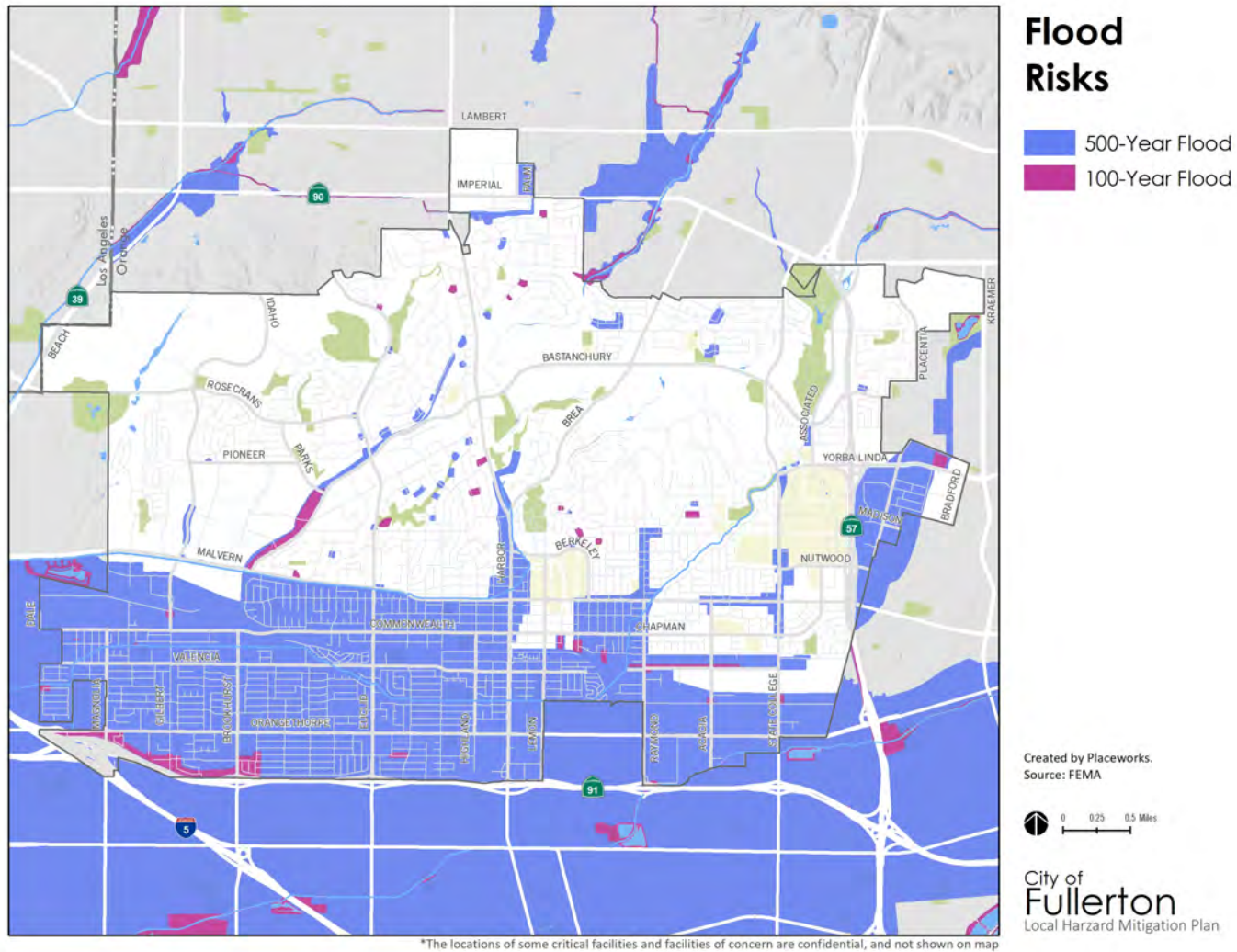
Flooding and ponding was also reported on several smaller, residential streets in Fullerton, including:

- The intersection of N. Yale Ave. and E. Brookdale Pl.
- The length of Dorothy Ln. between Raymond Ave. and Acacia Ave.
- The length of N. Arroyo Pl. to the extent that it is unusable for evacuations
- The length of Julie Ave.

Other reported flooding locations from the online survey can be viewed in the complete survey results section of this Plan (**Appendix B**). Generally, these eyewitness accounts help characterize flooding at a scale that may not always show up in FEMA floodplain mapping.

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Figure 3-5: FEMA Flood Zones



Map includes Letters of Map Revision through February 23, 2018

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## Past Events

Southern California is a semiarid region with inconsistent storm seasons and naturally shallow river channels. It was historically prone to floods that affected the entire region after long periods of rain. The largest flood in the Southern California region was in 1938, when several inches of rain fell over three days, causing rivers across the region to overflow. The Santa Ana River overflowed, flooding areas in Fullerton and Anaheim. The Fullerton and Brea dams were constructed in the aftermath of this particular flood, with money from the Works Progress Administration. Widespread flood-caused destruction across Southern California led numerous local governments to pursue a campaign of concretizing river beds, including rivers and creeks in Orange County, to prevent erosion. The following is a list of recorded flood events in Fullerton and Orange County (NOAA 2018a, 2010; Serna et al. 2015):

- Between December 1861 to January 1862, a 30-day-long period of rain called the “Noachian Deluge of California” poured across all of California. The Santa Ana River overflowed and spread across all of the low-lying areas of Orange County between Anaheim and the Coyote Hills (present-day Fullerton) in a four-foot-deep sea. Twenty deaths were recorded in Orange County alone.
- Heavy rains in January 1916 caused 22 deaths, widespread flooding, and the destruction of a number of boats moored at Newport Beach.
- The most extensive flooding in Southern California history occurred in late January 1916, when 8 to 58 inches of rainfall were recorded in various measuring stations across the region. Numerous dams breached, resulting in property damage and loss of life. Four people died in Orange County.
- In 1922, heavy rains flooded various rights-of-way across the region, and the Santa Ana River exceeded its normal surface elevation by three feet.
- In 1922, a six-day-long period of rain dropped as much as 25 inches of rain in some locations across Southern California. Fullerton was inundated with floodwaters, as were other major cities, such as Anaheim and Long Beach.
- Heavy rains on New Year’s Eve and Day of 1934 impacted cities across Southern California. Fullerton recorded more than 6 inches of rainfall. In total, 45 people lost their lives, and some canyons became inundated with floodwaters 10 feet high.
- A 1937 rainstorm in February deposited 4.25 inches of rain in nearby Long Beach. A few people were killed in the ensuing flooding, and some dams failed across the region.
- In 1938, the deadliest flooding event in Southern California history was caused by a tropical storm. Up to 30 inches of rain fell in the mountain areas, including 22 inches at the point of origin for the Santa Ana River watershed. In Orange County, 45 died, including 43 in Atwood (now part of present-day Placentia). Fullerton and the rest of northern Orange County were inundated with floodwaters.
- In 1939, a tropical storm brought heavy rain to all of Southern California, resulting in 45 deaths on land and 48 more deaths at sea.

- In November 1960, heavy rains inundated northern Orange County, resulting in one death. The resulting floodwaters damaged property and disrupted electricity service.
- In November 1963, heavy rains fell on Southern California. More than three inches were recorded in coastal Orange County locations. The flooding injured 6 people.
- A December 1964 rainstorm caused flooding that killed 40 people across Los Angeles and Orange Counties.
- Heavy storms in November 1965 dropped between 16 and 20 inches of rain in the mountains of Southern California, causing regional flooding and 15 deaths.
- More than 4 inches of rain fell in the mountains during an April 1988 rainstorm, and floodwaters inundated roadways across Southern California.
- Heavy rains in February 1993 caused flooding and road closures in Orange County.
- In January 1995, flooding inundated the region, causing an estimated \$55 million in property damage and prompting a federal disaster declaration.
- In February 1998, all of Southern California was impacted by heavy rains when 2 to 5 inches fell across the region. Many roads and bridges were washed away or destroyed, and widespread power outages occurred. Property damage reached \$100 million worth, and two people lost their lives.
- In March 2003, 3 to 7 inches of rain fell on Southern California, causing region-wide flooding. Water reached depths of up to three feet on some roadways, causing over 1,000 vehicle collisions.
- In January 2010, a strong storm delivered by the jet stream caused urban flooding throughout Southern California. A medical facility in nearby Santa Ana saw its roof cave in due to the heavy rain.
- In 2014 heavy rains affecting most of Southern California caused flooding on a section of Bastanchury Road that was nearly a foot deep. Nearby weather stations reported that more than an inch of rain had fallen in a span of three hours.
- In September 2015, flooding of roadways caused severe traffic congestion across Southern California, including Orange County. In the City of Los Angeles, 7,300 people lost power for most of the day, and there more than 500 traffic collisions across the entire region as a result of the road conditions.

### **Risk of Future Events**

There is no indication that the severe rainfall that leads to flooding will abate in the future, either in Fullerton or the greater region of Southern California. While Fullerton may experience prolonged periods of dry or wet years, flood events will likely continue to impact the city.

## Climate Change Considerations

Climate change is expected to alter the frequency of intense precipitation events throughout California, including Fullerton. Intense rainfalls are expected to occur more frequently (perhaps twice as often by the end of the 21st century) and potentially drop more rain (up to 40 percent more). These projected changes likely mean that Fullerton will experience more frequent and more intense flooding, potentially leading to erosion, dam failure, tree mortality, and other potential hazards.

## GEOLOGIC HAZARDS

For the purposes of this plan, geologic hazards include landslides and subsidence.

### Description

**Landslide:** Landslides occur when earth on slopes become destabilized, typically after heavy rains, when the precipitation saturates the soil and makes it less stable, or when significant erosion from rainfall destabilizes the ground. Slopes that have recently burned face a greater risk from rain-induced landslides, as the fires burn up many of the trees, brush, and other vegetation that help stabilize the earth. Earthquakes may also be a source of landslides as the shaking can destabilize already loosened soils.

**Subsidence:** Subsidence occurs when the level of the ground decreases, as if the surface is sinking. Subsidence can either be sudden (as in a sinkhole) or happen gradually over time. It can be caused by mining, groundwater pumping, or fossil fuel extraction, creating empty underground spaces that can collapse and cause the soil above to drop. Erosion, natural cave collapses, and seismic activity can also cause subsidence.

### Location and Extent

**Landslide:** There is the potential for landslides in the steeper portions of the East and West Coyote Hills area due to the sloping topography. Even these areas, however, are designated as having a moderately low risk of landslides due to seismic conditions, and a low likelihood of a landslide under other conditions (Dept. of Conservation 1976). While no definitive scale for measuring landslides exists, landslide events are usually measured using the amount of material that is displaced (i.e. the cubic feet of earth that moved). **Figure 3-6** shows the areas in Fullerton that are susceptible to landslides. The California Geological Survey has developed a scale of landslide susceptibility that is based on slope steepness and the strength of the underlying rock, with 0 being no susceptibility and 10 being the highest susceptibility. For the purposes of this Plan, an area with a susceptibility of 7 or above is considered a high-risk area.

**Subsidence:** The City has identified that the most likely locations for subsidence in Fullerton are the northern and central portions of the city. Other sections of the city are potentially subject to subsidence in the event of a major earthquake ( $M_w$  5.0 or greater), although Fullerton does not have a history of seismically induced subsidence (Fullerton 2012c). In terms of extent, subsidence is typically measured by the distance that the ground has sunk from its original elevation (i.e., in feet or inches) or by using the rate of subsidence (i.e., inches or centimeters per year).

There is evidence of subsidence in the southern section of Fullerton and most of Orange County as a result of excessive groundwater pumping in the first half of the 20th century, prior to the development of the

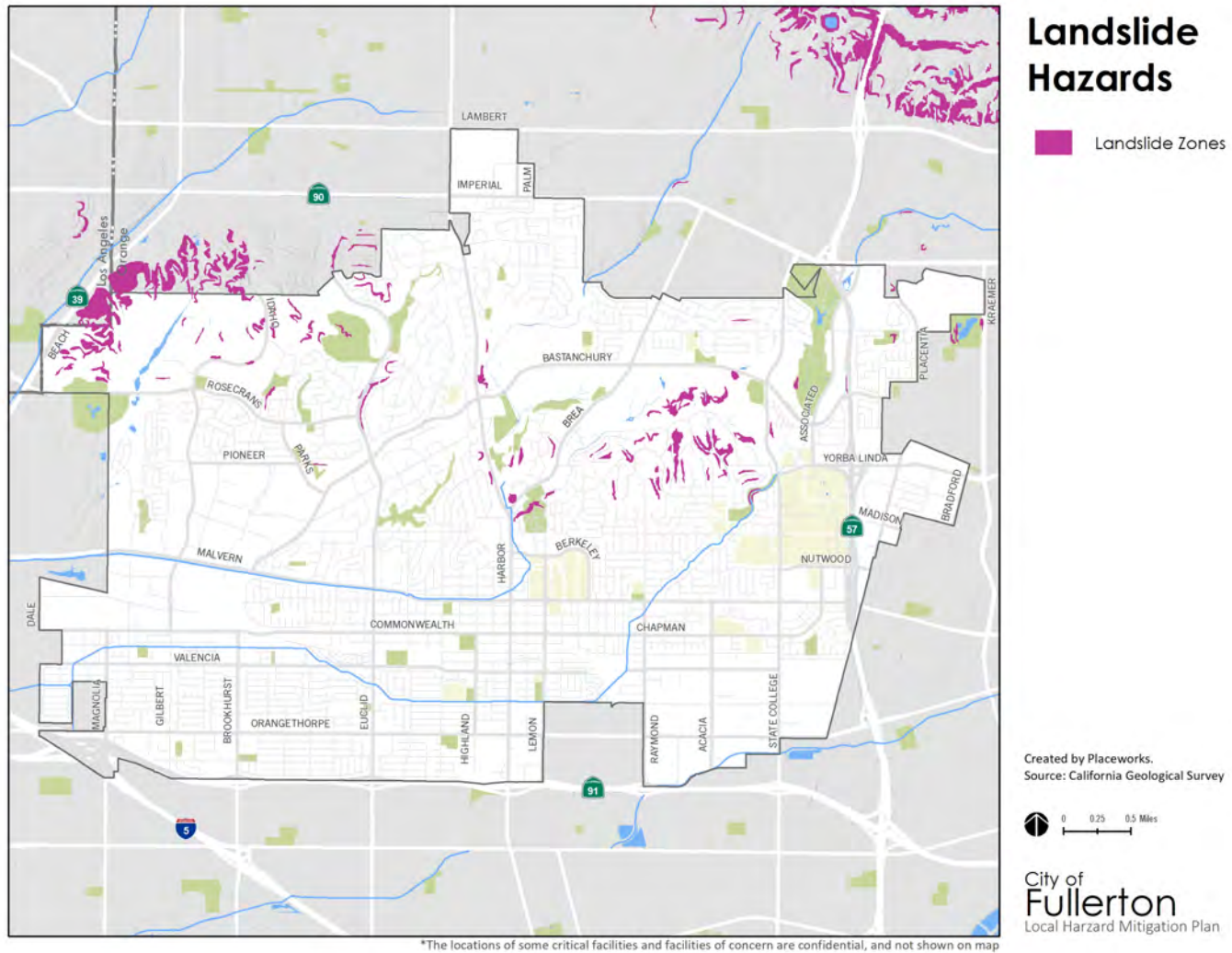
California State Water Project, which siphons water from the Owens Valley (USGS 2018a). Now that local groundwater reserves are replenished regularly, subsidence activity in this area is less likely to occur (Fullerton 2015).

#### **Past Events**

**Landslide:** Major landslides have occurred throughout the Southern California region. For example, landslides were set off by the 1971 San Fernando and 1994 Northridge earthquakes (Dept. of Conservation 1997). Since its founding, Fullerton itself does not have an extensive history of landslide events. The only recorded landslide in the city happened in January of 2005 when a five-day rainstorm destabilized an embankment at the 2000 block of N. Euclid Avenue. While the landslide did not cause any injuries, deaths, or significant property damage, the street and an adjacent recreational trail were partially washed out for a few days. During the same episode, a second landslide occurred between blocks 1700 and 1900 on Harbor Boulevard. The resulting destabilization partially washed out Harbor Boulevard but caused no other impacts (Fullerton 2010). City staff have determined that other landslides occurred prior to Fullerton's establishment, but it is not known exactly when these landslides occurred or the degree of their impact, if any.

**Subsidence:** According to data from the USGS, there are records of historical and current subsidence in the lower section of Fullerton as a result of excessive groundwater pumping in the first half of the 20th century, as discussed above. Due to the decreased reliance on local groundwater aquifers, the overall risk of subsidence has decreased since the 20th century, though some areas of Orange County are reported to be subsiding at historically high rates of more than one foot per year (USGS 2018a).

Figure 3-6: Landslide Hazards Map



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### Risk of Future Events

**Landslide:** Since most of Fullerton is on flat terrain, the likelihood of a landslide is low. The East and West Coyote Hills, however, have the potential for landslide events, given their topography. Seismic activity in the region also has the potential to start landslides, though it should be noted that seismic shaking in Fullerton has thus far generated no known landslide events. Destabilization of slopes and hills due to intense rainstorms also has the potential to cause future landslides. Fires on the Coyote Hills could cause soil otherwise anchored by vegetation to become loosened and therefore more susceptible to becoming part of a future landslide. Overall the probability of future occurrence within Fullerton is considered occasional.

**Subsidence:** Since Fullerton does not have a track record of subsidence events, it seems unlikely that subsidence will occur in the city's future. As long as the possibility exists, however, for a subsidence event to occur, Fullerton could potentially be at risk. Given Fullerton's ongoing history with petroleum extraction, it is possible that these activities could hasten the arrival of a subsidence event. Similarly, the possibility of an extreme drought in the future could lead to intensified groundwater withdrawals from the local water table which could also cause future subsidence. Fullerton's potential for a significant earthquake also means that the city could experience seismically induced subsidence in the future.

### Climate Change Considerations

**Landslide:** Due to the variety of factors that lead to landslides, it is possible that climate change could indirectly affect the conditions for landslides. More frequent and more intense rains may cause more moisture-induced landslides. Warmer temperatures and more frequent drought conditions may lead to more fires, which could destabilize soils and make future landslide events more likely.

**Subsidence:** The relationship between climate change and subsidence is not well established. Nevertheless, it is possible that climate change could indirectly influence subsidence in Fullerton. More intense rainstorms could potentially recharge underground aquifers, which could reduce the risk of subsidence. On the other hand, more severe and prolonged periods of droughts may encourage more groundwater withdrawals and increase the risk of subsidence.

## HAZARDOUS MATERIALS RELEASE

For the purposes of this Plan, this section discusses all nonnuclear and nonradiological hazardous materials release events. Events relating to the release of radiological material were determined to not be relevant in this Plan.

### Description

Hazardous materials release refers to a hazard event whereby harmful concentrations of hazardous or toxic substances are released into the environment. Such instances usually occur when storage containers of hazardous materials leak or fail. This can happen because of industrial accidents, vehicle crashes, as a consequence of other disasters (e.g., a flood or earthquake), or as a deliberate act.

The threat that hazardous materials pose to human health depends on the type of material, frequency and duration of exposure, and whether chemicals are inhaled, penetrate skin, or ingested, among other

factors. Exposure to hazardous materials can result in short term or long-term effects, including major damage to organs and systems in the body or death. Hazardous materials could also cause health risks if they contaminate soil, groundwater, and air, potentially posing a threat long after the initial release.

### Oil and Gas Operations

Oil and gas operations can cause air pollution, groundwater contamination, or odor nuisances that affect surrounding neighborhoods. Major spills and explosions sometimes occur at oil and gas facilities, potentially causing acute or chronic health effects in the aftermath. Oil and gas well operations can emit toxic chemicals into the air that are known to cause cancer and have respiratory, neurological, gastrointestinal, dermatological, and psychological effects. Studies have found that people living near oil and gas wells may be more likely to experience eyes, skin, nose, and throat irritation; asthma; or headaches, dizziness, nausea, and abdominal pain.

Oil and gas operations are known to emit volatile organic compounds, which are chemicals that easily evaporate, and other air pollutants that worsen air quality. Wells that are poorly constructed are more likely to lead to oil and gas leaks. Other oil and gas facilities that are poorly constructed or improperly maintained and monitored can lead to leaks that could contaminate aquifers or increase the risk of explosions. Wells can also release hazardous chemicals even if they are abandoned or left idle, if they are not fully cleaned. Additionally, the process of plugging up or abandoning oil wells can release hazardous materials that may cause several short-term health impacts, headaches, nausea, vomiting, eye and throat irritation, skin rashes, and the exacerbation of pre-existing respiratory conditions, such as asthma.

### Other Hazardous Materials

In addition to oil and gas facilities, manufacturing, distributing, and other industrial activities often involve the use of hazardous chemicals. The Department of Toxic Substances Control tracks the evaluation, cleanup, permitting, enforcement, and investigation of potential or current hazardous waste facilities. There are 79 sites within Fullerton that are undergoing corrective action, evaluation, investigation, inspection, or voluntary cleanup. The southwest section of the city, where land uses are primarily industrial, has a concentration of these sites. These sites are being evaluated for the presence of trichloroethylene (TCE) and perchloroethylene (PCE), which are volatile organic compounds that can pose a health risk to people who breathe them or contaminate aquifers used to supply household water.

In addition to these sites, the City is also located on top of a large groundwater aquifer that has experienced contamination from volatile organic compounds, historically used by manufacturing industries in the 1950s, 60s and 70s. To remediate this issue, the Orange County Water District has initiated the North Basin Groundwater Remedial Investigation and Feasibility Study, which aims to monitor and treat the contaminant plume that threatens a number of production wells for the Cities of Fullerton, Anaheim, and Placentia. With oversight from Federal, and State agencies, OCWD has been working to install the necessary monitoring and extraction wells to ensure that the plume does not contaminate the aquifer further and reduce the vulnerability of production wells from being impacted by these compounds.

These chemicals could have harmful effects on people, depending on how much and how long a person is exposed to them (ATSDR 2018). In particular, PCEs and TCEs could evaporate into the air and be inhaled



by persons occupying buildings located on the site (ATSDR n.d.). Children, adolescents, and pregnant women are especially at risk of the health effects associated with these chemicals, which include immune system diseases or pregnancy or birth issues in pregnant women (ATSDR n.d.). Other chemicals that are being evaluated on these industrial sites include benzene, chloroform, and toluene, which are associated with food and beverage manufacturing.

### Location and Extent

#### Oil and Gas Operations

Studies have shown that oil and gas operations can have a negative effect on air quality within roughly 600 feet and cause odors that are noticeable within 1,500 feet. Most scientists, public health professionals, and medical professionals agree that sensitive land use, such as housing, schools, faith institutions, hospitals, and water wells, should be at least a quarter mile from an oil or gas well. However, fires, explosions, and other major emergencies can have an impact at a larger distance (Butler et al.).

Oil fields are located in the northern section of the city, and most of them are plugged or abandoned. Active oil wells operated by the Breitburn Operating LP are located in the East Coyote Hills.

Natural gas is an odorless, flammable gas that is used as a major energy source. Natural gas is distributed through pipelines. There is one Southern California Gas Company natural gas pipeline that runs east-west through the middle of the city. The two primary hazards that natural gas poses are combustion and asphyxiation (Safer America 2017). The gas line shown on **Figure 3-7** is spatially accurate to +/- 500 feet (USDOT n.d.). A pipeline that bursts or leaks releases flammable gas that could ignite a destructive explosion. The risk of pipeline failure is related to pipeline condition, seismic activity, proximity to power lines, and surrounding population density, which amplifies the magnitude of threat.

#### Other Hazardous Materials

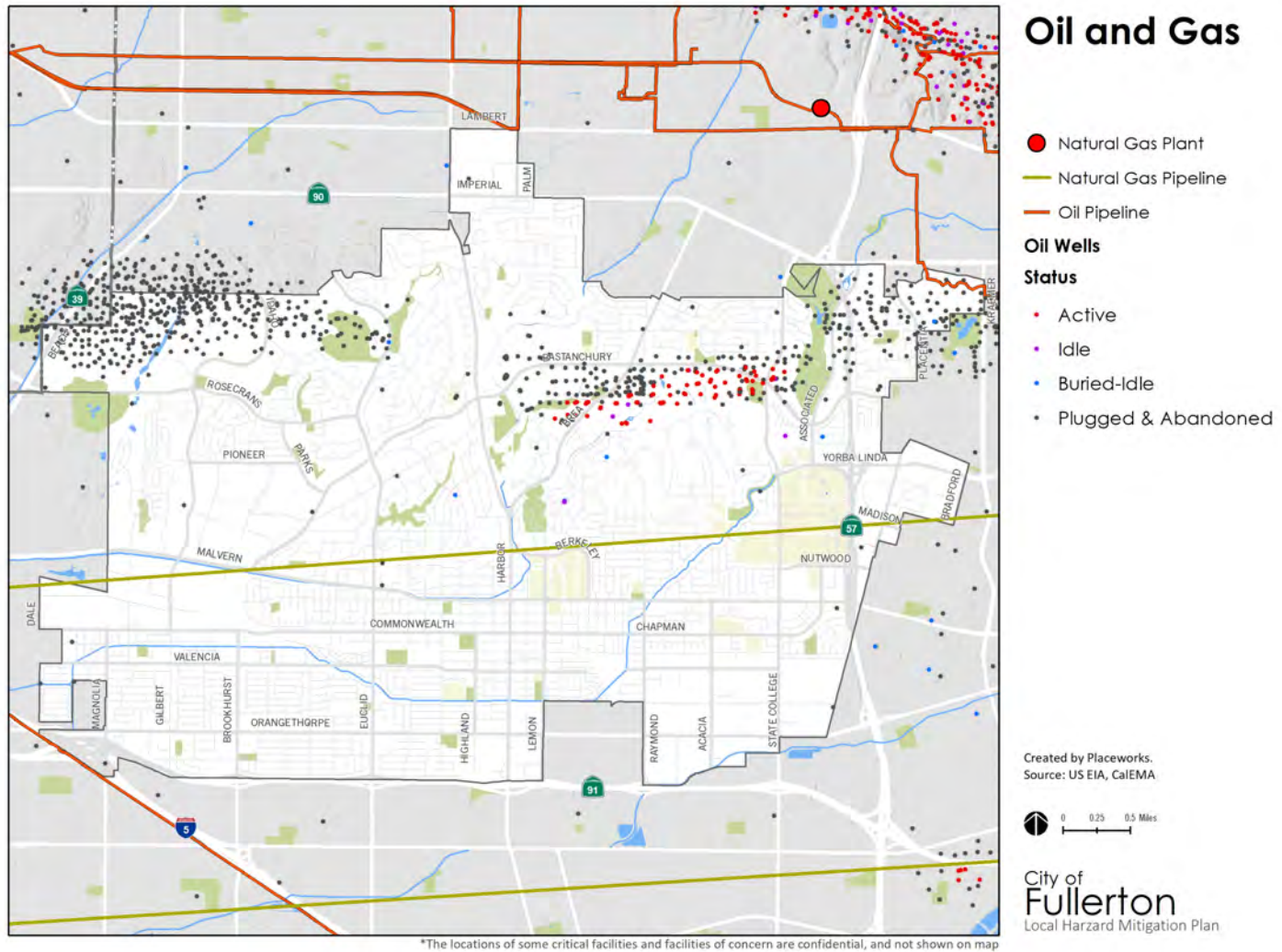
In Fullerton, there are a number of sites designated by the California Department of Toxic Substances Control as sites containing hazardous materials. These are located throughout the city, and typically include underground storage tanks containing petrochemicals, sites where contaminants have been spilled or improperly disposed of, and sites that are permitted to store and use hazardous materials in manufacturing processes. Sewer lines also bisect the city in numerous locations. A break in any of these sewer lines could unleash sewage into the main water supply for the city. Hazardous materials are also transported on highways and railways, many of which pass through Fullerton.

In severe situations, Fullerton may also be at risk of hazardous materials release events on a regional level. Fullerton is in the South Coast Air Basin (SCAQMD 1999). With the right prevailing wind conditions, airborne toxic material could spread to and impact various parts of the air basin, including sections or all of Fullerton.

**Figure 3-8** shows areas that are potential sites for hazardous materials release events.

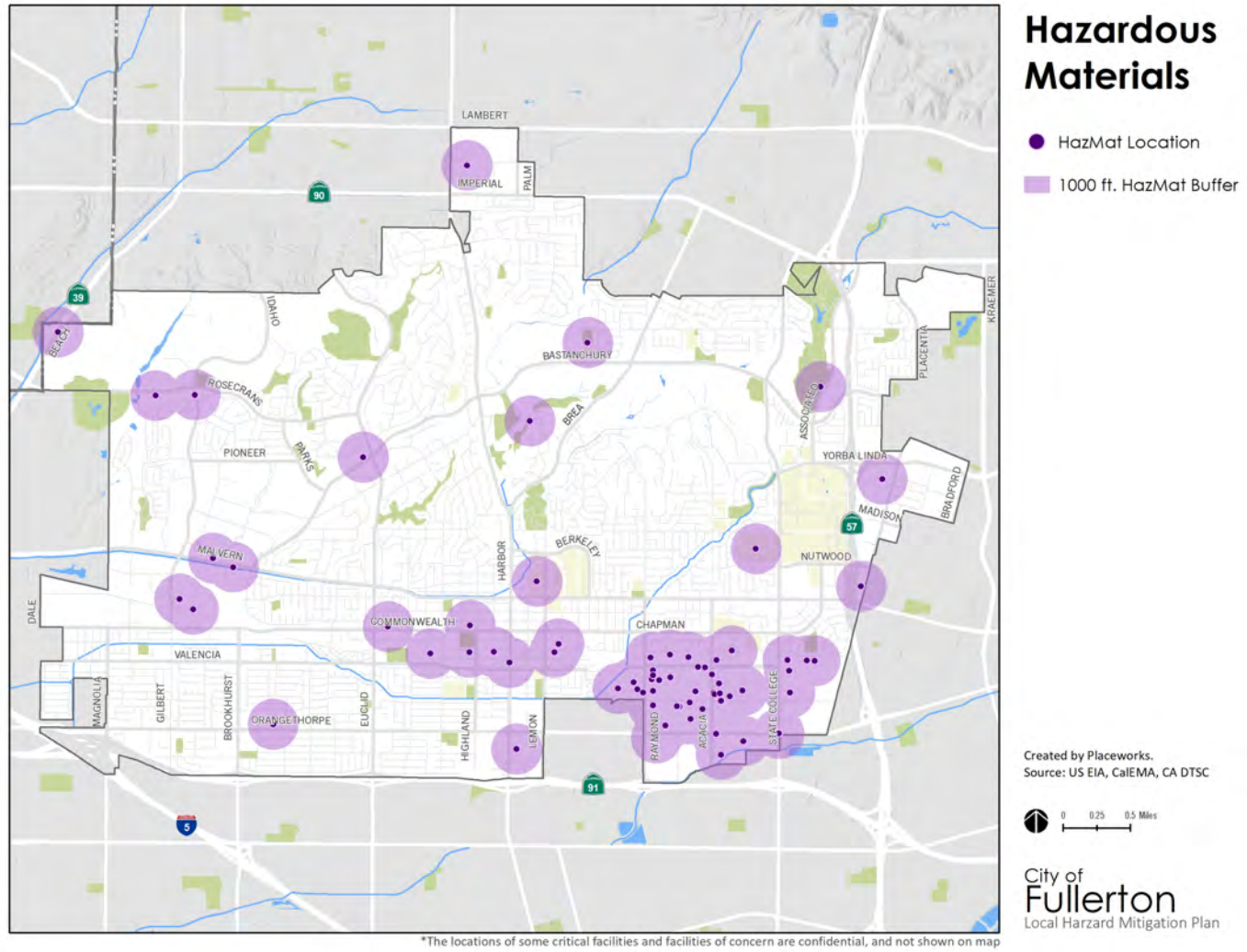
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Figure 3-7: Oil and Gas Operations



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Figure 3-8: DTSC Hazardous Materials Sites



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### Past Events

Fullerton has experienced some hazardous materials release events (Cal EMA 2018):

- In January 2006, 75 gallons of diesel was released when a freight truck collided with a fire hydrant at the intersection of Orangethorpe and Acacia and ruptured the containment chamber on the rig. The diesel then infiltrated a nearby flood control channel.
- In March 2010, a corrosive liquid was released when a forklift breached its containment at the 600 block of S. Acacia St.
- In April 2010, 400 gallons of sewage were released via a manhole; 100 gallons infiltrated a storm drain leading to Break Creek Channel.
- In December 2011, 20 pounds of ammonia were released at the 700 block of S. Raymond when a release valve failed to close completely.
- In January 2015, 195 gallons of sewage leaked from a manhole cover in the 1200 block of North Hollydale. The sewage then contaminated the Fullerton Creek Channel.
- In April 2018, 100 gallons of diesel were leaked onto the southbound lanes of SR-57 near S. Bastanchury when a freight truck collided with the center divider.

### Risk of Future Events

Given Fullerton's history with hazardous materials release and the presence of hazardous materials sites throughout the city, it is very likely that Fullerton will continue experiencing such events in the future. The high volumes of traffic that passes daily through Fullerton or on adjacent highways, freeways and railways creates a possibility that Fullerton could experience a vehicular or railroad transportation-related hazardous materials release event.

### Climate Change Considerations

Climate-related natural hazard events, such as an intense flood, could cause transportation crashes or damage storage containers that result in a hazardous materials release. Climate-related hazards could also exacerbate the effects and impacts of such events. For example, more intense rains could lead to more runoff from a site that is contaminated with hazardous materials.

## HUMAN-CAUSED HAZARDS

For the purposes of this plan, numerous hazard profiles have been grouped under human-caused hazards. These hazards are: aircraft incident, civil disturbance, cyber threat, terrorism, and transportation incident.

### Description

**Aircraft Incidents:** An aircraft incident refers to when an aircraft has lost control and crashes either into the ground or with another aircraft. This can be the result of human error, malfunctioning navigation equipment, or environmental conditions that prevent safe operation of the aircraft.



**Civil Disturbance:** A civil disturbance is an event when the normal operations of the city are either threatened or temporarily interrupted by events such as violent protests, riots, shootings, and armed standoffs. Civil disturbances can occur at a single time or be a string of related events. Property damage of businesses, government facilities, or homes can occur during these events. In extreme situations, death and injury may result from civil disturbances.

**Cyber Threats:** Cyber threats are when an individual or a group threatens or attempts to disrupt the operations and functioning of the computer systems belonging to private citizens, religious groups, educational institutions, government agencies, or businesses. These threats take the form of online harassment, hacking, or in-person tampering with electronic equipment. Successful cyber threats can lead to service disruptions, infrastructure damage, theft, and in severe instances may cause injury or death.

**Terrorism:** Terrorism is the use or threat of force to achieve a particular social or political outcome. The goals of terrorism may sometimes be the overturning of a government, the reversal of a public policy, the release of political prisoners, and other such motives. Acts of terror may overlap with acts of war or hate crimes. Increasingly, terrorists strike at the cyber infrastructure that helps keep communities and local governments running, an act known as cyber-terrorism.

Terrorists use a variety of methods to achieve their goals. Generally, they try to kill or seriously harm people, or they may attempt to disrupt civil society by destroying property or infrastructure, attacking government operations at all levels, interrupting essential public services, creating chaos, or a combination of some or all of these goals. Firearms and explosives are the most common weapons among terrorists, although other means may be used in lieu or in combination with these. In extreme situations, terrorists may gain access to weapons of mass destruction, which typically include such deadly agents as: bioweapons, chemical agents, radioactive materials, or high-yield explosives. It should be noted that these events are very rare. While incidents of terror caused by foreign individuals or groups receive significant media and public attention, most acts of terror in the United States have been caused by domestic terrorists.



Orange County Sheriff's deputies arrive at the campus of California State University, Fullerton in case of violent demonstrations. Image from [Orange County Register](#).

**Transportation Incidents:** A transportation accident is a crash or other failure involving a vehicle, including a car, truck, or train. This can be the result of the vehicle operator making an error or environmental conditions that prevent the vehicle from being safely maneuvered. Examples of transportation accidents include automobile crashes, freight truck collisions, and train crashes or derailments. Aviation transportation accidents are discussed separately in this section. It should be noted that small-scale incidents, such as a minor collision between automobiles, would not count as a hazard. A large-scale collision, however, that involves multiple vehicles and shuts down a freeway could present a hazard to

Fullerton because it could deter first responders from reaching victims or prevent residents from evacuating quickly.

#### **Location and Extent**

**Aircraft Incidents:** The Fullerton Municipal Airport is in the southwestern portion of the city, close to the border with Buena Park. The runway for the airport is on an east-west axis, with aircraft approaching from both ends. It is therefore possible that an aircraft incident could occur along any of these approach pathways. Aircraft incidents could also occur at the airport facility itself. Since the year 2000, there have been 22 accidents at FMA as documented by the National Transportation Safety Board (NTSB) database. From 1984 through September 2004, twenty aircraft accidents occurred within two miles of the airport in the cities of Fullerton and Buena Park (ALUC 2004).

**Civil Disturbance:** Civil disturbances can arise at any time and place for a variety of reasons. There are, however, some places where such events are more likely to emerge, including city hall, state and federal government centers, jails, police stations, major businesses, university campuses, and places of public assembly.

No definitive scale for measuring civil disturbance events exists, but a number of metrics may be used individually to determine a civil disturbance event's impact. These measures include:

- Number of facilities affected
- Number of fatalities
- Monetary loss
- Interruptions to communications infrastructure
- Number of people protesting
- Impacts to certain socioeconomic groups (Renn et al. 2011, Cal OES 2018)

**Cyber Threats:** Since computers are so ubiquitous, a cyber threat could appear in virtually any part of the city. In extreme circumstances, a threat could impact the entire city. Cyber threats vary in their length and severity in impact. A minor threat could simply cause computer systems to slow down for a few minutes and not behave as responsively. On the other hand, a major cyber threat could cause a complete shutdown of critical systems, including those used by banks, healthcare institutions, universities, major businesses, and city government.

Cyber threats are not measured in any particular scale, but they can be assessed by determining:

- The type of incident (website defacement, denial of service, unauthorized surveillance).
- The use of malicious software.
- The level of security countermeasures that failed in preventing the cyber threat.
- The duration of the cyber threat (a few hours, a few days, several weeks, etc.). (Mateski et al. 2012)

**Terrorism:** Terrorism can occur anywhere, although public spaces are more common. This includes such places as shopping malls, religious buildings and institutions, schools and universities, hospitals and medical clinics, government centers and complexes, and public gatherings or events. Terrorists may also choose infrastructure such as electric-generating facilities, water treatment plants, dams or reservoirs, railroads, highways, and other such areas. In some cases, private homes or businesses may be targeted. Terrorist acts are typically measured by the fatalities, injuries, and destruction they cause but there is no universally used scale for measuring terrorist events.

**Transportation Incidents:** Arterial streets, highways, freeways and railways are widespread in and around Fullerton. Major freeways passing through Fullerton include SR-57 (the Orange Freeway) and SR-91 (the Riverside Freeway). Rail infrastructure bisects the northern half of the city from the south. Passenger and freight rail use this right-of-way, including Metrolink, Amtrak, Burlington Northern Santa Fe (BNSF) and Union Pacific (UPRR). Any of these transportation corridors, or others in or around Fullerton, could be the site of a transportation incident that affects the community. Generally, transportation incidents are measured by the number of deaths they cause.

#### Past Events

**Aircraft Incidents:** Fullerton and the surrounding area have a history of aircraft accidents, including:

- In 1986, a passenger jetliner collided with a small propeller plane above the nearby city of Cerritos across the county line. The smaller plane was destroyed in the air, and the jetliner crashed into a residential neighborhood below, killing 15 residents of Cerritos and destroying 16 homes. (Harrison 2016)
- In September 2004, a pilot lost control of their plane during an airshow at the Fullerton Municipal Airport. The plane immediately crashed following take-off, injuring the pilot. (Aviation Safety Network 2004)
- In August 2016, the pilot of a small propeller plane lost control of the aircraft, sending the plane crashing into the wall of a hangar at the Fullerton Municipal Airport. The pilot and co-pilot suffered minor injuries. (Branson-Potts 2016)

**Civil Disturbance:** While Fullerton does not have an extensive history of civil disturbance, some notable events are listed below. Many have taken place at the CSUF campus:

- In spring semester in 1970, numerous protests erupted at the campus of CSUF in response to the Vietnam War, a campus visit by then-governor Ronald Reagan, and the massacre at Kent State University in Ohio. Governor Reagan ordered the university to shut down prior to final exams week. In total, more than 60 students and faculty members were arrested across the semester. (Fox 2009)

- Between July 2011 and January 2014, a series of protests took place in response to death of a Fullerton-based homeless man at the hands of the Fullerton Police Department. At the announcement of the acquittal of the officers involved in the death, violent protests erupted that resulted in the arrest of 13 people. A protester attacked a TV news camera woman, and a Fullerton Police station was defaced with graffiti. (Clay 2014; Winton and Sewell 2011; CBS Los Angeles 2014a)
- In October 2017, scuffles erupted between two sides of a protest at the campus of CSUF when a white supremacist was invited to speak by a campus student group. Objects were thrown from one group at the other, and one woman was reported to have been releasing a can of pepper spray into the air. Officers from the Orange County Sheriff's Department and CSUF University Police were present and arrested eight of the demonstrators. (Kopetman 2017)

**Cyber Threats:** Generally, Fullerton does not have a history of cyber threats. The only event of note occurred following an officer-related beating that resulted in the death of local homeless man, Kelly Thomas. In response, a hacking group called Anonymous threatened to hack the website of the Fullerton Police Department. City staff responded by shoring up security. No actual hacking materialized out of the threat (Winton and Grad 2011).

**Terrorism:** While there are no recorded terrorist events within Fullerton itself, terrorist activity has recently occurred in the area:

- A teenager was arrested in 2014 who was reported as having threatened terrorist action against event attendees of the US Open of Surfing. (Connelly and Emery 2014)
- In May 2015, two Anaheim-based men were arrested at a Transportation Security Administration checkpoint at the Los Angeles International Airport who had reportedly sworn allegiance to the Islamic State of Iraq and Syria (ISIS). One of these men, Muhanad Badawi, was a student at Fullerton College. (Winton 2016)
- In December 2015, a mass shooting and terrorist attack committed by a married couple who had reportedly sworn allegiance to ISIS killed 14 people at a medical facility in San Bernardino. (Global Terrorism Database 2018)

**Transportation Incidents:** Fullerton has experienced frequent transportation accidents, including:

- In November 1999, a Metrolink train collided with a freight train in near Brookhurst Road in Fullerton. While nobody was killed, 19 people were injured. The collision caused the railroad through Orange County to be temporarily closed and more than 3,500 Metrolink commuters were affected and had to seek alternative routing. (Winslow 2018; Harris et al. 1999; CBS Los Angeles 2018; Cal EMA 2018)
- In February 2018, a passing Amtrak train struck a person who had trespassed onto the right-of-way near the Fullerton Train depot. The train was not derailed and the trespasser survived with injuries.
- In March 2018, a man was hit by a passing Metrolink train in an apparent suicide.

- In April 2018, a freight truck struck the center median of SR-57 near Bastanchury Road in Fullerton and overturned, shutting down the highway for nearly 12 hours.
- In July 2018, a passing freight train fatally struck a person who had trespassed onto the right-of-way near the Fullerton Train Depot.

### Risk of Future Events

**Aircraft Incidents:** While it is possible to reduce the risk of aircraft incidents as much as possible, given that aircraft operations are subject to human error, there is always potential for an accident. As long as the Fullerton Municipal Airport continues operations, an aircraft incident could occur, given the history of such events in the area. The Fullerton Municipal Airport is, however, subject to the Airport Environs Land Use Plan (AELUP) adopted by the Airport Land Use Commission (ALUC) pursuant to the Public Utilities Code. In the AELUP, the ALUC, has placed land use restrictions on new uses in a safety zones around the runway based on the accident data and operations of the airport to reduce the potential for loss of life and property. Even without the impact caused by the City's airport, the high volume of air traffic in the area operating out of other regional airports contributes to the risk of an aircraft accident in Fullerton.

**Civil Disturbance:** While civil disturbance events may be rare, there is still a possibility that they could occur in the future in Fullerton. Given that a number of civil disturbance events have occurred at the campus of CSUF in the past, it is safe to say that more such events will emerge in the future. Other future civil disturbance events may take place in Downtown Fullerton or other areas where large groups of people tend to congregate.

**Cyber Threats:** Due to the integrated nature of technology into the everyday lives of Fullerton's residents, businesses, and government operations, it is possible that a cyber threat could emerge in the future. Given that no cyber threats are publicly known to have disrupted the City of Fullerton's normal operations in the past, the likelihood of a cyber threat severely handicapping the City in the future is unlikely.

**Terrorism:** Given that terrorist activity has its root causes in a variety of factors—such as global geopolitics, warfare, economics, and religion, etc.—it is impossible to predict whether or not a terrorist attack will occur. Since Fullerton does not feature facilities of critical national or state importance, however, it is less likely (although possible) that Fullerton will attract the attention of international terrorist groups. Acts of terror committed in Fullerton are more likely to be conducted by smaller organizations or individuals, although the effects may be no less significant.

**Transportation Incidents:** It is a certainty that transportation accidents will continue. While it is possible to guard against such events and implement safety measures, it is impossible to prevent every single transportation accident. Fullerton has a history of people trespassing on railroad tracks, and it is likely that people will continue to do this, endangering themselves and others. The large volume of traffic on streets and highways in and around Fullerton also makes it likely that an accident will occur on either of these pieces of transportation infrastructure in the future.

## Climate Change Considerations

**Aircraft Incidents:** The link between aircraft accidents and climate change is not well understood at this time. Although climate change is not likely to directly increase or decrease the number of aircraft incidents, it is feasible that more instances of severe weather could heighten the risk of an aircraft incident.

**Civil Disturbance:** It is not expected that climate change will have a direct impact on civil disturbance in Fullerton. It has been suggested, however, that increases in temperature may increase the likelihood of people to take to the streets and gather in crowds, potentially setting the stage for a riot (Khaleeli 2016). An increase in hot weather in Fullerton could, therefore, potentially increase the risk of civil disturbance. Hardships created by climate change, such as economic disruptions, could also indirectly increase the risk of civil disturbance.

**Cyber Threats:** Climate change will most likely not influence cyber threats in Fullerton.

**Terrorism:** The link between terrorism and climate change is not well understood. It has been suggested, however, that the impacts of a changing climate may exacerbate existing social, political, religious, and ethnic tensions. For example, longer, more intense droughts may restrict food supply or place limits on economic growth for cities, regions, or even whole countries. Nevertheless, the likelihood of climate change impacting terrorist activity in Fullerton is negligible, since these changes are more likely to impact developments on the national or international level.

**Transportation Incidents:** Climate change is not likely to impact transportation accidents in Fullerton.

## SEISMIC HAZARDS

A seismic hazard is the consequence of earthquakes and other tectonic activity. This Plan includes fault ruptures, liquefaction, and seismic shaking as seismic hazards. Landslides, which may be caused by earthquakes, are discussed in the Geologic Hazards section.

### Description

**Fault Rupture:** The shifting and movement of the Earth’s tectonic plates are responsible for seismic events. These tectonic plates can pull away from, move toward, or pass by each other. As they do, the plates sometimes lock together. This creates tension, and eventually the built-up tension is released like a springboard. The tension dissipates into the Earth’s crust.

The location at which two tectonic plates join is called a fault line. Fault lines are sometimes visible on the Earth’s crust as sudden rifts or anomalies in the continuity of the landscape. In California, the major north-south fault line is the San Andreas Fault—where the North American and Pacific Plates meet. Constant friction between the two plates over the millennia, however, has caused the areas where the two plates intersect to become fragmented, creating new, smaller faults.

The area in the immediate vicinity of a fault line is at risk of damage due to the potential for a fault rupture—the deformation or displacement of land on either side of the fault, which may move a few inches to several feet in opposite directions. Any buildings or infrastructure situated around, on top of, or

across a fault line could potentially be severely damaged or destroyed. The direction of the fault rupture depends upon the fault type: dip-slip faults produce vertical shearing, strike-slip faults produce horizontal shearing, and oblique-slip faults produce both vertical and horizontal shearing. A fourth kind of fault, called a “blind” fault, produces virtually no visible displacement of land.

Some faults have emerged fairly recently in geologic history. Quaternary faults are faults that have developed any time between the Holocene Era and the present (within the last 1.8 million years). These faults are especially concerning since they are the most likely to be active and cause future earthquakes.

The Alquist-Priolo Earthquake Fault Zoning Act enables the California State Geologist to designate zones surrounding active faults as Alquist-Priolo Special Study Zones, which is a special regulatory zone that requires additional study, to determine the location of the fault and the limits of the area prohibited from surface construction on top of the known location of an active fault.

**Liquefaction:** Liquefaction is a kind of seismic event that occurs in response to the sudden shaking of loose, water-saturated soil. When this happens, the ground no longer seems solid but rather like a liquid. Any structures built on top of a zone of liquefaction during a seismic event are at risk of serious damage. Infrastructure, such as pipelines, utility poles, water tanks, and other kinds of critical facilities are also at risk of being affected or destroyed by liquefaction events.

**Seismic shaking:** Seismic shaking refers to when the ground shakes as a result of an earthquake or other seismic event. Seismic shaking may cause billions of dollars’ worth of property damage across a whole region, but it may also be virtually undetectable to all except seismic measuring tools. Seismic shaking’s severity is determined by how much energy is released, how long the rupture is, and the depth of the origin. Areas that are closest to the epicenter of the seismic event generally experience the most shaking.

The susceptibility of a structure to damage from ground shaking is related to the underlying bedrock or soil as well as the strength of the earthquake itself. Material that is firm and solid can intensify short-period motions, causing stronger shaking, because seismic waves travel faster through harder material than softer material.

### KEY TERMS

**Spectral Acceleration:** The maximum acceleration experienced by a building or other structure during an earthquake.

**Period:** The time it takes to complete one cycle of a seismic wave, measured in seconds or fractions of a second.



## Location and Extent

**Fault Rupture:** There are several smaller fault lines that pass through or lie underneath Fullerton. The Puente Hills Blind Thrust System runs north-south through Fullerton. Sections of the Elysian Park and Yorba Linda fault lines pass through Fullerton’s southwestern and southeastern areas respectively. The Coyote Hills faults, a series of smaller, shorter faults, run through northern sections of Fullerton. One of these fault segments, located just north of the City, is located within an Alquist-Priolo Special Study zone. (Dept. of Conservation 2010; USGS 2018b).

In addition to these local faults, there are six major regional faults that could potentially impact Fullerton:

- The closest point of the Whittier-Elsinore Fault is 1.6 miles northeast of Fullerton.
- The closest point of the Newport-Inglewood Fault is 9.8 miles southwest of the city.
- The closest point of the Sierra Madre/San Fernando Fault is approximately 14 miles north of Fullerton.
- The Palos Verdes Hills Fault is 20 miles southwest of the city at its closest point.
- The San Jacinto Fault is 36 miles east of the city.
- The San Andreas fault, the dominant fault system in Southern California, is 37 miles northeast of Fullerton at its closest point.

**Figure 3-9** shows local and regional fault lines, their location relative to Fullerton, and their shake potential.

While significant efforts have been undertaken to identify and map fault lines in Southern California, there are still some fault lines or segments of fault lines that are either unmapped or completely unknown. It is possible for a fault rupture to occur along any of these unidentified faults.

Fault rupture events are usually measured using the distance of displacement of one side of the fault to the other. The longer the length of the fault rupture, the greater the impact of the event.

**Liquefaction:** Liquefaction can occur in areas with a high level of groundwater. Generally, areas with a higher water table are at more risk of liquefaction than areas with a lower water table.

Areas of liquefaction potential are delineated on the map in **Figure 3-10**. Local geology and groundwater conditions, as well as historical events, all influence which areas are susceptible to liquefaction. The Coyote Creek Floodplain in the northwest section of Fullerton contains an abundance of saturated, loose sandy soils at depths less than 40 feet. These sediment layers have the potential to liquefy in the event of an earthquake, causing this area to have a high liquefaction susceptibility. Although the Carbon Creek alluvial fan is composed of loose, sandy material, there is a low susceptibility because groundwater is relatively far below the surface. Since liquefaction occurs in areas with highly water saturated soil, areas of liquefaction with slopes are

### KEY TERMS

**Deep-Seated Landslide:** A landslide event generated by a gradual accumulation of water under the surface of the ground that weakens slope faces. They often lead to property damage.

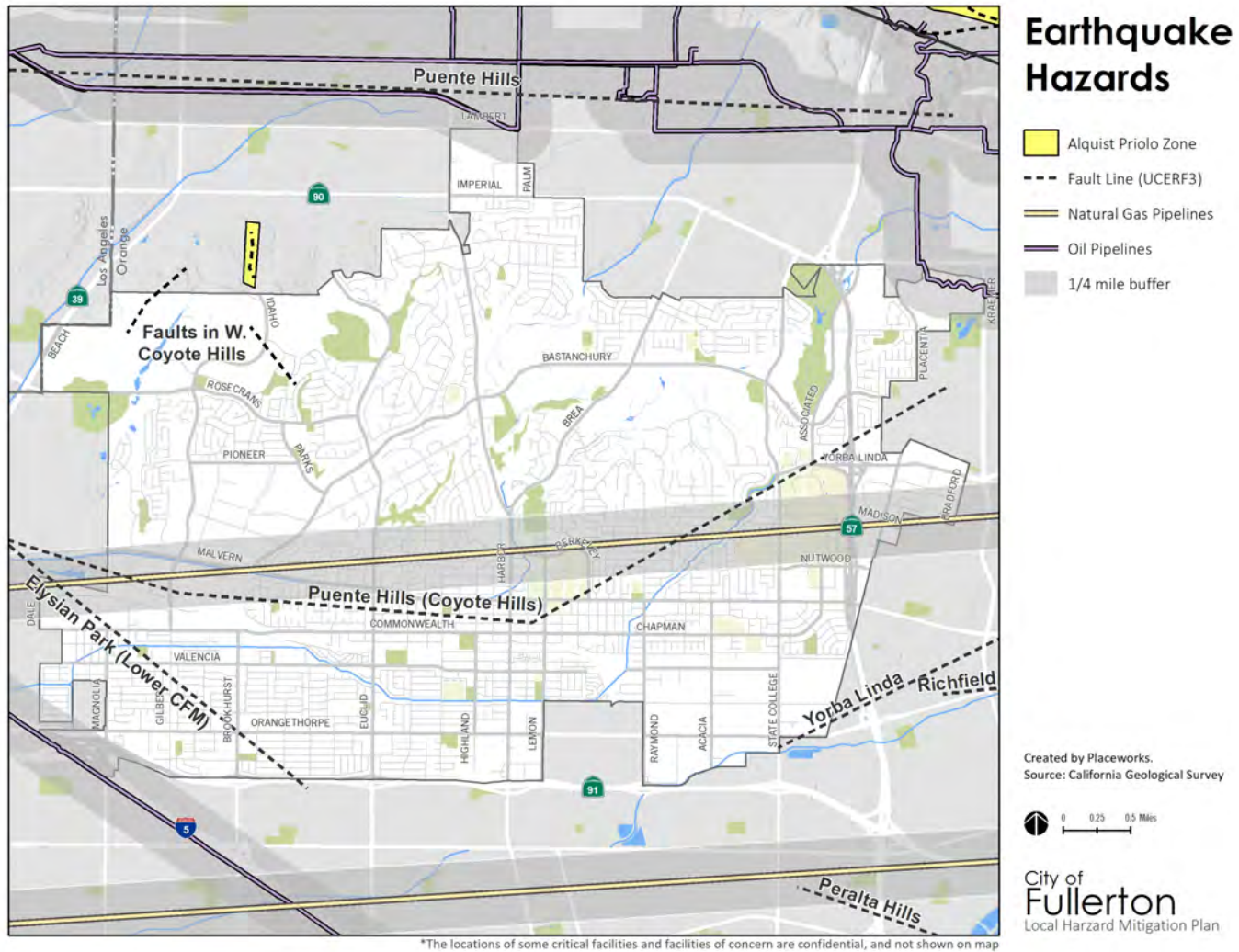
**Alluvial Fan:** Geologic formation in the shape of a fan that is formed when sediments from mountain rivers are deposited on flatter terrain.

also known to trigger events known as “deep-seated landslides” which are landslides that occur when water accumulates in the soil underneath the slope’s surface. The areas of West Coyote Hills and East Coyote Hills have a susceptibility to deep-seated landslide.

While liquefaction events are not measured on any standardized scale, multiple factors may be used to assess the size of the event, such as:

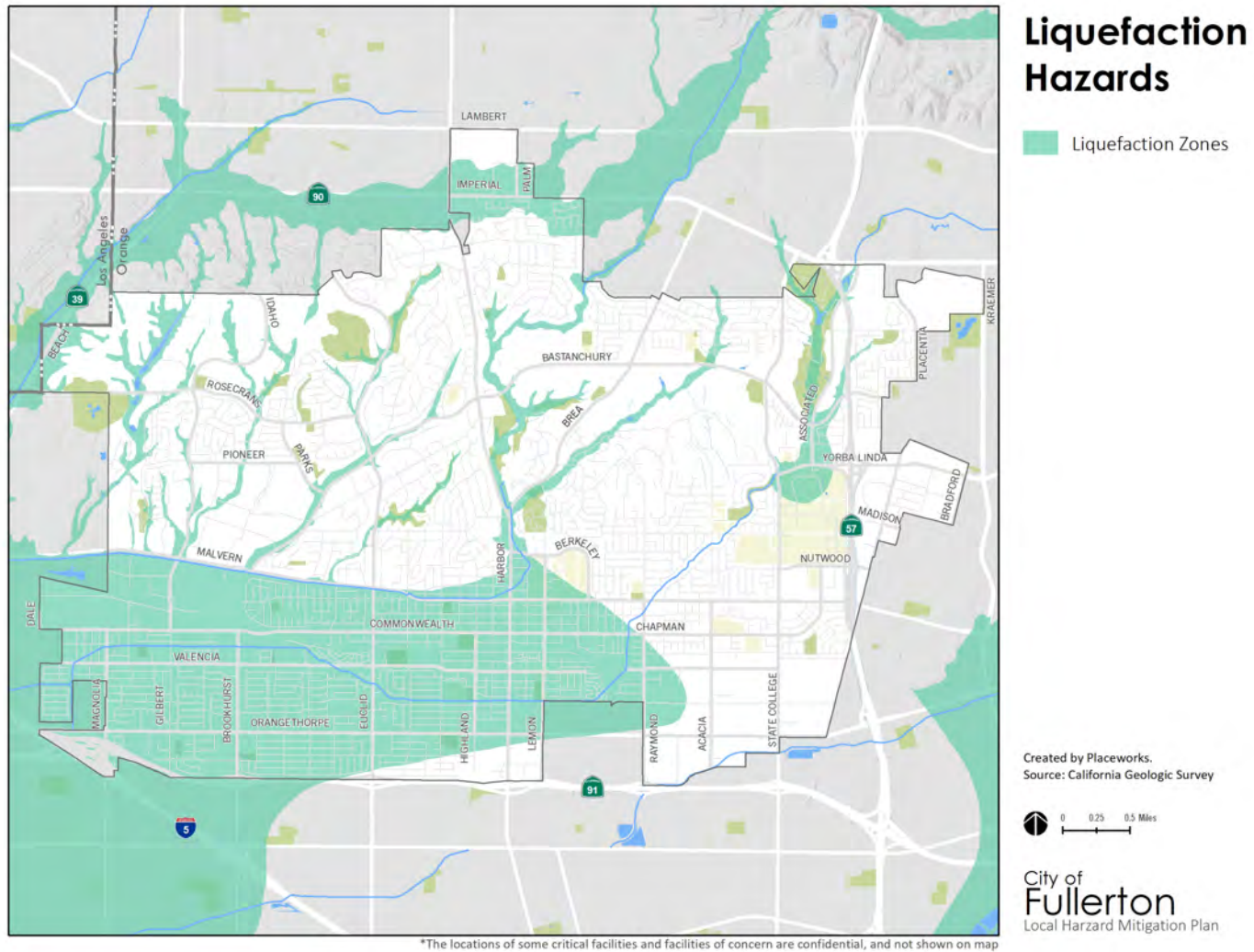
- Type of ground material
- Amount of material
- Strength of shaking
- Size of the affected area

Figure 3-9: Local and Regional Fault Lines Map



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Figure 3-10: Liquefaction Hazards Map



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**Seismic shaking:** Generally, seismic shaking events are measured using the Modified Mercalli Intensity (MMI) scale, which uses visible damage as a benchmark for each event. A seismic event will have a different MMI measurement in different locations, depending on the amount of damage done. The MMI scale uses Roman numerals ranging from I (1) to XII (12). **Table 3-9** shows the MMI scale.

**TABLE 3-9: MODIFIED MERCALLI INTENSITY SCALE**

Intensity	Description	Description
I	Instrumental	Felt only by a very few people, under especially favorable conditions.
II	Feeble	Felt only by a few people at rest, especially on the upper floors of buildings.
III	Slight	Noticeable by people indoors, especially on upper floors, but not always recognized as an earthquake.
IV	Moderate	Felt by many indoors, and by some outdoors. Sleeping people may be awakened. Dishes, windows, and doors are disturbed.
V	Slightly strong	Felt by nearly everyone, and many sleeping people are awakened. Some dishes and windows broken, and unstable objects overturned.
VI	Strong	Felt by everyone. Some heavy furniture is moved, and there is slight damage.
VII	Very strong	Negligible damage in well-built buildings, slight to moderate damage in ordinary buildings, and considerable damage in poorly-built buildings.
VIII	Destructive	Slight damage in well-built buildings, considerable damage and partial collapse in ordinary buildings, and great damage in poorly-built buildings.
IX	Ruinous	Considerable damage in specially designed structures. Great damage and partial collapse in substantial buildings, and buildings are shifted off foundations.
X	Disastrous	Most foundations and buildings with masonry or frames are destroyed, along with some well-built wood structures. Rail lines are bent.
XI	Very disastrous	Most or all masonry structures are destroyed, along with bridges. Rail lines are greatly bent.
XII	Catastrophic	Damage is total. The lines of sight are distorted, and objects are thrown into the air.

Source: USGS 2018c.

Seismic events are also measured using the moment magnitude scale (MMS, denoted as  $M_w$  or simply  $M$ ) which is a measurement of the energy released at the fault rupture. It has replaced the Richter scale, which is less reliable for large earthquakes. The MMS begins at 1.0 and increases as the energy of the earthquake increases. The MMS is a logarithmic scale, meaning that the difference between numbers on the scale multiplies as they increase. For example, an earthquake with 5.0  $M_w$  is approximately 1.4 times greater than 4.9  $M_w$ , 32 times greater than 4.0  $M_w$ , and 1,000 times greater than 3.0  $M_w$ .

Fullerton is in a High Seismic Zone, as defined by the Fullerton Building Code, which incorporates the 2016 edition of the California Building Code. There is a high risk of ground-shaking throughout Fullerton. The magnitude or intensity of the shaking will depend on the magnitude of the earthquake and the distance from the epicenter. The Puente Hills Fault has the greatest potential to cause intense ground shaking for this reason.

### Past Events

**Fault Rupture:** The largest recent fault rupture near Fullerton was the 1994 Northridge earthquake, a 6.7  $M_w$  event approximately 42 miles from downtown Fullerton, and the most destructive earthquake in the United States in nearly 100 years. The resulting destruction included property damage to more than 4,000



buildings as well as the destruction of numerous freeway structures across the Los Angeles region (RMS 2004).

More recently, a 5.1  $M_w$  earthquake beneath La Habra in 2014 caused fault rupturing adjacent to but not directly on the Puente Hills and Whittier faults (Graves et al. n.d.). As a result, six gas and water transmission lines were broken in Fullerton (CBS Los Angeles 2014b).

**Liquefaction:** There is no record of historic or paleo-seismic liquefaction in the area in and around Fullerton. All potential zones for liquefaction are based on soil susceptibility rather than past events (Dept. of Conservation 1997).

**Seismic shaking:** Significant seismic shaking events that were felt in Fullerton include the 1994 Northridge earthquake and the 1987 Whittier Narrows earthquake. Both of these quakes caused minor damage to properties, disrupted some city infrastructure, and broke utility lines, though neither caused any significant damage in Fullerton. The most recent significant seismic shaking event that impacted Fullerton was a 2014 5.1-magnitude quake that struck Fullerton as well as the surrounding communities of Brea and La Habra, causing up to \$824,000 of damage across the three cities (Palta 2014). The shaking broke water mains and disrupted electrical transmission to nearly 3,000 Southern California Edison customers across northern Orange County (Schwenke and Lin II 2014). Other

**Table 3-10** shows major earthquakes (at least 6.0  $M_w$ ) within 100 miles of downtown Fullerton.

**TABLE 3-10: SIGNIFICANT EARTHQUAKES WITHIN 100 MILES OF FULLERTON**

Event Name	Distance (Miles)*	Magnitude
1933 Long Beach Earthquake	18	6.4
1948 Desert Hot Springs Earthquake	92	6.0
1952 Kern County Earthquake	97	7.5
1971 San Fernando Earthquake	15	6.6
1986 North Palm Springs Earthquake	77	6.0
1992 Landers Earthquake	89	7.3
1994 Northridge Earthquake	41	6.7

Source: SCEDC 2011.

\* Distance between epicenter and downtown Fullerton

### Risk of Future Events

**Fault Rupture:** Given the history of fault rupture in and around Fullerton, it is very likely that fault rupturing will occur again in Fullerton's future. Furthermore, it is suggested that human activity, including the pumping of wastewater into the ground, oil extraction, oil well water injections, and others could lead to seismic and geologic hazards, including additional underground faulting (Graves et al. n.d.). Since oil production and agriculture have caused both petroleum and water to be withdrawn from the ground beneath Fullerton, there is a chance that Fullerton could be at higher risk for faulting than other communities in the vicinity that do not have a history of withdrawing subterranean resources.

**Liquefaction:** As long as the conditions for liquefaction events exist, such an event is feasible. Given Fullerton's known lack of historical liquefaction events, despite the presence of liquefaction-prone soil, there is a low likelihood that Fullerton will experience a liquefaction event in the foreseeable future.

**Seismic shaking:** Since Fullerton is situated in a seismically active area and has experienced seismic shaking in the past, it is nearly inevitable that seismic shaking will occur again in Fullerton’s future. The Third Uniform California Earthquake Rupture Forecast (UCERF3) was released in 2015 and provides the likelihood of a major earthquake on various faults between 2015 and 2044. **Table 3-11** shows the probabilities of a significant earthquake by magnitude on the key fault lines near Fullerton, as estimated by the UCERF3 forecast.

**TABLE 3-11: EARTHQUAKE PROBABILITIES FOR KEY FAULTS NEAR FULLERTON (2015-2044)**

Fault	Distance (Miles)*	Probability			
		6.7+ M <sub>w</sub>	7.0+ M <sub>w</sub>	7.5+ M <sub>w</sub>	8.0+ M <sub>w</sub>
Yorba Linda	3	0.09%	0.08%	0.03%	Negligible
Puente Hills	4	0.59%	0.52%	0.19%	Negligible
San Joaquin Hills	11	0.40%	0.38%	0.24%	Negligible
Whittier	12	1.45%	1.26%	0.66%	Negligible
Newport-Inglewood	12	0.95%	0.81%	0.42%	Negligible
Palos Verdes	21	3.09%	2.79%	0.10%	Negligible
Sierra Madre	21	1.10%	1.06%	0.72%	0.03%
San Jacinto	38	4.24%	4.22%	4.18%	2.31%
San Andreas†	38	20.79%	18.32%	15.71%	6.70%

Source: USGS 2015.

Note: UCERF3 results consist of two individual models (3.1 and 3.2), each of which provides rupture probabilities for each segment of the fault. This table shows the maximum probability for a section of the fault in either model.

\* Distance between downtown Fullerton and the nearest point of the fault. All distances are approximate.

† Southern California segments only.

In addition to the UCERF3 forecasts, which project the odds of a major earthquake on local and regional faults, the US Geological Survey forecasts the severity of seismic shaking in different locations for various plausible earthquake scenarios. **Table 3-12** shows the anticipated shaking in Fullerton from some of these scenarios.

**TABLE 3-12: SELECTED SHAKING SCENARIOS FOR FULLERTON**

<b>Fault</b>	<b>Magnitude (M<sub>w</sub>)</b>	<b>Distance to Epicenter (Miles)*</b>	<b>MMI in Fullerton</b>
Peralta Hills	6.6	7	VIII (Destructive)
Whittier	6.9	8	VIII (Destructive)
Anaheim	6.4	4	VIII (Destructive)
Chino	6.6	12	VIII (Destructive)
	6.8	13	VIII (Destructive)
Newport-Inglewood	7.0	2	VIII (Destructive)
	7.2	14	VII (Very strong)
	7.5	75	VIII (Destructive)
Palos Verdes	7.3	19	VIII (Destructive)
	7.7	50	VIII (Destructive)
Elsinore	7.0	25	VIII (Destructive)
	7.3	23	VIII (Destructive)
	7.7	110	VIII (Destructive)
Sierra Madre	7.3	25	VIII (Destructive)
San Jacinto	7.3	42	VIII (Destructive)
San Andreas	7.2	46	VIII (Destructive)

Source: USGS 2018d.

\* Distance between downtown Fullerton and the epicenter (the point on the surface above where the fault rupture began).

### Climate Change Considerations

**Fault Rupture:** Generally, there is no known direct connection between fault rupturing and climate change. Some evidence suggests that greater oceanic pressure on tectonic plates as a result of melting land ice could influence the behavior of seismic events, but there is little to indicate that this would play a major factor in any seismic event, including fault rupturing.

**Liquefaction:** Changes in precipitation patterns could affect groundwater levels, which could in turn affect the susceptibility of soils in Fullerton to liquefaction. At this time, however, there is no evidence to suggest that climate change affects liquefaction events in a substantial way.

**Seismic shaking:** Generally, there is no known direct connection between seismic shaking and climate change, although there is some evidence that melting land ice may influence seismic shaking at a global scale. This is unlikely to cause noticeable changes in seismic shaking at a local level.

### SEVERE WEATHER

For the purposes of this plan, numerous hazard profiles have been grouped under severe weather hazards. These hazards are: extreme heat, heavy rain, severe wind, and tornadoes.

#### Description

**Extreme Heat:** An extreme heat event is a day when temperatures reach levels that are significantly higher than normal. In California, extreme heat has been defined as any day when the maximum temperature surpasses 98 percent of all prior historic high temperatures for the area, using the time between April and October from 1961 to 1990 as the baseline. Extreme heat events differ from region to region based on the area's climate. An extreme heat event in the Central Coast area of California will likely have a lower

threshold than an extreme heat event in the Central Valley. A succession of extreme heat events is generally referred to as a heat wave.

Humidity plays a factor in the perceived heat that people feel. Generally, humidity will make a hot day feel even hotter than a dry day even though the temperature may be the same. This difference between actual heat and apparent heat is called the heat index. As an example, a 100°F day with 50 percent humidity will feel like a 118°F day (NOAA 2018b). **Figure 3-11** shows NOAA’s National Weather Service Heat Index.

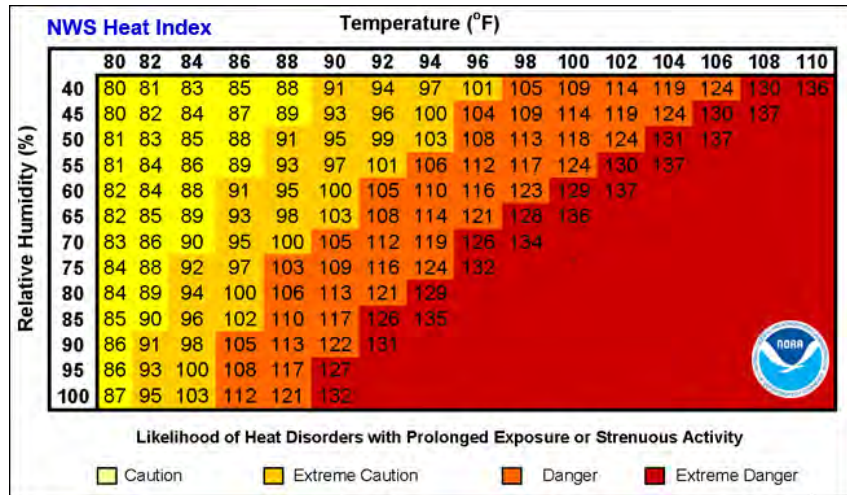


Figure 3-11: NOAA Heat Index

Extreme heat is dangerous for a variety of reasons. The human body cannot withstand long periods of heat and will suffer heat exhaustion and dehydration if precautions are not taken. Severe extreme heat may cause heatstroke, when internal body temperatures surpass 105°F. Without intervention, organ failure and even death can result. The elderly are especially at risk of extreme heat events, as are people who spend time or work predominantly outside, such as agricultural or construction workers.

**Heavy Rain:** During severe weather events such as strong storms, rain can fall at such a high rate that it cannot drain away fast enough. The resulting heavy rain can cause flooding, leading to inundation and potential damage to buildings, road networks, public areas, utilities, and other critical pieces of infrastructure. In California, heavy rainfall events are often short, intense bursts of rain, but in some cases heavy rain can persist for multiple days.

**Severe Wind:** Wind is simply the movement of air caused by differences in atmospheric temperature. High pressure air will naturally move to areas of low air pressure. Usually, the distance between these high and low pressure zones is far. On occasion, however, these low and high pressure zones may be near one another. When this happens, air will flow dramatically, creating high-speed winds.

When winds are fast enough, they can cause property damage to homes, public facilities, utilities, and other infrastructure. They can also uproot or topple mature trees or pick up debris and send it careening through the air. This debris can injure or even kill bystanders who may find themselves stranded outside. High speed winds can also deposit this debris in the middle of rights-of-way, such as roads, freeways, and railways, blocking exit routes for would-be evacuees or impeding access to first responders trying to reach wounded people.

**Tornado:** A tornado is a unique kind of extreme wind event that occurs when a vertical column of wind oscillating at very high speeds makes contact with earth. These kinds of conditions usually occur during electrical storms. Tornadoes can cause severe damage and injure or kill people. While these events are

rare in California, some tornadoes emerge under unique conditions. In especially rare circumstances, the extreme heat generated by wildland fires has been demonstrated to create circling towers of wind which are effectively tornadoes (Holthaus 2018). More common wind events that exhibit similar speeds to those of tornadoes include downbursts, microbursts, and derechos. Like tornadoes, these events are generated by thunderstorm conditions.

#### Location and Extent

**Extreme Heat:** Extreme heat events may occur anywhere in Fullerton. The threshold for an extreme heat day in Fullerton is 98.4°F (Cal-Adapt 2018).

**Heavy Rain:** The location and size of a rain event varies depending on regional geography as well as regional and global weather events. For example, small precipitation events may occur in only one particular section of Fullerton. In contrast, a large rain event could inundate a majority of Orange County as well as other jurisdictions.

As a whole, California’s precipitation varies from year to year depending on how much moisture the state receives from atmospheric rivers. Atmospheric rivers are corridors along which wet air travels from the tropics to continents. When the moisture arrives in California, it may precipitate as rain or snow. One of the most commonly known atmospheric rivers in California is the “Pineapple Express,” which brings moist air from the ocean surrounding Hawai’i to California. During certain years, an immense amount of moisture may be transported along the atmospheric rivers that cross over California, leading to severe rains (NOAA 2015).

Another weather phenomenon influencing rainfall in southern California—“El Niño,” officially referred to as the “Southern Oscillation” or “El Niño-Southern Oscillation (ENSO)” —can cause increased rainfall, particularly during the winter months. ENSO is caused by warming of the surface of the eastern tropical Pacific Ocean, leading to evaporation of warm, moist air into the atmosphere. Winds bring this moisture to the eastern Pacific and the American continents, where it falls as rain. ENSO does not always lead to increased rainfall by default but, in general, it can increase the chances for a winter with higher-than-usual precipitation (NOAA 2014, 2016).



A rainy day at the campus of California State University, Fullerton. Image from Mihaylo College of Business.

Rain events are usually measured by amount of precipitation that falls. **Table 3-13** categorizes rain events by the amount of precipitation per hour.

**TABLE 3-13: MEASURING HEAVY RAIN EVENTS**

Rain Type	Description
Heavy rain	More than 4 mm per hour but less than 8 mm per hour.
Very heavy rain	Greater than 8 mm per hour.
Moderate shower	Greater than 2 mm, but less than 10 mm per hour.
Heavy shower	Greater than 10 mm per hour, but less than 50 mm per hour.
Violent shower	Greater than 50 mm per hour.

Source: USGS 2016.  
mm = millimeter

**Severe Wind:** In southern California, the most common type of severe wind event is called the Santa Ana winds. High pressure over Nevada and Utah, often during the fall and winter months, forces air down from the high desert toward the ocean. As the winds descend, they heat up and increase in speed, sometimes carrying particulate matter and aggravating the respiratory health of those who have allergies (Scripps Health 2012; UCSD 2016). Fullerton is often affected by Santa Ana winds blowing through the Santa Ana Mountain range. Santa Ana winds are a leading cause of wildfires in California. More information on this is available in the “Fire” section.

Generally, winds are measured using the Beaufort scale, developed in 1805, which categorizes wind events on a scale of force 0 to force 12 using their speed and impacts. Any wind that is classified as force 9 or above is generally considered to be a severe wind event. **Table 3-14** shows how the Beaufort scale classifies wind events in detail.

**TABLE 3-14: BEAUFORT SCALE**

Force	Speed (mph)	Description
0	0 to 1	Calm: Smoke rises vertically and the sea is flat
1	1 to 3	Light air: The direction of wind is shown by smoke drift, but not wind vanes.
2	4 to 7	Light breeze: Wind is felt on the face, leaves rustle, and wind vanes are moved. Small wavelets appear on the ocean, but do not break.
3	8 to 12	Gentle breeze: Leaves and small twigs are in motion, and light flags are extended. Large wavelets appear on the ocean and crests begin to break.
4	13 to 18	Moderate breeze: Dust and loose paper become airborne, and small branches are moved. Small waves appear on the ocean.
5	19 to 24	Fresh breeze: Small trees begin to sway and moderate waves form.
6	25 to 31	Strong breeze: Large branches are in motion, and using an umbrella becomes difficult. Large waves begin to form.
7	32 to 38	Near gale: Whole trees are in motion and walking against the wind can be hard. Foam from breaking waves is blown in streaks.
8	39 to 46	Gale: Walking is difficult and twigs break off trees.
9	47 to 54	Severe gale: Slight structural damage. Crests of waves begin to topple.
10	55 to 63	Storm: Trees are uprooted and considerable damage to structures. Very high waves form in long, overhanging crests.
11	63 to 72	Violent storm: Widespread damage. Exceptionally high waves form, and the ocean is completely covered in foam.
12	73 and above	Hurricane: Devastating damage. On the ocean, the air is filled with foam and spray.

Source: NWS 2018.

**Tornado:** Tornado events are measured with the Enhanced Fujita (EF) scale. The EF scale uses observations of tornado damage, rather than the actual wind speed itself, as the measure. **Table 3-15** shows the EF scale.

**TABLE 3-15: ENHANCED FUJITA SCALE**

Rating	Speed (mph)	Description
EF0	65 to 85	Light damage: There is some damage to chimneys, branches are broken off trees, and shallow-rooted trees fall. Signboards damaged.
EF1	86 to 110	Moderate damage: Surfaces are peeled off roofs, and moving vehicles are blown off roads. Mobile homes are pushed off foundations or overturned.
EF2	111 to 135	Considerable damage: Mobile homes are demolished, and roofs are torn off framed houses. Large trees are snapped or uprooted, and light objects become missiles. Cars are lifted off the ground.
EF3	136 to 165	Severe damage: Roofs and some walls are torn off well-constructed houses. Trains are overturned, and most trees in forests are uprooted. Heavy cars are lifted and thrown.
EF4	166 to 200	Devastating damage: Well-constructed houses are leveled, and structures with weak foundations are blown away. Cars are thrown, and large objects become missiles.
EF5	201 and above	Incredible damage: Strong frame houses are leveled and blown away. Vehicle-sized objects are thrown over 300 feet. Bark is stripped off trees, and incredible phenomena occur.

Source: NOAA 2006a, 2006b.

### Past Events

**Extreme Heat:** Historically, Fullerton has, on average, experienced four extreme heat days per year between 1960 and 1990 (Cal-Adapt 2018). More recent local temperature data measured by the Fullerton Municipal Airport indicates that highest monthly mean maximum temperature in Fullerton between the years 2000 and 2019 occurred in September 2012, with the mean maximum temperature recorded at 92.7°F (NWS 2019). Given that the threshold for extreme heat days is five degrees hotter at a 98.4°F, it is clear that extreme heat days are not a regular occurrence in Fullerton’s history.

On occasion, however, Fullerton has experienced days of extreme heat:

- On September 1, 2017, southern California felt the brunt of a heat wave that caused temperatures to exceed 100°F in Inland Orange County. (NOAA 2018a)
- On October 23, 2017, the entire Southern California region was hit by a heat wave that lasted until the 25th. Fullerton Airport measured a peak temperature of 104°F on the 24th. (NOAA 2018a)
- In July 2018, heat waves continually impacted Southern California throughout the month, breaking heat records across the region. The maximum temperature on July 6 in Los Angeles was 111°F and in Santa Ana was 114°F. A second, less-powerful heat wave hit on July 25. (Arango 2018; Serna and Newberry 2018)



**Heavy Rain:** Fullerton has experienced heavy rain events that have inundated the community. Most recently, Fullerton was affected by a series of strong storms in the winter of 2016 and early 2017 that brought immense rainfall to California, including Fullerton (Coats 2017; Graham 2016). In 2014 heavy rains affecting most of southern California caused flooding on sections of Bastanchury Road that was nearly a foot deep. Nearby weather stations reported that more than an inch of rain fell in a span of three hours. In December 2013, rain showers poured on the coastal and inland areas of southern California, depositing between a quarter inch to half an inch of rain. Sections of Orange County between Placentia and Yorba Linda were affected, and streets in Anaheim were flooded. In January 2010, a strong storm delivered by the jet stream caused urban flooding throughout Southern California. The roof of a medical facility in nearby Santa Ana caved in due to the heavy rain (NOAA 2018a). Other past heavy rain events are included in the list of historical floods earlier in this chapter.

**Severe Wind:** There have been several strong wind events recorded in and around Fullerton (NOAA 2010, 2018a):

- In November 1957, Santa Ana winds exacerbated wildland fires, endangered air traffic, and triggered sandstorms in the Fontana area.
- In April 1962, strong Santa Ana winds howled throughout the region, uprooting trees, causing property damage and interrupting power transmission to customers.
- In November 1996, Santa Ana winds blew at 35 to 45 miles per hour throughout most of southern California, although winds were recorded close to 100 miles per hour in certain areas. In December 1996, gusts were recorded in Fremont Canyon near Tustin at 111 miles per hour. Injuries were recorded in Huntington Beach when a 60-foot tree was uprooted by the winds and fell on top of people.
- In October 1997, a fire caused by scrap metal was carried by 45-mile-per-hour Santa Ana winds throughout the Santa Ana Mountains, causing widespread property damage in eastern Orange County.
- In October 1998, a thunderstorm sent destructive winds through Orange County. Trees everywhere were uprooted and blown onto vehicles and buildings. A power outage affected more than 18,000 utility customers across the communities of Los Alamitos, Rossmor, Cypress, Tustin, Santa Ana, and Garden Grove.
- In October 2007, winds up to 85 miles per hour blew through Fremont Canyon near Tustin. These winds caused extensive damage to houses and vehicles. The winds also exacerbated existing wildland fires, causing widespread evacuations and the burning of more than 49,000 acres.
- In November 2008, strong Santa Ana winds exacerbated and spread the Freeway Complex Fire, one of the most destructive fires in Southern California history. More than 30,000 acres were burned.

**Tornado:** There are no documented events of tornadoes occurring within Fullerton. Some tornadoes or near tornado events have occurred in the surrounding area, however. Specifically:

- A tornado in March 1952 struck Santa Monica, killing three people and damaging some property.
- In February 1962, a tornado occurred in Irvine which uprooted trees and felled some utility poles.
- A series of tornadoes began in El Segundo and Huntington Beach in February 1978 which blew over utility poles and uprooted trees onto cars. Six people were also injured. In total, the tornadoes caused up to \$3 million in property damage.
- In March 1986, a tornado impacted Anaheim and damaged some buildings in 1.25-mile-long path.
- Across December 2004 and January 2005, a series of funnel clouds was observed in Fullerton, but a tornado was never generated (NOAA 2010).

In terms of fire-generated tornadoes or tornado-like events, the most recent example occurred during the Carr Fire in Northern California. Intense heat from the blaze created a rotating cloud of wind and smoke that was reportedly six miles high. The observed damage from these winds was similar to that caused by winds of 140 mph or higher (Holthaus 2018).

#### **Risk of Future Events**

**Extreme Heat:** Extreme heat events occur annually in Fullerton a few times each year. All expectations are that the probability they will occur again in the future is highly likely and anticipated to increase in the future.

**Heavy Rain:** There is no indication that rainfall or severe rain hazards will abate either in Fullerton or the greater region of Southern California in the future. While Fullerton may experience prolonged periods of dry or wet years, all expectations are that the probability they will occur again in the future is highly likely and anticipated to increase in the future.

**Severe Wind:** Given Fullerton's history of severe wind events, it is very likely that wind events will continue to impact the city. The most probable source of wind events in the future will likely originate from the Santa Ana winds or extreme storms. All expectations are that the probability they will occur again in the future is highly likely.

**Tornado:** While there is a chance that a tornado could emerge in Fullerton or begin somewhere else in Orange County and enter the city's boundaries, the rarity of the specific wind conditions that lead to tornadoes means that the risk of a tornado impacting Fullerton is low.

#### **Climate Change Considerations**

**Extreme Heat:** The primary effect of climate change is warmer overall global temperatures. In fact, the five hottest years on record have been within the last decade (Climate Central 2018). Among these, 2016 was the hottest year on record, and 2017 was the second hottest (WMO 2018). It is expected that these warming trends will continue and therefore bring the potential for hotter, more frequent extreme heat events. For Fullerton specifically, it is predicted that the average number of extreme heat days per year could increase from 4 to 16 or even 30 by the end of the 21st century (Cal Adapt 2018).

**Heavy Rain:** Climate change is expected to alter rainfall patterns in southern California, including Fullerton. As the climate warms, rain events are predicted to become more intense. It is likely that Fullerton will experience more rain inundation events that lead to flooding, erosion, dam failure, tree mortality, and other potential hazards.

**Severe Wind:** It is anticipated that the atmospheric rivers that deliver storms to Southern California may intensify as a result of climate change. While the average number of storms in Southern California will remain more or less the same, storms are expected to increase in strength by 10 to 20 percent (Oskin 2014). This increase in storm intensity may also bring more intense winds to the Southern California region, including Fullerton. It is not yet known if climate change will affect the frequency or intensity of Santa Ana wind events.

**Tornado:** It is not generally known whether or not climate change will increase the number of tornadoes in Southern California. Climate change will likely lead to more frequent and more powerful fires, though, which could set the stage for more fire-generated tornadoes (Holthaus 2018). Given how rare extremely powerful fires of this nature are in Fullerton, however, the risk of a fire-generated tornado occurring that could impact the city is low.

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# CHAPTER 4

## THREAT ASSESSMENT

Chapter 3 discussed the hazards that are at risk of occurring in City of Fullerton. Whereas “risk” is defined as the possibility that an event will occur, a hazard “threat” is the potential harm to people, ecosystems, buildings, and economic activity.

This chapter discusses the key facilities and population that is threatened by hazards. It also discusses how certain assets or populations are more vulnerable to hardship caused by a hazard and may find it more difficult preparing for, evacuating from, or recovering from a hazard event. This chapter summarizes the physical threat to critical facilities and facilities of concern, the social threat to vulnerable populations, and threats to the economy, transportation system, or environment or other areas of concern.

### KEY FACILITIES

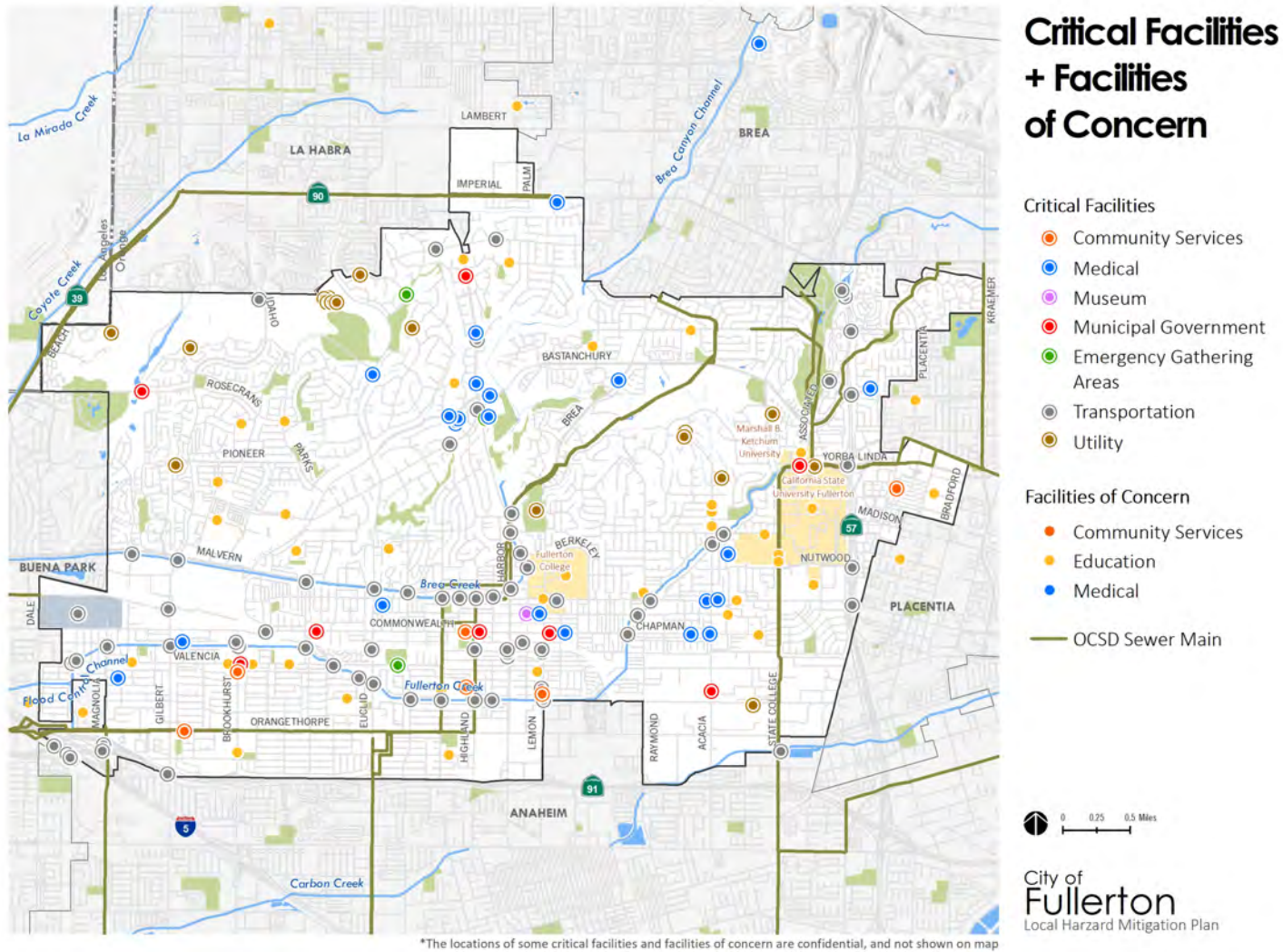
Critical facilities are properties that should receive priority in recovery efforts because they serve important functions in the execution and provision of emergency services to the City. Critical facilities in Fullerton include City administration buildings, water tanks and pumps, public safety buildings such as police and fire stations, schools, and bases of operations for City maintenance activities. These facilities may also serve as assembly points or temporary shelters or play a supportive role in preparing for and recovering from hazard events. Facilities of concern are not critical for City operations but could have elevated risk. Critical facilities and facilities of concern may be owned by the City, other agencies, or private companies.

The Hazard Mitigation Planning Committee identified 167 critical facilities and 69 facilities of concern that fall into several different categories based on their function. These facilities were chosen based on the city’s determination as well as their jurisdiction over them. Schools are community resources owned and operated by the local school districts. The City actively coordinates with these districts to ensure the facilities can help support emergency management needs. **Table 4-1** shows the number of critical facilities and facilities of concern in each category, the total estimated value of the facilities in each category, and examples of the facilities in each. **Appendix D** has a complete list of the critical facilities and facilities of concern. **Figure 4-1** maps all of the critical facilities and facilities of concern in Fullerton within their geographic context. Some facilities are not shown on the map due to security concerns about their locations.

The threat assessment for critical facilities looks at the number and types of facilities that lie within the areas of elevated risk for different hazards. Hazard events may damage or destroy these facilities, leaving them unable to function or with limited capacity. Repair or reconstruction work may be necessary to make these facilities fully operational. Facilities outside of the elevated risk hazard areas may still be affected by hazards, although the risk (and therefore chance of damage) is lower.

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Figure 4-1: Map of Critical Facilities and Facilities of Concern in Fullerton





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**TABLE 4-1: FULLERTON KEY FACILITIES**

Facility Type	Critical Facility	Facility of Concern	Total
Community Services	5	3	8
Education	0	44	44
Emergency Gathering Areas	5	0	5
Energy	2	0	2
Medical	1	22	23
Museum	1	0	1
Municipal Government	9	0	9
Transportation	71	0	71
Utility	33	0	33
Water and Sewage	40	0	40
<b>Total</b>	<b>167</b>	<b>69</b>	<b>236</b>

## VULNERABLE POPULATIONS

The threat analysis identifies segments of the population that may be disproportionately impacted by hazard events in relationship to where these hazards occur. A hazard event can have very different impacts on groups or individuals, based on their age, socioeconomic status, physical and mental condition, and other demographic factors or living conditions that affect their resilience to natural hazards. For example, a hurricane or other severe weather event can have a greater impact on older adults who suffer from chronic illnesses and may become unable to take their medications or access the services or technologies that they depend on.

Households with the following characteristics may be more vulnerable to hazard events:

- **Households with at least one person with a disability.** Households in which a person living with a disability lives alone or lives with others. Persons with disabilities may have reduced mobility may rely on others for care. Depending on their disability, they may not have the resources or ability to protect or mitigate damages to their homes or property.
- **Households living below the poverty level.** Households with an income below the poverty level are less likely to have the financial resources to prepare for or cope with the impacts of hazard events. For a family of four, the annual household income for a household living below the poverty level is \$25,100 (Heathcare.gov, 2018). If a hazard event significantly disrupts the local economy, they could face significant hardship recovering from the event.
- **Households with at least one person over 65.** Persons over the age of 65 may have limited mobility or suffer from medical conditions. A hazard event could exacerbate existing health complications or injuries in the aftermath of an event. Senior citizens living alone are especially at risk because they may have a more difficult time getting needed assistance before, during, or after a hazard event.

- Renter Households:** Renter households may have limited control over the resilience of their home. They could be unaware of signs of disrepair or more serious structural conditions. They may be subject to negligence from absentee or unresponsive landlords and live in unsafe housing conditions that are left unaddressed. Some renter households, especially undocumented, lower-income, or immigrant households, may not report safety issues or code violations to authorities out of fear of landlord retaliation or jeopardizing their jobs, housing stability, or residency. Almost half of households in Fullerton are renters.

The following tables show the population and households within Fullerton, as well as the percentage of people within a group that could be more vulnerable.

**TABLE 4-2: FULLERTON POPULATION AND HOUSEHOLDS**

City of Fullerton	Total
Population	139,044
Households	44,929
Median Household Income (adjusted to 2018 \$)	\$74,642

Sources: ACS Estimates 2012-2016; ESRI 2018 Demographic and Income Profile.

**TABLE 4-3: FULLERTON VULNERABLE POPULATIONS**

Vulnerable Population Metric	%
Percentage of renter households	46%
Percentage of households with at least one person living with a disability	20%
Percentage of households living under poverty limit	13%
Percentage of population aged 65+	12%
Percentage of 65+ population living alone	21%

Sources: ACS Estimates 2012-2016; ESRI 2018 Demographic and Income Profile.

There are other groups that may be more vulnerable during a hazard event than the general population—such as people living in homelessness, undocumented immigrants, persons who live with certain chronic diseases, persons who are socially isolated, or households that live in areas with limited vehicular access. These groups are vulnerable because they may experience greater hardship evacuating or recovering from a hazard event than the general population. The most recent federally mandated, “point-in-time” count of the homeless population in Orange County was conducted in April of 2018 and revealed that the overall homeless population in Northern Orange County had increased from 2017, including the homeless population in Fullerton. Specifically, 1,837 homeless individuals were counted among Northern Orange County cities, including: Anaheim, Brea, Buena Park, Cypress, Fullerton, La Habra, Los Alamitos, Orange, Placentia, Stanton, Villa Park, and Yorba Linda (Replogle 2019). While localized data for Fullerton’s portion of the homeless population is not available at this time, a hazard event that strikes any of these cities or a regional hazard event that impacts all of Northern Orange County simultaneously can impact the homeless population and cause migrations of homeless individuals and groups across city borders. This could lead to an overwhelming of local homeless services.

## OTHER COMMUNITY ASSETS

Other features or aspects of a community, such as important services, infrastructure networks, natural ecosystems, or local economic activities could also be disproportionately affected by a hazard event.

## THREAT PROFILES

### DAM FAILURE

#### Physical Threat

As mentioned in Chapter 3, dam inundation flooding as a result of a dam failure can be very destructive due to the quantity of water that is released in a short period of time. A dam failure can be caused by an earthquake or other strong force or as a result of structural issue, such as an eroded embankment or flood control channel.

**Table 4-4** shows the key facilities threatened by flooding hazards from at least one dam. The threat of dam inundation in Fullerton is high due to the presence of multiple dams surrounding the City. Dam inundation would primarily affect the flatter, lower elevation southern section of the city, potentially impacting 133 key facilities. The boundaries of dam inundation maps show downstream areas that would be inundated by at least two feet of water. Several bridges, nursing facilities, hospitals, educational facilities, and municipal divisions are in the path of one or more dam inundation areas. **Figure 4-2** shows the critical facilities and facilities of concern located within dam inundation areas. When the flood inundation waters from the dam failure event reach these facilities, they can their impede operations through short circuiting any unprotected power equipment. Any amenities or small structures, such as seating or portable sheds, at these facilities that are not securely fastened would likely be toppled by the force of the flood waters. Any underground rooms with apertures to the surface would likely become flooded.

Some dams pose a greater threat than others due to their capacity and operational status. According to the Army Corps of Engineers Dam Safety ratings, the Carbon Canyon, Prado, and Brea Dams are at a high risk of failure. Because of their size, they would also cause a significant degree of environmental, social, and economic damage if they failed (Army Corps n.d.b). Fullerton Dam presents a moderate to high risk of failure. The OC Reservoir has not been given a Dam Safety rating; however, this assessment has determined it presents a low threat to residents and key facilities.

#### Prado Dam

**Table 4-5** shows the key facilities that are in the inundation path of Prado Dam. Prado Dam has a storage capacity of almost 217,000 acre-feet (Army Corps n.d.a). Due to its large storage capacity, the dam could inundate several cities in Orange County if it failed, assuming all the water was released at once. More minor breaches would likely have less severe impacts. In Fullerton, a failure of Prado Dam could impact 78 critical facilities and 22 facilities of concern.

**TABLE 4-4: FACILITIES AT RISK OF DAM FAILURE INUNDATION BY ALL DAMS**

Facility Type	Critical Facility	Facility of Concern	Grand Total
Community Services	5	1	6
Education	0	25	25
Energy	2	0	2
Medical	0	10	10
Museum	1	0	1
Municipal Government Division	7	0	7
Emergency Gathering Areas	3	0	3
Transportation	57	0	57
Utility	4	0	4
Water and Sewage	18	0	18
<b>Grand Total</b>	<b>97</b>	<b>36</b>	<b>133</b>

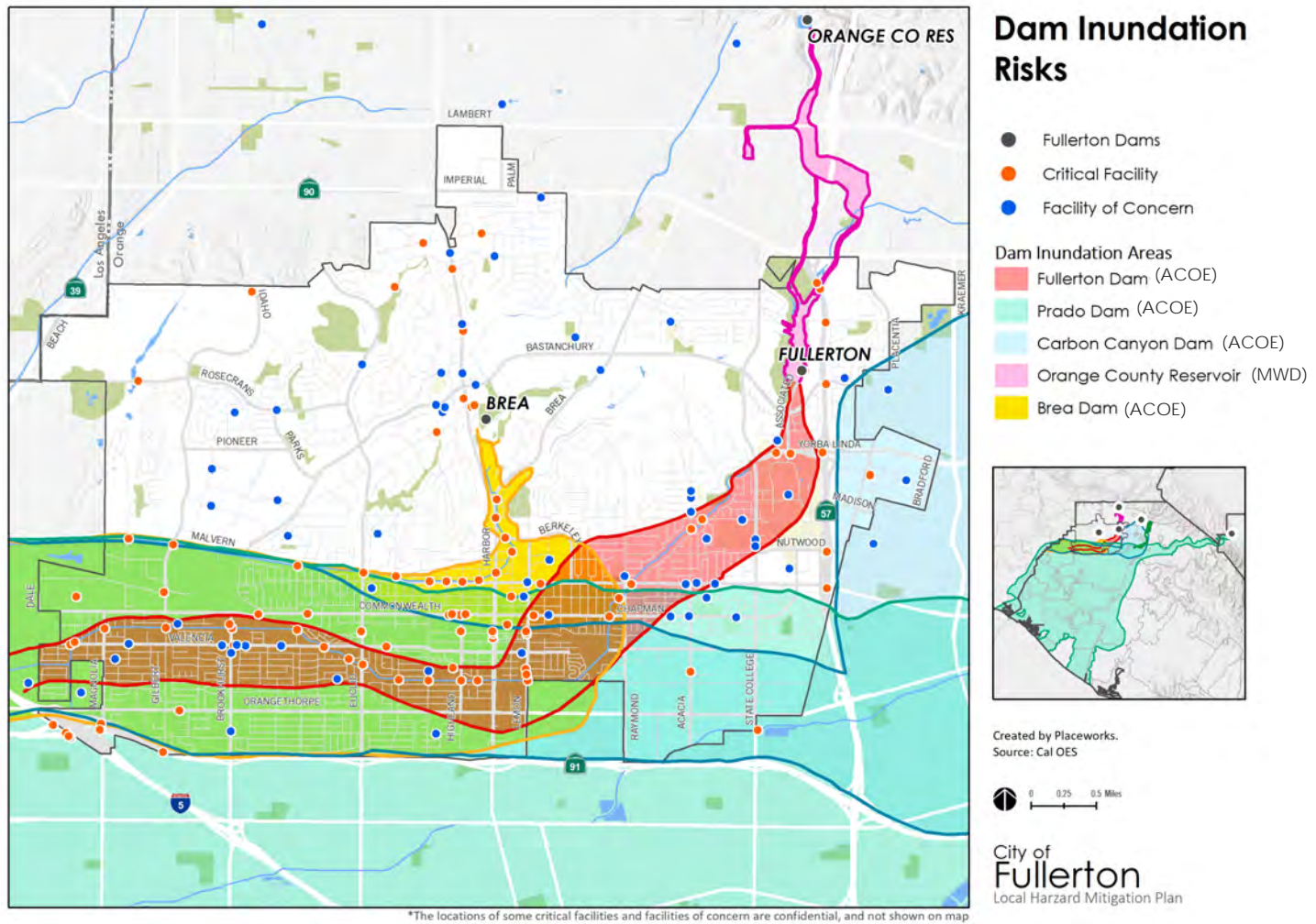
**TABLE 4-5: PRADO DAM INUNDATION AREA**

Facility Type	Critical Facility	Facility of Concern	Total
Community Services	5	1	6
Education	0	14	14
Emergency Gathering Areas	2	0	2
Medical	0	7	7
Museum	1	0	1
Transportation	42	0	42
Municipal Government	6	0	6
<b>Total</b>	<b>56</b>	<b>22</b>	<b>78</b>

### Carbon Canyon

**Table 4-6** shows the key facilities that are in the inundation path of Carbon Canyon Dam. A failure of Carbon Canyon Dam could impact 51 critical facilities and 15 facilities of concern, including several schools and transportation routes. Floodwaters from an inundation of this dam could affect neighborhoods north of State Route 91 and south of Chapman Avenue.

Figure 4-2: Critical Facilities and Facilities of Concern in Dam Inundation Areas



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**TABLE 4-6: CARBON CANYON DAM INUNDATION AREA**

Facility Type	Critical Facility	Facility of Concern	Total
Community Services	3	1	4
Education	0	12	12
Emergency Gathering Areas	1	0	1
Medical	0	2	2
Transportation	29	0	29
Municipal Government	3	0	3
<b>Total</b>	<b>36</b>	<b>15</b>	<b>51</b>

### Brea Dam

**Table 4-7** shows the key facilities that are in the inundation path of Brea Dam. A failure of the Brea Dam would impact 58 critical facilities and 20 facilities of concern. Brea Dam's inundation path could potentially affect the neighborhoods in the city south of Malvern Avenue and west of Raymond Avenue.

**TABLE 4-7: BREDA DAM INUNDATION AREA**

Facility Type	Critical Facility	Facility of Concern	Total
Community Services	4	1	5
Education	0	14	14
Emergency Gathering Areas	3	0	3
Medical	0	5	5
Museum	1	0	1
Transportation	45	0	45
Municipal Government	5	0	5
<b>Total</b>	<b>58</b>	<b>20</b>	<b>78</b>

### Fullerton Dam

**Table 4-8** shows the key facilities that are in the inundation path of Fullerton Dam. A failure of the Fullerton Dam would impact 29 critical facilities and 20 facilities of concern. A breach of the Fullerton Dam would flow from the dam's location north of the California State University campus southwest along the Fullerton Creek. The flood channel would play a role in mitigating the threat of a potential inundation.

### OC Reservoir

The dam failure of the OC reservoir is unlikely to affect any households or key facilities. The reservoir's inundation area would be limited to Craig Regional Park as the inundation area for the OC Reservoir dam is largely outside of Fullerton's city boundaries and the small section that crosses into Fullerton is contained by the reservoir of Fullerton Dam. In a scenario where the reservoir of Fullerton Dam may be full, and the dam compromised structurally it is possible that a sudden release of water from a breach of

the OC Reservoir could overwhelm the Fullerton Dam and cause it to also breach but such a scenario is highly unlikely.

**Social Threat**

A dam failure event could cause significant destruction, particularly if there is little or no advance warning. Residents could quickly lose access to water, power, roads, communication services, and transportation routes.

**Table 4-9** shows the social vulnerability of the dam inundation zone. Almost half or more households in a dam inundation zone are renters. Additionally, there are a greater number of households living in poverty in potential dam inundation areas compared to the City as a whole. Households in these areas have a lower average median household income compared to the City average, indicating that this population would have less disposable income to recover from a dam inundation event.

**TABLE 4-8: FULLERTON DAM INUNDATION AREA**

Facility Type	Critical Facility	Facility of Concern	Total
Community Services	2	1	3
Education	0	13	13
Medical	0	6	6
Transportation	23	0	23
Utility	1	0	1
Municipal Government	3	0	3
<b>Total</b>	<b>29</b>	<b>20</b>	<b>49</b>

**TABLE 4-9: DAM INUNDATION ZONE, THREATENED POPULATION METRICS**

Threatened Population Metric	Brea Dam	Carbon Canyon Dam	Prado Dam	Fullerton Dam	Orange County Reservoir	City of Fullerton
Population	54,863	58,892	58,924	29,878	0	139,044
Households	16,166	17,579	17,340	8,273	0	44,929
Median household income (adjusted to 2018 \$)	\$59,526	\$54,779	\$59,410	\$63,234	0	\$74,642
Renter Households	55%	59%	55%	48%	0	46%
Percentage of households with at least one person living with a disability	22%	19%	22%	22%	0	20%
Percentage of households living under poverty limit	17%	17%	17%	16%	0	13%
Percentage of population aged 65+	9%	8%	9%	11%	0	12%
Percentage of 65+ population living alone	21%	20%	21%	21%	0	21%

Sources: ACS Estimates 2012-2016; ESRI 2018 Demographic and Income Profile.

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## DISEASES AND PESTS

### Physical Threat

It is unlikely that diseases would pose any physical threat to key facilities in Fullerton.

### Social Threat

A disease epidemic could affect everyone in Fullerton to some degree, from a mild inconvenience to a fatal condition. Vulnerability is highly dependent on the type of disease, but in general, pregnant women, senior citizens, young persons, people with weakened immune systems, and people living in homelessness face the greatest threat. Persons who live alone and become significantly ill—especially senior citizens and persons with disabilities—could face an elevated threat if they are unable to take care of themselves. Additionally, a large concentration of vulnerable persons living together could lead to a widespread epidemic. Of particular concern are isolated communities with a large population of infirm or vulnerable groups, such as nursing homes or retirement communities.

### Other Threats

A major outbreak of a disease could stress healthcare facilities and systems in and around Fullerton, potentially causing a decline in medical services. Such an outbreak could also prevent many people from going to work, which would harm the economy and affect the quality of many local services.

## DROUGHT

### Physical Threat

Drought is a regional issue that could affect all areas and critical facilities throughout the City. The primary threat from drought events is a reduced water supply, which would most directly impact the City's water supply. Reduced rainfall leads to a reduction in groundwater recharge, which is the primary water source for the City. While droughts of short duration may not impact the groundwater aquifer, prolonged periods of drought may affect the City's ability to sustainably withdraw water.

Drought also has a number of secondary impacts that could affect the City and its critical facilities. Reduced precipitation and irrigation resulting from drought can affect plants and vegetation increasing the risk of fire. In addition, during prolonged drought trees can become stressed making them susceptible to disease and/or prone to falling over or experiencing damage due to sudden branch drop syndrome. These impacts typically occur as a result of strong winds that can stress the trees limbs and root systems. This is a particular concern in the West Coyote Hills, which has a very high potential for wildfire risks, and the East Coyote Hills, which includes the Panorama Nature Preserve and other open spaces (CAL FIRE 2011). In 2015, almost 70 trees in Hillcrest Park died from the drought, including mature trees (Ponsi 2015).

Key critical facilities susceptible during a drought include water pumps and water delivery infrastructure, which may require modification if groundwater elevations decrease significantly requiring wells to be drilled deeper into the aquifer. In addition, flood control infrastructure, and wastewater systems may be impacted, because lower rates of storm water runoff and sewage conveyance, would decrease flows,

which could allow solid materials and trash to accumulate and clog systems (Schwab 2013). These types of damages can be subtle and occur over a long period (Schwab 2013).

### **Social Threat**

In urbanized areas, social threats stemming from droughts or water shortage may become extreme enough that public health is at risk. If water supply is extremely curtailed or permanently interrupted, significant health impacts could occur. While this is highly unlikely, a prolonged drought occurring over several years could require the City to take extreme measures to reduce water consumption. Typically, these measures include incentivizing use reduction and installation of efficient technologies that rely on less water. If the drought persists or consumption doesn't align with available water supplies, jurisdictions typically resort to financial mechanisms (incentives/disincentives) that reduce water demand. Ultimately prolonged droughts have a tendency to increase the costs of water production, due to increased pumping costs from deeper parts of the aquifer, enhanced treatment due to concentration of constituents in the water, and reduced revenues due to the reduction in water usage. While most households in the City may be able to absorb these cost increases, lower income households may struggle with this added expense, placing greater stress on this segment of the population.

### **Other Threat**

A drought could have far-reaching regional health and environmental impacts, all of which cannot be sufficiently addressed in this report. One of the most serious consequences is that a region can deplete its groundwater supply during prolonged-droughts. Droughts can also affect the recreational and aesthetics features of a community. On a community scale, it can negatively impact large, shady mature trees that would take years to replace. The cost of coping with a drought, including infrastructure repairs and open space maintenance and can absorb a high percentage of the city's budget.

## **FIRE**

### **Physical Threat**

There are approximately 44 key facilities located within a Fire Hazard Severity Zone (FHSZ). The majority of these are water pumps or sewage facilities, creating a significant risk to the city's water infrastructure. Water pumps can fail if they lose power during a fire, hampering firefighting efforts. Additionally, excessive water use from firefighting efforts can lower water pressure in pipes and raise the risk of contamination. Lower water pressure can cause non-potable water to backflow or make it easier for contaminants to be drawn in (USEPA 2002).

As shown in **Table 4-10**, there are a number of medical-related facilities, such as assisted living and nursing facilities, in the wildfire hazard zone. In the event of a wildfire, these facilities may require specialized evacuation to ensure the safety of their occupants due to the high vulnerability of the persons living in these facilities. **Figure 4-3** shows the critical facilities and facilities of concern located in fire hazard severity zones.

**TABLE 4-10: KEY FACILITIES THREATENED BY WILDFIRE**

<b>Facility Type</b>	<b>Moderate Fire Hazard Severity Zone</b>	<b>High Fire Hazard Severity Zone</b>	<b>Very High Fire Hazard Severity Zone</b>	<b>Total</b>
Emergency Gathering Areas <sup>1</sup>	0	1	1	2
Medical <sup>2</sup>	1	2	2	5
Municipal Government <sup>1</sup>	0	0	1	1
Transportation <sup>1</sup>	2	0	1	3
Water and Sewage <sup>1</sup>	3	4	26	33
<b>Total</b>	<b>6</b>	<b>7</b>	<b>31</b>	<b>44</b>

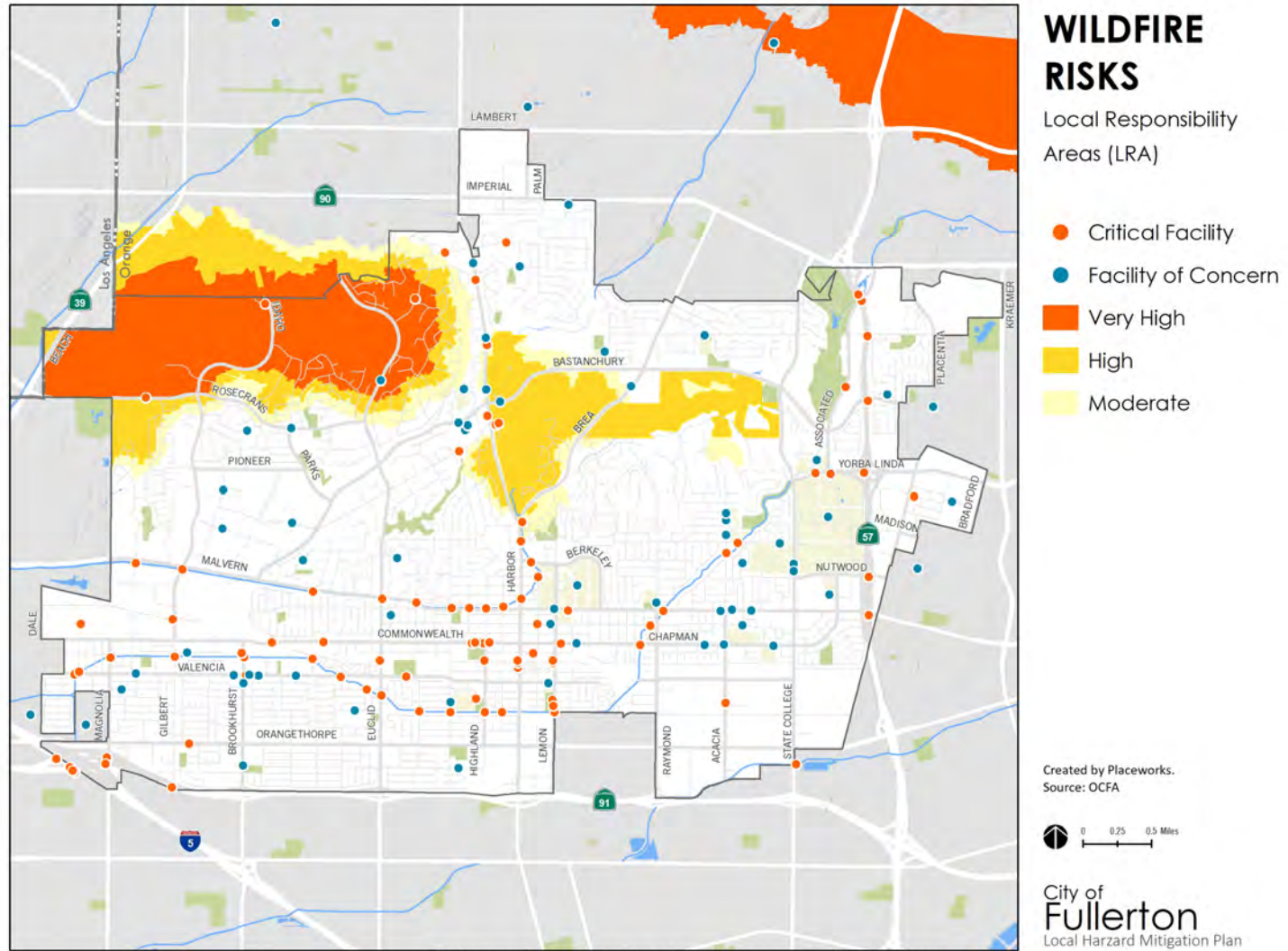
<sup>1</sup> – Critical Facilities  
<sup>2</sup> – Facilities of Concern

### Social Threat

Fullerton’s wildfire hazard zones are home to approximately 14,600 residents, most of whom live in the Very High FHSZ, as shown in **Table 4-11**. Of the vulnerable populations, there is a large population of seniors (over 65) living in an FHSZ. Nearly one quarter (22 percent) of the population living within a medium, high, or very high FHSZ are seniors, compared to 12 percent within the City as a whole. In the moderate and high FHSZ, 24 percent of residents are seniors. In the very high FHSZ, 18 percent of the populations are seniors. Senior residents could be living with disabilities or debilitating medical conditions, have limited mobility options, or rely on caregivers for assistance. They may rely on medication, service animals, wheelchairs, or walkers or require family assistance when evacuating their homes (American Red Cross 2009).

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Figure 4-3: Critical Facilities and Facilities of Concern in Fire Hazard Severity Zones in Fullerton





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**TABLE 4-11: FIRE HAZARD SEVERITY ZONE THREATENED POPULATIONS**

Threatened Population Metric	Moderate and High Fire Hazard Severity Zone	Very High Fire Hazard Severity Zone	City of Fullerton
Population	9,882	4,701	139,044
Households	3,277	1,571	44,929
Median household income (adjusted to 2018 \$)	\$117,435	\$121,154	\$74,642
Renter Households	19%	15%	46%
Percentage of households with at least one person living with a disability	23%	23%	20%
Percentage of households living under poverty limit	4%	6%	13%
Percentage of population aged 65+	24%	18%	12%
Percentage of 65+ population living alone	19%	19%	21%

### Other Threat

Large wildfires can have a costly and devastating toll on a community. Approximately 60 percent of the land uses within the FHSZ are residential. Flying embers can easily ignite the roofs of homes and other buildings that are not constructed with fire-resistant roofs and rapidly spread fire throughout a region. In addition to residential property, wildfires can damage water pipes and cause water contamination. Plastic water pipes can melt under extreme heat and cause ash, debris, and burned plastic resins to contaminate drinking water (Wilson 2018). In the aftermath of a fire, major damages to commercial, medical, or other nonresidential buildings could cause a significant number of people to permanently lose employment.

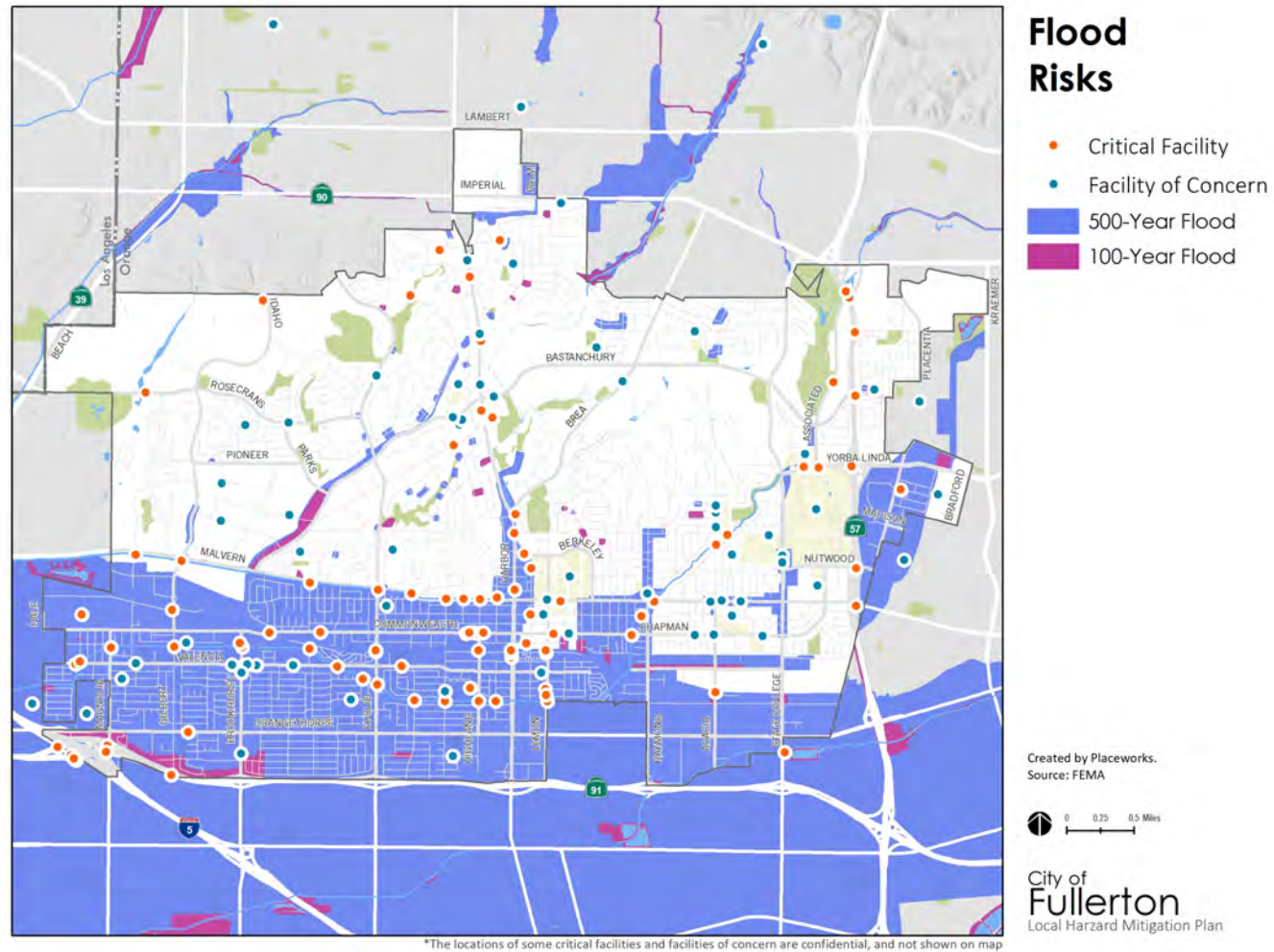
## FLOODING

### Physical Threat

Flooding from a 100-year or 500-year storm event will primarily affect the southern section of the city, where the terrain is relatively flat. In the event of a major storm, runoff will flow rapidly to southern Fullerton from the higher-elevation northern areas of the city. Whereas a 100-year flood threatens just 2 critical facilities, a 500-year flood threatens 102 key facilities, among these are Fullerton City Hall and Community Center. **Table 4-12** shows the key facilities threatened by flooding in the City. **Figure 4-4** also maps the critical facilities and facilities of concern in Fullerton relative to the floodplain areas. Any facilities inundated with floodwaters are likely to experience power outages if the flood disrupts nearby electrical power grids. Computers and other electronic equipment stored on the ground would become inoperable and destroyed. Streets would become flooded and motorists as well as emergency personnel may not be able to reach their destinations.

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Figure 4-4: Critical Facilities and Facilities of Concern in Fullerton's Floodplains



Map includes Letters of Map Revision through February 23, 2018

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**TABLE 4-12: CRITICAL FACILITIES AND FACILITIES OF CONCERN AT RISK OF FLOODING**

Facility Type	100-Year Flood		500-Year Flood	
	Facility of Concern	Critical Facility	Facility of Concern	Critical Facility
Community Services	0	0	1	6
Education	0	0	18	0
Energy	0	0	0	2
Medical	0	0	5	0
Municipal Government	0	0	0	5
Emergency Gathering Areas	0	0	0	2
Transportation	0	0	0	49
Utility	0	0	0	2
Water and Sewage	0	2	0	12
<b>Total</b>	<b>0</b>	<b>2</b>	<b>24</b>	<b>78</b>

### Social Threat

Approximately 45 percent of Fullerton residents live in either the 100-year or 500-year flood zone. A majority of these households are renters, which means they risk losing their homes after a devastating flood. Whereas a 100-year flood would impact just 2,344 residents, a 500-year flood would directly impact 60,788 persons and 17,962 households. Slightly less than a quarter of the city's households in either the 100-year or 500-year flood zone includes a person living with a disability. Compared to the city as a whole, there are 3 to 4 percent more residents living in poverty in the 100- and 500-year flood zone respectively. Additionally, 7 to 8 percent of people in the 100- and 500-year flood zone are over the age of 65.

Lower-income persons in flood-prone areas may be unable to afford flood insurance premiums or flood-proofing improvements to their homes. Following the aftermath of a flood, they may face homelessness or significant financial losses that are difficult to overcome. Persons 65 years of age or more are more likely to have health conditions that could limit their ability to evacuate or recover from a flood. **Table 4-13** shows the social vulnerability in this hazard zone.

### Other Threat

Floodwaters can transport debris that blocks roadways and hinders transit, emergency response services, and evacuations. Serious floods could cause erosion of the soil around utility lines and interrupt services. Damage to a large number of homes or businesses may slow local economic activity.

**TABLE 4-13: FLOOD HAZARD ZONE THREATENED POPULATIONS**

Threatened Population Metric	100-Year Flood Hazard Zone	500-Year Flood Hazard Zone	City of Fullerton
Population	2,344	60,788	139,044
Households	918	17,962	44,929
Median household income (adjusted to 2018 \$)	\$37,337	\$57,173	\$74,642
Renter Households	74%	58%	46%
Percentage of households with at least one person living with a disability	24%	20%	20%
Percentage of households living under poverty limit	16%	17%	13%
Percentage of population aged 65+	7%	8%	12%
Percentage of 65+ population living alone	23%	21%	21%

Sources: ACS Estimates 2012-2016; ESRI 2018 Demographic and Income Profile.

## GEOLOGIC HAZARDS

### Landslides/Mudflows

#### Physical Threat

There are currently three critical facilities, all of which are pump stations, in potential earthquake-induced landslide areas, shown in **Table 4-14**. Although accurate mapping data for rainfall-induced landslide areas is not available, landslides are a risk on all steep hillsides. In areas with steep slopes, long periods of rainfall can trigger a landslide which could impact roads. There are also a number of residences, schools, and nursing or assisted living facilities in the East and West Coyote Hills region that could potentially be impacted by rainfall-induced landslides or roads stalled by debris. **Figure 4-5** shows the critical facilities and facilities of concern that could be impacted by a landslide in Fullerton.

**TABLE 4-14: FULLERTON DAM INUNDATION AREA**

Facility Type	Critical Facility	Facility of Concern	Total
Utility	3	0	3

#### Social Threat

As shown in **Table 4-15**, there are 1,532 people and 446 households living within an earthquake-induced landslide zone, which is only a small percentage of the city’s population, and very few of whom are renters. This population does not exhibit a significant social vulnerability in terms of income, age, and disability. However, 37 percent of the senior population in this area lives alone. Seniors, persons with disabilities, and others who have mobility challenges may not be able to hastily evacuate their homes if a force triggers a landslide on their property.



**TABLE 4-15: FULLERTON THREATENED-POPULATION METRICS IN EQ- INDUCED LANDSLIDE ZONE**

<b>Vulnerable Population Metric</b>	<b>EQ-Induced Landslide Zone</b>	<b>City of Fullerton</b>
Population	1,532	139,044
Households	446	44,929
Median household income (adjusted to 2018 \$)	\$144,783	\$74,642
Renter Households	16%	46%
Percentage of households with at least one person living with a disability	22%	20%
Percentage of households living under poverty limit	6%	13%
Percentage of population aged 65+	12%	12%
Percentage of 65+ population living alone	37%	21%

Sources: ACS Estimates 2012-2016; ESRI 2018 Demographic and Income Profile.

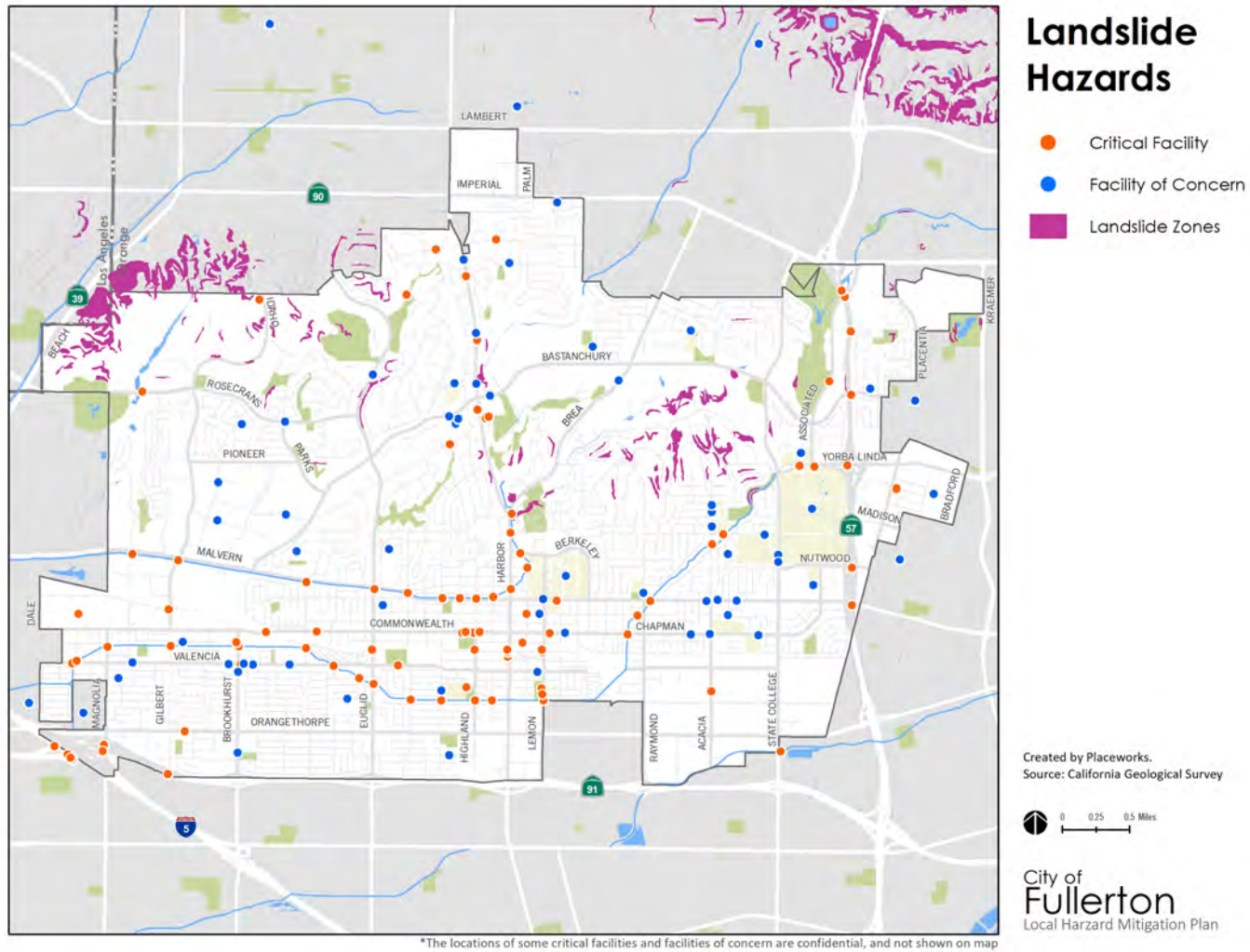
### Other Threats

Landslides may block roadways for weeks or even months. Such an event in Fullerton could cause long-term disruptions to the roadway network, hindering emergency response services. Underground utility lines in slide-prone areas or above-ground lines built on or above them, can be damaged in a landslide, causing service outages. Landslides could affect sensitive ecological areas around the community, causing localized harm to the region's ecosystem, although widespread disruptions are unlikely.

Homes and businesses are typically damaged or destroyed by landslides. In addition to potentially causing significant injuries or fatalities, this can cause economic harm and create a need for long-term emergency sheltering and temporary housing until these buildings can be reconstructed. Utility lines, such as power lines or water pipes, may be broken by a landslide, interrupting important services.

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Figure 4-5: Critical Facilities and Facilities of Concern in Landslide Zones in Fullerton



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## **Subsidence**

### **Physical Threat**

There is evidence of current or historical land subsidence in Fullerton as a result of excessive groundwater pumping, particularly in the southern section of the city (USGS 2018). Subsidence can have an effect on both the built and natural environment. Because water lines are gravity driven, a change in elevation as a result of subsidence could make the system more inefficient. Sinking of the ground could also reduce the distance to the groundwater table, which could raise the risk of contamination from hazardous materials. Subsidence could also irreversibly decrease an aquifer's capacity to store water (USGS 2017). Although accurate subsidence mapping data is not available, many important critical facilities could be gradually affected by subsidence in Fullerton and may require further study to examine their function and safety.

### **Social Threat**

Subsidence is a concern for everyone because it could have a significant effect on large-scale systems such as utility infrastructure, open space, and aquifers. In addition, subsidence could affect the safety of homes. Buildings could gradually sink as a result of subsidence, causing minor issues such as cracks or misalignments of doors and windows, or more costly problems such as sinkholes. These issues could impact residents living in older homes, which may not have been built with foundations reinforced with steel. Because insurance companies may not cover damages caused by subsidence or other geologic hazards, lower-income households may find it financially difficult to cope with subsidence.

### **Other Threats**

If subsidence occurred in Fullerton, the impacts could be widespread. In addition to potentially damaging buildings throughout the community, subsidence could damage roads and rail lines as well as underground pipes such as water, wastewater, and natural gas. This could create more congestion on Fullerton's transportation networks and interrupt key utility services.

## HAZARDOUS MATERIALS

### Physical Threat

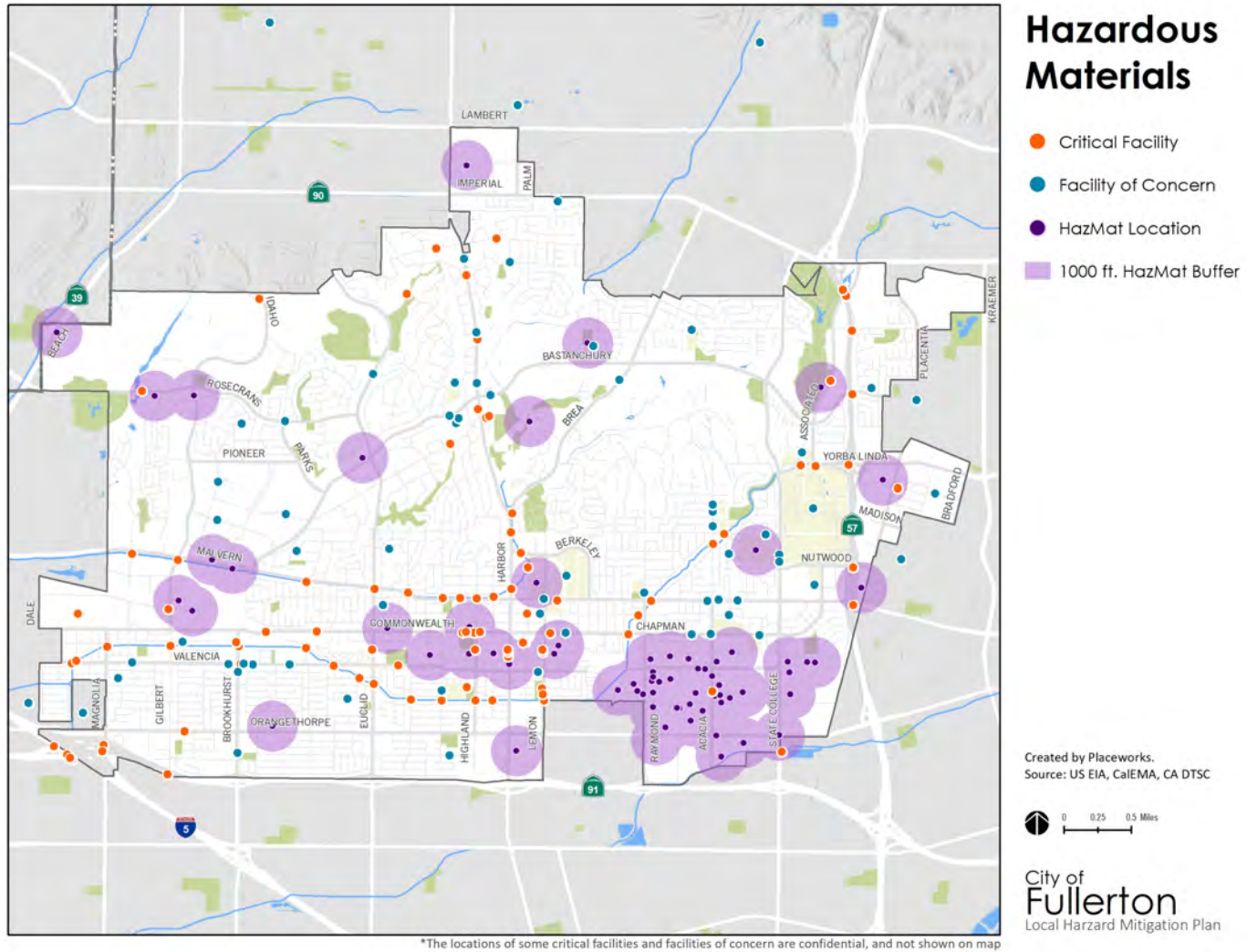
Hazardous materials, including chemicals used as byproducts of industrial activities, natural gas and oil pipeline ruptures could be a significant threat to human and environmental health if they are not properly stored, managed, and contained. Oil and natural gas lines could rupture, exposing flammable or toxic chemicals. A short section of the Crimson Pipeline carries crude oil cuts through the northeast corner of Fullerton. In addition, several oil pipelines carrying crude oil and refined product run through La Habra, Brea, Anaheim, and Buena Park. SoCalGas also runs a subterranean natural gas pipeline through the middle of the city that nearly divides northern and southern Fullerton in half. Although pipeline failures are low-frequency events, they can have disastrous consequences. Ruptures could lead to fires and explosions that cause serious injuries or fatalities as well as environmental contamination of waterways. Oil and gasoline could contaminate groundwater and lead to costly and multiyear cleanup efforts if released into waterways.

In addition, records from the Department of Toxic Substances Control have found harmful levels of toxic chemicals that have leached into the soil as a result of industrial activities. These chemicals can leach into the soil and potentially contaminate groundwater aquifers. **Figure 4-6** shows the critical facilities and facilities of concern that are nearby to hazardous materials sites in Fullerton.

### Social Threat

The most concerning impact of hazardous chemicals and materials is their impact on human health. Hazardous chemicals used in oil and gas operations and hazardous materials used in other industrial operations could have harmful effects on certain groups, depending on how much and how long a person is exposed to them (ATSDR 2017). In particular, PCEs and TCEs could evaporate and expose persons occupying buildings located on the site to these compounds (ATSDR n.d.b). Crude oil pipelines can have high concentrations of hydrogen sulfide (H<sub>2</sub>S), which is a poisonous and flammable gas that can cause death in low exposures (Butler et al. 2018). Children, adolescents, and pregnant women are especially at risk of health risks associated with these chemicals. The health risks include immune system diseases or pregnancy or birth complications (ATSDR n.d.b).

Figure 4-6: Critical Facilities and Facilities of Concern Near Hazardous Materials Sites in Fullerton





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## HUMAN-CAUSED HAZARDS

### Physical Threat

Organizations or agencies that protect important information, such as finance institutions, hospitals, government buildings, or universities, could be the target of cyber threats. A terrorist event could involve the intentional failure of dams, oil and gas pipelines, or other major infrastructure that would cause widespread destruction. The use of bioweapons, chemical agents, radioactive materials, or high-yield explosives could impact a community's water supply or overall exposure to hazardous materials. Civil disturbances could lead to large-scale damages to public or private property.

### Social Threat

The human-caused hazards discussed above could threaten the lives of large numbers of people. Areas that draw large crowds, such as busy commercial areas, airports, or campuses, could be more at risk from a terrorist event or civil disturbance. Transportation accidents, such as aircraft failures, train, or truck accidents present a greater threat to people living in these areas and working in these industries. Additionally, civil disturbances, cyber threats, or terrorist events could be politically motivated and target specific populations. Therefore, sociopolitical, ethnic, or religious minorities could face a greater threat than the general population.

## SEISMIC HAZARDS

Seismic hazards can cause widespread damage or destruction to buildings and other structures. All buildings in the community, including all critical facilities and facilities of concern, are threatened by earthquakes, although the threat varies depending on which fault line is responsible for the event. In general, facilities closest to the fault line face the highest threat. The fault line most likely to cause a significant earthquake in Fullerton is the Puente Hills fault, which runs through the southern half of the city.

A serious seismic event could slow economic activity and the provision of key services. Government administration nodes can be impaired if key facilities are damaged, and seismic damage to local hospitals could hinder medical care. A seismic event could potentially impact the electrical grid, potable water and sewage services, transportation networks, and communication services.

### Liquefaction

#### Physical Threat

A significant section of the lower southwest section of the city would be affected by liquefaction, potentially impacting 109 key facilities. As shown in **Table 4-16**, a seismic event could cause liquefaction that damages bridges, education facilities, utility infrastructure, and several other critical facilities and facilities of concern. **Figure 4-7** maps the critical facilities and facilities of concern in Fullerton that are located within liquefaction hazard zones.

#### Social Threat

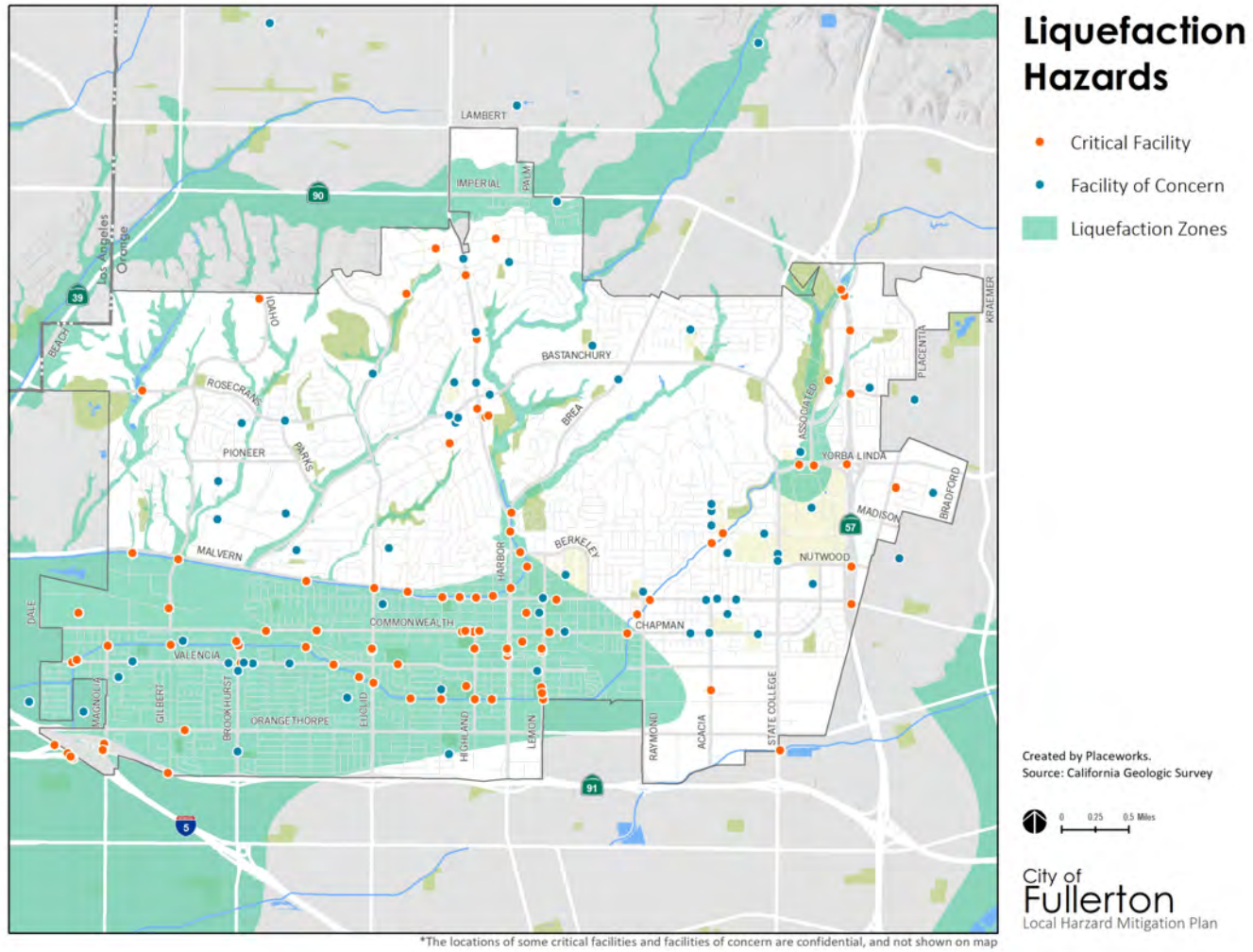
Liquefaction could affect 57,376 residents and 16,874 households, with more than half renting. Persons in the liquefaction hazard zone are slightly more likely to live under the poverty limit than the average

Fullerton resident, and households in the liquefaction hazard zone are also somewhat more likely to include a person with disabilities. **Table 4-17** shows the social vulnerability in the liquefaction hazard zone.

**TABLE 4-16: KEY FACILITIES THREATENED BY LIQUEFACTION**

<b>Facility Type</b>	<b>Critical Facility</b>	<b>Facility of Concern</b>	<b>Total</b>
Community Services	4	1	5
Education	0	14	14
Energy	2	0	2
Emergency Gathering Areas	3	0	3
Medical	0	7	7
Museum	1	0	1
Municipal Government	7	0	7
Transportation	54	0	54
Utility	1	0	1
Water and Sewage	15	0	15
<b>Total</b>	<b>87</b>	<b>22</b>	<b>109</b>

Figure 4-7: Critical Facilities and Facilities of Concern in Liquefaction Zones in Fullerton



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**TABLE 4-17: FULLERTON THREATENED-POPULATION METRICS IN LIQUEFACTION ZONE**

Vulnerable Population Metric	Liquefaction Zone	City of Fullerton
Population	57,376	139,044
Households	16,874	44,929
Median household income (adjusted to 2018 \$)	\$61,844	\$74,642
Renter Households	52%	46%
Percentage of households with at least one person living with a disability	22%	20%
Percentage of households living under poverty limit	16%	13%
Percentage of population aged 65+	10%	12%
Percentage of 65+ population living alone	20%	21%

Sources: ACS Estimates 2012-2016; ESRI 2018 Demographic and Income Profile.

## SEISMIC SHAKING AND SURFACE FAULT RUPTURE

### Physical Threat

All critical facilities and facilities of concern are threatened by seismic shaking, but structures that risk the most damage are those that are not seismically retrofitted or are built on unstable or water-saturated foundations. Seismic shaking can trigger other hazard events, including liquefaction, landslides, and subsidence.

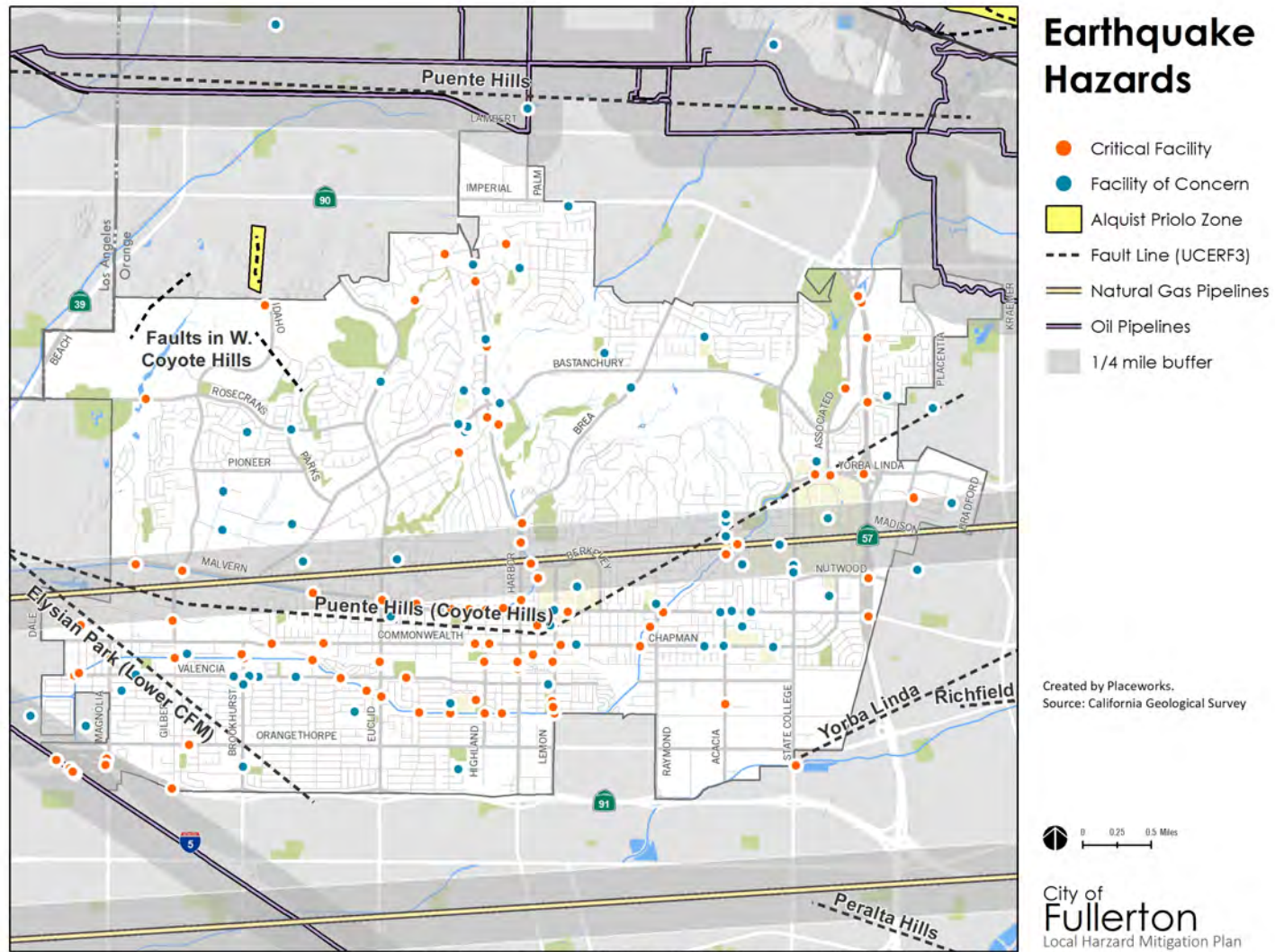
Surface fault rupture could damage any building or infrastructure within the rupture zone. The Puente Hills fault line in the southern section of the city threatens utility lines and other critical facilities. A fault rupture could burst the natural gas transmission line that runs near and crosses the Puente Hills fault line. Because natural gas is a flammable substance, a rupture can release natural gas into the air and ignite an explosion (IBHS 2018). **Figure 4-8** shows the critical facilities and facilities of concern in Fullerton that could be impacted by seismic shaking or fault rupture.

### Social Threat

Seismic shaking and fault rupture pose a significant threat to populations living or working near structures that are not retrofitted to withstand seismic activity. This could include lower-income households who are unable to afford the cost of seismically retrofitting their homes or renters living in substandard housing. Senior citizens (especially those living alone) and lower-income households could have more difficulty recovering from a seismic event that causes significant damage to their home.

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Figure 4-8: Critical Facilities and Facilities of Concern in Seismic Shaking and Fault Rupture Zones in Fullerton





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## SEVERE WEATHER

### Physical Threat

Severe weather could affect all parts of Fullerton, so all critical facilities and facilities of concern are within this hazard zone. The two most common severe weather events that could affect Fullerton include high winds and extreme heat.

#### Severe Winds

Intense winds likely present the greatest threat to physical structures, particularly from trees or branches that fall on buildings and cause substantial damage. Older structures that have deferred maintenance or have not been retrofitted for high wind conditions may suffer greater damage in comparison to newer/updated structures. Utility lines and wooden utility poles face an elevated threat from wind, as do buildings without reinforced roofs.

#### Extreme Heat

Very high temperatures can cause roads to deform and buckle as concrete expands in the heat, especially in weaker spots in the pavement, such as areas that have not been maintained well. Power lines and other sections of the electrical grid are less effective in higher temperatures and may suffer damage due to stress during extreme heat events.

Buildings with dark pavement will absorb more heat than the surfaces with vegetation or lighter material, which are better at reflecting the sun's energy. This urban heat island effect is strongest during hot periods when the sun is strongest.

#### Heavy Rain

Heavy rain would damage any structures with poorly constructed roofs and could also erode the soil around building foundations. Heavy rain could also lead to flash flooding which would damage unelevated structures in flood zones. Heavy rains are most likely to cause damage to structures located on slopes, where the risk of erosion is the highest. Landslides triggered by heavy rains would damage any structures located below the landslide's starting point.

#### Tornado

Since tornadoes can occur anywhere in the city it is not possible to determine which structures would be impacted by a tornado event. However, any structures that have unsecured cladding or accessories (such as roof shingles, weather vanes, or radio antennas) are anticipated to experience some degree of damage. It is unlikely that any structure in Fullerton would be entirely demolished by a tornado event since tornadoes in California rarely reach that degree of destruction.

### Social Threat

#### Severe Winds

Events such as severe winds and winter weather can harm people throughout Fullerton but have a greater effect on the safety of homeless persons and persons who work outdoors. Lower-income households, who may not be able to afford homes built or retrofitted to withstand powerful winds, could also have difficulty coping or recovering from heavy winds or storms.

### **Extreme Heat**

Whereas a heat event can be relatively harmless for those with a reliable means for staying hydrated and cool, it can be deadly for others. Young children, the elderly, or people suffering from serious medical conditions are physiologically more vulnerable to heatstroke. Some senior citizens also take medicines that can make it harder for their bodies to maintain a safe internal temperature, creating an additional threat from extreme heat events. Young children may not be aware of the signs of dehydration or ways of protecting themselves from heatstroke.

People living in homelessness are at a high risk of health complications during heat waves, especially if they are unsheltered. According to data counts by the OC Health Care Agency, in 2017, there were approximately 4,800 individuals experiencing homelessness in the county, with over 50 percent unsheltered, approximately 25 percent in emergency shelters, and 20 percent in transitional shelters (OCGov 2017). During a heat wave, these people are very vulnerable to heatstroke, especially if they are unable to reach a cooling center.

Sudden spikes in heat can catch people by surprise. Stores can rapidly sell out of fans, air-conditioning units, or drinking water during a heat-wave. Lower-income households or those with limited mobility may be unable to acquire sufficient insulation or cooling devices without significant advance preparations.

### **Heavy Rain**

Heavy rain events pose a threat to any groups in Fullerton who are not able to access adequate shelter. People who are homeless most often live in tents or informal structures that may protect against minor rains but are inadequate against a heavy rain event. Heavy rain can lead to flash flooding which could sweep away any informal dwellings located within drainages and stream courses. Additionally, vulnerable populations living in older homes that have outdated building materials may experience damage during significant rain events. If affected groups have limited incomes or lack the resources to make necessary repairs or maintain the structures, retrofit of these structures may be hindered.

### **Tornado**

Tornadoes, like all severe weather events, pose a threat to those who lack adequate shelter. Any vulnerable populations that are unable to access shelter before a tornado event, are at risk of being injured or killed. In addition, populations living in older, unmaintained buildings are also likely to be at greater risk of impact from a tornado.

### **Other Threats**

Debris from high winds and other severe weather events can block roadways, disrupting the local transportation network. This in turn can affect transit and emergency response personnel, who may be unable to reach certain areas of the community or may have to take alternative routes.

High temperatures can trap pollutants close to the ground and can potentially worsen air quality beyond what is acceptable under federal health standards.

# CHAPTER 5

## HAZARD MITIGATION STRATEGY

### STRATEGY DEVELOPMENT PROCESS

Fullerton’s hazard mitigation strategy is a comprehensive set of actions—hazard mitigation actions—that are intended to reduce the impacts of hazard events. These actions will help to protect the safety and well-being of residents and visitors, critical facilities and facilities of concern, other buildings and structures, key services, the local economy, and other important community assets. Some actions will also help with emergency preparedness, enabling the community to more effectively respond to hazard events. Although preparedness actions are not a required component of an LHMP, the Hazard Mitigation Planning Committee chose to include them because they support a robust overall mitigation strategy.

### USE OF HAZARD AND THREAT ASSESSMENT

The Committee relied in part on the hazard profiles and threat assessments in this Plan to develop the actions in the mitigation strategy. The Committee prepared a comprehensive set of mitigation actions that respond to the relevant hazard situations and provide protection to residents, businesses, and community assets in Fullerton. The Committee took care to ensure that the mitigation actions will help to reduce damage from the most frequent types of hazard events, the most significant that may reasonably occur, and those with the greatest potential to harm the community. The Committee also drafted mitigation actions that will help protect the most vulnerable members of the community and the most vulnerable local assets.

### CAPABILITIES ASSESSMENT

The capabilities assessment is a review of the existing local agencies, public policies, funding sources, individuals, and other resources that can support hazard mitigation activities in Fullerton. The hazard mitigation actions build off of the existing success of these resources and leverage their capabilities to support improved resiliency in the community. The capabilities assessment looked at the following types of resources:

- Personnel resources: City staff and volunteers, and staff and volunteers at other agencies.
- Plan resource: Advisory or enforceable plans adopted by the City or other agencies.
- Policy resource: Policies adopted and implemented by the City or other agencies.
- Technical resource: Data and tools available to the City.

**Table 5-1** shows the capabilities assessment for Fullerton. A key addition to this table is the identification of plan integration activities from the previous LHMP. These activities have been highlighted within the capabilities assessment table as “Plan Integration Components”.

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**TABLE 5-1: CAPABILITIES ASSESSMENT**

<b>Resource Name</b>	<b>Type of Resource</b>	<b>Ability to Support Mitigation</b>	<b>Website</b>
<b>City of Fullerton</b>			
Building Code	Policy resource	The Fullerton Building Code and associated standards (Residential Code, Mechanical Code, Electrical Code, etc.) are a set of regulations that govern how new buildings are constructed. These standards are published by the state and are adopted by local communities, sometimes with amendments to make the codes more locally applicable. Mitigation actions to construct buildings to a safer standard, allowing them to better resist damage during a hazard event, may be made part of future building code updates.	<a href="https://www.cityoffullerton.com/gov/departments/dev_serv/building_n_permits/default.asp">https://www.cityoffullerton.com/gov/departments/dev_serv/building_n_permits/default.asp</a>
Capital Improvement Plan	Plan resource	The Fullerton Capital Improvement Plan is a set of construction projects planned for City-owned buildings, facilities, and infrastructure. It is updated every year as part of the City's annual budget and includes projects for the next 5 years. Mitigation actions to retrofit existing City-owned structures or to build new ones that are better able to resist damage may be implemented by including these projects in the Capital Improvement Plan in the future.	<a href="https://www.cityoffullerton.com/gov/departments/public_works/capital_improvements_programs/capital_improvement_program_overview.asp">https://www.cityoffullerton.com/gov/departments/public_works/capital_improvements_programs/capital_improvement_program_overview.asp</a>
	<b>Plan Integration Component</b>	<b>Several mitigation actions from the previous LHMP were integrated into major capital improvement projects that were completed or in progress by the City since previous adoption.</b>	
Community Development Department	Personnel resource	The Fullerton Community Development Department consists of the Building Division, Code Enforcement Division, Housing and Neighborhood Services, and Planning Division. The department is responsible for approving building permits, ensuring that buildings and private property comply with appropriate standards, conducting short-term and long-term planning activities in the community, and coordinating activities that preserve and enhance the character of Fullerton's neighborhoods. As part of these duties, the department enforces the Fullerton Building Code and all land use regulations. Mitigation actions related to the construction of new structures or retrofits or improvements to existing structures may be implemented through future plan processing by Community Development Department staff. Currently, the Hazard Mitigation Planning Committee leader for Fullerton is in the Community Development Department and is responsible for coordinating updates to the City's LHMP.	<a href="https://www.cityoffullerton.com/gov/departments/dev_serv/default.asp">https://www.cityoffullerton.com/gov/departments/dev_serv/default.asp</a>
Community Emergency Response Team	Personnel resource	The Fullerton Community Emergency Response Team (CERT) is a group of volunteers trained in disaster preparedness, public safety, traffic control, and emergency response. CERT members can conduct disaster preparedness activities as well as light emergency response activities when disaster situations occur. The program is managed by the Fullerton Fire Department. Mitigation actions related to community training and education may be further implemented through expansion or revisions to the CERT program.	<a href="https://www.cityoffullerton.com/gov/departments/fire/emergency_preparedness/cert/default.asp">https://www.cityoffullerton.com/gov/departments/fire/emergency_preparedness/cert/default.asp</a>

**TABLE 5-1: CAPABILITIES ASSESSMENT**

<b>Resource Name</b>	<b>Type of Resource</b>	<b>Ability to Support Mitigation</b>	<b>Website</b>
Emergency Operations Plan	Plan Resource	The Fullerton Emergency Operations Plan is a comprehensive document that provides direction and guidance to City Departments and personnel during an emergency situation.	N/A
	<b>Plan Integration Component</b>	<b>Incorporation of information from the LHMP informed the relocation of the City’s Emergency Operations Center.</b>	
Fire Department	Personnel resource	The Fullerton Fire Department provides fire protection and firefighting services in Fullerton. The department’s responsibilities include taking preparatory steps to prevent fires or limit their destruction. Mitigation actions related to reducing the likelihood of fires or minimizing injury and damage from fires may be implemented through fire department staff.	<a href="https://www.cityoffullerton.com/gov/departments/fire/about_fire_department/default.asp">https://www.cityoffullerton.com/gov/departments/fire/about_fire_department/default.asp</a>
General Plan	Plan resource	The Fullerton General Plan is the long-term, comprehensive blueprint for development and changes in the community. The policies in the general plan address land uses, public safety, environmental protection, transportation, and others. The general plan serves as a framework for mitigation actions, establishing the overarching policies for mitigation activities. Mitigation actions may be directly incorporated into the general plan to provide a stronger enforcement mechanism.	<a href="https://www.cityoffullerton.com/gov/departments/dev_serv/general_plan_update/default.asp">https://www.cityoffullerton.com/gov/departments/dev_serv/general_plan_update/default.asp</a>
	<b>Plan Integration Component</b>	<b>Upon adoption of the previous LHMP, the City integrated the document into the General Plan to ensure compliance with AB 2140.</b>	
Human Resources Department	Personnel resource	The Fullerton Human Resources Department is responsible for staff recruitment and training, as well as Risk Management functions for the City. Mitigation actions that relate to staff training may be implemented through the Human Resources Department.	<a href="https://www.cityoffullerton.com/gov/departments/hr/default.asp">https://www.cityoffullerton.com/gov/departments/hr/default.asp</a>
Landscape Maintenance Division	Personnel resource	The Fullerton Landscape Maintenance Division, part of the Public Works Department, is responsible for maintaining the City’s parks, reservoir basins, hiking trails, and other City properties. It manages tree trimming and the preparation of Fullerton’s Community Forest Management Plan. Mitigation actions that involve responding to tree mortality, drought resilience of public landscapes, and pest management fall under the purview of the Landscape Maintenance Division.	<a href="https://www.cityoffullerton.com/gov/departments/public_works/landscape/default.asp">https://www.cityoffullerton.com/gov/departments/public_works/landscape/default.asp</a>
Parks and Recreation Department	Personnel resource	The Fullerton Department of Parks and Recreation is responsible for neighborhood centers, parks, trails, and museums and managing classes and special events offered to the community. The Parks and Recreation Commission studies policy recommendations related to parks and recreation concerns, projects, and programs. This Department also provides programs and services for Fullerton’s senior population and connects seniors with transportation vouchers and bus passes. Mitigation actions involving community outreach and designations of Parks and Recreation facilities as emergency shelters may be implemented by this department.	<a href="https://www.cityoffullerton.com/gov/departments/parks_n_recreation/default.asp">https://www.cityoffullerton.com/gov/departments/parks_n_recreation/default.asp</a>

**TABLE 5-1: CAPABILITIES ASSESSMENT**

<b>Resource Name</b>	<b>Type of Resource</b>	<b>Ability to Support Mitigation</b>	<b>Website</b>
City Manager's Office	Personnel Resource	The Fullerton City Manager Department has executive oversight of citywide operations, policy development, and fiscal planning and manages economic development, public information, city clerk, and city council services. The department also holds the Economic Development, City Clerk's Office, and the Public Information Office. The Public Information Office coordinates all external communication between the City and citizens, including news releases, social media, and general information management.	<a href="https://www.cityoffullerton.com/gov/departments/city_manager/default.asp">https://www.cityoffullerton.com/gov/departments/city_manager/default.asp</a>
Police Department	Personnel resource	The Fullerton Police Department is charged with maintaining public safety in the community. As part of this work, the police department is responsible for conducting emergency preparedness activities, investigating criminal activity, and directing traffic. Mitigation actions that relate to the safe movement of traffic (e.g., during evacuations), the public safety of residents during emergency events, and terrorism-related activities may be implemented through police department staff. Because emergency preparedness is part of the department's responsibilities, the police department can also widely implement other types of mitigation actions through coordination with other departments and agencies.	<a href="http://www.fullertonpd.org/">http://www.fullertonpd.org/</a>
Public Information Office	Personnel resource	The Fullerton Public Information Office, a part of the City Manager's Office, is responsible for disseminating critical information to the public in a timely manner. The Office writes and publishes press releases, manages the City's social media outlets, and distributes general information.	<a href="https://www.cityoffullerton.com/gov/departments/city_manager/public_information/default.asp">https://www.cityoffullerton.com/gov/departments/city_manager/public_information/default.asp</a>
Public Works Department	Personnel resource	The Fullerton Public Works Department is responsible for constructing and maintaining City-owned facilities and infrastructure, including roadways, sidewalks, parks, and open space areas. Mitigation actions that involve constructing or retrofitting City-owned facilities and infrastructure may be implemented through Public Works Department staff.	<a href="https://www.cityoffullerton.com/gov/departments/public_works/divisions.asp">https://www.cityoffullerton.com/gov/departments/public_works/divisions.asp</a>
Water Division	Technical resource	The Fullerton Water Division, part of the Department of Public Works, is a municipally owned water supplier. The Division's responsibilities also include building and maintaining the local water infrastructure, ensuring water quality, and conducting water conservation programs. Mitigation measures related to water use and water supply may be implemented in collaboration with City staff.	<a href="https://www.cityoffullerton.com/gov/departments/public_works/water_system/default.asp">https://www.cityoffullerton.com/gov/departments/public_works/water_system/default.asp</a>
<b>Orange County</b>			
Orange County Fire Authority	Personnel resource	The Orange County Fire Authority (OCFA) provides fire protection and firefighting services to the unincorporated areas of Orange County and many incorporated communities. Fire-related mitigation actions that require coordination with the county may be implemented in collaboration with OCFA staff.	<a href="http://ocfa.org/">http://ocfa.org/</a>



**TABLE 5-1: CAPABILITIES ASSESSMENT**

<b>Resource Name</b>	<b>Type of Resource</b>	<b>Ability to Support Mitigation</b>	<b>Website</b>
Orange County Hazard Mitigation Plan	Plan resource	The Orange County Hazard Mitigation Plan identifies and describes the hazard events that may occur in the unincorporated areas of Orange County and provides a suite of mitigation actions to help decrease the potential damage from these hazards. Mitigation actions for Fullerton that require coordination with the county may be integrated into the County’s Hazard Mitigation Plan. Similar mitigation actions in both the county’s and Fullerton’s hazard mitigation plans can lead to a more regionally unified hazard mitigation strategy, which may improve effectiveness.	<a href="http://www.ocgov.com/civica/inc/blobfetch.aspx?BlobID=47524">http://www.ocgov.com/civica/inc/blobfetch.aspx?BlobID=47524</a>
Orange County Water District	Personnel resource	The Orange County Water District (OCWD) is the agency responsible for managing groundwater supplies in Orange County, which is a source of some of the water supply for Fullerton. Mitigation actions related to groundwater supplies, including groundwater recharge, may be implemented with support and assistance from OCWD.	<a href="https://www.ocwd.com/">https://www.ocwd.com/</a>
Orange County Sanitation District	Personnel resource	The Orange County Sanitation District (OCS D) is the local wastewater utility that collects sewage water from Fullerton and other municipalities in Orange County. OCS D also operates a water reclamation plant that supports tertiary water treatment. Mitigation actions pertaining to water infrastructure, supply, and treatment may be implemented through OCS D.	<a href="https://www.ocsd.com/">https://www.ocsd.com/</a>
Orange County Health Care Agency	Personnel resource	The Orange County Health Care Agency is a regional provider that provides and regulates certain health services, such as food protection, hazardous waste regulation, coastal water quality monitoring, and pollution prevention. Mitigation actions related to the agency’s environmental health and food safety and public health service areas would require coordination with the OC Health Care Agency.	<a href="http://www.ochealthinfo.com/">http://www.ochealthinfo.com/</a>
<b>Regional, State, and Federal Agencies</b>			
Cal-Adapt	Technical resource	Cal-Adapt is an online tool that provides detailed projections for future climate-related conditions in California, including factors such as temperature, precipitation, and sea level rise. These projections can help inform forecasts of future hazard events and can explain how hazard conditions are expected to change. The Committee can use Cal-Adapt to monitor anticipated changes in future climate conditions and adjust mitigation actions accordingly.	<a href="http://cal-adapt.org/">http://cal-adapt.org/</a>
California Department of Transportation	Technical resource	The California Department of Transportation (Caltrans) is the state agency with jurisdiction over designated highways, including the Orange Freeway (State Route 57) and the Riverside Freeway (State Route 91). Mitigation measures related to ensuring the resiliency of state-designated freeways may utilize the agency’s data and be implemented in coordination with Caltrans.	<a href="http://www.dot.ca.gov/">http://www.dot.ca.gov/</a>
California Governor’s Office of Emergency Services	Technical resource	The California Governor’s Office of Emergency Services (Cal OES) is the state agency responsible for reducing hazards in the state through mitigation activities, conducting emergency planning, supporting emergency response and recovery activities, and acting as a liaison between local and federal agencies on emergency-related issues. It provides guidance on hazard mitigation planning activities, shares best practices, and distributes funding opportunities. The Committee can work with Cal OES to obtain funding to implement LHMP mitigation strategies and to receive guidance on future updates.	<a href="http://www.caloes.ca.gov/">http://www.caloes.ca.gov/</a>

**TABLE 5-1: CAPABILITIES ASSESSMENT**

<b>Resource Name</b>	<b>Type of Resource</b>	<b>Ability to Support Mitigation</b>	<b>Website</b>
California State Hazard Mitigation Plan	Plan resource	The California State Hazard Mitigation Plan assesses the types of hazards that may be present in California. It includes descriptions of these hazards, summaries of past hazard events, descriptions of how these hazards may occur in the future, and how these hazards may harm the people and assets of California. Like a local hazard mitigation plan, the State Hazard Mitigation Plan is updated every five years. The Committee can use the State Hazard Mitigation Plan as a source of information to refine the hazard profiles and vulnerability assessments in future Fullerton LHMPs.	<a href="http://www.caloes.ca.gov/for-individuals-families/hazard-mitigation-planning/state-hazard-mitigation-plan">http://www.caloes.ca.gov/for-individuals-families/hazard-mitigation-planning/state-hazard-mitigation-plan</a>
Federal Emergency Management Agency	Technical resource	The Federal Emergency Management Agency (FEMA) is the federal agency responsible for hazard mitigation, emergency preparedness, and emergency response and recovery activities. It provides guidance to state and local governments on hazard mitigation activities, including best practices and how to comply with federal requirements. FEMA also provides funding for hazard mitigation actions through grant programs.	<a href="https://www.fema.gov/">https://www.fema.gov/</a>
Metropolitan Water District of Southern California	Technical resource	The Metropolitan Water District of Southern California (MWD) is a public agency that supplies water to various water providers throughout the southern California region, many of whom in turn distribute the water to more localized water suppliers. Water used in Fullerton that comes from outside Orange County is supplied by MWD. Mitigation actions that involve local water supplies may be implemented through coordination with MWD. The agency may also provide technical support and other resources for mitigation actions involving water use.	<a href="http://www.mwdh2o.com/">http://www.mwdh2o.com/</a>
Army Corps of Engineers, Los Angeles District	Technical resource	The United States Army Corps of Engineers designed, built, and manages the flood control infrastructure in and around Fullerton. They are responsible for evaluating the conditions of the dams that keep floodwaters from inundating the City and the surrounding communities. Mitigation actions involving dam failure, flooding, and severe weather may be supported by the Army Corps of Engineers.	<a href="https://www.spl.usace.army.mil/">https://www.spl.usace.army.mil/</a>
<b>Private agencies</b>			
Southern California Edison	Technical resource	Southern California Edison (SCE) is the electrical service provider for Fullerton. SCE also owns the electrical distribution grid in the community. Mitigation actions relating to the resiliency of Fullerton's electrical grid may use the agency's data and be implemented through coordination with SCE.	<a href="https://www.sce.com/">https://www.sce.com/</a>
Southern California Gas Company	Technical resource	The Southern California Gas Company (SoCalGas) is the natural gas provider for Fullerton and also owns the natural gas infrastructure in the community. Mitigation actions that address the resiliency of natural gas infrastructure and services in Fullerton may use the agency's data and be implemented through coordination with SoCalGas.	<a href="https://www.socalgas.com/">https://www.socalgas.com/</a>

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## EVALUATION OF POTENTIAL HAZARD MITIGATION ACTIONS

Based on the hazard profiles, threat assessment, capabilities assessment, results of the community survey, discussions among Committee members, and existing best practices, the Committee prepared a set of potential mitigation actions. The Committee evaluated these potential actions using the criteria described in the following paragraphs and **Table 5-2**.

FEMA requires local governments to evaluate the monetary and nonmonetary costs and benefits of potential mitigation actions. Although local governments are not required to assign specific dollar values to each action, they should identify the general size of costs and benefits. The Committee may elect to include measures that have a high cost or low benefits, but such measures should be clearly beneficial to the community and an appropriate use of local resources.

In addition, FEMA directs local governments to consider the following questions as part of the financial analysis:

- What is the frequency and severity of the hazard type to be addressed by the action, and how vulnerable is the community to this hazard?
- What impacts of the hazard will the action reduce or avoid?
- What benefits will the action provide to the community?
- What critical facilities, if any, will benefit from the action? How many facilities will benefit, and how important are they to the community?
- What are the environmental benefits or impacts of the action?

The Committee reviewed and revised the potential hazard mitigation actions according to the following set of criteria, known as STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) to guide and inform discussions. **Table 5-2** shows the STAPLE/E criteria.

**TABLE 5-2: STAPLE/E CRITERIA**

Issue	Criteria
Social	<ul style="list-style-type: none"> <li>• Is the action socially acceptable to Fullerton community members?</li> <li>• Would the action treat some individuals unfairly or inequitably?</li> <li>• Is there a reasonable chance of the action causing a social disruption?</li> </ul>
Technical	<ul style="list-style-type: none"> <li>• Is the action likely to reduce the risk of the hazard occurring, or will it reduce the effects of the hazard?</li> <li>• Will the action create new hazards, or make existing hazards worse?</li> <li>• Is the action the most useful approach for Fullerton to take, given the goals of the City and of community members?</li> </ul>
Administrative	<ul style="list-style-type: none"> <li>• Does the City have the administrative capabilities to implement the action?</li> <li>• Are there existing City staff who can lead and coordinate implementation of the measure, or can the City reasonably hire new staff for this role?</li> <li>• Does the City have enough staff, funding, technical support, and other resources to carry out implementation?</li> <li>• Are there administrative barriers to implementing the action?</li> </ul>
Political	<ul style="list-style-type: none"> <li>• Is the action politically acceptable to City officials and to other relevant jurisdictions and political entities?</li> <li>• Do community members support the action?</li> </ul>
Legal	<ul style="list-style-type: none"> <li>• Does the City have the legal authority to implement and enforce the action?</li> <li>• Are there potential legal barriers or consequences that could hinder or prevent implementation of the action?</li> <li>• Is there a reasonable chance that implementation of the action would expose the City to legal liabilities?</li> <li>• Could the action reasonably face other legal challenges?</li> </ul>
Economic	<ul style="list-style-type: none"> <li>• What are the monetary costs of the action, and do the costs exceed the monetary benefits?</li> <li>• What are the start-up and maintenance costs of the action, including administrative costs?</li> <li>• Has funding for action implementation been secured, or is a potential funding source available?</li> <li>• How will funding the action affect the City's financial capabilities?</li> <li>• Could implementation of the action reasonably burden the Fullerton economy or tax base?</li> <li>• Could there reasonably be other budgetary and revenue impacts to the City?</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>• What are the potential environmental impacts of the action?</li> <li>• Will the action require environmental regulatory approvals?</li> <li>• Will the action comply with all applicable federal, state, regional, and local environmental regulations?</li> <li>• Will the action reasonably affect any endangered, threatened, or otherwise sensitive species of concern?</li> </ul>

## PRIORITIZATION

As part of the effort to review the hazard mitigation actions, the Committee also prioritized the actions. They looked at the risks and threats from each hazard, financial costs and benefits, technical feasibility, and community values, among others. Committee members were asked to identify their priority actions through a vote. Items prioritized by at least four Committee members are considered high priority, and those prioritized by one to three members are considered medium priority. Actions not prioritized by any Committee member are considered low priority.

## COST ESTIMATES

To meet the cost estimation requirements of the hazard mitigation planning process, the Committee identified relative cost estimates based on their understanding of the mitigation action intent and their experience developing identical or similar programs/implementing projects. Three cost categories based on the City’s typical cost criteria were used for budgeting purposes:

- Low cost (\$): \$25,000 or less
- Medium cost (\$\$): \$25,001 to \$500,000
- High cost (\$\$\$): Greater than \$500,000

## HAZARD MITIGATION ACTIONS

### PROGRESS ON PRIOR MITIGATION ACTIONS

In 2010, the City of Fullerton adopted its most recent Local Hazard Mitigation Plan, which this Plan replaces. The 2010 Plan identified numerous mitigation actions and strategies to address the hazards that threaten Fullerton. Table 5-3A identifies the status of previous mitigation actions, some of which, have been incorporated into this LHMP, completed, or abandoned. For example, the 2010 Plan called for Fullerton to integrate the LHMP into the safety element of Fullerton’s General Plan—this was completed in 2012 with the adoption of a comprehensive update to the General Plan. The Plan also recommended the grade separation of State College Blvd, Raymond Ave, and Acacia Ave. At the time of this Plan’s composition, the grade separation of State College Blvd and Raymond Ave have been realized. The Plan also suggested that the City’s GIS staff map all of Fullerton’s cultural and historic assets. This task was completed and incorporated into the City’s 2012 General Plan update.

Some mitigation actions are still pending completion at the time of this Plan’s writing. The 2010 Plan called for the update of the Community Forest Master Plan, a mitigation action which will be continued into this LHMP. The Plan also identified the stabilization of the slope abutting Harbor Blvd as a mitigation action, but funding for that project is still pending. Other projects are still in the implementation process. Improvements to the Olive Street Storm Drain system were completed in 2017 by the City’s Engineering Division, but the second phase of the project is not scheduled to begin until 2020. Ultimately, the mitigation actions provided in Table 5-3B incorporate relevant mitigation actions from the 2010 plan that were not completed. In some cases, these actions were modified to ensure relevancy to the updated goals, analysis, and results of this planning process.

**TABLE 5-3A: PREVIOUS MITIGATION ACTIONS**

Mitigation Action Title	Status Update (Completed, Abandoned, Continue into New LHMP)
<b>Multi-Hazard</b>	
Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Completed
Tree Master Plan Update	Continue into New LHMP (Integrated into Action P.2)
Community Forest Master Plan Update	Continue into New LHMP (Action P.2)

Develop and Conduct a Multi- Hazard Seasonal Public Awareness Program	Continue into New LHMP (Action P.6)
Hazardous Materials GIS improvements	Continue into New LHMP (Action 8.2)
Acacia Grade Separation	Abandoned
State College Grade Separation	Completed
Raymond Grade Separation	Completed
Data Gathering and GIS Tracking of Police and Fire Calls for Service in Response to Natural Hazard Events	Abandoned
GIS Integration	Continue into New LHMP (Action P.11)
GIS tracking of Historic, Cultural, and Natural Resources	Abandoned
Water Master Plan	Abandoned
<b>Multi-hazard: flood, liquefaction</b>	
Structure Buy Out Program and Conversion (Southwest Fullerton) to Open Space	Abandoned
<b>Dam Failure</b>	
Brea Dam Safety and Maintenance Plan	Abandoned
<b>Drought</b>	
Convert Lions Field/Richmond Park to Artificial Turf	Completed (Lions Field) / Abandoned (Richmond Park)
Water Main Replacement	Continue into New LHMP (Actions 1.2, 1.6, 1.7)
Water Allocation Study	Abandoned
Water Meter Replacement with AMI	Continue into New LHMP (Action 4.1)
Park and Recreation Master Plan	Abandoned
<b>Drought and Earthquake</b>	
Reservoir Rehabilitation	Continue into New LHMP (Actions 1.2, 1.6, 1.7)
New Well 7A	Continue into New LHMP (Actions 1.2, 1.6, 1.7)
Booster Station Rehabilitation	Continue into New LHMP (Actions 1.2, 1.6, 1.7)
<b>Earthquake</b>	
Seismic Compliance/Retro Fit for Existing Structures – Public and Critical Facilities	Completed (Bridge Preventive Maintenance Plan updated in 2018.)
Seismic Compliance/Retro Fit for Existing Structures – Private	Continue into New LHMP (Actions 10.2, 10.4, 10.6)
<b>Earthquake /Erosion/Flood</b>	
Harbor Slope Stabilization	Continue into New LHMP (Actions 7.1, 7.3)
<b>Erosion/Flood</b>	
Bastanchury Storm Drain Improvements	Continue into New LHMP (Actions 6.1, 6.3)
<b>Flood</b>	
Olive Street Storm Drain Improvements	Phase I Completed/ Phase II slated for summer 2020.
Evaluate status of floodplain management program	Continue into New LHMP (Actions 6.5, 6.6)
<b>Wildfire</b>	
Modifying/Enforcing Fuels Modification Plans and Weed Abatement on Public Lands	Continue into New LHMP (Actions 5.1, 5.2, 5.7)
Study for Protection of Existing EOC (Fire Station 6)	Completed
Purchase Type 3 Engine	Continue into New LHMP (Action 5.3)

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## HAZARD MITIGATION GOALS

The goals identified in **Chapter 1** help develop policies to protect community members, ecosystems, and other important assets from hazard events. These goals were developed to ensure consistency with the City's General Plan Safety Element <sup>4</sup>, which will be updated as part of this process. These goals informed the development of mitigation actions and act as checkpoints to help City staff determine the progress of mitigation action implementation.

- Reduce and isolate threats to public safety and property in Fullerton.
- Maintain government operations and provisions of essential services to residents and stakeholders during and after a hazard event.
- Protect the natural environment through responsible stewardship of air, water, and open spaces in Fullerton.
- Promote resiliency and climate action in Fullerton through resilient infrastructure, responsive governance, and vibrant civic participation.
- Partner with surrounding local, regional, state, and federal jurisdictions in hazard mitigation efforts.

Based on the criteria and evaluation processes used during Plan development, the Committee prepared a prioritized list of mitigation actions to improve Fullerton's resiliency to hazard events. Collectively, these comprise the community hazard mitigation strategy. **Table 5-3** lists the mitigation actions as well as the prioritization of each action and other details related to implementation. Priorities identified are intended to assist the City in future funding and implementation activities.

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<sup>4</sup> The comprehensive update to the Fullerton General Plan is called The Fullerton Plan. The Safety Element is divided into two chapters of The Fullerton Plan, Natural Hazards and Public Safety.



**TABLE 5-3B: PROPOSED MITIGATION ACTIONS**

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>5</sup>
<b>Preparedness Activities</b>						
P.1	Maintain at least one emergency power-generating station in all critical facilities that the City could use as an emergency public assembly area, such as City Hall, Fullerton Public Library, and any others that the City may so designate in the future.	General Fund, Grants	Public Works	Low	2022	High (5)
P.2	Update the Community Forest Master Plan, incorporating drought strategies and wildfire vulnerabilities into the planning framework.	General Fund, Grants	Public Works (Landscape Maintenance Division)	Low	2022	Medium (3)
P.3	Hire a full-time Emergency Operations Coordinator for Fullerton.	General Fund, Grants	City Manager, Human Resources	High	2022	Medium (1)
P.4	Continuously research, prepare, and submit applications for hazard mitigation grants.	General Fund, Grants	All	Low	Ongoing	Low (0)
P.5	Update Safety Element to incorporate the 2019 Local Hazard Mitigation Plan.	General Fund, Grants	Community Development	Low	2020	Low (0)
P.6	Develop a communications plan and protocol to immediately disseminate information about potential hazard conditions to all City staff and to residents and businesses in potentially affected areas (alert homeowners in wildfire hazard zones if high fire conditions occur, warn property owners in 100-year floodplain if heavy rainfall is expected, etc.).	General Fund, Grants	Public Works, City Manager, Fire	Low	TBD	Low (0)
P.7	Promote and assist business owners in Fullerton to develop and regularly update an emergency preparedness plan and expand the existing Alert OC system.	General Fund, Grants	Fire	Low	Ongoing	Low (0)
P.8	Organize frequent workshops on emergency preparedness topics (e.g., essential items for emergency kits, evacuation routes, landscaping to reduce runoff and fire risk) for residents and business owners.	General Fund, Grants	Fire	Low	Ongoing	Low (0)
P.9	Conduct interjurisdictional trainings with partner first-responder agencies in the area, including CAL FIRE, OCFA, Orange County Sheriff’s Department, CSUF University Police, police and fire departments of adjacent cities, and any other agencies that Fullerton may select in the future.	General Fund, Grants	Fire, Police	Low	Ongoing	Low (0)

<sup>5</sup> Some mitigation actions were subsequently added to this table after the HMPC had conducted the ranking and prioritization exercise. Such actions were not able to be voted upon the HMPC members and are thus denoted with the text “Not voted upon” in the “Priority” column.

**TABLE 5-3B: PROPOSED MITIGATION ACTIONS**

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>5</sup>
P.10	Develop smart transportation demand management systems to respond to increased volumes of traffic during an evacuation.	General Fund, Grants	Public Works, Engineering	Medium	2021	Low (0)
P.11	Develop an Open Data Platform to make hazard layers available to the public to aid future risk analysis as well as inform the public of hazard threats in their community.	General Fund, Grants	Community Development, Public Works	Medium	2021	Low (0)
P.12	Develop partnership with wireless telephone companies to ensure that they maintain phone towers and communication facilities during emergency situations.	General Fund, Grants	City Manager, Fire	Low	TBD	Low (0)
P.13	Coordinate with major employment centers to ensure that adequate evacuation planning is conducted, and infrastructure used for evacuation purposes (roads, bridges, sidewalks) are kept clear and in good repair to ensure accessibility for pedestrians and motorists.	General Fund, Grants	Community Development, Public Works	Medium	Ongoing	Not voted upon.
<b>Multiple hazards<sup>6</sup></b>						
1.1	Install backup generators at key critical facilities (City Hall, Fire Stations, Police Stations, water pumps, etc.) in the event of power loss during an emergency. Install portable generators in City-owned water facilities. <i>(Hazards addressed: All)</i>	General Fund, Grants	Public Works	High	2021	High (5)
1.2	Frequently reassess the areas where critical facilities and areas of elevated hazard risk intersect. <i>(Hazards addressed: Dam failure, fire, flood, landslide, subsidence, hazardous materials release, seismic shaking, liquefaction, fault rupture).</i>	General Fund, Grants	All	Low	Ongoing	Low (0)
1.3	Encourage SoCalGas, Southern California Edison, Orange County Sanitation District, Metropolitan Water District of Orange County, and Orange County Water District to harden their infrastructure in the city to reduce the risk of breach. <i>(Hazards addressed: Dam failure, fire, flood, hazardous materials release, transportation accidents, terrorism)</i>	General Fund, Grants	City Manager and City Council	Low	Ongoing	Low (0)
1.4	Plant fire-resistant, drought-tolerant groundcover on slopes, inclines, and hillsides to reduce runoff and erosion during heavy rainfall. <i>(Hazards addressed: Drought, fire, flood, geologic)</i>	General Fund, Grants	Public Works, Community Development	Medium	Ongoing	Low (0)

<sup>6</sup> Some of the mitigation actions in the Multiple Hazards section address a combination of different hazards or they may address all of them. This is noted in the “Hazards Addressed” note after each mitigation action.

**TABLE 5-3B: PROPOSED MITIGATION ACTIONS**

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>5</sup>
1.5	Inform residents in areas of elevated hazard risk of the risks and proper preparation techniques and evacuation procedures. <i>(Hazards addressed: All)</i>	General Fund, Grants	City Manager, Administrative Services, Police, Fire	Medium	Ongoing	Low (0)
1.6	Position new critical facilities outside of elevated hazard risk areas and relocate existing critical facilities outside of hazard risk areas, as feasible. <i>(Hazards addressed: Dam failure, drought, fire, flood, geologic, and seismic)</i>	General Fund, Grants	Public Works, Community Development	High	Ongoing	Low (0)
1.7	Address structural or operational weaknesses in bridges, dams, retaining walls, etc. to reduce risk of failure during a hazard. <i>(Hazards addressed: All)</i>	General Fund, Grants	Public Works, Community Development	High	Ongoing	Low (0)
<b>Dam Failure</b>						
2.1	Coordinate with state and federal agencies to collectively identify threats to the City and the region and identify ways to retrofit/strengthen the dams under their control.	General Fund, Grants	Public Works, Parks and Recreation, City Manager	Low	Ongoing	Low (0)
2.2	Investigate the feasibility of an early warning alarm to be activated in the parts of Fullerton within a particular dam failure inundation area should the reservoir(s) breach.	General Fund, Grants	Public Works, City Manager	Medium	2020	Low (0)
<b>Disease and pest management</b>						
3.1	Coordinate with surrounding jurisdictions, local health care providers, businesses, schools, the Orange County Health Care Agency, the California Department of Public Health, and the Centers for Disease Control to inform community members about current public health trends or issues, free and low-cost healthcare options, treatments, and where to find local healthcare facilities.	General Fund, Grants	City Manager, Fire	Low	Ongoing	Low (0)
3.2	Cooperate with the Orange County Mosquito and Vector Control District to inform community members on best practices for mosquito-proofing homes and businesses and how to avoid mosquito bites.	General Fund, Grants	City Manager	Low	Ongoing	Low (0)
3.3	Continue to work with residents, business owners, and utilities to remove dead, dying, and diseased trees weakened by disease/pests.	General Fund, Grants	Public Works, Community Development	Medium	Ongoing	Low (0)

**TABLE 5-3B: PROPOSED MITIGATION ACTIONS**

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>5</sup>
<b>Drought</b>						
4.1	Launch a pilot program with smart water meters to track water usage in commercial and industrial properties across the City.	General Fund, Grants	Public Works	High	2022	Medium (2)
4.2	Perform pilot study to predict water main breaks around Fullerton.	General Fund, Grants	Public Works	Medium	2022	Low (0)
4.3	Identify opportunities (grant funding, design assistance, etc.) to sponsor homeowner retrofits from lawns to low-water-consuming plants.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
<b>Fire</b>						
5.1	Remove highly flammable vegetation in Very High, High, and Moderate Fire Hazard Severity Zones and replant with fire-adapted specimens.	General Fund, Grants	Public Works	Medium	Ongoing	High (5)
5.2	Create a hillside weed abatement pilot program using goats or other livestock to reduce fuel loads in fire-prone areas.	General Fund, Grants	Fire	Medium	2021	High (4)
5.3	Obtain a Type 3 Fire Engine to respond to potential fire threats in the fire-prone areas of the City.	General Fund, Grants	Fire	High	2021	Medium (2)
5.4	Draft and adopt a Community Wildfire Preparedness Plan for areas within the Very High, High, and Moderate Fire Hazard Severity Zones.	General Fund, Grants	Fire	Medium	2023	Medium (1)
5.5	Create a rapid response plan from among Fullerton's and Orange County's first responders to secure hospital, nursing and assisted living facilities, as many of them are located within fire hazard severity zones.	General Fund, Grants	Fire	Low	2022	Medium (1)
5.6	Reinforce and regularly inspect fire retardant infrastructure such as sprinklers, fire hose terminals, and fire suppression systems in City facilities.	General Fund, Grants	Fire, Public Works	High	Ongoing	Low (0)
5.7	Clear dead vegetation in reservoir footprints, railroad rights-of-way, parks, and open spaces, especially during and after a drought episode.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
5.8	Develop a model to evaluate the water system to ensure it meets fire flow requirements throughout wildfire hazard zone areas.	General Fund, Grants	Public Works	Medium	2022	Low (0)

**TABLE 5-3B: PROPOSED MITIGATION ACTIONS**

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>5</sup>
5.9	Continue fire hazard prevention awareness campaign to residents in the High and Very High Fire Hazard Severity Zones.	General Fund, Grants	Fire	Medium	Ongoing	Low (0)
5.10	Expand the existing home preparedness assessment program to assist more residents in understanding and addressing their wildfire risk.	General Fund, Grants	Fire	Medium	2020	Low (0)
5.11	Require all new development in Very High, High, and Moderate Fire Hazard Severity Zones to use noncombustible building materials such as masonry, brick, stucco, concrete, steel, or others as appropriate. Establish zones of defensible space around homes in Very High, High, and Moderate Fire Hazard Severity Zones.	General Fund, Grants	Community Development, Fire	Low	2025	Low (0)
<b>Flood</b>						
6.1	Draft an ecosystem restoration plan and upgrade of drainage systems in Gilman Park and other similar areas in Fullerton.	General Fund, Grants	Public Works	High	2022	Medium (3)
6.2	Create areas with permeable pavements and/or catchwater systems as an interim solution to flood control channel expansion. These solutions can help to absorb runoff and prevent the flood control channels from exceeding capacity during a storm.	General Fund, Grants	Public Works	High	2020	Medium (1)
6.3	Update the City's Drainage Area Master Plan on a regular basis to incorporate new data and/or address emerging issues.	General Fund, Grants	Public Works	High	Ongoing	Medium (1)
6.4	Keep all flood control channels clear of debris and plant detritus that could affect the capacity of the channel during heavy rainfall events. Install large grilles over storm drain inlets to screen out large debris.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
6.5	Continually update the mapped boundaries of floodplain inundation zones within the City.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
6.6	Continuously pursue FEMA elevation certification for all structures in Fullerton.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
6.7	Elevate and flood-proof public utility boxes above expected flood depth elevation in flood hazard inundation areas.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)

**TABLE 5-3B: PROPOSED MITIGATION ACTIONS**

	<b>Mitigation Action</b>	<b>Potential Funding Sources</b>	<b>Responsible Agency/ Department</b>	<b>Relative Cost</b>	<b>Time Frame</b>	<b>Priority<sup>5</sup></b>
6.8	Require new critical facilities to be built a minimum of 1 foot higher than the anticipated 500-year flood elevation height where feasible.	General Fund, Grants	All	High	2020	Low (0)
<b>Geologic (Landslide, Subsidence)</b>						
7.1	Build retaining walls, install shotcrete, and drape catch-fall nets on slopes or areas where landslides are likely to occur on public property. For private property, identify potential incentives for property owners to construct these improvements.	General Fund, Grants	Public Works, Community Development	High	Ongoing	Medium (2)
7.2	Install water runoff catchment troughs to channelize and divert rainwater away from hillsides on public property. For private property, identify potential incentives for property owners to construct these improvements.	General Fund, Grants	Public Works, Community Development	High	Ongoing	Medium (1)
7.3	Conduct visual inspections of roadways that abut slopes or hills to assess potential for landslides prior to large rain events and follow up inspections after events.	General Fund, Grants	Public Works, Community Development	Low	Ongoing	Low (0)
<b>Hazardous Materials Release</b>						
8.1	Promote proper disposal of hazardous material items at regional collection centers operated by the County.	General Fund, Grants	City Manager	Low	Ongoing	Low (0)
8.2	Develop a parcel-level database, in coordination with Orange County, that tracks the status of hazardous materials storage and use, prioritized by potential threat to surrounding properties.	General Fund, Grants	Fire	Low	2024	Low (0)
<b>Human-Caused (Aircraft Accident, Civil Disturbance, Cyber Threats, Terrorism, Transportation Accidents)</b>						
9.1	Coordinate with the Orange County Intelligence Assessment Center (OCIAC) to monitor potential incidents resulting in civil disturbance events (riots, mass shootings, etc.).	General Fund, Grants	Police, Fire	Low	Ongoing	Medium (1)
9.2	Disseminate information on cyber threats or potential terrorist activity to City staff and continually follow up with information on further developments in the situation.	General Fund, Grants	City Manager	Low	Ongoing	Medium (1)
9.3	Regularly update cyber security software and educate business owners and residents on current internet-based threats.	General Fund, Grants	Information Technology, Administrative Services (Business Registration Division), City Manager	Medium	Ongoing	Low (0)

**TABLE 5-3B: PROPOSED MITIGATION ACTIONS**

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>5</sup>
9.4	Retrofit all critical facilities, City administration buildings, and other buildings the City may deem to be important in the future with counterterrorism design and building materials.	General Fund, Grants	Public Works	High	2025	Low (0)
<b>Seismic Hazards (Fault Rupture, Liquefaction, Seismic Shaking)</b>						
10.1	Work with California Geologic Survey and the US Geologic Survey to identify and map the uncharted extents of fault lines within the City.	General Fund, Grants	Community Development	Low	Ongoing	Low (0)
10.2	Regularly update an inventory of buildings within the City that may be seismically vulnerable (adobe brick, unreinforced masonry, etc.)	General Fund, Grants	Community Development	Low	Ongoing	Low (0)
10.3	Encourage homeowners located near fault lines to seismically retrofit natural gas lines. Gas lines should be properly braced and equipped with automatic seismic safety shut-off valves at all structure entry points to prevent fires or explosions from ruptures caused by an earthquake.	General Fund, Grants	Community Development	Low	Ongoing	Low (0)
10.4	Incentivize individual property owners to upgrade and retrofit buildings or structures that are susceptible to damage or destruction during a seismic event.	General Fund, Grants	Community Development	Medium	Ongoing	Low (0)
10.5	Inspect all City-designated critical facilities, particularly City Hall and emergency response locations and complete any seismic retrofitting, as necessary.	General Fund, Grants	Public Works, Community Development	High	Ongoing	Low (0)
10.6	Conduct a feasibility study to develop a revolving loan program for residents and businesses to assist with the cost of seismic and fire mitigation improvements, such as upgraded water lines that withstand seismic shaking impacts, indoor sprinkler systems that meet Chapter 7 A requirements, and/or structural modifications to meet current seismic requirements.	General Fund, Grants	Public Works, Community Development	High	2026	Not voted upon.
<b>Severe Weather (Extreme Heat, Heavy Rain, Severe Wind)</b>						
11.1	Notify residents through public service announcements a couple of days in advance of a severe weather event. Focus on media methods that target vulnerable populations, such as elderly, sick, lower-income, or persons with limited mobility to better ensure they have adequate time to prepare for a heatwave in advance.	General Fund, Grants	City Manager	Low	Ongoing	Low (0)

**TABLE 5-3B: PROPOSED MITIGATION ACTIONS**

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>5</sup>
11.2	Evaluate the long-term capacity of designated cooling centers and shelters in the City to provide sufficient relief from extreme heat. Assess the need to expand services as the frequency, length, and severity of future heatwaves potentially change as a result of climate change.	General Fund, Grants	Public Works, Parks and Recreation	Medium	2020	Low (0)
11.3	Trim trees that the City determines could blow over during a severe wind event. Move power lines underground when feasible.	General Fund, Grants	Public Works, Community Development	High	Ongoing	Low (0)

Relative Costs: Low (\$), \$0–\$25,000; Medium (\$\$), \$25,001–\$500,000; High (\$\$\$), >\$500,000.



## NATIONAL FLOOD INSURANCE PROGRAM

Fullerton participates in the National Flood Insurance Program (NFIP), which was created by Congress in 1968 to provide flood insurance at subsidized rates to homeowners who live in flood-prone areas. Individual communities have the option to participate in the NFIP, although property owners who live in nonparticipating communities with flood-prone areas will not be able to buy flood insurance through the program. Additionally, nonparticipating communities with mapped floodplains cannot receive federal grants or loans for development activities in flood-prone areas and cannot receive federal disaster assistance to repair flood-damaged buildings in mapped floodplains (FEMA 2018a). Fullerton has participated in NFIP since 1974 (FEMA 2018b).

Although participation is not a dedicated hazard mitigation action, Fullerton will continue to participate in NFIP and comply with the program's requirements through continued enforcement of the City's Flood Zone Development ordinance (Municipal Code Title 14, Chapter 14.01.015). This ordinance applies to land within the mapped 100-year floodplain and requires any construction activities in the 100-year floodplain to meet stricter standards to ensure that any new or retrofitted developments are more resilient to flood events. The ordinance also requires that structures in the 100-year floodplain be elevated to contend with flood risk. As part of the City's efforts to comply with the NFIP, Fullerton will make updates and revisions to the Flood Zone Development ordinance to minimize the threat of harm from flood events. Specifically, the NFIP requires that communities seeking participation must adopt and enforce floodplain regulation ordinances based on the data provided by their respective floodplain administrator, as required by Code of Federal Regulations 44, 60.2 (h). These updates and revisions may be prompted by changes in local demographics, shifts in land uses, changes to flood regimes such as frequency and intensity of flood events, and other factors that may warrant municipal action. The City will also continue to incorporate any changes to the locations and designations of mapped floodplains into future planning documents, including future updates to this Plan.

As of September 2018, there were 339 properties in Fullerton insured under the NFIP, with a total insured value of approximately \$94.7 million. Since the start of the program, NFIP has paid out 29 claims to Fullerton properties. There is one property in Fullerton that is known as a repetitive loss property, which has filed two claims (2005 and 2010) against its flood insurance (Lohmann 2018). For reference, a repetitive loss property is a property for which two or more flood insurance claims of more than \$1,000 have been paid by the NFIP within any 10-year period since 1978.

# CHAPTER 6

## PLAN MAINTENANCE

In order for this LHMP to remain effective and useful to the community of Fullerton, it must remain up to date. An updated version of the LHMP will continue to guide hazard mitigation activities in Fullerton and will help keep the City eligible for state and federal hazard mitigation funding. The LHMP has been structured so that the City can easily update individual sections as new information becomes available and as new needs arise, helping to keep this Plan current.

This chapter discusses how to update this Plan to keep it in compliance with applicable state and federal requirements. This chapter also describes how the City can incorporate the mitigation actions described in Chapter 5 into existing programs and planning mechanisms, and how public participation will remain an important part of Plan monitoring and future update activities.

### COORDINATING BODY

The Hazard Mitigation Planning Committee will remain responsible for maintaining and updating the Plan, including evaluating the Plan effectiveness as needed. The members of the Committee will also coordinate implementation of the Plan through their respective positions. A list of the current Committee members is in Chapter 1. In future years, staff and representatives (either current Committee members or other individuals) from the following City organizations should be included in maintenance and update activities:

- Fullerton City Manager’s Office
- Fullerton Community Development
- Fullerton Fire Department
- Fullerton Human Resources Department
- Fullerton Parks and Recreation
- Fullerton Police Department
- Fullerton Public Works Department

As appropriate, staff from other organizations who sat on the Committee during the preparation of this Plan should be invited to participate in future plan maintenance and update activities. Other organizations that could be asked to participate in this process are:

- California Department of Transportation
- California State University, Fullerton
- City of Anaheim
- City of Brea
- City of Buena Park
- City of La Habra
- City of Placentia

- Fullerton College
- Fullerton Joint Union High School District
- Fullerton School District
- Orange County Emergency Management Division
- Orange County Fire Authority
- Orange County Health Care Agency
- Orange County Intelligence and Assessment Center
- Orange County Parks
- Orange County Public Works
- Orange County Sanitation District
- Orange County Sheriff's Department
- Orange County Water District
- Metropolitan Water District of Southern California
- Southern California Edison
- Southern California Gas Company
- St. Jude Medical Center

The staff member currently serving as the Hazard Mitigation Planning Committee (HMPC) leader, the person responsible for coordinating the Committee for future LHMP updates, is in the Community Development Department, and he or she will serve as the project manager during the update process. He or she may also designate this role to another staff member. The HMPC leader or their designee will coordinate maintenance of this Plan, lead the formal Plan review and evaluation activities, direct the Plan update, and assign tasks to other members of the Committee to complete these activities. Such tasks may include collecting data, developing new mitigation actions, updating mitigation actions, making presentations to City staff and community groups, and revising sections of the Plan document.

## PLAN IMPLEMENTATION

The effectiveness of the Plan depends on successful implementation of the mitigation actions. This includes integrating mitigation actions into existing City plans, policies, programs, and other implementation mechanisms. The mitigation actions in this Plan are intended to reduce the damage from hazard events, help the City secure funding, and provide a framework for hazard mitigation activities. The members of the Committee have prioritized the hazard mitigation actions, as shown in **Table 5-3** in Chapter 5, and these prioritizations will guide implementation of the actions through new or existing City mechanisms as resources are available. The HMPC leader is responsible for overseeing the implementation, promotion, and maintenance of this Plan. The HMPC leader is also responsible for facilitating meetings and other coordinating activities related to Plan implementation and maintenance.

This Plan works in concert with the Fullerton General Plan, particularly the Safety Element. The Safety Element creates a framework for mitigation and preparation activities and integrates with the goals of this Plan. The LHMP is a way for the City to expand on the goals and policies in the

general plan, identifying specific mitigation actions to achieve the general plan's high-level objectives. The general plan and the LHMP collectively help to reduce the threat from hazardous conditions to Fullerton residents, businesses, visitors, buildings and facilities, infrastructure, key services, ecosystems, and other assets.

In addition to the General Plan, this LHMP should be incorporated into other City documents as applicable. Mitigation actions that involve construction of new City buildings or infrastructure, or major retrofits to existing structures, should be reflected in updates to the Capital Improvement Program. Mitigation actions that improve resiliency in new construction by increasing the standards for new construction should be reflected in updates to Fullerton's Building and Construction Regulations. Revisions to requirements for new construction activities specifically within flood plains should result in changes to the City's Floodplain Management Regulations, and requirements related to seismic retrofits to existing buildings may be implemented through amendments to the City's buildings regulations. Any mitigation actions that change where different developments and land use activities can occur, how they should be sited, and how they can be constructed or operated should be integrated as applicable into the City of Fullerton Zoning Code. Appendix E provides guidance on best practices to accomplish this integration.

## PLAN MAINTENANCE

To support maintenance and implementation, this Plan is supported by the Fullerton Mitigation Implementation Handbook, provided in **Appendix E** for reference. The handbook is intended to function as a stand-alone document that gives concise and accessible guidance to jurisdiction staff for implementing and maintaining the Plan. A key component of the handbook is the specific mechanisms that the jurisdiction can use to integrate this plan into other City planning mechanisms.

## PLAN EVALUATION

When members of the Committee are not updating the Plan, they should meet at least once a year to go over the implementation of mitigation actions and evaluate the Plan's effectiveness. These meetings should include:

- Discussion of the timing of implementing the mitigation actions.
- Evaluation of the actions that are being implemented and determining if these actions are succeeding.
- Revisions, as needed, of the prioritization of mitigation actions.
- Integration of the mitigation actions into other mechanisms as needed.

The first of these meetings will be held in the 2020 calendar year. To the extent possible, Committee meetings should be scheduled at an appropriate time in the City's annual budgeting process, which will help ensure that funding and staffing needs for mitigation actions are considered.

When the Committee meets to evaluate the Plan, members should consider these questions:

- What hazard events, if any, have occurred in Fullerton in the past year? What were the impacts of these events on the community? Were the impacts mitigated, and if so, how?
- What mitigation actions have been successfully implemented? Have any mitigation actions been implemented but not successfully, and if so, why?
- What mitigation actions, if any, have been scheduled for implementation but have not yet been implemented?
- What is the schedule for implementing future mitigation actions? Is this schedule reasonable? Does the schedule need to be adjusted for future implementation, and are such adjustments appropriate and feasible?
- Have any new issues of concern arisen, including hazard events in other communities or regions, that are not covered by existing mitigation actions?
- Are new data available that could inform updates to the Plan, including data relevant to the hazard profiles and threat assessments?
- Are there any new planning programs, funding sources, or other mechanisms that can support hazard mitigation activities in Fullerton?

## PLAN UPDATES

The information in this Plan, including the hazard profiles, threat assessments, and mitigation actions, are based on the best available information, practices, technology, and methods available to the City and Committee at the time this Plan was prepared. As factors change, including technologies, community demographics and characteristics, best practices, and hazard conditions, it is necessary to update the Plan so that it remains relevant. Additionally, Title 44, Section 201.6(d)(3) of the Code of Federal Regulations requires that LHMPs be reviewed, revised, and resubmitted for approval every five years to remain eligible for federal benefits.

## UPDATE METHOD AND SCHEDULE

The update process should begin no later than four years after this Plan is adopted, allowing a year for the update process before the Plan expires. The HMPC leader or their designee may also choose to begin the update process sooner, depending on the circumstances. Some reasons for accelerating the update process may include:

- A presidential disaster declaration for Fullerton or for an area that includes part or the entire city.
- A hazard event that results in one or more fatalities in Fullerton.

The update process will add new and updated methods, demographic data, community information, hazard data and events, considerations for threat assessments, mitigation actions,

and other information as necessary. This will help keep the Plan relevant and current. The Committee will determine the best process for updating the Plan, which should include the following steps:

- Involve at least one member from each City department on the Committee or as a supporting role to contribute as needed.
- Contact non-City organizations that sat on the Committee during preparation of the Plan or other relevant entities to gauge their interest and involve them in the update process.
- Review and update the hazard mapping and threat assessment for critical facilities.
- Revise the threat assessment for populations and other assets.
- Review and revise the mitigation actions as needed, including in response to actions that have been completed, changed, cancelled, or postponed.
- Send a draft of the updated Plan to appropriate external agencies.
- Make a draft of the updated Plan available to members of the public for comment.
- Following public review, send a draft of the updated plan to Cal OES and FEMA for review and approval.
- Adopt the final updated Plan within one year of beginning the update process and within five years of the adoption of the previous Plan.

## UPDATE ADOPTION

The Fullerton City Council is responsible for adopting this Plan and all future updates. As previously mentioned, adoption should occur every five years, within one year of the commencement of the update process and before the current Plan expires. The adoption should take place after FEMA notifies the City that the Plan is Approved Pending Adoption. Once the City Council adopts the Plan following its approval by FEMA, the Community Development Department will transmit a copy of the adopted Plan to FEMA.

## PUBLIC INVOLVEMENT

The City will continue to keep members of the public informed about the Committee's actions to review and update the LHMP. The Committee will develop a revised community engagement strategy that reflects the City's updated needs and capabilities. The updated strategy should include a tentative schedule and plan for public meetings, recommendations for the use of the City website and social media accounts, and content for public outreach documentation. The Committee will also distribute annual progress reports to Fullerton community members.

## **POINT OF CONTACT**

The Hazard Mitigation Planning Committee leader for Fullerton is the primary point of contact for this Plan and for future updates. At the time of writing, this person is Heather Allen, available at (714) 738-6884 or [heathera@cityoffullerton.com](mailto:heathera@cityoffullerton.com).

# CHAPTER 7

## REFERENCES AND IMAGE CREDITS

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### CHAPTER 3

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**CITY OF FULLERTON**

**APPENDICES**

**LOCAL HAZARD MITIGATION PLAN**



**May 19, 2020**



# APPENDIX A

## MEETING MATERIALS

- Invitation to the Hazard Mitigation Planning Committee
- Composite Attendance List of Hazard Mitigation Planning Committee
- Hazard Mitigation Planning Committee Meeting #1 Agenda and Sign-In Sheet
- Hazard Mitigation Planning Committee Meeting #2 Agenda and Sign-In Sheet
- Hazard Mitigation Planning Committee Meeting #3 Agenda and Sign-In Sheet
- Hazard Mitigation Planning Committee Meeting #4 Agenda and Sign-In Sheet and Hazard Mitigation Actions Table with Committee Annotations

From: Heather Allen  
Sent: Wednesday, June 6, 2018 1:12 PM  
Cc: Heather Allen  
Subject: Hazard Mitigation Planning Committee - City of Fullerton

Good Afternoon -

The City of Fullerton is starting the preparation of their Local Hazard Mitigation Plan Update in June. This plan allows the City access to grant funding sources through FEMA to conduct hazard mitigation planning activities. As part of the plan process, the City and their consultant will be facilitating a series of four meetings to discuss the different elements of the plan. We need your assistance during this process by participating on this committee and attending these meetings. Since we work with your Agency on a regular basis and value your input and knowledge of the issues within the City, we hope that you will join us and participate in the process. If you are unable to attend and/or if there are others in your Agency that should attend, please forward the information to them.

These meetings are expected to last up to 2 hours each and will occur on a monthly basis from June through September from 1:30 p.m. to 3:30 p.m.

Dates and topics are:

- \* June 14, 2018 - Introduction and review hazards of concern and critical facilities
- \* July 12, 2018 - Review hazard profiles, hazards mapping and overview of risk assessment
- \* August 9, 2018 - Review risk assessment analysis and begin mitigation actions development and brainstorming
- \* September 13, 2018 - Review, revise, and prioritize mitigation actions and discuss monitoring and implementation

All meetings will be held at the Fullerton Community Center, 340 W Commonwealth Ave, in the Boardroom. Use any entrance and follow the signs for the meeting. Ample parking is located at the rear of the building. I will also be sending meeting requests for the four dates to get this on your calendars.

Once these meetings are complete, we expect to finalize the Administrative Draft document for review and comment sometime in October. Once this process is complete, we ask that you remain available if we have any follow up questions or need additional insight, however we expect this will most likely not be necessary.

We understand the significant commitments you already have, and our goal is to facilitate a process that minimizes your time commitments, while maximizing your effective participation in the process. If you are assigning a staff member to participate please provide their contact information. If you have any questions, please do not hesitate to contact me at [HeatherA@ci.fullerton.ca.us](mailto:HeatherA@ci.fullerton.ca.us)<mailto:[HeatherA@ci.fullerton.ca.us](mailto:HeatherA@ci.fullerton.ca.us)>

City of Fullerton

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Heather Allen, AICP  
Planning Consultant  
City of Fullerton  
Community Development Department  
303 W. Commonwealth Ave.  
Fullerton, CA 92832



COMPOSITE ATTENDANCE LIST OF HAZARD MITIGATION PLANNING COMMITTEE

<b>Agency</b>	<b>Representative</b>
Fullerton Community Development (Planning)	Heather Allen (Committee Leader)
Fullerton Community Development (Planning)	Matt Foulkes
Fullerton Fire	Adam Loeser
Fullerton Fire	Kathy Schaefer
Fullerton Human Resources	Pamela Mackie
Fullerton Human Resources	Olga Vellanoweth
Fullerton Parks and Recreation	Alice Loya
Fullerton Parks and Recreation	Doug Pickard
Fullerton Police	Rhonda Cleggett
Fullerton Public Works	Dan Diaz
Fullerton Public Works	Hye Jin Lee
Fullerton Public Works	Kevin Kwak
Fullerton Public Works	Wayne Elms
Fullerton Public Works	William Roseberry
Fullerton Public Works	Yelena Voronel
Fullerton School District	Laurie Bruneau
California State University, Fullerton	Pearl Boelter
Caltrans	Julie Lugaro
City of La Habra	Carlos Jaramillo
City of Placentia	Arlen Beck
Fullerton College	Larry Lara
Fullerton Joint Unified School District	Carl Erickson
Metropolitan Water District	Ian Whyte
Orange County Health Care Agency	Rebecca Marsile
Orange County Sanitation District	Rudy Davila
St. Jude Medical Center	Hector Campos

## *Hazard Mitigation Planning Team Meeting #1*

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June 14, 2018

1:30-3:30 pm

Fullerton Community Center - BOARDROOM  
340 W Commonwealth Avenue  
Fullerton, CA

### **AGENDA**


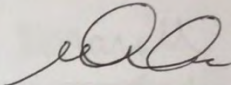
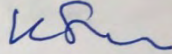
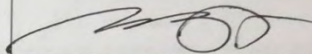
1. Team Introductions (5 minutes)
2. Local Hazard Mitigation Plan Overview (15 minutes)
3. Project Goals and Expectations (10 minutes)
4. Hazard Mitigation Planning Team Roster (10 minutes)
5. Communication Protocols (5 minutes)
6. Data Needs (20 minutes)
7. Community Engagement and Outreach Strategy (10 minutes)
8. Hazard Identification/Prioritization (40 minutes)
9. Next Steps (5 minutes)



**City of Fullerton  
Hazard Mitigation Planning Committee Sign-In  
June 14, 2018**

Name and Department	Title	Signature
Wayne Ellis Public Works	Landscape SUPERVISOR	W. Ellis
Rhonda Crockett F.P.D.		Rhonda Crockett
Adam Leser FFD	Deputy Chief	Adam Leser
Pamela Mackie HR	Risk Mgt	Pamela Mackie
Deqa HZ	Risk Mgt Spec	Deqa HZ
Micaloys <sup>PER</sup>	PER manager	Micaloys

June 14, 2018

 City of Fullerton Hazard Mitigation Planning Committee Sign-In June 14, 2018		
Name and Department	Title	Signature
Arlen Beck City of Placentia Development Services CARL	Planning Technician <del>arlen.beck@placentia.org</del> abeck@placentia.org	Arlen Beck
Dan Diaz PW	Street SUPT	
Kevin Kuzak	Senior Civil PW Eng - Engineer	
Rudy Davila ENGINEERING (OCS)	ENGINEER	
Laurie Brunner	Fullerton School District	Laurie Brunner

June 14, 2018





**City of Fullerton  
Hazard Mitigation Planning Committee Sign-In  
June 14, 2018**

Name and Department	Title	Signature
Julie Lugaro	Caltrans Assoc. Trans planner	<i>Julie Lugaro</i>
Yefena Voronel	Principal Civil Eng City of Fullerton	<i>Y. Voronel</i>
Rebecca Marsile	Orange County Health Care Agency	<i>R Marsile</i>
Doug Pickard	COF Parks: Rec	<i>Doug Pickard</i>
IAN WYZZE MWD	EMERGENCY MANAGEMENT PROGRAM MANAGER	<i>I. Wyzze</i>
CARL ERICKSON Fullerton Joint Union High School District	DIRECTOR OF PR Risk Management ERICKSON@FSUNSD.ORG	<i>Carl Erickson</i>
Hector Campos ST Jude M-CITY	Services & EV	<i>Hector Campos</i>

June 14, 2018

## *Hazard Mitigation Planning Team Meeting #2*

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July 12, 2018


1:30-3:30 pm

Fullerton Community Center - BOARDROOM  
340 W Commonwealth Avenue  
Fullerton, CA

### **AGENDA**


1. Team Introductions (5 minutes)
2. Draft Project Goals (10 minutes)
3. Updated Critical Facilities Inventory (10 minutes)
4. Hazard Prioritization (5 minutes)
5. Hazard Profiles/Mapping (60 minutes)
6. Next Steps (10 minutes)

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 <div style="text-align: center;"> <b>City of Fullerton</b>  <b>Hazard Mitigation Planning Committee Sign-In</b>  <b>July 12, 2018</b> </div>		
Name and Department	Title	Signature
Pamela J Macke HR	Risk Management Analyst	P. J. Macke
Olga Vellanowala HR	Risk Mgmt Specialist	O. Vellanowala
W. G.	Landscape Supv.	W. G.
Dan Diaz	PW/streets	D. Diaz
William ROSEBERRY	PW/BLDG'S - SEWER	W. Roseberry
Rebecca Marsile	Health Educator	R. Marsile
Pearl Bahter	Director SHS CSUF	P. Bahter
Larry Laru Fullerton College	Director of Facilities	L. Laru
Arlen Beck City of Placentia	Planning Technician	A. Beck
Kathy Schaefer Fire.	Division Chief	K. Schaefer
Matt Foulkes Planning. CoFF	Planning manager	M. Foulkes

July 12, 2018

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 <b>City of Fullerton</b> <b>Hazard Mitigation Planning Committee Sign-In</b> <b>July 12, 2018</b>		
Name and Department	Title	Signature
Russ Gwert	Lt.	<i>[Signature]</i>
Adam Loeser - Fire	Deputy Chief	<i>[Signature]</i>
Alicia Lopez	P&R mgr.	<i>[Signature]</i>
Doug Pickard	P:R Parks Project spec.	<i>[Signature]</i>



# City of Fullerton

## Local Hazard Mitigation Plan

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### 1. Hazard Mitigation Planning Committee Meeting #3

Thursday, August 9<sup>th</sup>, 1:30-3:30 p.m.

Fullerton City Hall

303 W Commonwealth Ave, Fullerton, CA 92832

### 2. Agenda

- a. Introductions (5 minutes)
- b. Threat Assessment Discussion (45 minutes)
- c. Mitigation Strategies Discussion (30 minutes)
- d. Next Steps (5 minutes)

### 3. Next Meeting:

Date: **September 13<sup>th</sup>, 2018**

Time: **1:30-3:30 PM**

Location: **Fullerton City Hall, 303 W Commonwealth Ave, Fullerton, CA 92832**

Topic: **Review of Mitigation Actions**



**City of Fullerton  
Hazard Mitigation Plan Planning Meeting Sign-In  
August 9, 2018**

Name and Department	Title	Name and Department	Signature	Title
Doug Pickard P:R	Parks Project Specialist			
City of Placentia Arlen Beck	Planning Technician			
ZYONDA CLEGGET	Police			
Randy Max	HR			
Kathy Schaefer	Fire			
Dya Vellmann	HR			
Hector Campos	SF Jude McCall			
Math Foulkes	Planning manager			

August 9, 2018



**City of Fullerton  
Hazard Mitigation Plan Planning Meeting Sign-In  
August 9, 2018**

Name and Department	Title	Signature
Carlos Saramillo	Depto. Dir. City of Fullerton County Department	

August 9, 2018





# City of Fullerton

## Local Hazard Mitigation Plan

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### 1. Hazard Mitigation Planning Committee Meeting #4

Thursday, September 13<sup>th</sup>, 1:30-3:30 p.m.

Fullerton City Hall

303 W Commonwealth Ave, Fullerton, CA 92832

### 2. Agenda

- a. Review of Draft Mitigation Actions (75 minutes)
- b. Prioritization of Draft Mitigation Actions (15 minutes)
- c. Q&A (10 minutes)
- d. Next Steps (5 minutes)

### 3. Next Steps:

**Distribution of Administrative Draft LHMP for Team Review**



**City of Fullerton  
Hazard Mitigation Plan Planning Meeting Sign-In  
September 13, 2018**

Name and Department	Title	Signature
Samuel Machic / HA	Risk Management Analyst	<i>[Signature]</i>
<del>Julio Lopez</del> Caltrans	Assoc. Transportation planner	<i>[Signature]</i>
Kathy Schaefer	D. Coy fire	<i>[Signature]</i>
Arlen Beck	City Planning Technician	<i>[Signature]</i>
Doug Pickers CofP Parks? Rec.	Parks Project Specialist	<i>[Signature]</i>
Carlos Taranillo	City of LA H&V14	<i>[Signature]</i>
William Roseberg	COF	PW maint.
Hector Campos	ST. Jude	<i>[Signature]</i>
Kevin Kwak	Senior Civil Eng.	k kw
Hye Jin Lee	Water sys manager/ Assist. City Eng.	<i>[Signature]</i>
Wayne Elms	Landscape supv.	W. E

Thursday, September 13, 2018



P.D. Have a follow-up EO contractor  
 TABLE 5-3: MITIGATION ACTIONS

Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
<b>Preparedness Activities</b>					
P.1 Continuously research, prepare, and submit applications for hazard mitigation grants.	General Fund, Grants	PL, Public Res. Com. Dev. (A/E)	Low		
P.2 Update Safety Element to incorporate the 2018 Local Hazard Mitigation Plan.	General Fund, Grants	PL, Public Res. Com. Dev. (A/E)	Low		
P.3 Immediately disseminate information about potential hazard conditions with all City staff and residents and businesses in potential affected areas (i.e. alert homeowners in wildfire hazard zones, if high fire conditions occur, warn property owners in 100-year floodplain if heavy rainfall is expected, etc.).	General Fund, Grants	PL, PIO, Fire	Low		
P.4 Promote and assist business owners in Fullerton to develop and regularly update an emergency preparedness plan. <i>General, High DC</i>	General Fund, Grants	Fire	Low		
P.5 Maintain at least one emergency power-generating station in all critical facilities that the City could use as an emergency public assembly area, such as City Hall, Fullerton Public Library, Police and Fire Stations, and any others that the City may so designate in the future. <i>General, High DC</i>	General Fund, Grants	PL	High-Low		
P.6 Organize frequent workshops on emergency preparedness topics (i.e. essential items for emergency kits, evacuation routes, landscaping to reduce runoff and fire risk, etc.) for residents and business owners.	General Fund, Grants	Fire	Low		
P.7 Conduct interjurisdictional trainings with partner first responder agencies in the area, including: CAL FIRE, Orange County Fire Authority, Orange County Sheriff's Department, CSUF University Police, Police and Fire Departments of adjacent cities, and any other agencies that Fullerton may select in the future.	General Fund, Grants	Fire, Police	Low		
P.8 Develop SMART transportation demand management systems to respond to increased volumes of traffic during an evacuation.	General Fund, Grants	PL, Eng	Low-Med		
P.9 Develop an Open Data Platform to make hazard layers available to the public to aid future risk analysis as well as inform the public of hazard threats in their community.	General Fund, Grants	Comm Dev., PL	Low		
P.10 Update the Community Forest Master Plan, incorporating drought strategies, and wildfire vulnerabilities into the planning framework.	General Fund, Grants	PL - Land Use	Low		
P.11 Develop partnership with wireless phone towers and communication facilities during emergency situations.	General Fund, Grants	City Mgr., Fire	Low		
<b>Multiple hazards</b>					
M.1 Piling of pipe development (new buildings or existing building renovations) to submit landscape plans that feature fire-resistant plant specimens and permeable surfaces. <i>(Hazards addressed: Dam Failure, Fire, Flood, Heavy Rain)</i>	General Fund, Grants				
M.2 Frequently assess the areas where critical facilities and areas of elevated hazard risk intersect. <i>(Hazards addressed: Dam Failure, Fire, Flood, Landslide, Subsidence, Hazardous Materials Release, Seismic Shaking, Liquefaction, Fault Rupture)</i>	General Fund, Grants	ALL	Low		
M.3 Regularly address structural or operational weaknesses in bridges, dams, retaining walls, etc. to reduce risk of failure during a hazard. <i>(Hazards addressed: All)</i>	General Fund, Grants	Eng., Comm Dev., Army Corps, California	High		
M.4 Exchange SoCalGas, Southern California Edison, Orange County Sanitation District, Metropolitan Water District of Orange County, and Orange County Water District to harden their infrastructure passing through or located in the city to reduce the risk of breach. <i>(Hazards addressed: Dam Failure, Fire, Hazardous Materials Release, Transportation Accidents, Terrorism)</i>	General Fund, Grants	City Mgr. & Council	Low		
M.5 Conduct regular ground water quality monitoring. <i>(Hazards addressed: Drought, Fire)</i>	General Fund, Grants				
M.6 Remove trees and vegetation along rail rights-of-way and evacuation routes that are likely to impede movement as a result of tree mortality from lightning, disease, fire, and other causes. <i>(Hazards addressed: Transportation Accidents, Drought, Fire, Severe Wind, Transportation Accidents)</i>	General Fund, Grants				
M.7 Install fire generators at key critical facilities (City Hall, Fire Stations, Police Stations, water pumps, etc.) in the event of failure during an emergency. <i>(Hazards addressed: All Hazards)</i>	General Fund, Grants	PL	High		
M.8 Install water storage tanks in critical facilities to prevent runoff and store stormwater. <i>(Hazards addressed: Drought, Flood)</i>	General Fund, Grants				
M.9 Position new critical facilities outside of elevated hazard risk areas and relocate existing critical facilities outside of hazard risk areas, as feasible. <i>(Hazards addressed: Dam Failure, Drought, Fire, Flood, Geologic, and Seismic)</i>	General Fund, Grants	PL, Comm Dev.	High		
M.10 Plant fire-resistant, drought-tolerant groundcover on slopes, inclines, and hillsides to reduce runoff and erosion during heavy rainfall. <i>(Hazards addressed: Drought, Fire, Flood, Geologic)</i>	General Fund, Grants	PL, Comm Dev.	Med		
M.11 Work with the Army Corps of Engineers to retrofit, strengthen, and increase the capacity of the dams, reservoirs, and retention areas in the City, as applicable. <i>(Hazards addressed: Dam Failure, Flood, Geologic, and Seismic)</i>	General Fund, Grants	City Mgr., Admin.	Med		
M.12 Inform residents in areas of elevated hazard risk of the risks and proper preparation techniques and evacuation procedures. <i>(Hazards addressed: All)</i>	General Fund, Grants	City Mgr., Admin.	Med		
M.13 Relocate critical facilities out of areas of elevated hazard risk, where feasible. <i>(Hazards addressed: All)</i>	General Fund, Grants				
<b>Dam Failure</b>					
D.1 Coordinate with State and Federal agencies to collectively identify threats to the City and the region and identify ways to retrofit/strengthen the dams under their control.	General Fund, Grants	PL, Public Res. Com. Dev.	Low		
D.2 Install an early warning alarm to be activated in the parts of Fullerton located within a particular dam failure inundation area should the reservoir(s) breach.	General Fund, Grants	PL	Med		
<b>Disease and pest management</b>					
D.3 Coordinate with health care providers, businesses, schools, the Orange County Health Care Agency, the California Department of Public Health, and Center for Disease Control to inform community members about free and low-cost healthcare options, treatments, and where to find local healthcare facilities. <i>General, High DC</i>	General Fund, Grants	City Mgr., Fire	Low		
D.4 Cooperate with the Orange County Mosquito and Vector Control District to inform community members on best practices for mosquito-proofing homes and businesses and how to avoid mosquito bites.	General Fund, Grants	City Mgr.	Low		
D.5 Continue to work with California Public Utilities Commission to remove dead, dying, and diseased trees weakened by disease/pests.	General Fund, Grants	PL, Comm Dev.	Low-Med		

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
F.1 Launch a pilot program with smart water meters to track water usage in properties across the City.	General Fund, Grants	PL	High		
F.2 Identify opportunities (grant funding, design assistance, etc.) to sponsor homeowner retrofits from fountains to low-water consuming plants.	General Fund, Grants	PL	Med		
<b>Fire</b>					
F.3 Create a hillside weed abatement pilot program using goats, or other livestock to reduce fuel loads in fire prone areas.	General Fund, Grants	Fire	Med		
F.4 Continue fire hazard prevention awareness campaigns to residents in the High and Very High Fire Hazard Severity Zones.	General Fund, Grants	Fire, Med	Med		
F.5 Expand the existing home preparedness assessment program to assist more residents in understanding and addressing their wildfire risk.	General Fund, Grants	Fire, Med	Med		
F.6 Obtain a Type 3 Fire Engine to respond to potential fire threats in the fire hazard prone areas of the City.	General Fund, Grants	Fire, PL	High		
F.7 Harden and regularly inspect fire retardant infrastructure such as sprinklers, fire hose terminals, and fire suppression systems in critical facilities.	General Fund, Grants	Fire, PL	Med		
F.8 Draft and adopt a Community Wildfire Preparedness Plan for areas within the City within the Very High, High, and Moderate Fire Hazard Severity Zones.	General Fund, Grants	Fire	Med		
F.9 Require all new development in Very High, High, and Moderate Fire Hazard Severity Zones to use non-combustible building materials such as masonry, brick, stucco, concrete, steel, or others as appropriate. Establish zones of defensible space around homes in Very High, High, and Moderate Fire Hazard Severity Zones.	General Fund, Grants	Comm Dev., Fire	Low		
F.10 Remove all non-fire resistant trees and any other highly flammable vegetation in Very High, High, and Moderate Fire Hazard Severity Zones and replant with fire-resistant specimens.	General Fund, Grants	PL	Low-Med		
F.11 Remove all non-fire resistant trees and any other highly flammable vegetation in Very High, High, and Moderate Fire Hazard Severity Zones.	General Fund, Grants	PL	Med		
F.12 Clear dead vegetation in resource forests, natural rights-of-way, parks, and open spaces especially during and after a drought episode.	General Fund, Grants	PL	Med		
F.13 Replace pressure water pumps with gravity fed mechanisms to ensure firefighting efforts are sustained in case power is lost during a fire.	General Fund, Grants	Fire	Low		
F.14 Create a rapid response team from among Fullerton's and Orange County's first responders to secure nursing and assisted living facilities as many of them are located within fire hazard severity zones.	General Fund, Grants	Fire	Low		
<b>Flood</b>					
F.15 Keep all flood control channels clear of debris and plant debris that could affect the capacity of the channel during heavy rainfall events. Install large grates over storm drain inlets to screen out large debris.	General Fund, Grants	PL	Med		
F.16 Continually update the mapped boundaries of floodplain inundation zones within the City.	General Fund, Grants	PL	Med		
F.17 Migrate the design of culverts to incorporate permeable, ripraped medians, and other permeable surfaces that improve storm drain capacity.	General Fund, Grants	PL	Med		
F.18 Update the City's Drainage Area Management Plan on a regular basis to incorporate new data and/or address emerging issues.	General Fund, Grants	PL	High		
F.19 Continually pursue FEMA elevation certification for all structures in Fullerton.	General Fund, Grants	PL	Med		
F.20 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.21 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.22 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.23 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.24 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.25 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.26 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.27 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.28 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.29 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.30 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.31 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.32 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.33 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.34 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.35 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.36 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.37 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.38 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.39 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.40 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.41 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.42 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.43 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.44 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.45 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.46 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.47 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.48 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.49 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.50 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.51 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.52 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.53 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.54 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.55 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.56 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.57 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.58 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
F.59 Upgrade the City's Flood Warning System (CWS) to allow the City's residents to receive direct flood insurance rally.	General Fund, Grants	PL	Med		
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**TABLE 5-3: MITIGATION ACTIONS**

	Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
10.4	Incentivize individual property owners to upgrade and retrofit buildings or structures that are susceptible to damage or destruction during a seismic event.	General Fund, Grants	Comm Dev	Med		
10.5	Encourage homeowners located near fault lines to seismically retrofit natural gas lines. Gas lines should be properly braced and equipped with automatic seismic safety shut-off valves at all structure entry points to prevent fires or explosions from ruptures caused by an earthquake.	General Fund, Grants	Comm Dev	Low		
10.9	Work with local gas to ensure that high pressure natural gas lines are seismically retrofitted to the highest standards. Explore use of materials that can reduce the force of seismic shaking on the pipelines.	General Fund, Grants	City Mgr	Low		
<b>Severe Weather (Extreme Heat, Heavy Rain, Severe Wind)</b>						
11.1	Develop and distribute information to the public on how to seek shelter during extreme heat events.	General Fund, Grants				
11.2	Notify residents through public service announcements a couple days in advance of a heatwave. Focus on media methods that target vulnerable populations, such as elderly, sick, lower-income, or persons with limited mobility to better ensure they have adequate time to prepare for a heatwave in advance.	General Fund, Grants	City Mgr	Low		
11.3	Evaluate the long-term capacity of designated cooling centers and shelters in the City to provide sufficient relief from extreme heat. Assess the need to expand services as the frequency, length, and severity of future heatwaves potentially changes as a result of climate change.	General Fund, Grants	Pln, Parks Rec	Med		
11.4	Require the Emergency Operations Coordinator to regularly monitor NOAA warnings of severe wind, heat, or rain, and issue advisories to homes of Fullerton using email, radio, and television broadcasts, and social media.	General Fund, Grants				

Relative Cost: Low (L), Med (M), High (H)

\$ 25,000  
 \$\$ 25,001 - 499,999  
 \$\$\$ +500,000



# **APPENDIX B**

## COMMUNITY OUTREACH MATERIALS

- Community Engagement Strategy
- City of Fullerton LHMP Website
- Fullerton LHMP Press Release
- Fullerton Observer News Clipping
- Public Input Meeting Presentation
- Fullerton LHMP Online Survey Results

## COMMUNITY ENGAGEMENT STRATEGY

The City of Fullerton is currently developing a Local Hazard Mitigation Plan (LHMP), which will be the strategic plan to assess and reduce the threats that the community faces from current and future hazard conditions. Based on preliminary discussions, these hazards are:

- Geologic Hazards (faulting seismicity, liquefaction/landslide)
- Fire Hazards (urban and wildland)
- Flooding and Dam Failure

Guidelines from the Federal Emergency Management Agency (FEMA) requires that the City create opportunities for members of the public to be involved in the development of the plan, at a minimum during its initial drafting stage and during plan approval, and that such opportunities be documented. This process helps ensure that the LHMP reflects community values, concerns, and priorities. Fullerton will follow these guidelines when preparing its LHMP, and will go above the minimum FEMA requirements to secure more extensive community involvement as opportunities allow.

The overarching goals of the LHMP document as are follows:

- Enhance the resilience of community members, private property, and natural systems to hazard events.
- Keep critical services and government functions operational by protecting key infrastructure in Fullerton.
- Ensure that the City of Fullerton is eligible for increased funding for hazard mitigation and disaster recover activities.
- Support compliance with state laws that require addressing specific hazards and other items, including the effects of climate change.

These goals will be reflected throughout the community outreach process, with the intent to educate community members and obtain feedback in an open and transparent manner to support preparation of the LHMP. The engagement process should be respectful and neutral, providing all participants with the opportunity to express their opinions in a productive way. This Community Engagement Strategy describes how Fullerton will conduct outreach to members of the local community and other stakeholders of importance, in a flexible and outcome-oriented manner.

## PROJECT TEAM AND RESPONSIBILITIES

The LHMP is being prepared by a project team, comprised of members from the City's Hazard Mitigation Planning Committee (HMPC), key stakeholders (as discussed in the Community Members section), and technical consulting firm PlaceWorks. The HMPC members are as follows:

### Key Terms

**Hazard:** A natural or human-caused event with the potential to cause damage.

**Resiliency:** The ability of a population or asset to reduce a threat.

**Risk:** The chance that a hazard, especially one of a particular size or intensity, will occur.

**Threat:** The potential of a hazard to do harm.

**Vulnerability:** A weakness that increases the threat posed to a population or asset.

- Heather Allen: Planning Consultant, Community Development Department (HMPC Leader)
- Staff or representative from the following departments:
  - Airport
  - City Manager
  - Community Development
  - Fire
  - Human Resources
  - Parks & Recreation
  - Police
  - Public Works

The members of the HMPC will be responsible for reviewing all proposed methods, materials, and content for outreach activities. As the local experts, they will be able to provide valuable information about how best to reach community members, and to share information and receive feedback effectively. It is likely that at least one member of the HMPC, Heather Allen or a designee, will attend meetings and other outreach events to serve as a representative of the City. HMPC staff will serve as the primary liaisons with community members on the project (e.g. answering public inquiries about the LHMP), and will be responsible for distributing content through the preferred means.

Members of the project team from PlaceWorks will prepare a description of the recommended community engagement strategy, as well as materials and content for outreach activities. This may include digital and print materials, as well as any other items used for community engagement. At least one member of the PlaceWorks team will attend meetings and other outreach events, helping to facilitate the event and serving as technical experts as needed. PlaceWorks will also be responsible for collecting and analyzing the results of engagement activities, and sharing these results with other members of the project team.

## COMMUNITY MEMBERS/ KEY STAKEHOLDERS

During community engagement activities, the project team will reach out to two groups of community members. The project team will engage members of the general public, which includes people who live and/or work in Fullerton, as well as those who own property or run businesses in the community. Additionally, the project team will work with key stakeholders, who represent agencies, businesses, or other organizations that are present in the community or are otherwise important to local health, safety, and quality of life. Such stakeholders do not include representatives from City agencies. The project team anticipates the following key stakeholders:

- California Department of Transportation
- City of Anaheim
- City of Brea
- City of Buena Park
- City of Placentia
- Orange County Emergency Management Division

- Orange County Fire Authority
- Orange County Health Care Agency
- Orange County Intelligence Assessment Center
- Orange County Water District
- Orange County Public Works
- Orange County Sanitation District
- Southern California Edison
- Southern California Gas Company

Other stakeholders important to the community that will be engaged during the process include:

- California State University, Fullerton
- Fullerton College
- Fullerton Joint Union High School District
- Fullerton School District
- St. Jude Medical Center

Modifications to this list may occur throughout the process if additional stakeholders are identified.

## PUBLIC MEETINGS

In-person public meetings allow members of the Fullerton community to learn about the LHMP, including the process of the plan development, hazards of concern, and feasible steps the City and community members can take to improve resiliency. These meetings allow for members of the community to speak directly to City staff and other stakeholders about the project, and to provide useful feedback. Discussions at in-person meetings are often more detailed and involved than those through online media.

All meetings will emphasize the project goals and the City's intent in preparing the LHMP, as discussed above. The meetings will also provide an opportunity for members of the project team to address any misconceptions about the LHMP. Educational material to correct other misconceptions that may arise could be distributed as part of other outreach activities, including being posted online and on the City's social media accounts. Example misconceptions may include:

- "Fullerton must have an LHMP to receive disaster relief funding". In actuality, communities are eligible for federal disaster relief funding regardless of whether they have an LHMP or not. However, the State of California limits its share of disaster relief funding to 75 percent of the costs not paid by the federal government unless the community has a valid LHMP, at which point the State may pay more than 75 percent.
- "The LHMP must analyze all potential hazards". An LHMP must only look at natural hazards. Human-caused hazards may be included for the sake of improving overall community safety, but are not necessary. FEMA only provides funding to help mitigate natural hazards.

The City is planning to hold 2 public meetings at key stages of the process.

## **MEETING 1 – PUBLIC INPUT MEETING**

This meeting will occur as a study session with the Planning Commission. At this meeting, City staff and other members of the project team will share information about the LHMP and what it is, the process used to prepare it, and future opportunities for engagement. This meeting will provide opportunities for community members to learn about the project and explain, from their perspective, what they think is most important for the City to know and address in the LHMP. A graphically-oriented PowerPoint presentation will be used to explain the concepts of hazard mitigation planning to the meeting attendees.

This meeting is currently scheduled for some time between September to October in conjunction with an existing Planning Commission hearing.

## **MEETING 2 – FINAL ADOPTION HEARING**

At this meeting, City staff will present the final plan for adoption by the City. Adoption of the plan occurs upon receipt of final approval notification from the Federal Emergency Management Agency (FEMA). This meeting will involve a presentation by the project team and allow for opportunities for questions and clarifications by the Council and public.

This meeting will be scheduled upon receipt of FEMA approval. This is anticipated to occur in Spring 2019.

## **ONLINE AND MEDIA ENGAGEMENT**

Engagement through online systems and media outlets allows the City to reach a wide audience without requiring extensive effort by project staff. Online methods are well suited to receive community input on specific issues, and allow community members to participate who may be unable to attend in-person meetings. Local media outlets allow the City to easily send out notifications and other information that reaches a large segment of the community. There are multiple elements of online and media engagement that will be used during the development of the Fullerton LHMP.

## **PROJECT WEBSITE**

The project website will be a simple, one-stop location for community members to learn about the LHMP. It will contain information about what an LHMP is, why the City is preparing one, and how community members can get involved, along with other topics. The website will also include links to materials and plan documents as they become available, and will contain notifications about upcoming events related to the plan development. A link to the website at the time of this document's preparation is included here:

<http://www.cityoffullerton.com/LHMP>

## **SOCIAL MEDIA**

The use of social media accounts, such as Facebook and Twitter, is an easy way for the City to send quick notifications or bursts of information about the project to a large number of community members. The

City can use its social media accounts to send out information about upcoming events or other opportunities for public involvement. The following are a list of existing accounts that could be used:

- Facebook: City, Police Department
- Twitter: City, Police Department
- NextDoor

## **ONLINE SURVEY**

The online survey is an effective way to collect information and comments from community members about issues of importance to the LHMP. The survey will include questions about community members' past experience and familiarity with emergency conditions, level of preparedness for future emergencies, and preferred actions for the City to take to increase community resiliency, along with other questions that the project team chooses to add. Links to the survey can be posted on the project website and distributed through social media announcements. The project team can also distribute paper copies of the survey during community events or meetings, if desired.

## **PRESS RELEASES**

Press releases allow the City to send out information about upcoming project milestones or other notifications to local media outlets, including print media, television, and radio. The City can use these documents to alert members of the public about the status of the project and upcoming events, often in conjunction with postings on social media and on the project website. The number of press releases should be limited (e.g. one to announce the beginning of public engagement, one to announce the release of the public draft plan, and potentially a third if warranted), as too many press releases will likely be ignored.

## **CONTENT FOR ONLINE AND MEDIA ENGAGEMENT**

The following material can be used for the online and media engagement components of the community engagement strategy. It can also be adapted and revised as the project proceeds and specifics change.

### **PROJECT WEBSITE CONTENT**

#### **Local Hazard Mitigation Plan**

The City of Fullerton is preparing a Local Hazard Mitigation Plan, or LHMP. This plan will help create a safer community for residents, businesses, and visitors. The LHMP allows public safety officials and city staff, elected officials, and members of the public understand the threats from natural and human-caused hazards in our community. The plan will also recommend specific actions to proactively decrease these threats before disasters occur.

### *Why have an LHMP?*

An LHMP will let Fullerton plan for future emergencies. Usually, after a disaster occurs, communities take steps to recover from the emergency and rebuild. A LHMP is a way for the City to become more prepared in advance of these disasters, so when they do occur, less damage occurs and recovery is easier. Our community can use LHMP strategies to reduce instances of property damage, injury, and loss of life from disasters. Besides protecting public health and safety, this approach can save money. Studies estimate that every dollar spent on mitigation saves an average of four dollars on response and recovery costs. An LHMP can also help to strengthen the mission of public safety officers, such as police and fire department staff, providing them with clear roles and responsibilities to build a safer community.

Besides helping to protect Fullerton, our LHMP will make the City eligible for grants from the Federal Emergency Management Agency (FEMA) that can be used to further improve safety and preparedness in the community. Having an adopted LHMP can also make Fullerton eligible to receive more financial assistance from the State when disasters do occur.

### *What is in our LHMP?*

The City of Fullerton LHMP includes four main sections:

- A summary of the natural and human-caused hazards that pose a risk to our community. This will include descriptions of past disaster events and the chances of these disasters occurring in the future.
- An assessment of the threat to Fullerton, which will describe how our community is vulnerable to future disasters. The plan will look at the threat to important buildings and infrastructure, such as police and fire stations, hospitals, roads, and utility lines. It will also look at the threat to community members, particularly disadvantaged persons.
- A hazard mitigation strategy, which will lay out specific policy recommendations for Fullerton to carry out over the next five years. These recommendations will help reduce the threat that our community faces from hazard events.
- A section on maintaining the plan, which will help ensure that our LHMP is kept up-to-date. This will make it easier for us to continue to proactively protect ourselves, and will also keep the City eligible for additional funding.

### *What hazards will our LHMP help protect against?*

The City plans to include the following natural hazards in our LHMP:

- Geologic Hazards (faulting seismicity, liquefaction/landslide)
- Fire Hazards (urban and wildland)
- Flooding and Dam Failure

Our LHMP will also look at how climate change may affect these hazards and may include other hazards that pose a threat to our community.



### *How is our LHMP being prepared?*

The City has assembled a Hazard Mitigation Planning Committee (HMPC), which includes representatives from public safety officials and City departments, and will guide the overall development of our LHMP. The HMPC is supported by key stakeholders, and technical consultants. Together, these participants form the project team responsible for preparing our plan.

### *When will our LHMP be done?*

The project team plans to release a first draft of the Fullerton LHMP for public review in Fall 2018. After members of the public provide comments and feedback, the project team will revise the plan, and send it to state and federal agencies for review and approval. Once approved by state and federal agencies, the Fullerton City Council will approve the final LHMP. We hope to have the plan ready for adoption in the early 2019, but it may be later depending how long state and federal review takes.

### *How can I get involved?*

You can get involved in preparing our LHMP in different ways.

- The project team will hold public meetings to share information about our LHMP and obtain community feedback. The first of these meetings is scheduled for **Day, Date, 2018**.
- The City will release an online survey to members of the public in the spring of 2018, asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take the survey when it comes out, and encourage your friends and family to do the same.
- The City will release a draft of the completed LHMP for public review. Please review and provide comments on this document, either at in-person meetings or in writing.
- Encourage members of the Fullerton City Council to adopt the plan. Then, encourage them to put the plan into effect.
- Reach out to the project team **[insert contact information]** for more ways to stay involved.

### *What can I do now to be better prepared for disasters?*

- Know the hazards that may affect you at your home, work, or school. You can find out more at <http://myhazards.caloes.ca.gov/>.
- Assemble an emergency kit for your home. In a disaster, you may have to rely on supplies in your emergency kit for at least three days. Be sure to include supplies for any pets and anyone in your home with special needs. Learn more at <https://www.ready.gov/build-a-kit>.
- Have a disaster plan for your household, including how people should contact each other if a disaster occurs and where you should meet.
- Learn about your neighbors and how to help them. In a disaster, emergency responders may not be able to reach your neighborhood for a while. Know if your neighbors have any special needs, and be sure to check on them as soon as you can.
- Make sure your homeowner's or renter's insurance covers you from disasters such as earthquakes and floods. If these disasters occur, having good insurance coverage will help you recover easier.
- Volunteer with an emergency response or community service organization that does work on disaster education and preparation.

- Speak to your employer about creating a disaster recovery, workforce communication, and/or business continuity plan. If they already have one or more of these plans in place, make sure you and your co-workers know it.
- Fullerton Community Emergency Response Team, a group of volunteers trained by the Fullerton Fire Department to assist emergency responders during disasters. Training is free and offered at times throughout the year. Learn more at:  
[https://www.cityoffullerton.com/gov/departments/fire/emergency\\_preparedness/cert/default.asp](https://www.cityoffullerton.com/gov/departments/fire/emergency_preparedness/cert/default.asp)

## SOCIAL MEDIA POSTS

### Facebook

#### *Project/meeting announcement*

Help us build a safer Fullerton! Our city is currently preparing a Local Hazard Mitigation Plan (LHMP), which will provide information about our community's vulnerabilities to disasters and what we can do to be more prepared. Come to [LOCATION] at [TIME] on [DATE] to learn more and get involved. Additional information is located here: [PROJECT WEBSITE].

#### *Survey*

Let your voice be heard as we plan for a safer Fullerton! Our city is looking for engaged community members to take a quick survey on hazards and emergency preparations. Your responses will help in the preparation of our Local Hazard Mitigation Plan (LHMP). All survey responses are completely anonymous. Take the survey at [SURVEY LINK] and learn more about the LHMP at [PROJECT WEBSITE].

#### *Public plan release*

With the help of our active and involved community members, we have prepared a first draft of our Local Hazard Mitigation Plan (LHMP). This plan will help our community learn about and prepare for future emergencies, building a safer Fullerton for everyone. You can read the plan at [LINK], and submit comments for how to make the LHMP better at [COMMENT FIELD/WEBSITE/EMAIL ADDRESS]. You can also make in-person comments at our public meeting at [LOCATION] at [TIME] on [DAY]. Help us make our LHMP the best it can be!

### Twitter

#### *Project/meeting announcement*

Our city is writing a new plan to help us build a safer Fullerton. Come to our public kickoff meeting to learn more and get involved! [Link to webpage announcement – use URL shortener]

### *Survey*

We want your opinion to help us build a safer Fullerton! Take a few minutes to take our Local Hazard Mitigation Plan survey at [\[Link to survey – use URL shortener\]](#).

### *Public plan release*

The first draft of our plan to help us build a safer Fullerton for everyone is out! Read the plan and comment online or in person. Learn more at [\[Link to website post – use URL shortener\]](#).

## **SAMPLE PRESS RELEASE**

The City of Fullerton has begun preparation of a Local Hazard Mitigation Plan (LHMP), a five-year strategic plan to improve local resilience to hazard events. Development of the plan, the first such plan for Fullerton, is being funded through a grant from the Federal Emergency Management Agency (FEMA). The plan is being prepared by public safety officials and City staff, with support from key stakeholders, other affected agencies, and technical consultants. It will also incorporate regular feedback from key Fullerton community members. The City plans to release a draft of the plan for public review in January of 2018, with final adoption planned for summer of 2018 following approval from the California Office of Emergency Services and FEMA.

The Fullerton LHMP will summarize the natural and human-caused hazards that pose a threat to the community, including drought, flooding, earthquakes, and wildfires. As a part of this process, the plan will identify how climate change is expected to affect future hazards in Fullerton. The LHMP will analyze how community members, buildings, and infrastructure are vulnerable to the threats posed by these hazards. It will outline a Hazard Mitigation Strategy that will provide specific policy and action recommendations to City staff and community partners to improve overall resiliency to hazard events. The plan will also include steps to maintain it and keep it updated, including keeping the plan current in the face of changing conditions.

In addition to protecting Fullerton from current and future hazards, having an LHMP will allow Fullerton to be eligible for grants from FEMA for additional hazard mitigation efforts, under the provisions of the federal Robert T. Stafford Act and the Disaster Mitigation Act of 2000. It will also make Fullerton eligible to receive additional disaster relief funding from the State of California, per California Government Code Section 8685.9.

## CITY OF FULLERTON LHMP WEBSITE

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### Local Hazard Mitigation Plan

Community Development  
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Code Enforcement  
Commissions & Committees  
Contact Us  
Demographics  
Development Activity  
FAQs  
General Plan  
Historic Preservation  
Housing & Neighborhood Services  
Inspections  
Marijuana  
Permits Online  
Public Notices  
Planning & Zoning  
West Coyote Hills  
DowntownGamePlan  
1600 West Commonwealth

#### Local Hazard Mitigation Plan

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Fire Hazards (urban and wildland)  
Flooding and Dam Failure

Our LHMP will also look at how climate change may affect these hazards and may include other hazards that pose a threat to our community.

## How is our LHMP being prepared?

The City has assembled a Hazard Mitigation Planning Committee (HMPC), which includes representatives from public safety officials and City departments, and will guide the overall development of our LHMP. The HMPC is supported by key stakeholders, and technical consultants. Together, these participants form the project team responsible for preparing our plan.

## When will our LHMP be done?

The project team plans to release a first draft of the Fullerton LHMP for public review in Fall 2018. After members of the public provide comments and feedback, the project team will revise the plan, and send it





## When will our LHMP be done?

The project team plans to release a first draft of the Fullerton LHMP for public review in Fall 2018. After members of the public provide comments and feedback, the project team will revise the plan, and send it to state and federal agencies for review and approval. Once approved by state and federal agencies, the Fullerton City Council will approve the final LHMP. We hope to have the plan ready for adoption in the early 2019, but it may be later depending how long state and federal review takes.

## How can I get involved?

You can get involved in preparing our LHMP in different ways.

- The project team will hold public meetings to share information about our LHMP and obtain community feedback. The first of these meetings is scheduled for October 10 at 7:00pm in the Fullerton City Council Chambers in conjunction with the Planning Commission meeting.
- The City has prepared an online survey for members of the public, asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take the survey at <https://www.surveymonkey.com/r/KB6XP7D>, and encourage your friends and family to do the same.
- The City will release a draft of the completed LHMP for public review. The draft will be available from this webpage. Please review and provide comments on this document, either at in-person meetings or in writing.
- Encourage members of the Fullerton City Council to adopt the plan. Then, encourage them to put the plan into effect.
- Reach out to the project team through Heather Allen at [heathera@cityoffullerton.com](mailto:heathera@cityoffullerton.com) for more ways to stay involved.

## What can I do now to be better prepared for disasters?

- Know the hazards that may affect you at your home, work, or school. You can find out more at <http://myhazards.caloes.ca.gov/>.
- Assemble an emergency kit for your home. In a disaster, you may have to rely on supplies in your emergency kit for at least three days. Be sure to include supplies for any pets and anyone in your home with special needs. Learn more at <https://www.ready.gov/build-a-kit>.
- Have a disaster plan for your household, including how people should contact each other if a disaster occurs and where you should meet.



- Encourage members of the Fullerton City Council to adopt the plan. Then, encourage them to put the plan into effect.
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- Have a disaster plan for your household, including how people should contact each other if a disaster occurs and where you should meet.
- Learn about your neighbors and how to help them. In a disaster, emergency responders may not be able to reach your neighborhood for a while. Know if your neighbors have any special needs, and be sure to check on them as soon as you can.
- Make sure your homeowner's or renter's insurance covers you from disasters such as earthquakes and floods. If these disasters occur, having good insurance coverage will help you recover easier.
- Volunteer with an emergency response or community service organization that does work on disaster education and preparation.
- Speak to your employer about creating a disaster recovery, workforce communication, and/or business continuity plan. If they already have one or more of these plans in place, make sure you and your co-workers know it.
- Join the Fullerton Community Emergency Response Team, a group of volunteers trained by the Fullerton Fire Department to assist emergency responders during disasters. Training is free and offered at times throughout the year. Learn more at: [https://www.cityoffullerton.com/gov/departments/fire/emergency\\_preparedness/cert/default.asp](https://www.cityoffullerton.com/gov/departments/fire/emergency_preparedness/cert/default.asp)



Select Language

Translate

## FULLERTON LHMP PRESS RELEASE



# *Press Release*

*City of Fullerton*

Date: September 27, 2018  
Contact: Stephen Hale, Public Information Coordinator  
(714) 738-6317  
SHale@cityoffullerton.com

### **FOR IMMEDIATE RELEASE**

#### **Fullerton to Hold Public Input Meeting on the Local Hazard Mitigation Plan**

FULLERTON, Calif. (September 27, 2018) — The City of Fullerton has begun preparation of a Local Hazard Mitigation Plan (LHMP), a five-year strategic plan to improve local resilience to hazard events. As part of the planning process, a public input meeting will be held on **Wednesday, October 10, 2018 at 7:00 p.m.** in conjunction with the regular meeting of the Planning Commission in the Fullerton City Council Chamber, 303 West Commonwealth Avenue, Fullerton, CA 92832.

Development of the plan is being funded through a grant from the Federal Emergency Management Agency (FEMA). The plan is being prepared by public safety officials and City staff, with support from key stakeholders, other affected agencies, and technical consultants. It will also incorporate regular feedback from key Fullerton community members. The City plans to release a draft of the plan for public review in Fall 2018, with final adoption planned for 2019 following approval from the California Office of Emergency Services and FEMA.



The Fullerton LHMP will summarize the natural and human-caused hazards that pose a threat to the community, including drought, flooding, earthquakes, and wildfires. As a part of this process, the plan will identify how climate change is expected to affect future hazards in Fullerton. The LHMP will analyze how community members, buildings, and infrastructure are vulnerable to the threats posed by these hazards. It will outline a Hazard Mitigation Strategy that will provide specific policy and action recommendations to City staff and community partners to improve overall resiliency to hazard events. The plan will also include steps to maintain it and keep it updated, including keeping the plan current in the face of changing conditions.

In addition to protecting Fullerton from current and future hazards, having an LHMP will allow Fullerton to be eligible for grants from FEMA for additional hazard mitigation efforts, under the provisions of the federal Robert T. Stafford Act and the Disaster Mitigation Act of 2000. It will also make Fullerton eligible to receive additional disaster relief funding from the State of California.

The City has prepared an online survey for members of the public, asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take the survey at [www.surveymonkey.com/r/KB6XP7D](http://www.surveymonkey.com/r/KB6XP7D). Learn more about the LHMP at [www.cityoffullerton.com/LHMP](http://www.cityoffullerton.com/LHMP).

###

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## FULLERTON OBSERVER NEWS CLIPPING

Page 2 OBSERVER

REGIONAL AND LOCAL NEWS

EARLY SEPTEMBER 2018



**BICYCLISTS OF THE MONTH:** Kelsey Ridge & Kids were seen peddling through downtown. All had their safety helmets on! - PHOTO BY MALIKA PANDEY

### Local Hazard Survey Online as Fullerton Prepares Mitigation Plan

The City of Fullerton has begun preparation of a Local Hazard Mitigation Plan (LHMP), a five-year strategic plan to improve local response to hazardous events.

Development of the plan is being funded through a grant from the Federal Emergency Management Agency (FEMA). The plan is being prepared by public safety officials and city staff, affected agencies, and technical consultants.

The city will release a draft of the plan for public review in Fall 2018, with final adoption planned for 2019 following approval from the California Office of Emergency Services and FEMA.

The Fullerton LHMP will summarize the natural and human-caused hazards that pose a threat to the community, including drought, flooding, earthquakes, and wildfires. As a part of this process, the plan will identify how climate change is expected to affect Fullerton. The LHMP provide specific

policy and action recommendations to improve overall policy in response to hazardous events. In addition to protecting Fullerton from current and future hazards, having an LHMP will allow Fullerton to be eligible for grants from FEMA for additional hazard mitigation efforts, under the provisions of the federal Robert T. Stafford Act and the Disaster Mitigation Act of 2000. It will also make Fullerton eligible to receive additional disaster relief funding from the State of California.

The City has prepared an online survey for members of the public, asking for information about past experience with natural hazards and how our LHMP can be the most useful.

Take the survey by visiting [www.surveymonkey.com/r/KB6XP7D](http://www.surveymonkey.com/r/KB6XP7D).

Learn more about the LHMP at [www.cityoffullerton.com/LHMP](http://www.cityoffullerton.com/LHMP).

### TURPENTINE SMELLS REPORTED

## **PUBLIC INPUT MEETING PRESENTATION**

[See pages B-18 to B-39]



# Agenda/Overview

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Project Background

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Project Funding

---

Hazard Mitigation Planning Committee

---

Overview of the Plan Development Process

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Planning Outcomes (Community Input)

---

Public Engagement Opportunities

---

Questions and Answers



## Project Background

### What

- Preparation of a Local Hazard Mitigation Plan (LHMP) Update

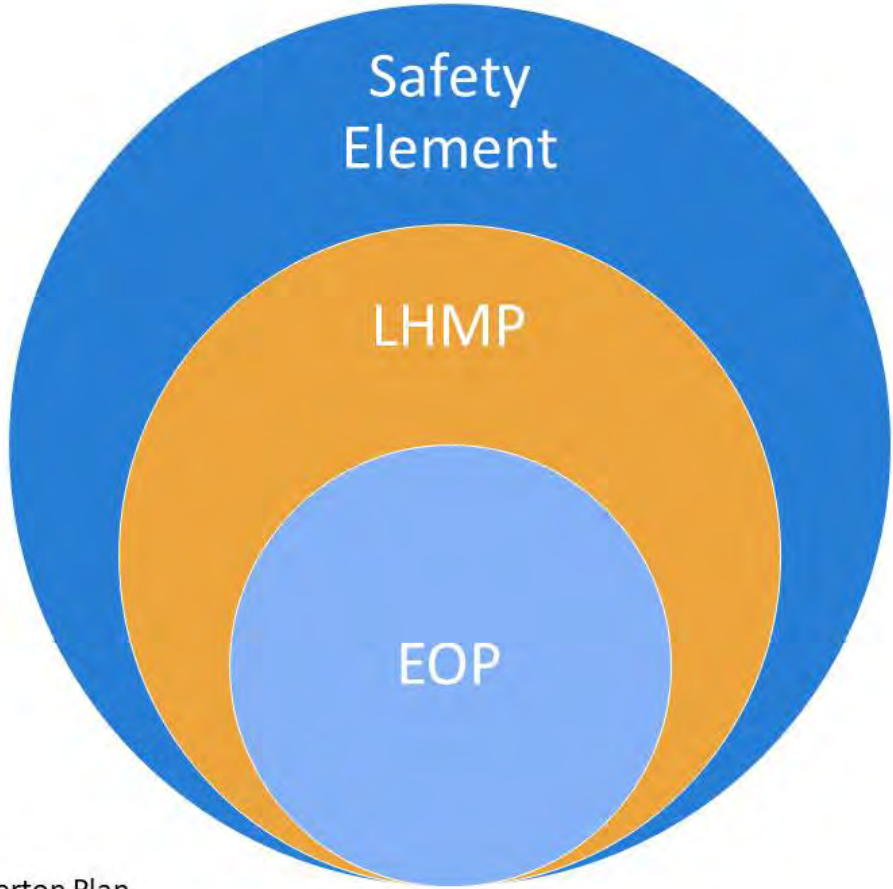
### Who

- Led by Fullerton Community Development Department

### Why

- Assist the City with future mitigation grant opportunities

How
<ul style="list-style-type: none"><li>• Integrate the LHMP with the City's General Plan Safety Element* to comply with recent legislation</li></ul>



\*Safety Element = Natural Hazards Chapter of The Fullerton Plan



# What is Hazard Mitigation



## Project Funding/ Future Funding

- Received a Grant from the Federal Emergency Management Agency (FEMA) for the plan
- City staff time applies to the grant funding match requirements



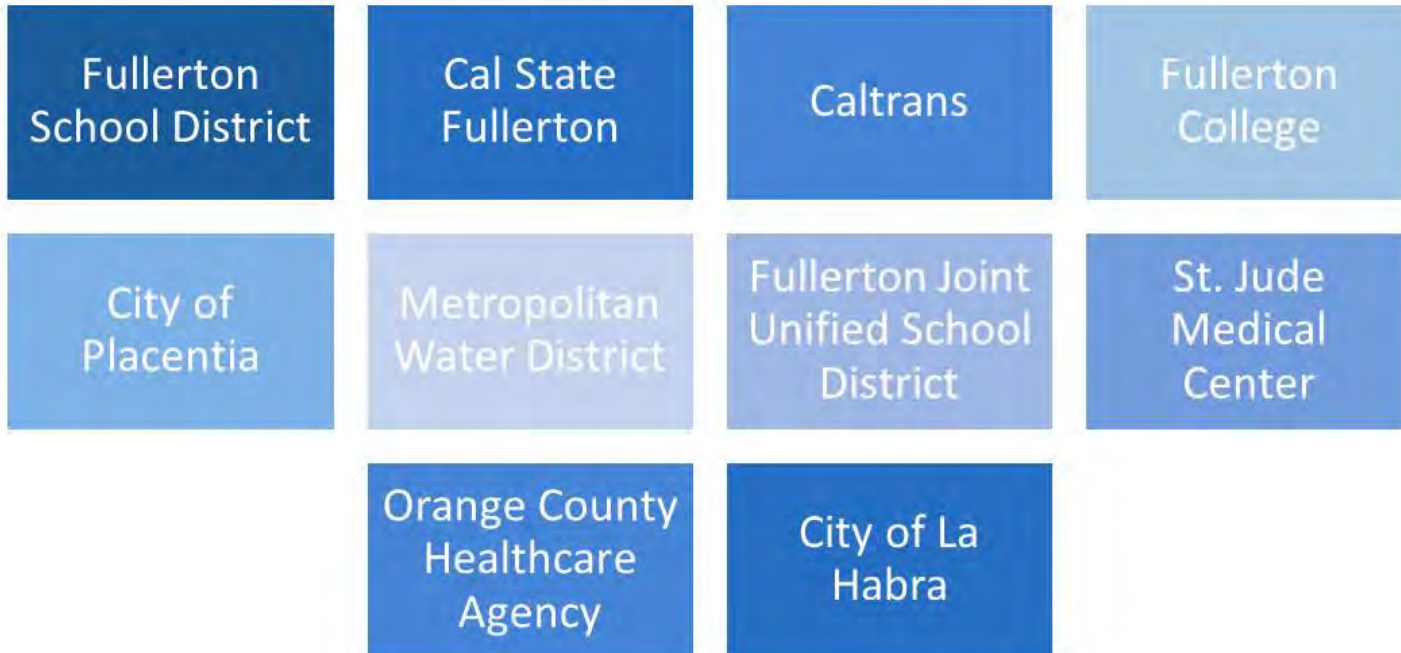
**Once Adopted, eligible  
for future grant funding  
opportunities  
(PDM, HMGP, FMA)**



# Hazard Mitigation Planning Committee



# Hazard Mitigation Planning Committee: External Stakeholders





## Misconceptions

“Fullerton must have an LHMP to receive disaster relief funding”.

 **FALSE**

In actuality, communities are eligible for federal disaster relief funding regardless of whether they have an LHMP or not. However, the State of California limits its share of disaster relief funding to 75 percent of the costs not paid by the federal government unless the community has a valid LHMP, at which point the State may pay more than 75 percent.

## Misconceptions

“The LHMP must analyze all potential hazards”.

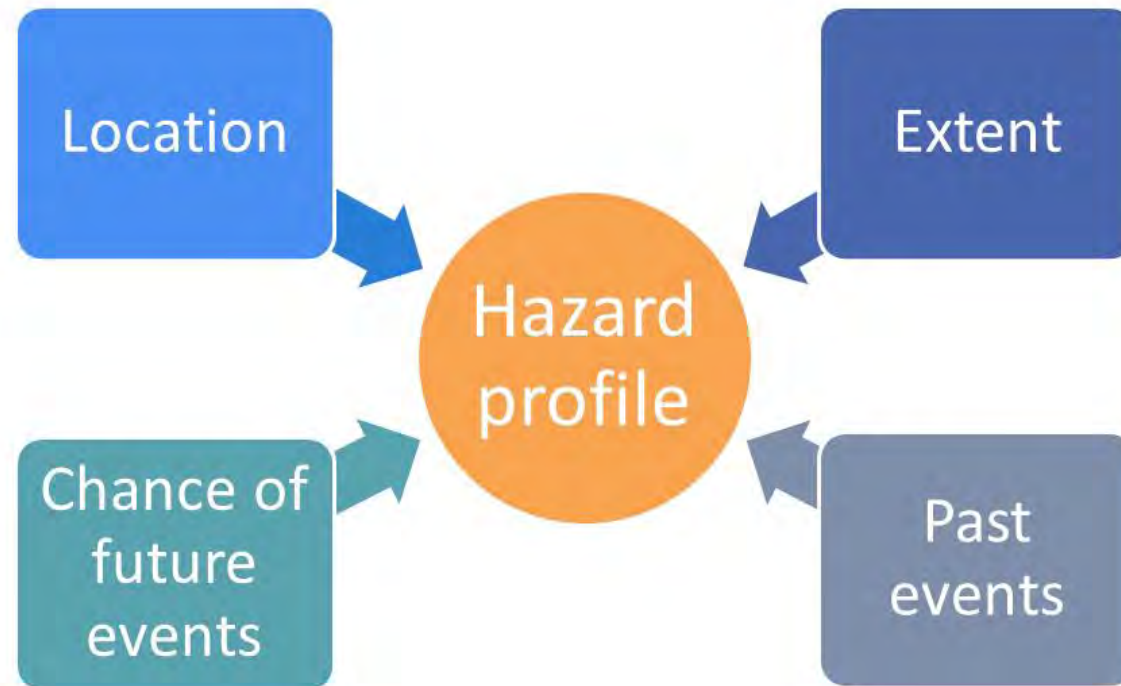
 **FALSE**

An LHMP must only look at natural hazards. Human-caused hazards may be included for the sake of improving overall community safety, but are not necessary. FEMA only provides funding to help mitigate natural hazards.

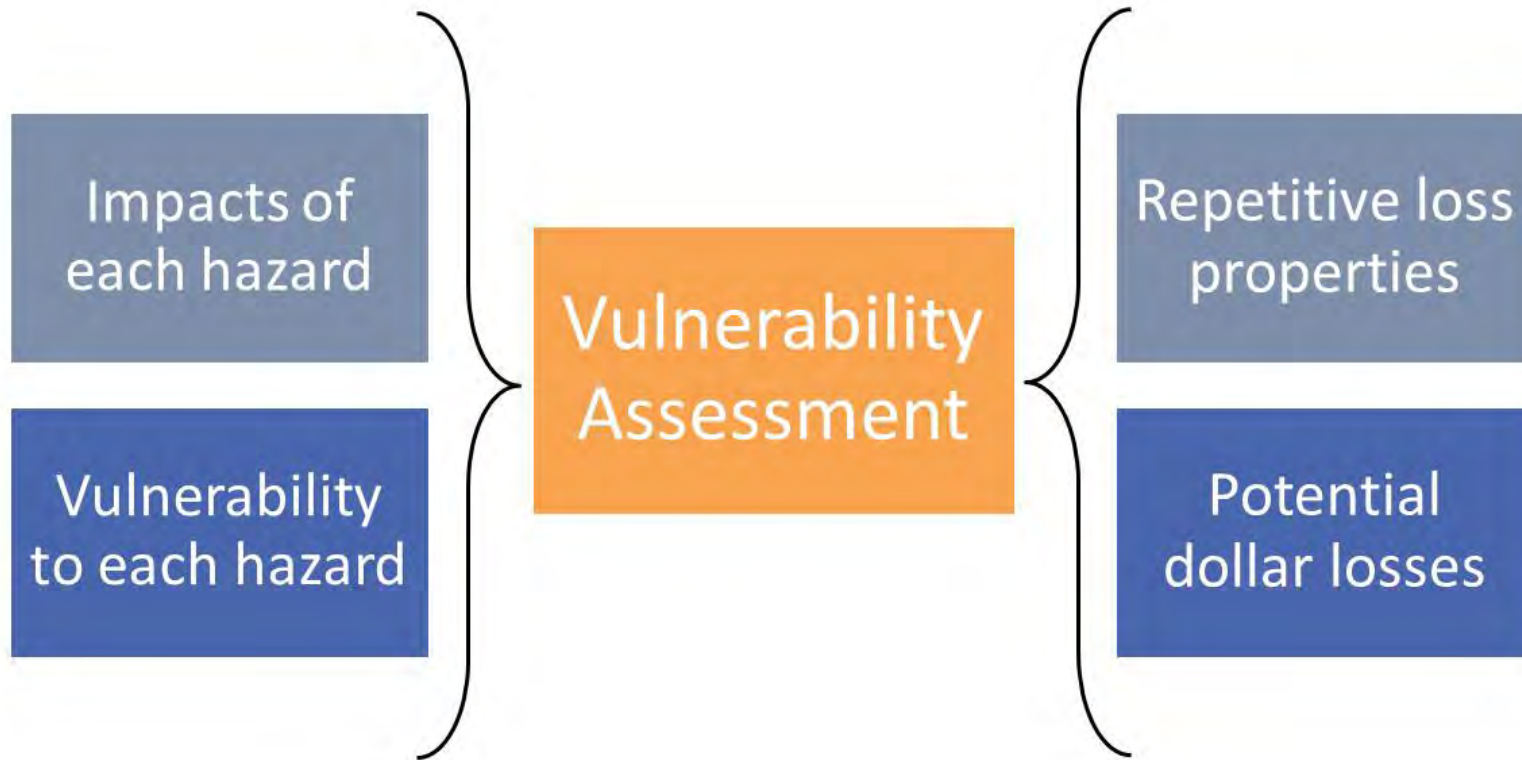
# Overview of the Plan Development Process

- **Project Initiation**
  - Establish Plan Goals
  - Identify Data Needs
- **Planning Process**
  - Convene meetings with members of Hazard Mitigation Planning Committee
  - Develop Public Outreach Strategy
- **Risk Assessment**
  - Determines threat to the community
  - Gives profile of each hazard in the city
  - Examines threat to vulnerable populations





- » Describes hazards that affect community
- » Explains why some hazards are excluded



# Overview of the Plan Development Process (continued)

- **Hazard Mitigation Strategy**

- Actions that Fullerton can take to reduce potential vulnerabilities consisting of:
  - Goals – Overarching objectives
  - Strategies – Comprehensive, specific actions
  - Action Plan – Ranks action by priority, cost, and timeframe

- **Plan Maintenance**

- Gives City staff tools to update Plan within 5-year time period

- **Compilation and Adoption**

- Public review and comment
- Approval FEMA and Cal OES
- Adoption by Fullerton City Council

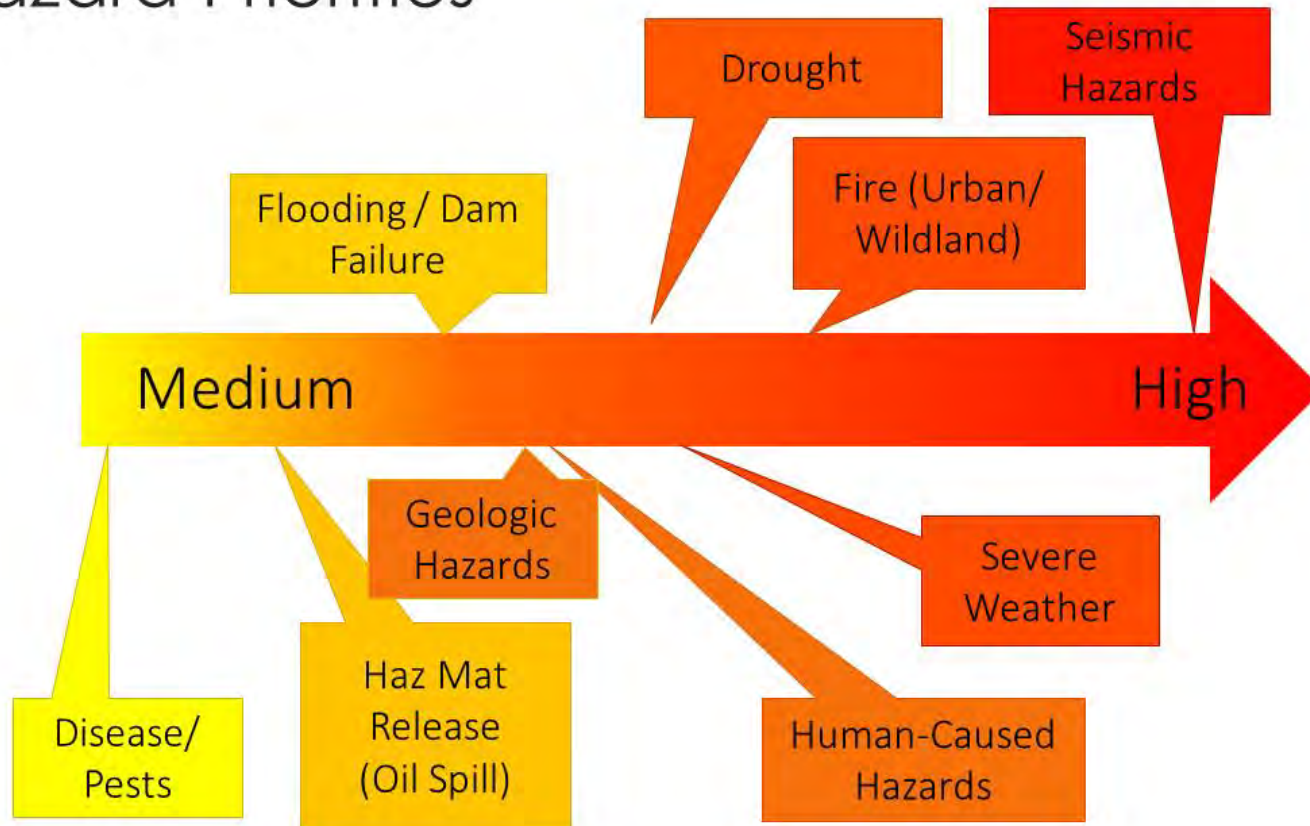
# Hazards Addressed in Plan

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- Dam Failure
- Disease/Pests
- Drought
- Fire Hazards
- Flood
- Geologic Hazards
- Hazardous Materials Release
- Human-caused Hazards
- Seismic Hazards
- Severe Weather



# Hazard Priorities





## Key Proposed Mitigation Actions

### Dam Failure

- Feasibility investigation of an early warning alarm in case of reservoir(s) breach.

### Disease and Pest Management

- Coordination with other stakeholders to provide key information on public health trends or issues, free and low-cost healthcare options, treatments, and where to find local healthcare facilities.

### Drought

- Smart water meter pilot program

# Mitigation Actions Drafted by HMPC





# Mitigation Actions Drafted by HMPC

## Human-caused Hazards

- Counterterrorism design and building materials retrofits for key City facilities.

## Seismic Hazards

- Seismic retrofitting inspections for key City-designated critical facilities

## Severe Weather

- Key media messaging and campaign development for future heat wave episodes, with key targeting for potential vulnerable populations.

# How to Stay Engaged/Informed

## **Fullerton LHMP Website**

<https://www.cityoffullerton.com/lhmp>

## **Fullerton LHMP Survey**

<https://www.surveymonkey.com/r/KB6XP7D>

# Public Comment or Question Period

# Future Questions

If you have additional questions, please contact:

## **City of Fullerton**

Heather Allen, Fullerton Community Development

Phone: (714) 738-6884

Email: [heathera@cityoffullerton.com](mailto:heathera@cityoffullerton.com)

## **PlaceWorks**

Aaron Pfannenstiel, LHMP Project Manager

Phone: (909) 989-4449, extension 2201

Email: [ajp@placeworks.com](mailto:ajp@placeworks.com)

*Photo from Psomas*



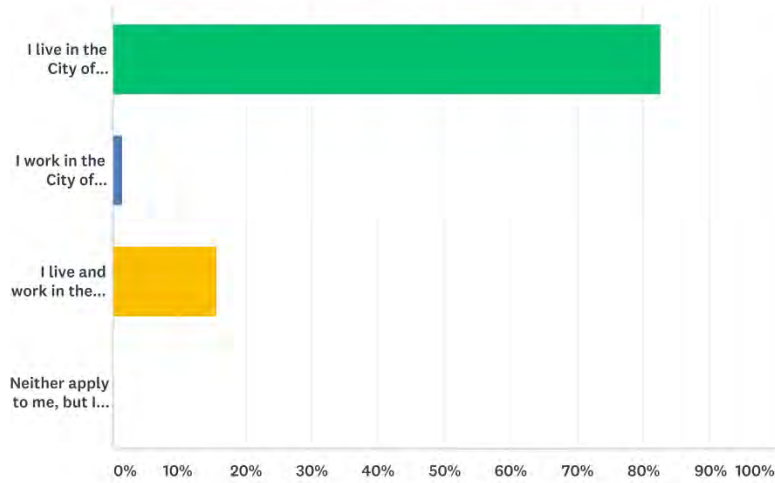
## **FULLERTON LHMP ONLINE SURVEY RESULTS**

The survey response data is included from pages B-42 to B-82.

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q1 Please indicate whether you live or work in the City of Fullerton.

Answered: 133 Skipped: 2



ANSWER CHOICES	RESPONSES	
I live in the City of Fullerton.	82.71%	110
I work in the City of Fullerton.	1.50%	2
I live and work in the City of Fullerton.	15.79%	21
Neither apply to me, but I am interested in the City's resiliency.	0.00%	0
<b>TOTAL</b>		<b>133</b>



Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q2 What is the ZIP code of your home?

Answered: 134 Skipped: 1

#	RESPONSES	DATE
1	92832	10/16/2018 12:55 PM
2	92832	10/15/2018 2:55 PM
3	92831-1916	10/15/2018 9:01 AM
4	92835	10/15/2018 7:15 AM
5	92833	10/15/2018 6:38 AM
6	92833	10/14/2018 10:23 PM
7	92832	10/14/2018 8:56 PM
8	92831	10/14/2018 8:18 PM
9	92831	10/14/2018 7:44 PM
10	92835	10/14/2018 1:15 PM
11	92835	10/14/2018 1:14 PM
12	92833	10/14/2018 9:17 AM
13	92831	10/14/2018 9:03 AM
14	92831	10/14/2018 7:10 AM
15	92833	10/13/2018 6:57 PM
16	92835	10/13/2018 10:18 AM
17	92833	10/12/2018 9:05 PM
18	92835	10/12/2018 5:35 PM
19	92831	10/12/2018 3:27 PM
20	92833	10/12/2018 2:38 PM
21	92833	10/12/2018 12:39 PM
22	92833	10/12/2018 12:07 PM
23	92833	10/12/2018 11:28 AM
24	92832	10/12/2018 11:04 AM
25	92831	10/12/2018 10:54 AM
26	92833	10/12/2018 10:41 AM
27	92835	10/12/2018 9:33 AM
28	92833	10/12/2018 8:50 AM
29	92831	10/12/2018 8:44 AM
30	92832	10/12/2018 8:09 AM
31	92835	10/12/2018 6:26 AM
32	92833	10/12/2018 5:43 AM
33	92835	10/12/2018 4:04 AM
34	92832	10/12/2018 12:50 AM
35	92835	10/12/2018 12:16 AM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

36	92833	10/11/2018 11:49 PM
37	92833	10/11/2018 10:58 PM
38	92835	10/11/2018 10:30 PM
39	92833	10/11/2018 10:21 PM
40	92831	10/11/2018 10:01 PM
41	92835	10/11/2018 9:30 PM
42	92835	10/11/2018 9:17 PM
43	92835	10/11/2018 9:13 PM
44	92835	10/11/2018 9:07 PM
45	92832	10/11/2018 8:31 PM
46	92835	10/11/2018 8:18 PM
47	92833	10/11/2018 7:54 PM
48	92835	10/11/2018 7:53 PM
49	928352	10/11/2018 7:05 PM
50	92835	10/11/2018 6:45 PM
51	92832	10/11/2018 6:41 PM
52	92835	10/11/2018 6:32 PM
53	92835	10/11/2018 6:02 PM
54	92832	10/11/2018 5:55 PM
55	92835	10/11/2018 5:54 PM
56	92832	10/11/2018 5:51 PM
57	92833	10/11/2018 5:49 PM
58	92831	10/11/2018 5:36 PM
59	92833	10/11/2018 5:25 PM
60	92831	10/11/2018 5:24 PM
61	92831	10/11/2018 5:15 PM
62	92832	10/11/2018 5:07 PM
63	92833	10/11/2018 5:03 PM
64	92833	10/11/2018 4:55 PM
65	92833	10/11/2018 4:51 PM
66	92831	10/11/2018 4:46 PM
67	92833	10/11/2018 4:26 PM
68	92833	10/11/2018 4:16 PM
69	92833-3117	10/11/2018 4:15 PM
70	92833	10/11/2018 4:03 PM
71	92835	10/11/2018 4:03 PM
72	92835	10/11/2018 4:00 PM
73	92835	10/11/2018 3:51 PM
74	92833	10/11/2018 3:49 PM
75	92833	10/11/2018 3:48 PM
76	92833	10/11/2018 3:43 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

77	92835	10/11/2018 3:38 PM
78	92831	10/11/2018 3:38 PM
79	90603	10/11/2018 3:36 PM
80	92831	10/11/2018 3:21 PM
81	92831	10/11/2018 3:19 PM
82	92833	10/11/2018 3:19 PM
83	92831	10/11/2018 3:09 PM
84	92833	10/11/2018 3:07 PM
85	92833	10/11/2018 3:06 PM
86	92835	10/11/2018 3:05 PM
87	92835	10/11/2018 3:01 PM
88	92835	10/11/2018 2:59 PM
89	92831	10/11/2018 2:56 PM
90	92831	10/11/2018 2:52 PM
91	92832	10/11/2018 2:51 PM
92	92835	10/11/2018 2:50 PM
93	92832	10/11/2018 2:46 PM
94	92832	10/11/2018 2:45 PM
95	92835	10/11/2018 2:44 PM
96	92833	10/11/2018 2:42 PM
97	92831	10/11/2018 2:41 PM
98	92831	10/11/2018 2:38 PM
99	92833	10/11/2018 2:36 PM
100	92833	10/11/2018 2:32 PM
101	92835	10/11/2018 2:30 PM
102	92835	10/11/2018 2:27 PM
103	92831	10/11/2018 2:26 PM
104	92835	10/11/2018 2:26 PM
105	92835	10/11/2018 2:25 PM
106	92833	10/11/2018 2:21 PM
107	92831	10/11/2018 2:21 PM
108	92832	10/11/2018 2:21 PM
109	92832	10/11/2018 2:21 PM
110	92831	10/11/2018 2:16 PM
111	92831	10/11/2018 2:16 PM
112	92831	10/11/2018 2:15 PM
113	92831	10/11/2018 2:12 PM
114	92835-2245	10/11/2018 2:11 PM
115	92835	10/11/2018 2:11 PM
116	92832	10/11/2018 2:09 PM
117	92835	10/11/2018 2:06 PM

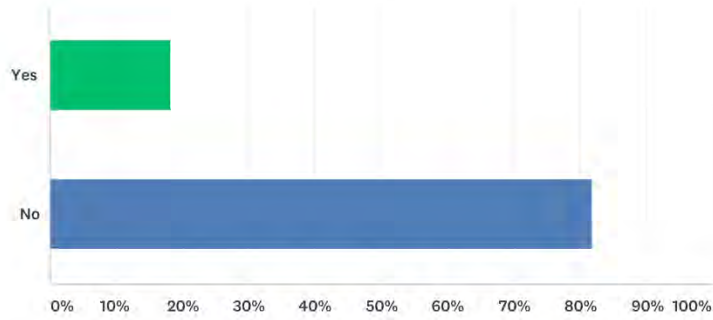
Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

118	92832	10/11/2018 2:04 PM
119	92832	10/11/2018 2:00 PM
120	92831	10/11/2018 11:53 AM
121	92833-1849	10/11/2018 10:39 AM
122	92833	10/11/2018 10:19 AM
123	92831	10/11/2018 9:44 AM
124	92832	10/11/2018 9:29 AM
125	92832	10/11/2018 9:01 AM
126	92832	10/11/2018 8:34 AM
127	92833	10/3/2018 1:36 PM
128	91709	10/2/2018 10:37 AM
129	92831	9/27/2018 9:46 PM
130	92832	9/17/2018 7:49 AM
131	92833	9/16/2018 10:06 AM
132	92835	8/30/2018 12:24 AM
133	92833	8/28/2018 8:17 PM
134	92832	8/28/2018 5:21 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q3 Have you been impacted by a disaster in your current residence?

Answered: 132 Skipped: 3

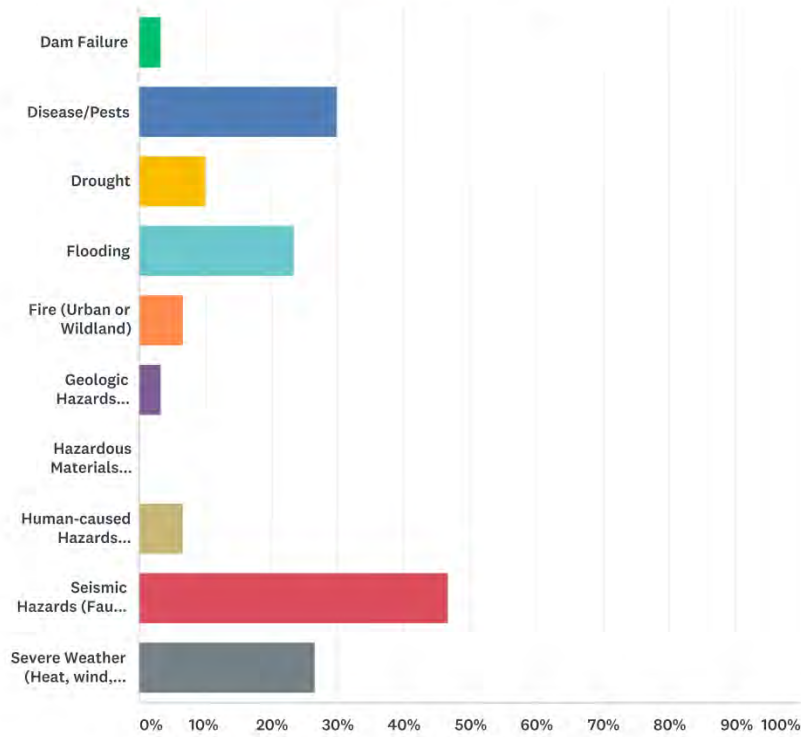


ANSWER CHOICES	RESPONSES	
Yes	18.18%	24
No	81.82%	108
TOTAL		132

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q4 If you answered yes to the previous question, please select the type of disaster that you have been impacted by (select all that apply).

Answered: 30 Skipped: 105



ANSWER CHOICES	RESPONSES
Dam Failure	3.33% 1
Disease/Pests	30.00% 9
Drought	10.00% 3
Flooding	23.33% 7
Fire (Urban or Wildland)	6.67% 2
Geologic Hazards (Landslides, Mudflows, Subsidence)	3.33% 1
Hazardous Materials Release (Oil spills)	0.00% 0
Human-caused Hazards (Aircraft, civil disturbance, transportation accidents, terrorism, cyber threats, etc.)	6.67% 2
Seismic Hazards (Fault rupture, seismic shaking, liquefaction)	46.67% 14
Severe Weather (Heat, wind, rain)	26.67% 8

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Total Respondents: 30

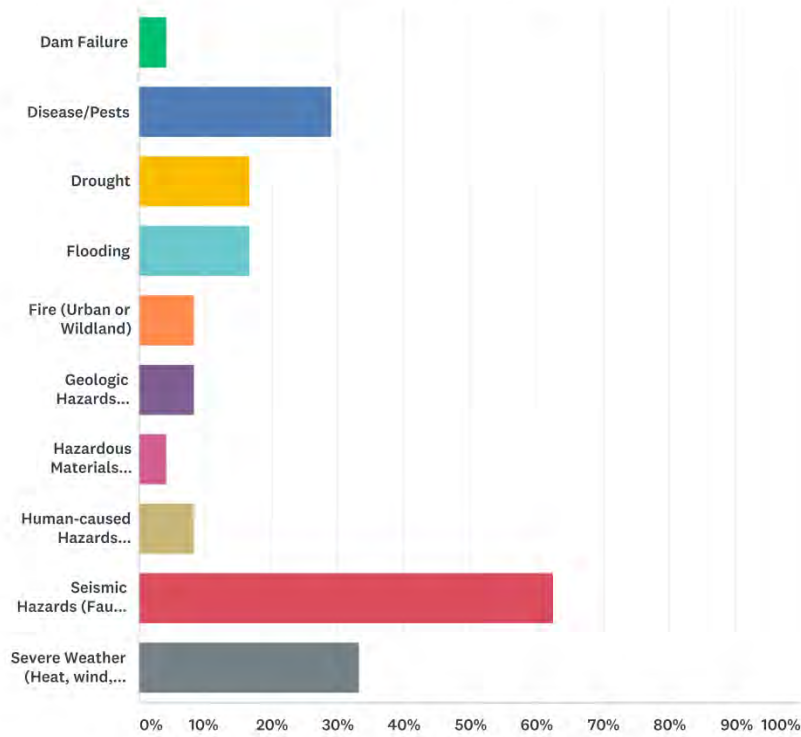
#	PLEASE LIST ANY ADDITIONAL HAZARDS THAT HAVE PREVIOUSLY IMPACTED YOUR NEIGHBORHOOD OR HOME.	DATE
1	.	10/13/2018 10:18 AM
2	Previously had a rodent problem prior to moving into our home. But we hired a pest control company to close all the entry points, sterilize our attic, and place new insulation.	10/12/2018 12:07 PM
3	With any amount of rain my street floods over the curb in from of my house. I wouldn't call it a disaster but it could get worse.	10/12/2018 9:33 AM
4	Rats. One year, I believe it was 1998, the yard and patio flooded up to the first step on the steps to the. Since there are only two steps this was pretty scary Also I have tripped and fallen due to potholes on city streets. Potholes are also a hazard for cars	10/12/2018 4:04 AM
5	Freeway noise and grime. Trash and misc from homeless encampments.	10/11/2018 5:07 PM
6	geologic hazard brought on by drought. have also experienced earthquakes and heavy rains	10/11/2018 2:11 PM



Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q5 If you answered yes to the previous question, please select the type of disaster that you have been impacted by (select all that apply).

Answered: 24 Skipped: 111



ANSWER CHOICES	RESPONSES
Dam Failure	4.17% 1
Disease/Pests	29.17% 7
Drought	16.67% 4
Flooding	16.67% 4
Fire (Urban or Wildland)	8.33% 2
Geologic Hazards (Landslides, Mudflows, Subsidence)	8.33% 2
Hazardous Materials Release (Oil spills)	4.17% 1
Human-caused Hazards (Aircraft, civil disturbance, transportation accidents, terrorism, cyber threats, etc.)	8.33% 2
Seismic Hazards (Fault rupture, seismic shaking, liquefaction)	62.50% 15
Severe Weather (Heat, wind, rain)	33.33% 8

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

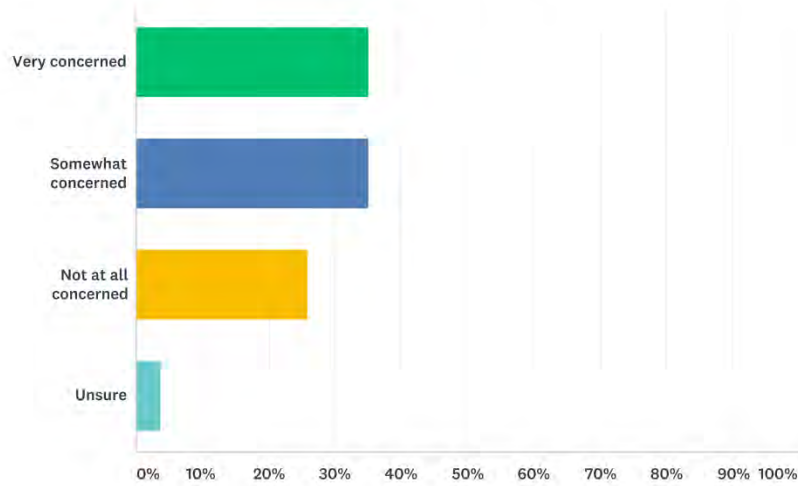
Total Respondents: 24

#	PLEASE LIST ANY ADDITIONAL HAZARDS THAT PRESENT A THREAT TO YOUR NEIGHBORHOOD OR HOME.	DATE
1	-	10/13/2018 10:18 AM
2	Back slope could slide	10/12/2018 4:04 AM
3	Pathogens allowed to fester in homeless encampments.	10/11/2018 2:46 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q6 How concerned are you that climate change may create new hazardous situations in Fullerton, or make existing natural hazards worse?

Answered: 131 Skipped: 4

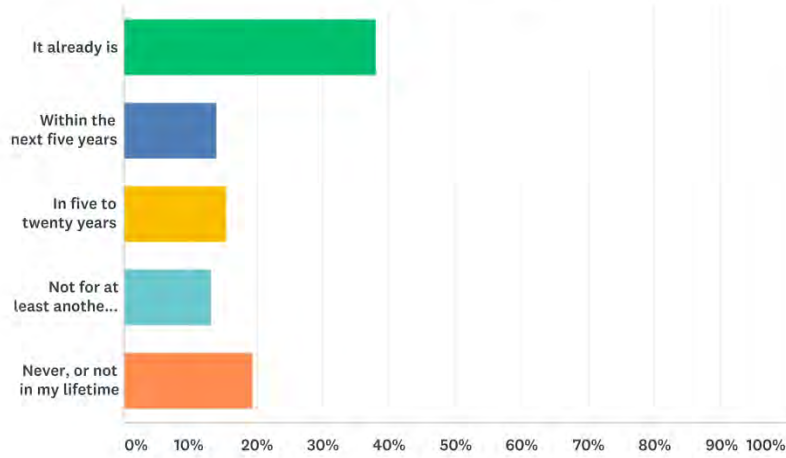


ANSWER CHOICES	RESPONSES	
Very concerned	35.11%	46
Somewhat concerned	35.11%	46
Not at all concerned	25.95%	34
Unsure	3.82%	5
TOTAL		131

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q7 When do you think climate change will pose a threat to your health, property, livelihood, or overall well-being?

Answered: 129 Skipped: 6

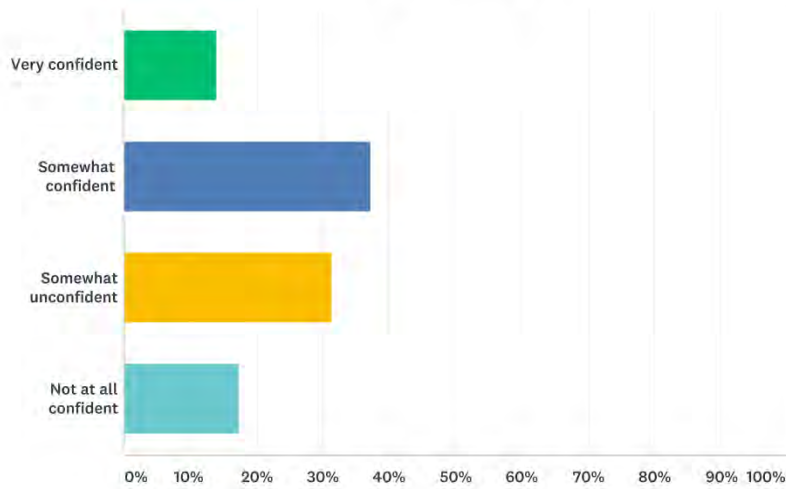


ANSWER CHOICES	RESPONSES	
It already is	37.98%	49
Within the next five years	13.95%	18
In five to twenty years	15.50%	20
Not for at least another twenty years	13.18%	17
Never, or not in my lifetime	19.38%	25
<b>TOTAL</b>		<b>129</b>

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q8 If you have taken any action to protect yourself against natural hazards, how confident are you that these actions will be sufficient to protect against more severe hazards that are expected because of climate change?

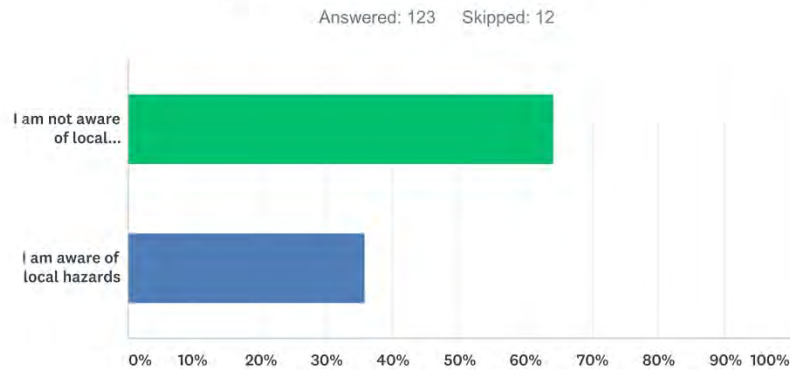
Answered: 121 Skipped: 14



ANSWER CHOICES	RESPONSES	
Very confident	14.05%	17
Somewhat confident	37.19%	45
Somewhat unconfident	31.40%	38
Not at all confident	17.36%	21
<b>TOTAL</b>		<b>121</b>

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

**Q9 The planning team is using various data sources to identify hazards in your community; however, some of these data sources do not provide data at a general citywide level. Are there any small-scale issues, such as ponding at a certain intersection during rain, that you would like the planning team to consider?**



ANSWER CHOICES	RESPONSES	
I am not aware of local hazards	64.23%	79
I am aware of local hazards	35.77%	44
<b>TOTAL</b>		<b>123</b>

#	PLEASE PROVIDE AS MUCH DETAIL AS POSSIBLE, INCLUDING LOCATION AND TYPE OF HAZARD.	DATE
1	Ponding along Orangethorpe.	10/16/2018 12:55 PM
2	The intersection of Raymond and Orangethorpe always accumulates a dangerous amount of water during heavy rains. In addition, Dorothy Avenue between Raymond and Acacia pools water across the width of the street.	10/15/2018 9:01 AM
3	Homeless people loitering panhandling toileting in public are health and safety hazards throughout the city.	10/14/2018 10:23 PM
4	why do you have the emergency command center right next to a CNG fueling center, a few feet from your own yard gas station, and adjacent to rail lines that are frequently used by tanker cars? it seems a recipe for disaster during a catastrophic earthquake	10/14/2018 8:56 PM
5	Drainage issues in heavy rains.	10/14/2018 1:15 PM
6	Malvern Creek has a chain-link fence on both sides intended to keep the water in during a flood. The only thing that will keep water in is cinder block walls.	10/14/2018 9:17 AM
7	I would like to see rain water diverted into some bioswales. Intersection of Yale and Brookdale gets flooded	10/14/2018 7:10 AM
8	Stock piling of potentially hazardous items, spray cans, pesticides	10/12/2018 2:38 PM
9	The Robert E. Ward nature preserve has a lot of brush which would readily burn if there was ever a wildfire there. The idea of controlled burning seems like it can be applied at the Robert E. Ward nature preserve. There are many homes surrounding this area that are at extremely high risk of damage if there was ever a wildfire.	10/12/2018 12:07 PM



Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

10	Arroyo Pl. floods during heavy rains, it would be impossible to use this street for any evacuations.	10/12/2018 8:50 AM
11	Coyote Hills Park has areas where water runoff from sprinklers pools on the sodewalks, potentially leading to breeding ground for mosquitos	10/12/2018 5:43 AM
12	Commonwealth floods during heavy rains; from richman to Euclid. Potholes will continue to be an increasing hazard since they are not being addressed.	10/12/2018 4:04 AM
13	Associated Road was designated as a flood channel in severe rain or dam failure. This is why there is only a tennis court at the corner of Associated Road and Bastanchury. This is why there is only a small farm south of Imperial Hwy. I have wondered for years why condos were built below the street level at the southwest corner of Bastanchury and Associated Rd.	10/11/2018 9:30 PM
14	Fullerton roads are slurried but the crappy job and sub par materials crack and deteriorate within 2 years. Why aren't we hiring a company that can do it right, dig it out and level it properly?	10/11/2018 7:54 PM
15	We are near the oil fields in NE Fullerton. Have flooding on 1500 block of Evergreen when it rains.	10/11/2018 7:05 PM
16	Puddling because of damaged curb from water main break on rosarita. Poor roads thru out the city. Danger for cars and emergency vehicles.	10/11/2018 6:32 PM
17	Chapman at Truman Ave often has standing water.	10/11/2018 5:55 PM
18	Potholes...all over Fullerton.	10/11/2018 5:54 PM
19	Excessive speeding on neighborhood streets- Woods Ave, between Commonwealth & Chapman, large potholes that are damaging cars, overgrown trees that create damage to sidewalks and streets and block signs.	10/11/2018 5:51 PM
20	Harbor blvd floods from la Palma north. Nearly impassable during heavy rains	10/11/2018 5:36 PM
21	Flooding on Brookhurst from Orangethorpe to the 91 with heavy rain	10/11/2018 5:25 PM
22	We have sightings of coyotes in our area very frequently.	10/11/2018 4:55 PM
23	There is an ongoing standing water problem at the southern intersection of Loma Alta and Canyon. There was some repair done a while back that reduced the standing water but the problem is not resolved. This is a problem for both ponding during rain and potentially mosquito breeding.	10/11/2018 4:51 PM
24	Given the current mosquito infestation, the water at the NE corner of the housing block sits for several days after a rain.	10/11/2018 4:26 PM
25	Low spot at little Chapman and Wayne Ave. has ponding nearly every time it rains.	10/11/2018 4:16 PM
26	BASQUE AND CHAPMAN AREA FLOODS AT HEAVY RAIN	10/11/2018 3:48 PM
27	Sweet at Amerige seems to always have sitting water.	10/11/2018 3:43 PM
28	Corner of Page/ Roberta and Brookhurst severe flooding . Also the corner of Brookhurst and orangethorp in adequate drainage .	10/11/2018 3:25 PM
29	Poor drainage exists in the neighborhood between Malvern, Euclid, Commonwealth and Basque.	10/11/2018 3:19 PM
30	Camps at the train station, along the abandoned railroad, under freeway overpasses.	10/11/2018 2:46 PM
31	Standing water in the curbs encourage mosquitos. We are getting eaten alive. I don't have standing water anywhere on my property but I can't do anything about standing water in improperly graded curbs.	10/11/2018 2:45 PM
32	In heavy rains our street gets flooded with rain and mud from the hills above. The water has risen over the curb onto the grass.	10/11/2018 2:41 PM
33	This may not be what you're looking for but some of the intersections in my neighborhood do not have stop signs either way and at least one of the directions of the intersection should have yield signs. My address is 1431 W. Woodcrest Ave. During heavy rains several of the intersections in my neighborhood turns upon particularly Woodcrest and Basque	10/11/2018 2:36 PM
34	Brookhurst and the 91 freeway. Caltrans has all rainfall and drains from the city of Anaheim going to the Houston channel on the Fullerton side. And the drains from the 91 freeway. Causes backup and flooding.	10/11/2018 2:32 PM
35	Orangethorpe and Raymond	10/11/2018 2:21 PM



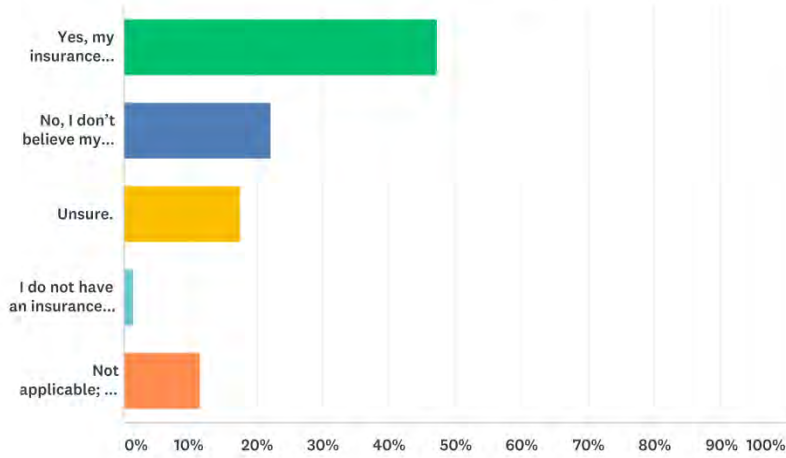
Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

36	I have a storm drain in front of my house and I removed a huge tree in my front yard that could of poised a threat to my house and safety of others	10/11/2018 2:21 PM
37	There is a gutter/drain at the end of Longview Drive as it curves around towards Brea Blvd that is always clogged with mud and debris.	10/11/2018 2:12 PM
38	subsidence due to drought; sinking foundations	10/11/2018 2:11 PM
39	Area off of Berkeley gets flooded. See this youtube video for evidence. <a href="https://www.youtube.com/watch?v=IrGxnYIae-o">https://www.youtube.com/watch?v=IrGxnYIae-o</a>	10/11/2018 2:09 PM
40	The potholes everywhere are fairly hazardous to bicycle riders especially, and also damaging to cars.	10/11/2018 2:04 PM
41	Condition of roads. They a are a danger to drivers and people alike.	10/11/2018 10:39 AM
42	In the neighborhood where Julie Ave is, near Basque, there has been flooding higher than the muffler of my car.	8/30/2018 12:24 AM
43	Aggressive drivers increasingly running red lights at intersections	8/28/2018 8:17 PM
44	The railroad underpass on Harbor south of Commonwealth is prone to flooding	8/28/2018 5:21 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q10 If you are a homeowner, do you have adequate homeowners' insurance to cover the hazards that could impact your home?

Answered: 131 Skipped: 4

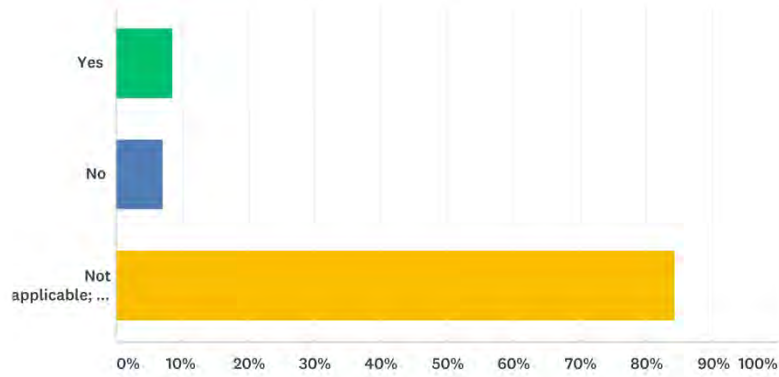


ANSWER CHOICES	RESPONSES	
Yes, my insurance coverage should be adequate.	47.33%	62
No, I don't believe my insurance coverage would be adequate for a major disaster.	22.14%	29
Unsure.	17.56%	23
I do not have an insurance policy.	1.53%	2
Not applicable; I rent my current residence.	11.45%	15
<b>TOTAL</b>		<b>131</b>

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q11 If you rent your residence, do you have renters' insurance?

Answered: 127 Skipped: 8

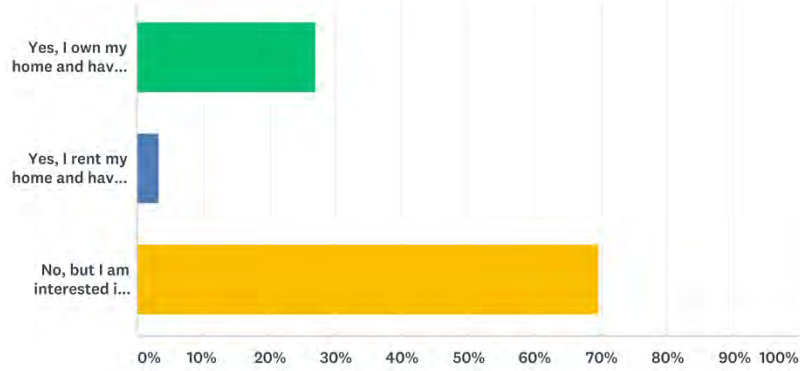


ANSWER CHOICES	RESPONSES	
Yes	8.66%	11
No	7.09%	9
Not applicable; I own my residence.	84.25%	107
TOTAL		127

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q12 Do you have flood insurance for your home?

Answered: 119 Skipped: 16

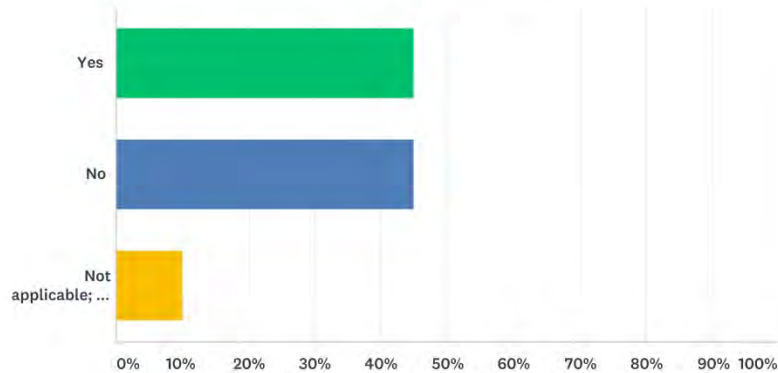


ANSWER CHOICES	RESPONSES
Yes, I own my home and have flood insurance.	26.89% 32
Yes, I rent my home and have flood insurance.	3.36% 4
No, but I am interested in reviewing flood insurance options ( <a href="https://www.floodsmart.gov/">https://www.floodsmart.gov/</a> ).	69.75% 83
TOTAL	119

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q13 Have you done anything to your home to make it less vulnerable to hazards such as earthquakes, floods, and fires?

Answered: 129 Skipped: 6



ANSWER CHOICES	RESPONSES
Yes	44.96% 58
No	44.96% 58
Not applicable; I rent my residence.	10.08% 13
<b>TOTAL</b>	<b>129</b>

#	IF NOT, DO YOU PLAN TO?	DATE
1	Yes. Replace turn with stormwater capture drought tolerante landscape.	10/16/2018 12:55 PM
2	Not sure what needs to be done	10/15/2018 7:15 AM
3	i plan to continually upgrade my preparations as well as swapping out items by code date	10/14/2018 8:56 PM
4	I live in a condominium, the HOA deals with the buildings and environs.	10/14/2018 7:44 PM
5	Replaced our shake roof with a tile roof.	10/14/2018 1:15 PM
6	I'm thinking about having some work done to secure it in case of an earthquake	10/14/2018 7:10 AM
7	No	10/12/2018 5:35 PM
8	Our house is in code for earthquakes, we sit above flood plains, Fires, our property is surrounded by trees and brush from others properties. Not much we can do.	10/12/2018 8:50 AM
9	I'd like to, but my father owns the home and will not take the needed actions.	10/11/2018 11:49 PM
10	Not sure how	10/11/2018 10:30 PM
11	If not too cost prohibitive	10/11/2018 10:01 PM
12	Our homeowners association has taken measures to install drains where water flows downhill directly towards homes. This helps with rainfall.	10/11/2018 9:30 PM
13	Not sure what to do.	10/11/2018 5:55 PM
14	Not really sure how to	10/11/2018 5:49 PM
15	I don't know what to do.	10/11/2018 4:16 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

16	Yes, once a specific hazard is identified.	10/11/2018 2:59 PM
17	maybe	10/11/2018 2:46 PM
18	not in the budget	10/11/2018 2:41 PM
19	About as much as the people in hurricane areas	10/11/2018 2:32 PM
20	BRACE/BOLT FOUNDATION	10/11/2018 2:16 PM
21	No	8/28/2018 8:17 PM

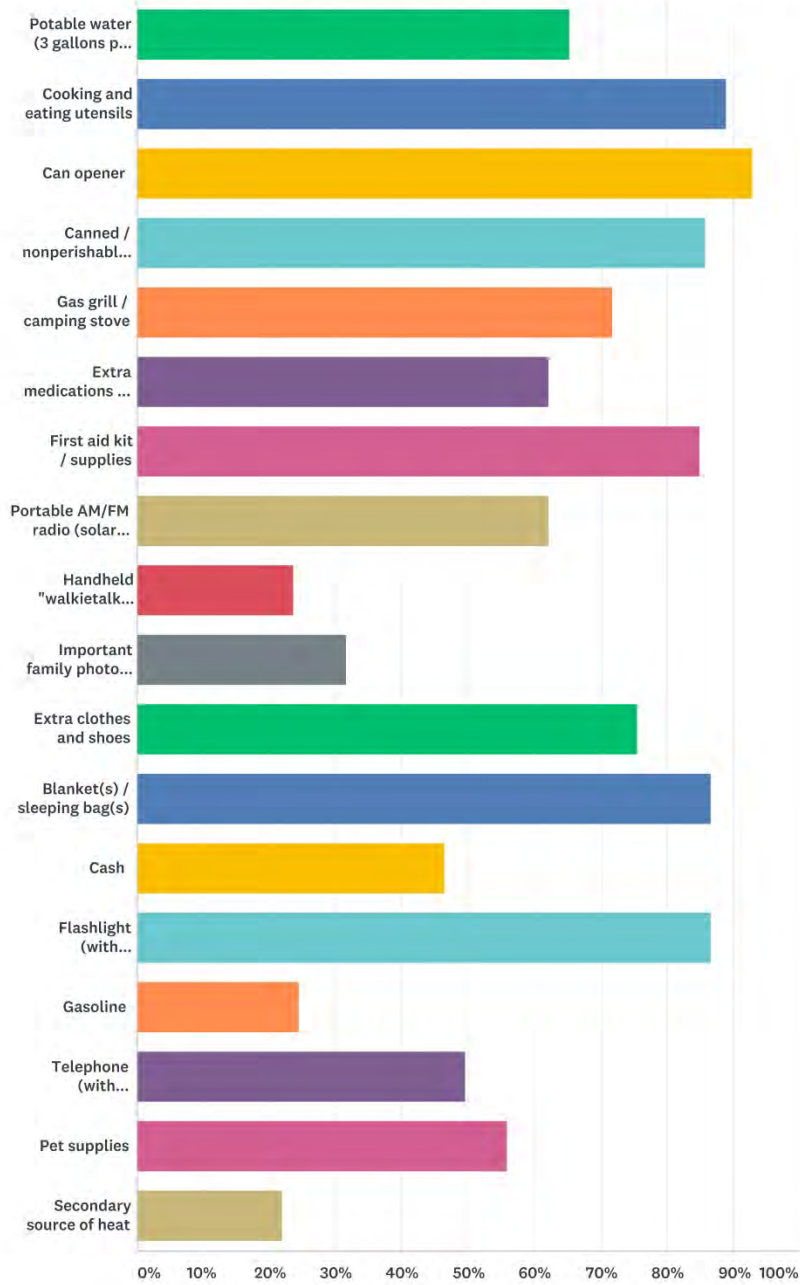
Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

**Q14** If a severe hazard event occurred today such that all services were cut off from your home (power, gas, water, sewer) and you were unable to leave or access a store for 72 hours, which of these items do you have readily available?

Answered: 127 Skipped: 8



Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey



ANSWER CHOICES	RESPONSES
Potable water (3 gallons per person)	65.35% 83

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Cooking and eating utensils	88.98%	113
Can opener	92.91%	118
Canned / nonperishable foods (ready to eat)	85.83%	109
Gas grill / camping stove	71.65%	91
Extra medications and contact lenses (if applicable)	62.20%	79
First aid kit / supplies	85.04%	108
Portable AM/FM radio (solar powered, hand crank, or batteries)	62.20%	79
Handheld "walkietalkie" radios (with batteries)	23.62%	30
Important family photos / documentation in a water- and fireproof container	31.50%	40
Extra clothes and shoes	75.59%	96
Blanket(s) / sleeping bag(s)	86.61%	110
Cash	46.46%	59
Flashlight (with batteries)	86.61%	110
Gasoline	24.41%	31
Telephone (with batteries)	49.61%	63
Pet supplies	55.91%	71
Secondary source of heat	22.05%	28
Total Respondents: 127		

#	WHAT ELSE DO YOU HAVE IN YOUR EMERGENCY KIT?	DATE
1	gloves, shovel, axe, pry bars, etc	10/14/2018 8:56 PM
2	bottle of soap, butane lighter and 100 \$1 bills because no one will have change for a 20.	10/14/2018 9:17 AM
3	Tent, eyeglasses, kitty litter and trash bags (for latrine), a vegetable garden	10/13/2018 10:18 AM
4	Portable generator	10/12/2018 10:41 AM
5	3 season tent	10/12/2018 8:50 AM
6	Basic tools	10/12/2018 8:09 AM
7	Tools (shovels, rakes, rope, tarps, large containers) Batteries, generator, solar powered items, water purifier, disinfectant, personal hygiene supplies	10/12/2018 6:26 AM
8	Wrench for gas line, gloves, limited water.	10/11/2018 11:49 PM
9	Solar phone charger	10/11/2018 10:30 PM
10	Pop-up tent. Portable toilet. Emergency food.	10/11/2018 9:30 PM
11	Generator, CERT kit, emergency lights in house, Trash bags, pop up canopy, plastic tarps, Lightsticks,etc...	10/11/2018 7:05 PM
12	Potable water	10/11/2018 6:45 PM
13	I could survive for 72 hours inside my home. However, the following items are not collectively in one place in my home but, maybe should be -tools to turn off gas, water, power (should there be broken pipes or leaks) -out-of-the-area contact information (for cell phone) so people don't worry - hurricane lamps for light in the evening (oil) -toilet paper -poncho (re: rain) -camera (for assessment) -given the way medications are dispensed, having extra medication is ONLY good in theory.	10/11/2018 4:26 PM
14	Gun and ammo, local area map, CB /Ham radio.	10/11/2018 3:25 PM

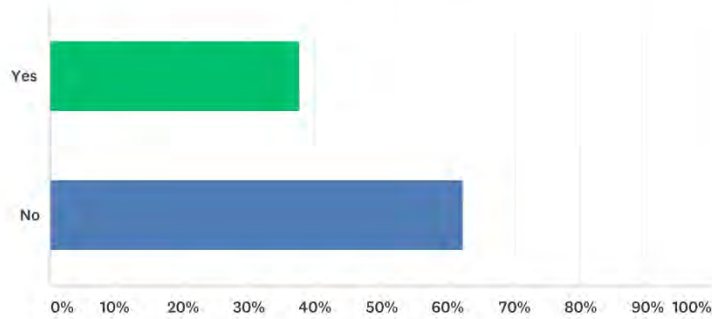
Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

15	Nothing.	10/11/2018 3:06 PM
16	Water filtration kit, MREs, solar panels, personal security,	10/11/2018 3:01 PM
17	Tools	10/11/2018 2:30 PM
18	Small toolkit, matches, toothpaste and brushes,mylar blanket, signal mirror, gas mask and nbc filters, lots of stuff	10/11/2018 2:27 PM
19	Jesus	10/11/2018 2:21 PM
20	an entire motorhome	10/11/2018 9:44 AM
21	Generator, camping supplies, RV,	9/17/2018 7:49 AM
22	Hair ties Hiking shoes & socks Sunscreen Vaseline Compass Hand sanitizer	9/16/2018 10:06 AM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q15 Are you familiar with the special needs of your neighbors in the event of a disaster situation (special needs may include limited mobility, severe medical conditions, memory impairments)?

Answered: 130 Skipped: 5

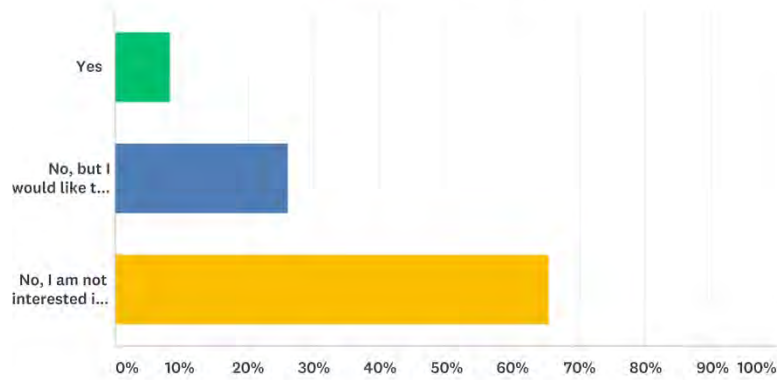


ANSWER CHOICES	RESPONSES	
Yes	37.69%	49
No	62.31%	81
TOTAL		130

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q16 Are you a trained member of your Community Emergency Response Team (CERT)?

Answered: 130 Skipped: 5

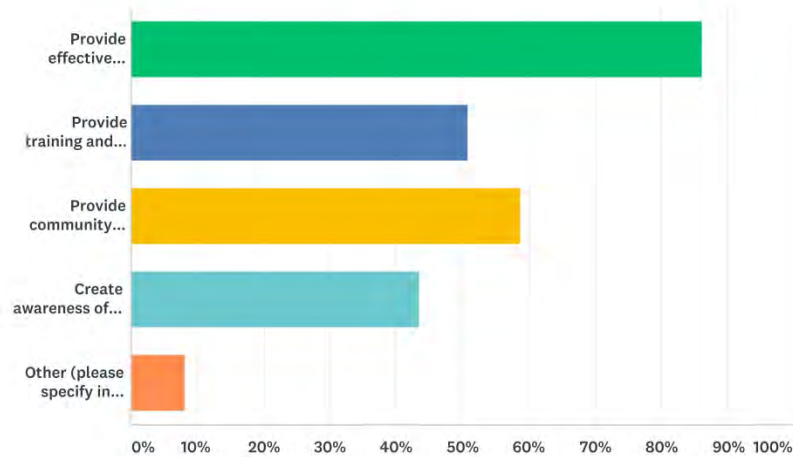


ANSWER CHOICES	RESPONSES	
Yes	8.46%	11
No, but I would like to learn more about CERT.	26.15%	34
No, I am not interested in being a trained CERT member.	65.38%	85
<b>TOTAL</b>		<b>130</b>

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q17 How can the City help you become better prepared for a disaster?  
(choose all that apply)

Answered: 124 Skipped: 11



ANSWER CHOICES	RESPONSES
Provide effective emergency notifications and communication.	86.29% 107
Provide training and education to residents and business owners on how to reduce future damage.	50.81% 63
Provide community outreach regarding emergency preparedness.	58.87% 73
Create awareness of special needs and vulnerable populations.	43.55% 54
Other (please specify in comment box below)	8.06% 10
Total Respondents: 124	

#	IF YOU SELECTED "OTHER" PLEASE SPECIFY HERE:	DATE
1	Assess neighborhood	10/15/2018 7:15 AM
2	intermediate and advanced first aid, and emergency techniques and strategies for residence	10/14/2018 8:56 PM
3	I am worried about roads becoming impassible. I would like to see the city set up a plan to mobilize crews to patch and repair roads or remove large pieces of asphalt that break off and prevent us from driving IMMEDIATELY after a disaster instead of waiting for weeks until you get around to it. If we have a really bad disaster, people need to leave IMMEDIATELY after in order to save lives. Please take this seriously. Up to 3,000 people died in Puerto Rico because they couldn't escape. The original death toll was around 50. Learn from other people's mistakes.	10/14/2018 9:17 AM
4	we have signed up for the Fullerton Emergency Notification System and received our test notice.	10/11/2018 9:30 PM
5	Know where our board & care homes are in our neighborhoods. CERT used to have districts for local response with district leaders	10/11/2018 7:05 PM
6	Create a system so fire and Pd are aware of homes where people with special needs live	10/11/2018 5:36 PM
7	Provide low or no cost lows for people to improve their seismic readiness both structurally as well as in home readiness such as strapping large items and fastening cabinets.	10/11/2018 4:51 PM
8	Provide some items for kit. Cant afford to stockpile	10/11/2018 4:15 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

9	notification if in a flood or special hazard zone	10/11/2018 4:00 PM
10	Ask the Health Dept to test for biohazards in the encampments then clean them up.	10/11/2018 2:46 PM
11	Make people aware of how serious disasters are. None of my neighbors are prepared. I can't prep for the whole block. I am prepped long term for my family, but if I have to provide for my neighbors too, none of us will have enough.	10/11/2018 2:45 PM
12	email links to websites	10/11/2018 2:41 PM
13	apply for FEMA HMA grants to help homeowners take action.	10/11/2018 2:11 PM
14	Permanent supportive housing for our vulnerable disabled homeless population.	10/11/2018 2:04 PM
15	Maintain city infrastructure: roads, storm drains	10/3/2018 1:36 PM
16	Provide supplies.	9/16/2018 10:06 AM



Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q18 What is the ZIP code of your workplace?

Answered: 47 Skipped: 88

#	RESPONSES	DATE
1	92831	10/16/2018 12:55 PM
2	92806	10/14/2018 10:23 PM
3	retired	10/14/2018 8:56 PM
4	92831	10/14/2018 7:44 PM
5	Retired	10/14/2018 1:15 PM
6	92886	10/14/2018 1:14 PM
7	91765	10/14/2018 9:03 AM
8	92831	10/12/2018 3:27 PM
9	92833	10/12/2018 2:38 PM
10	92832	10/12/2018 11:04 AM
11	N/A	10/12/2018 10:54 AM
12	92832	10/11/2018 10:21 PM
13	92832	10/11/2018 8:31 PM
14	92832	10/11/2018 7:54 PM
15	92832	10/11/2018 7:53 PM
16	92833	10/11/2018 6:32 PM
17	92833	10/11/2018 5:25 PM
18	92831	10/11/2018 5:24 PM
19	92833	10/11/2018 4:16 PM
20	92831	10/11/2018 4:03 PM
21	92831	10/11/2018 4:00 PM
22	92835	10/11/2018 3:51 PM
23	92831	10/11/2018 3:49 PM
24	92833	10/11/2018 3:48 PM
25	90027	10/11/2018 3:38 PM
26	92832	10/11/2018 3:19 PM
27	92831	10/11/2018 3:09 PM
28	92835	10/11/2018 2:56 PM
29	90017	10/11/2018 2:46 PM
30	92833	10/11/2018 2:36 PM
31	90744	10/11/2018 2:32 PM
32	92831	10/11/2018 2:27 PM
33	92831	10/11/2018 2:26 PM
34	All of fullerton	10/11/2018 2:26 PM
35	92835	10/11/2018 2:25 PM

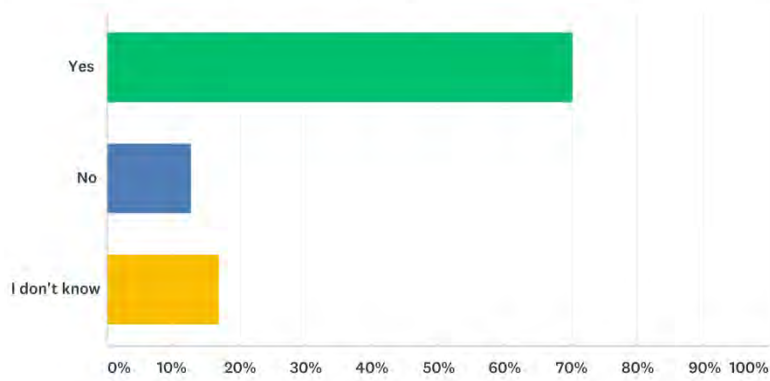
Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

36	92831	10/11/2018 2:21 PM
37	92831	10/11/2018 2:21 PM
38	92835-2245	10/11/2018 2:11 PM
39	92832	10/11/2018 2:04 PM
40	92832	10/11/2018 2:00 PM
41	92832	10/11/2018 10:19 AM
42	92833	10/11/2018 9:44 AM
43	9	10/11/2018 9:29 AM
44	92832	10/11/2018 8:34 AM
45	92832	10/2/2018 10:37 AM
46	92831	9/27/2018 9:46 PM
47	92832	8/28/2018 5:21 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q19 Does your employer have a plan for disaster recovery in place?

Answered: 47 Skipped: 88

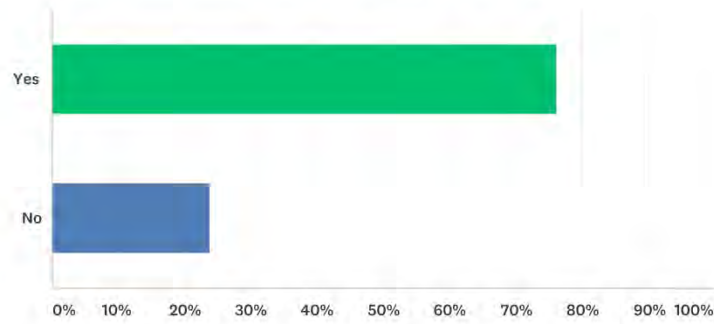


ANSWER CHOICES	RESPONSES	
Yes	70.21%	33
No	12.77%	6
I don't know	17.02%	8
TOTAL		47

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q20 Does your employer have a workforce communications plan to implement following a disaster so they are able to contact you?

Answered: 46 Skipped: 89

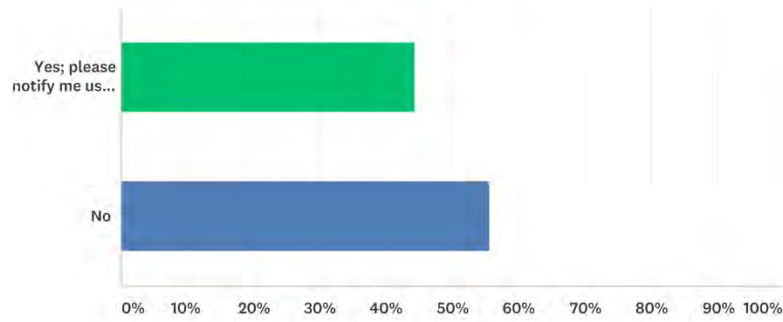


ANSWER CHOICES	RESPONSES	
Yes	76.09%	35
No	23.91%	11
TOTAL		46

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q21 Would you like to be contacted when the Draft 2018 Fullerton Hazard Mitigation Plan is available for review?

Answered: 126 Skipped: 9



ANSWER CHOICES	RESPONSES	
Yes; please notify me using my contact information in the next question.	44.44%	56
No	55.56%	70
TOTAL		126

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

Q22 If you would like to be notified of future opportunities to participate in hazard mitigation and resiliency planning, please provide your name and e-mail address. If you do not have an e-mail address, please provide your mailing address.

Answered: 53 Skipped: 82

ANSWER CHOICES	RESPONSES	
Full name	98.11%	52
E-mail address	96.23%	51
Street address	88.68%	47
City, State, ZIP	90.57%	48

#	FULL NAME	DATE
1		10/16/2018 12:55 PM
2		10/14/2018 10:24 PM
3		10/14/2018 7:46 PM
4		10/14/2018 1:16 PM
5		10/14/2018 9:20 AM
6		10/14/2018 9:03 AM
7		10/13/2018 6:59 PM
8		10/12/2018 3:27 PM
9		10/12/2018 12:40 PM
10		10/12/2018 11:29 AM
11		10/12/2018 8:53 AM
12		10/12/2018 8:51 AM
13		10/12/2018 8:11 AM
14		10/12/2018 12:16 AM
15		10/11/2018 10:59 PM
16		10/11/2018 10:30 PM
17		10/11/2018 10:22 PM
18		10/11/2018 9:31 PM
19		10/11/2018 9:17 PM
20		10/11/2018 7:09 PM
21		10/11/2018 6:47 PM
22		10/11/2018 6:14 PM
23		10/11/2018 5:50 PM
24		10/11/2018 5:37 PM
25		10/11/2018 5:04 PM
26		10/11/2018 4:51 PM

The names of survey respondents have been redacted to protect their privacy.

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

27		10/11/2018 4:17 PM
28		10/11/2018 4:16 PM
29		10/11/2018 4:04 PM
30		10/11/2018 4:01 PM
31		10/11/2018 3:51 PM
32		10/11/2018 3:44 PM
33		10/11/2018 3:26 PM
34		10/11/2018 3:20 PM
35		10/11/2018 3:08 PM
36		10/11/2018 3:07 PM
37		10/11/2018 3:02 PM
38		10/11/2018 2:50 PM
39		10/11/2018 2:42 PM
40		10/11/2018 2:40 PM
41		10/11/2018 2:39 PM
42		10/11/2018 2:34 PM
43		10/11/2018 2:28 PM
44		10/11/2018 2:27 PM
45		10/11/2018 2:27 PM
46		10/11/2018 2:22 PM
47		10/11/2018 2:16 PM
48		10/11/2018 2:12 PM
49		10/11/2018 10:39 AM
50		10/11/2018 8:35 AM
51		8/30/2018 12:25 AM
52		8/28/2018 8:18 PM

The names of survey respondents have been redacted to protect their privacy.

#	E-MAIL ADDRESS	DATE
1		10/16/2018 12:55 PM
2		10/14/2018 10:24 PM
3		10/14/2018 7:46 PM
4		10/14/2018 1:16 PM
5		10/14/2018 9:20 AM
6		10/14/2018 9:03 AM
7		10/13/2018 6:59 PM
8		10/12/2018 3:27 PM
9		10/12/2018 12:40 PM
10		10/12/2018 11:29 AM
11		10/12/2018 8:53 AM
12		10/12/2018 8:11 AM
13		10/12/2018 4:05 AM
14		10/12/2018 12:16 AM

The emails of survey respondents have been redacted to protect their privacy.



Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

15		10/11/2018 10:59 PM
16		10/11/2018 10:30 PM
17		10/11/2018 10:22 PM
18		10/11/2018 9:31 PM
19		10/11/2018 9:17 PM
20		10/11/2018 7:09 PM
21		10/11/2018 6:47 PM
22		10/11/2018 6:14 PM
23		10/11/2018 5:50 PM
24		10/11/2018 5:04 PM
25		10/11/2018 4:51 PM
26		10/11/2018 4:17 PM
27		10/11/2018 4:16 PM
28		10/11/2018 4:04 PM
29		10/11/2018 4:01 PM
30		10/11/2018 3:51 PM
31		10/11/2018 3:44 PM
32		10/11/2018 3:26 PM
33		10/11/2018 3:20 PM
34		10/11/2018 3:08 PM
35		10/11/2018 3:07 PM
36		10/11/2018 3:02 PM
37		10/11/2018 2:50 PM
38		10/11/2018 2:42 PM
39		10/11/2018 2:40 PM
40		10/11/2018 2:39 PM
41		10/11/2018 2:34 PM
42		10/11/2018 2:28 PM
43		10/11/2018 2:27 PM
44		10/11/2018 2:27 PM
45		10/11/2018 2:22 PM
46		10/11/2018 2:16 PM
47		10/11/2018 2:12 PM
48		10/11/2018 10:39 AM
49		10/11/2018 8:35 AM
50		8/30/2018 12:25 AM
51		8/28/2018 8:18 PM
#	STREET ADDRESS	DATE
1		10/16/2018 12:55 PM
2		10/14/2018 10:24 PM
3		10/14/2018 7:46 PM

The emails of survey respondents have been redacted to protect their privacy.

The addresses of survey respondents have been redacted to protect their privacy.

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

4	10/14/2018 1:16 PM
5	10/14/2018 9:20 AM
6	10/14/2018 9:03 AM
7	10/13/2018 6:59 PM
8	10/12/2018 3:27 PM
9	10/12/2018 12:40 PM
10	10/12/2018 11:29 AM
11	10/12/2018 8:51 AM
12	10/12/2018 12:16 AM
13	10/11/2018 10:59 PM
14	10/11/2018 10:30 PM
15	10/11/2018 9:31 PM
16	10/11/2018 9:17 PM
17	10/11/2018 7:09 PM
18	10/11/2018 6:47 PM
19	10/11/2018 5:50 PM
20	10/11/2018 5:37 PM
21	10/11/2018 4:51 PM
22	10/11/2018 4:17 PM
23	10/11/2018 4:16 PM
24	10/11/2018 4:04 PM
25	10/11/2018 4:01 PM
26	10/11/2018 3:51 PM
27	10/11/2018 3:44 PM
28	10/11/2018 3:26 PM
29	10/11/2018 3:20 PM
30	10/11/2018 3:08 PM
31	10/11/2018 3:07 PM
32	10/11/2018 3:02 PM
33	10/11/2018 2:50 PM
34	10/11/2018 2:42 PM
35	10/11/2018 2:40 PM
36	10/11/2018 2:39 PM
37	10/11/2018 2:34 PM
38	10/11/2018 2:28 PM
39	10/11/2018 2:27 PM
40	10/11/2018 2:27 PM
41	10/11/2018 2:22 PM
42	10/11/2018 2:16 PM
43	10/11/2018 2:12 PM
44	10/11/2018 10:39 AM

The addresses of survey respondents have been redacted to protect their privacy.

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

45	The addresses of survey respondents have been redacted to protect their privacy.	10/11/2018 8:35 AM
46		8/30/2018 12:25 AM
47		8/28/2018 8:18 PM
#	CITY, STATE, ZIP	DATE
1	Fullerton, CA, 92832	10/16/2018 12:55 PM
2	Fullerton CA 92833	10/14/2018 10:24 PM
3	Fullerton, CA 92831	10/14/2018 7:46 PM
4	Fullerton, CA 92835	10/14/2018 1:16 PM
5	Fullerton, CA 92833	10/14/2018 9:20 AM
6	92831	10/14/2018 9:03 AM
7	Fullerton, CA 92833	10/13/2018 6:59 PM
8	Fullerton	10/12/2018 3:27 PM
9	Fullerton	10/12/2018 12:40 PM
10	Fullerton, CA 92833	10/12/2018 11:29 AM
11	Fullerton	10/12/2018 8:53 AM
12	Fullerton	10/12/2018 8:51 AM
13	Fullerton	10/12/2018 12:16 AM
14	fullerton, ca 92833	10/11/2018 10:59 PM
15	92835 fullerton ca	10/11/2018 10:30 PM
16	Fullerton, CA 92835	10/11/2018 9:31 PM
17	Fullerton CA 92835	10/11/2018 9:17 PM
18	Fullerton, CA	10/11/2018 7:09 PM
19	Fullerton	10/11/2018 6:47 PM
20	Fullerton, CA, 92833	10/11/2018 5:50 PM
21	Fullerton 92831	10/11/2018 5:37 PM
22	Fullerton, CA 92833	10/11/2018 4:51 PM
23	Fullerton, CA 92833	10/11/2018 4:17 PM
24	Fullerton	10/11/2018 4:16 PM
25	Fullerton, CA 92835	10/11/2018 4:04 PM
26	Fullerton	10/11/2018 4:01 PM
27	FULLERTON	10/11/2018 3:51 PM
28	92833	10/11/2018 3:44 PM
29	Fullerton	10/11/2018 3:26 PM
30	Fullerton, CA 92833	10/11/2018 3:20 PM
31	Fullerton	10/11/2018 3:08 PM
32	Fullerton CA 92835	10/11/2018 3:07 PM
33	Fullerton, CA 92835	10/11/2018 3:02 PM
34	Fullerton	10/11/2018 2:50 PM
35	Fullerton, ca 92831	10/11/2018 2:42 PM
36	Fullerton, CA 92831	10/11/2018 2:40 PM
37	FULLERTON, CA 92833	10/11/2018 2:39 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

38	Fullerton ca 92833	10/11/2018 2:34 PM
39	Brea, CA 92821	10/11/2018 2:28 PM
40	92835	10/11/2018 2:27 PM
41	Fullerton CA 92835	10/11/2018 2:27 PM
42	Fullerton, CA 92831	10/11/2018 2:22 PM
43	Fullerton, CA 92831	10/11/2018 2:16 PM
44	Fullerton Ca 92835	10/11/2018 2:12 PM
45	Fullerton	10/11/2018 10:39 AM
46	Fullerton, CA 92832	10/11/2018 8:35 AM
47	Fullerton	8/30/2018 12:25 AM
48	Fullerton, CA 92833	8/28/2018 8:18 PM

Fullerton Local Hazard Mitigation Plan (LHMP) Community Input Survey

**Q23 Please provide us with any additional comments/suggestions/questions that you have regarding your risk of future hazard events.**

Answered: 15 Skipped: 120

#	RESPONSES	DATE
1	I am most concerned with fires in the aftermath of a major earthquake.	10/14/2018 7:46 PM
2	Set up a plan to remove all flammable dead trees and weeds from Coyote Hills on a yearly basis before fire season.	10/14/2018 9:20 AM
3	Finding honest, reliable workmen is difficult. A list of people who specialize in earthquake retrofitting, drainage... would be helpful	10/14/2018 7:12 AM
4	My home insurance company is not very forthcoming when I try to clarify my coverage for wildfires. Tips on how to identify if a homeowner is underinsured for disasters (fire and earthquake in particular) would be helpful for any Californian.	10/12/2018 12:09 PM
5	What concerns me is fire, we are a community with a lot of uncleared lots and trees. Fires could start and spread very easily.	10/12/2018 8:53 AM
6	The streets around us are so much busier, more cars than ever, more risk of accidents, speeding. We have a cement block wall but we know cars or trucks can punch through.	10/12/2018 8:51 AM
7	Our main concern is regarding after a big earthquake and the possibility of roving gangs stealing and whatever else they would do. How do we prepare for that?	10/11/2018 9:31 PM
8	How are we going to continue to pay for police and fire service? I see highrise condo/apartments but no increase in fire and police services. Our police and fire people need more paid personnel to alleviate over time and stress. They are the front and back door to our city. What is the long term plan???	10/11/2018 8:00 PM
9	Not enough emergency responders for our city...whether FPD,FFD or CERT members. Folks have to be informed often on city website and any other media available.	10/11/2018 7:09 PM
10	I'm low-income and like to get earthquake insurance but can't afford it with my disability check every month.	10/11/2018 3:08 PM
11	Why ignore the risks of communicable disease? Wouldn't it be better to prepare for it?	10/11/2018 2:47 PM
12	I know orange County vector control is doing all they can regarding the mosquito problem and especially regarding the new invasive species of mosquito. I firmly believe that all a allout effort needs be made to educate the public and all means necessary to eradicate this problem before it becomes a serious public health issue. I truly believe this is the number one threat facing us right now.	10/11/2018 2:39 PM
13	None	10/11/2018 2:34 PM
14	We might want to consider Amateur Radio Operators as a communication resource in the event of a disaster or emergency.	10/11/2018 2:27 PM
15	Ask maintenance workers across the city for input.	9/16/2018 10:07 AM

# **APPENDIX C**

## **ADOPTION RESOLUTION**

- City council resolution of adoption



RESOLUTION NO. 2020-42

A RESOLUTION OF THE CITY OF FULLERTON, CALIFORNIA, ADOPTING THE CITY OF FULLERTON LOCAL HAZARD MITIGATION PLAN AS APPROVED BY FEMA ON JUNE 10, 2019 AND CORRESPONDING REVISIONS TO THE FULLERTON PLAN, INCLUDING A COMPREHENSIVE UPDATE TO APPENDIX I, THEREBY ADOPTING THE LOCAL HAZARD MITIGATION PLAN INTO THE SAFETY ELEMENT OF THE CITY'S GENERAL PLAN PURSUANT TO GOVERNMENT CODE SECTION 65302.6

LOCAL HAZARD MITIGATION PLAN  
APPLICANT: CITY OF FULLERTON

RECITALS:

WHEREAS Fullerton Municipal Code (FMC) Section 2.18.080 establishes the Powers and Duties of the Planning Commission including "to recommend and implement a master or general plan or amendments thereto..." Government Code Section 65353(a) provides that when the Planning Commission has such authorization, the Commission shall hold at least one public hearing before making a recommendation on the adoption of or amendment of a general plan to the City Council; and

WHEREAS the Planning Commission of the City of Fullerton has held a duly noticed public hearing on April 15, 2020, as required by law, to consider adoption of the Local Hazard Mitigation Plan as approved by FEMA on June 10, 2019 and corresponding revisions to The Fullerton Plan and recommended approval to the City Council;

WHEREAS the City Council of the City of Fullerton has held a duly noticed public hearing, as required by law, to consider adoption of the Local Hazard Mitigation Plan as approved by FEMA on June 10, 2019 and corresponding revisions to The Fullerton Plan;

WHEREAS the City Council does, pursuant to the California Environmental Quality Act (CEQA) Guidelines, finds that the proposed project is statutorily exempt from CEQA review per Section 15061(b)(3);

WHEREAS Government Code Section 65302.6 establishes that a city may adopt a LHMP as part of the safety element of the general plan and in so doing, pursuant to Government Code Section 8685.9, this makes the City eligible to recover additional disaster reimbursement from the State pursuant to AB2140 (2006).

RESOLUTION

The City Council finds as follows:

1. In all respects as set forth in the Recitals of this Resolution.

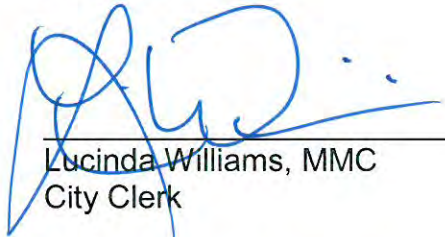
THEREFORE, the Fullerton City Council finds the project statutorily exempt pursuant to CEQA Guidelines 15061(b)(3) and adopts the City of Fullerton Local Hazard Mitigation Plan as approved by FEMA on June 10, 2019 and corresponding revisions to The Fullerton Plan, including a comprehensive update to Appendix I, thereby adopting the Local Hazard Mitigation Plan into the Safety Element of the City's General Plan pursuant to Government Code Section 65302.6.



ADOPTED BY THE FULLERTON CITY COUNCIL ON MAY 19, 2020.

  
Jennifer Fitzgerald  
Mayor

ATTEST:

  
Lucinda Williams, MMC  
City Clerk

May 20, 2020  
Date

Attachments:

Attachment 1 – Amendments to The Fullerton Plan

# Chapter

# 10

## Public Safety

Fullerton will be a city which values and provides quality public safety services including emergency services, crime prevention and hazard mitigation.  
-The Fullerton Vision

### Introduction

Safe and vital neighborhoods, business districts and recreational areas, including the buildings and infrastructure therein, are among Fullerton's most valued qualities and highest priorities. The City's police and fire systems and professionals, as well as its building and code enforcement professionals, provide residents, business owners, property owners, and visitors with a reliable, community-oriented presence that results in effective, preventative and responsive public safety services.

The Public Safety Chapter seeks to sustain and improve the City's commitment to safety through proactive and comprehensive police, fire, building, and code enforcement services that advance community outreach, education, and awareness, reinforce partnerships, promote prevention, and enhance the technical, logistical and technological systems and tools to prepare for and respond to public safety needs.

The following goals and policies are provided to achieve the Fullerton Vision as it pertains to Public Safety.

#### Associated Tables and Exhibits

- Exhibit 15: Police and Fire Protection Facilities (page 175)
- Exhibit 16: Parcels Located within Fullerton Municipal Airport Runway Protection Zone - Land Use (page 177)
- Exhibit 17: Parcels Located within Fullerton Municipal Airport Accident Potential Zone (APZ II) (page 179)
- Exhibit 18: Part 77 Airspace Plan (page 181)

#### Overarching Policies

- OAP1.** Comply with State and Federal laws and regulations while maintaining local control in decision-making.
- OAP2.** Pursue Federal, State and local funding options to support implementation of The Fullerton Plan.
- OAP3.** Leverage the advantages and advances of technology.
- OAP4.** Seek opportunities for increased efficiency and effectiveness.

### Purpose

The purpose of the Public Safety Element is to provide quality public safety services needed to serve the existing and expected future population in Fullerton.

This Element is required per California Government Code Section 65302.

*The City of Fullerton Local Hazard Mitigation Plan (LHMP) has been adopted as part of The Fullerton Plan Safety Element. The Safety Element is divided into two chapters of The Fullerton Plan: Natural Hazards (Chapter 21) and Public Safety (Chapter 10) with additional policies in Public Health (Chapter 11), Water (Chapter 16), Air Quality and Climate Change (Chapter 17), Integrated Waste Management (Chapter 18), and Natural Hazards (Chapter 20). The LHMP evaluates risk to the community from seismic hazards, fire, drought, severe weather, dam failure, human-caused hazards, geologic hazards, flooding, hazardous materials release, and disease/pests. It identifies critical facilities and vulnerable populations within areas of elevated hazard risk. The LHMP includes a hazard mitigation strategy including a prioritized list of mitigation actions to improve Fullerton's resiliency to hazard events.*



## GOAL 12: Proactively addressing public safety concerns.

---

### Policies

*Specific statements that provide a directive or framework for City decision-making that directly contribute to the attainment of the goal.*

---

#### *Region/Subregion Level*

##### **P12.1 Healthy Family Development**

Support programs that strengthen regional partnerships between public safety and human services agencies to encourage strong family relationships, reinforce healthy child development and encourage lawful behavior.

##### **P12.2 Collaboration with Outside Agencies**

Support regional and subregional efforts to prevent violence, child abuse, sexual assault, domestic violence, illegal use of firearms, violence associated with substance abuse, crimes against property and other similar issues.

#### *City Level*

##### **P12.3 Community Confidence Building**

Support policies and programs that bolster productive communication and problem-solving between public safety personnel and the Fullerton community.

##### **P12.4 Balance Safety Needs**

Support policies, projects, programs, and regulations that balance the need to reduce vehicle accidents, injuries, and deaths through traffic calming and street design with the need to facilitate emergency response times.

##### **P12.5 Community Preservation**

Support policies, programs and regulations pertaining to proactive code enforcement methods which reinforce the proper maintenance of properties, buildings and landscapes, and adherence to applicable regulations, while discouraging conditions that foster vandalism and more serious crime.

##### **P12.6 Youth Community Safety Partnership**

Support programs that involve young people in discussions about crime and prevention, increase youths' attachment to the community, engage youth in productive activities, and reinforce success in education.

##### **P12.7 Fire Code Amendments**

Support policies, programs and regulations that give the Fire Marshall flexibility to approve streets and fire lanes with reduced clearance requirements when other fire safety factors are incorporated into the project (such as street connectivity, traffic safety and the presence of sprinkler systems).

##### **P12.7.1 THIRA\***

Support projects, programs, policies and regulations that facilitate the preparation of a THIRA (Threat and Hazard Identification Risk Assessment) plan in accordance with FEMA guidelines that allows Fullerton to plan for and address the risks of human-caused hazards.

# GOAL 14: An environment with opportunities for community health and wellbeing.

---

## Policies

*Specific statements that provide a directive or framework for City decision-making that directly contribute to the attainment of the goal.*

---

### *Region/Subregion Level*

- P14.1 Coordination**  
Support programs to coordinate with state, county and regional agencies to improve public health and well-being through a range of efforts with regional, subregional and local agencies including schools, local medical facilities, senior centers and adjacent jurisdictions.

### *City Level*

- P14.2 Healthy Living**  
Support policies, projects, programs and regulations that result in changes to the physical environment to improve health, well-being and physical activity.
- P14.3 Farmers' Markets**  
Support policies, projects, programs and regulations that facilitate successful farmers' markets at appropriate and convenient locations throughout the City.
- P14.4 Community Gardens**  
Support policies, projects, programs and regulations that encourage community gardens that are operated and managed by local volunteers and that provide for small-scale local food production in areas convenient to residents.

### **P14.4.1 Public Health Education\***

Support policies, projects, programs, and regulations that disseminate information on low-cost or free healthcare resources both within Fullerton and the surrounding region and that keep residents informed of trending public health hazards and diseases.

### **P14.4.2 Contagion and Pest Abatement\***

Support policies, projects, programs and regulations that allow the City to address any epidemics or vector-borne diseases that arise in the future through emergency closures of public areas, vegetation removal, storm drain clearance, and other such actions.

### *Neighborhood/District Level*

- P14.5 Opportunities for Physical Activity**  
Support policies, projects, programs and regulations that provide for convenient and safe areas that facilitate opportunities for physical activity such as parks, trails, open space, safe streets for bicycling, safe sidewalks for walking, and recreational facilities for residents of all ages and abilities. (See Chapter 12: Parks and Recreation for related policies.)



# Chapter 16

## Water

Fullerton will be a city which is committed to environmental sustainability in planning design, policy and practice.  
-The Fullerton Vision

### Introduction

The City's quality of life is dependent upon water and natural watershed resources. In addition to fundamental health and sanitation, an adequate supply of potable water provides significant public and private benefits such as irrigation, ecological habitat, recreation opportunities and aesthetics.

A threat to water resources is drought. Droughts are periods of time when water is scarce due to reduced rainfall. In urbanized areas like Fullerton, this can take the form of deteriorating landscapes in private homes and businesses as well as in public facilities, such as parks. As a segment of Fullerton's water supply is imported from other locations across the state, a drought in these areas may affect the City. Given how frequent droughts are in California, it is highly likely that Fullerton will be impacted at some point in the future by the effects of drought. Within Fullerton, as well as the region, water management is shifting increasingly toward water conservation and efficiency technologies used in planning, design, and construction of sites, buildings, and land uses. Additionally, urban runoff and storm water management is of growing concern at the local, regional, State and Federal levels, and regulations and practices pertaining to storm water are influencing the interrelationships between the built and natural environments.

The Water Element seeks to effectively manage water and natural watershed resources, including water supply, demand, quality, and storm water.

The following goals and policies are provided to achieve the Fullerton Vision as it pertains to Water.

#### Associated Tables and Exhibits

Exhibit 25.1: Statewide Drought Conditions (page 205.2)\*

#### Overarching Policies

**OAP1.** Comply with State and Federal laws and regulations while maintaining local control in decision-making.

**OAP2.** Pursue Federal, State and local funding options to support implementation of The Fullerton Plan.

**OAP3.** Leverage the advantages and advances of technology.

**OAP4.** Seek opportunities for increased efficiency and effectiveness.

### Purpose

The purpose of the Water Element is to ensure that the City has adequate water resource capacities and water quality to meet future growth needs.

This Element is not required per California Government Code Section 65302; however, as water is of importance to the community of Fullerton, it is prepared as an optional element per California Government Code Section 65303.

# GOAL 19: An adequate, safe, and reliable water supply.

---

## Policies

*Specific statements that provide a directive or framework for City decision-making that directly contribute to the attainment of the goal.*

---

### *Region/Subregion Level*

**P19.1 Agency Coordination for Water Supplies**  
Support regional and subregional efforts to ensure that an adequate water supply, including groundwater, remains available.

**P19.2 Conservation Efforts**  
Support regional and subregional efforts to promote water efficiency and conservation.

**P19.3 New Technologies**  
Support projects, programs, policies and regulations to encourage the use of new technologies which reduce water use.

**P19.3.1 Regional Water Protection\***  
Support regional and subregional efforts to safeguard water infrastructure and supply against the treats of contamination or disruption from disaster events of a regional or national scale, such as terrorism, earthquakes, floods, geologic activity, or other events as they arise.

**P19.3.2 Climate Resilience in Water Supply\***  
Support regional and subregional efforts to adapt current water supply practices in anticipation of reduced water availability due to the effects of climate change.

### *City Level*

**P19.4 Adequate Supply**  
Support projects, programs, policies and regulations to maintain adequate quantities of water, including groundwater, available to the City now and in the future.

**P19.5 Water Quality**  
Support projects, programs, policies and regulations to ensure the quality of the water supply.

**P19.5.1 Water-saving Infrastructure\***  
Support projects, programs, policies, and regulations that will lead to the capture, storage, and re-use of rainwater in the city so as to reduce Fullerton's dependence on external sources of water.

### *Neighborhood/District Level*

**P19.6 Focus Area Planning**  
Support projects, programs, policies and regulations to evaluate ways to conserve and reduce water use as part of community-based planning of Focus Areas.

### *Project Level*

**P19.7 Sustainable Water Practices in New Development**  
Support projects, programs, policies and regulations to encourage water efficient practices in site and building design for private and public projects.



## GOAL 20: A healthy watershed and clean urban runoff.

---

### Policies

*Specific statements that provide a directive or framework for City decision-making that directly contribute to the attainment of the goal.*

---

#### *Region/Subregion Level*

- P20.1 Regional Watersheds**  
Support regional and subregional efforts to support functional and healthy watersheds.
- P20.2 Urban Runoff Management**  
Support regional and subregional efforts to support cleaner and reduced urban runoff.

#### *City Level*

- P20.3 Product Handling and Disposal Impacts**  
Support projects, programs, policies and regulations to reduce impacts to watersheds and urban runoff from the improper handling and disposal of commercial products.

- P20.3.1 Natural Water System Integrity\***  
Support projects, programs, policies and regulations that encourage the re-emergence of natural watersheds throughout the city's extent.

#### *Neighborhood/District Level*

- P20.4 Local Watersheds**  
Support projects, programs, policies and regulations that support a functional and healthy watershed within neighborhoods and districts.

- P20.5 Water Quality of Focus Areas**  
Support projects, programs, policies and regulations to encourage site and infrastructure improvements within the City's Focus Areas to support cleaner and reduced urban runoff.

#### *Project Level*

- P20.6 Construction Impacts**  
Support projects, programs, policies and regulations to reduce impacts to watersheds and urban runoff caused by private and public construction projects.
- P20.7 Development Impacts**  
Support projects, programs, policies and regulations to reduce impacts to watersheds and urban runoff caused by the design or operation of a site or use.
- P20.7.1 Incorporate Natural Water Systems in Design Standards\***  
Support projects, programs, policies and regulations that encourage the preservation of natural creeks and waterways into new projects and developments in Fullerton.



# Chapter 17

## Air Quality and Climate Change

Fullerton will be a city which is committed to environmental sustainability in planning design, policy and practice.  
-The Fullerton Vision

### Introduction

As a city located within the Southern California region, Fullerton is aware of and concerned about its air quality. The region is challenged by poor air quality caused by a number of contributing factors, and the City of Fullerton is dedicated to its role in achieving the objectives of regional air quality programs. In addition to general air quality issues, a consensus exists within the scientific and, in general, other sectors, that climate change is occurring. Assembly Bill 32, the Global Warming Solutions Act, requires California to reduce greenhouse gas emissions to 1990 levels by 2020. Although actions taken on a local level cannot resolve this global issue, the City of Fullerton is committed to implementing policies that address energy and resource conservation.

Climate change is expected to either compound the effects or increase the severity of certain hazards in and around Fullerton. For instance, fire hazards may likely become more frequent and destructive due to hotter temperatures and reduced water availability. Flooding may become more widespread since drier ground is less able to absorb urban runoff. Certain diseases and pests may become more prevalent due to longer mating seasons. For many of these hazards, the City's Local Hazard Mitigation Plan (Appendix I) identifies strategies to address some of these potential impacts, increasing overall community resilience.

The Air Quality and Climate Change Element seeks to protect the well-being of Fullerton's citizens through improvement of air quality, and addressing climate change through the integration of a climate action plan.

The following goals and policies are provided to achieve the Fullerton Vision as it pertains to Air Quality and Climate Change.

### Overarching Policies

- OAP1.** Comply with State and Federal laws and regulations while maintaining local control in decision-making.
- OAP2.** Pursue Federal, State and local funding options to support implementation of The Fullerton Plan.
- OAP3.** Leverage the advantages and advances of technology.
- OAP4.** Seek opportunities for increased efficiency and effectiveness.

### Purpose

The purpose of the Air Quality and Climate Change Element is to protect the health and welfare of the community through policies aimed at improving air quality, reducing greenhouse gas emissions and working toward reducing the potential adverse effects of climate change.

This Element is not required per California Government Code Section 65302; however, as air quality and climate change are of importance to the community of Fullerton, it is prepared as an optional element per California Government Code Section 65303.

***The Climate Action Plan (CAP) will be adopted in conjunction with The Fullerton Plan and EIR. This Chapter contains a summary of the CAP strategies. Refer to the full CAP, provided in as an appendix to the EIR, for additional information.***



## GOAL 22: Participation in regional efforts to address climate change and its local impacts.

### Policies

*Specific statements that provide a directive or framework for City decision-making that directly contribute to the attainment of the goal.*

#### Region/Subregion Level

- P22.1 Motor Vehicle-related GHG Emissions**  
Support regional and subregional efforts to reduce greenhouse gas emissions associated with transportation through land use strategies and policies, transportation system improvements, and transportation demand management programs.
- P22.2 GHG Emissions from Electrical Generation**  
Support regional and subregional efforts to reduce greenhouse gas emissions associated with electrical generation through energy conservation strategies and alternative/renewable energy programs.
- P22.3 GHG Emissions from Water Conveyance**  
Support regional and subregional efforts to reduce greenhouse gas emissions associated with water conveyance through water conservation strategies and alternative supply programs.
- P22.4 Solid Waste-Related GHG Emissions**  
Support regional and subregional efforts to reduce emissions associated with solid waste through increased recycling programs and reduced waste strategies. (See Chapter 18: Integrated Waste Management for related policies.)

#### City Level

- P22.5 Technology to Reduce Emissions**  
Support projects, programs, policies and regulations to use technology whenever feasible to minimize travel for City meetings and trainings.
- P22.6 GHG Emissions from Waste**  
Support projects, programs, policies and regulations to reduce greenhouse gas emissions from waste through improved management of waste handling and reductions in waste generation. (See Chapter 18: Integrated Waste Management for related policies.)

#### P22.7 Climate Adaptation

Support projects, programs, policies and regulations to address climate change impacts relevant to the City as an inland community, including rises in average and extreme temperature, less annual precipitation, more flooding during El Niño seasons, increased power outages and higher levels of smog.

#### Neighborhood/District Level

- P22.8 Sustainable Communities Strategies**  
Support projects, programs, policies and regulations to coordinate future community-based planning efforts of the Focus Areas for consistency with the SCAG Sustainable Communities Strategy and Orange County Sustainable Communities Strategy.

#### **P22.8.1 Adopt Neighborhood Plans\***

Support projects, programs, policies and regulations to prepare local communities in Fullerton to prepare for the increased risks associated with climate change, such as Community Wildfire Preparedness Plans and evacuation plans in case of flood inundation or dam failure.

#### Project Level

- P22.9 Development**  
Support projects which voluntarily desire to implement site and/or building design features exceeding minimum requirements to reduce project greenhouse gas emissions.
- P22.9.1 Anticipatory Climate Resilient Design\***  
Support projects that incorporate design elements and standards that anticipate the effects of a warming climate with features that protect against intensified and increased disaster risk.

# Chapter 18

## Integrated Waste Management

Fullerton will be a city which is committed to environmental sustainability in planning design, policy and practice.  
-The Fullerton Vision

### Introduction

Integrated waste management is described as a system for reducing, collecting, recycling and disposing of waste products generated by residential, institutional, commercial, and industrial land uses. The City of Fullerton, recognizing the importance of reduce, reuse and recycle wherever possible, continues to pursue the integrated waste management practices that were borne in 1989 when the State Legislature passed AB 939, requiring that cities reduce the amount of waste going to landfill sites.

Hazardous materials in and around the Fullerton community have the potential to be released and endanger public health and safety. Ongoing oil and gas operations in Fullerton may lead to air pollution, oil spills, and groundwater contamination. Other sites use or store chemicals that are dangerous when exposed to humans. Sewer lines or gas pipelines running through Fullerton may also breach during a hazard event and can release their contents underground or on the surface, potentially compromising water supplies or endangering personal health.

The Integrated Waste Management Element seeks to encourage solid waste reduction and provide for the efficient recycling and disposal of refuse and solid waste material without deteriorating the environment.

The following goal and policies are provided to achieve the Fullerton Vision as it pertains to Integrated Waste Management.

### Overarching Policies

- OAP1.** Comply with State and Federal laws and regulations while maintaining local control in decision-making.
- OAP2.** Pursue Federal, State and local funding options to support implementation of The Fullerton Plan.
- OAP3.** Leverage the advantages and advances of technology.
- OAP4.** Seek opportunities for increased efficiency and effectiveness.

### Purpose

The purpose of the Integrated Waste Management Element is encourage an environmentally sound waste management system which uses resource recovery, recycling, and source reduction.

This Element is not required per California Government Code Section 65302; however, as integrated waste management is of importance to the community of Fullerton, it is prepared as an optional element per California Government Code Section 65303.



## GOAL 23: Safe and efficient management of waste.

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### Policies

*Specific statements that provide a directive or framework for City decision-making that directly contribute to the attainment of the goal.*

---

#### *Region/Subregion Level*

**P23.1 Regional Waste Management**  
Support regional and subregional efforts to increase recycling, waste reduction, and product reuse.

**P23.1.1 Regional Hazardous Waste Control\***  
Support regional and subregional efforts to control and limit the amount of hazardous waste that is released into regional air basins and watersheds as well as limiting the transport of hazardous materials along certain corridors only.

#### *City Level*

**P23.2 Hazardous Waste**  
Support projects, programs, policies and regulations to promote safe handling and disposal by households, businesses and City operations of solid waste which has specific disposal requirements.

**P23.3 Waste Reduction and Diversion**  
Support projects, programs, policies and regulations to promote practices to reduce the

amount of waste disposed in landfills.

**P23.4 Waste Stream Separation and Recycling**  
Support projects, programs, policies and regulations to expand source separation and recycling opportunities to all households, businesses and City operations

#### *Neighborhood/District Level*

**P23.5 Recycling Centers**  
Support projects, programs, policies and regulations to develop neighborhood-serving, State-certified recycling facilities in neighborhoods and districts.

**P23.6 Focus Area Waste Management**  
Support projects, programs, policies and regulations to evaluate ways to increase recycling and product reuse and reduce waste as part of community-based planning of Focus Areas.

#### *Project Level*

**P23.7 Waste Management**  
Support projects, programs, policies and regulations to consider project level solid waste management needs at the site and building design stages.

***Also see Chapter 17: Air Quality and Climate Change, P21.5 Product Handling and Disposal Impacts, P22.4 Solid Waste GHG Emissions and P22.6 GHG Emissions for Solid Waste.***

## GOAL 24: Responsible management of open spaces balanced with the healthy functioning of environmental systems.

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### Policies

*Specific statements that provide a directive or framework for City decision-making that directly contribute to the attainment of the goal.*

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**P24.8 Environmentally Sensitive Areas**  
Support projects, programs, policies and regulations to preserve the environmentally sensitive areas of public open spaces.

**P24.9 Passive Open Space**  
Support projects, programs, policies and regulations to encourage diverse, environmentally-sensitive, passive open spaces.

#### *Neighborhood/District Level*

**P24.10 Trail Linkages to Open Space**  
Support projects, programs, policies and regulations to promote recreational trails and the bikeway system to link open spaces to public areas and neighborhoods.

**P24.11 Open Space in Focus Areas**  
Support projects, programs, policies and regulations to evaluate increasing urban and natural open spaces as part of community-based planning of Focus Areas.

**P24.11.1 Manage Wildfire Areas\***

Support projects, programs, policies and regulations to manage and reduce the risk of wildfire in Very High, High, and Moderate Fire Hazard Severity Zones throughout the City through fire hazard abatement practices.

#### *Project Level*

**P24.12 Environmental Impact of Support Facilities**  
Support projects, programs, policies and regulations to limit the construction of facilities in open space areas and to design necessary improvements, such as fire roads, access roads, and parking facilities, to minimize environmental impacts and maintain the visual qualities of the open space.

**P24.13 Maintenance of Sensitive Areas**  
Support programs, policies and regulations to require maintenance of environmentally-sensitive areas by qualified/trained personnel and/or contractors.

**P24.13.1 Resilient Management\***

Support projects, programs, policies and regulations which increase the resilience of open space and natural areas to increased risk of fire, flood, and geologic hazards.



# Chapter 20

## Natural Hazards

Fullerton will be a city which values and provides quality public safety services including emergency services, crime prevention and hazard mitigation.  
-The Fullerton Vision

### Introduction

Consistent with State law, the City of Fullerton is committed to protecting the community from any unreasonable risks associated with the effects of seismically induced events, slope instability leading to mudslides and landslides, subsidence and other known geologic hazards, flooding, and wild land and urban fires.

Severe weather events such as high winds, extreme heat, heavy rains, or tornadoes can cause property damage, lead to disruptions in services and infrastructure, or cause injury or death. Any winds over 47 miles per hour are considered destructive as they can blow over utility poles and launch debris at people caught outside. Extreme heat caused by higher than normal temperatures or high humidity can cause harm to human health. In Fullerton, an extreme heat day is when temperatures reach or exceed 98.4°F. Heavy rains in Fullerton generally occur during the winter season when El Niño weather conditions or atmospheric rivers bring rain from other parts of the world to Southern California. Severe or prolonged heavy rain can lead to flooding in the City, particularly in areas with high amounts of pavement and other impervious surfaces. Floods are measured by their likelihood of occurrence. A 100-year flood has a 1 in 100 chance of occurring during any given year while a 500-year flood has a 1 in 500 chance of occurring during any given year. Fullerton has both 100- and 500-year floodplains as designated by FEMA. Tornadoes are cycling columns that rotate at extremely high speeds ranging from 65 to 200 miles per hour or faster. While tornadoes are rare in California, a few have occurred in or near Fullerton throughout recorded history. All of these events are likely to continue occurring in Fullerton.

The Natural Hazards Element seeks to reduce the potential risk of death, injuries, property damage and economic and social dislocation resulting from natural hazards within or affecting the Fullerton community.

The following goal and policies are provided to achieve the Fullerton Vision as it pertains to Natural Hazards.

#### Overarching Policies

**OAP1.** Comply with State and Federal laws and regulations while maintaining local control in decision-making.

**OAP2.** Pursue Federal, State and local funding options to support implementation of The Fullerton Plan.

**OAP3.** Leverage the advantages and advances of technology.

**OAP4.** Seek opportunities for increased efficiency and effectiveness.

### Purpose

The purpose of the Natural Hazards Element is to protect life, prevent human injury and reduce the potential for property damage throughout Fullerton.

This Element is required per California Government Code Section 65302.

#### Associated Tables and Exhibits

Exhibit 26: Local and Regional Fault Lines\* (page 207)

Exhibit 27: Liquefaction Zones\* (page 209)

Exhibit 27.1: Landslide Potential\* (page 209.2)

Exhibit 28: Fire Hazard Zones\* (page 211)

Exhibit 29: Dam Failure Inundation Zone\* (page 213)

Exhibit 30: FEMA Flood Zones\* (page 215)

*The City of Fullerton Local Hazard Mitigation Plan (LHMP) has been adopted as part of The Fullerton Plan Safety Element. The Safety Element is divided into two chapters of The Fullerton Plan: Natural Hazards (Chapter 21) and Public Safety (Chapter 10) with additional policies in Chapters 11, 16, 17, 18, and 20. The LHMP evaluates risk to the community from natural and human-caused hazards and includes prioritized mitigation actions.*



# GOAL 26: Protection of people, natural and built environments and economy from natural hazards.

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## Policies

*Specific statements that provide a directive or framework for City decision-making that directly contribute to the attainment of the goal.*

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### *Region/Subregion Level*

**P26.1 Regional Coordination**  
Support projects, programs, policies and regulations to coordinate planning for and response to natural disasters with other agencies within the region.

### *City Level*

**P26.2 Adequate Emergency Response Infrastructure**  
Support projects, programs, policies and regulations to prepare to respond to natural disasters to the best of the City's ability.

**P26.2.1 Continual Efforts\***  
Support projects, programs, policies and regulations to continually update and refine the City's Safety Element, Local Hazard Mitigation Plan, Emergency Operations Plan, and other plans as staff may deem relevant with the latest available information on hazards and disaster risk in Fullerton.

### *Neighborhood/District Level*

**P26.3 Focus Area Planning**  
Support projects, programs, policies and regulations to consider natural hazard risks and mitigation as part of community-based planning of Focus Areas.

### **P26.3.1 Community Hazard Mapping\***

Support projects, programs, policies and regulations that help communities and residents of neighborhood blocks understand what kinds of hazards could occur in their area and which areas are the most susceptible to fire, geologic, seismic, and flooding hazards.

### *Project Level*

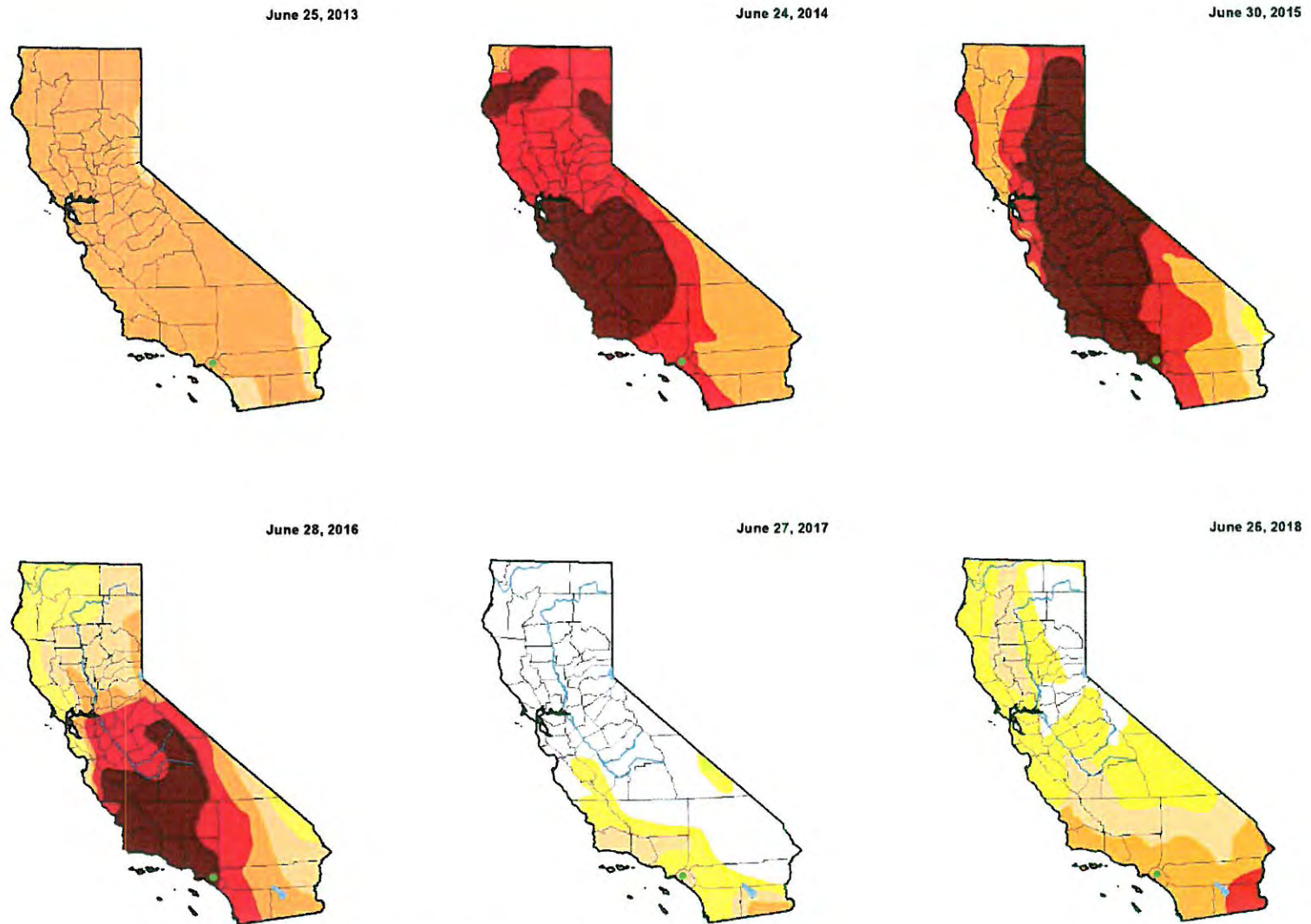
**P26.4 Minimization of Development in High Risk Areas**  
Support projects, programs, policies and regulations to discourage or limit development within areas that are vulnerable to natural disasters, particularly in areas with recurring damage and/or the presence of multiple natural hazards.

**P26.5 Hazard Specific Development Regulations**  
Support projects, programs, policies and regulations to utilize hazard specific development regulations to mitigate risks associated with identified potential natural hazards, including flooding, wildland fires, liquefaction, and landslides when development does occur.

*Also see Chapter 10: Public Safety for related policies.*



Exhibit 25.1 - Statewide Drought Conditions from 2013 to 2018



● Approximate Location of the City of Fullerton

Exhibit 26 - Local and Regional Fault Lines Map

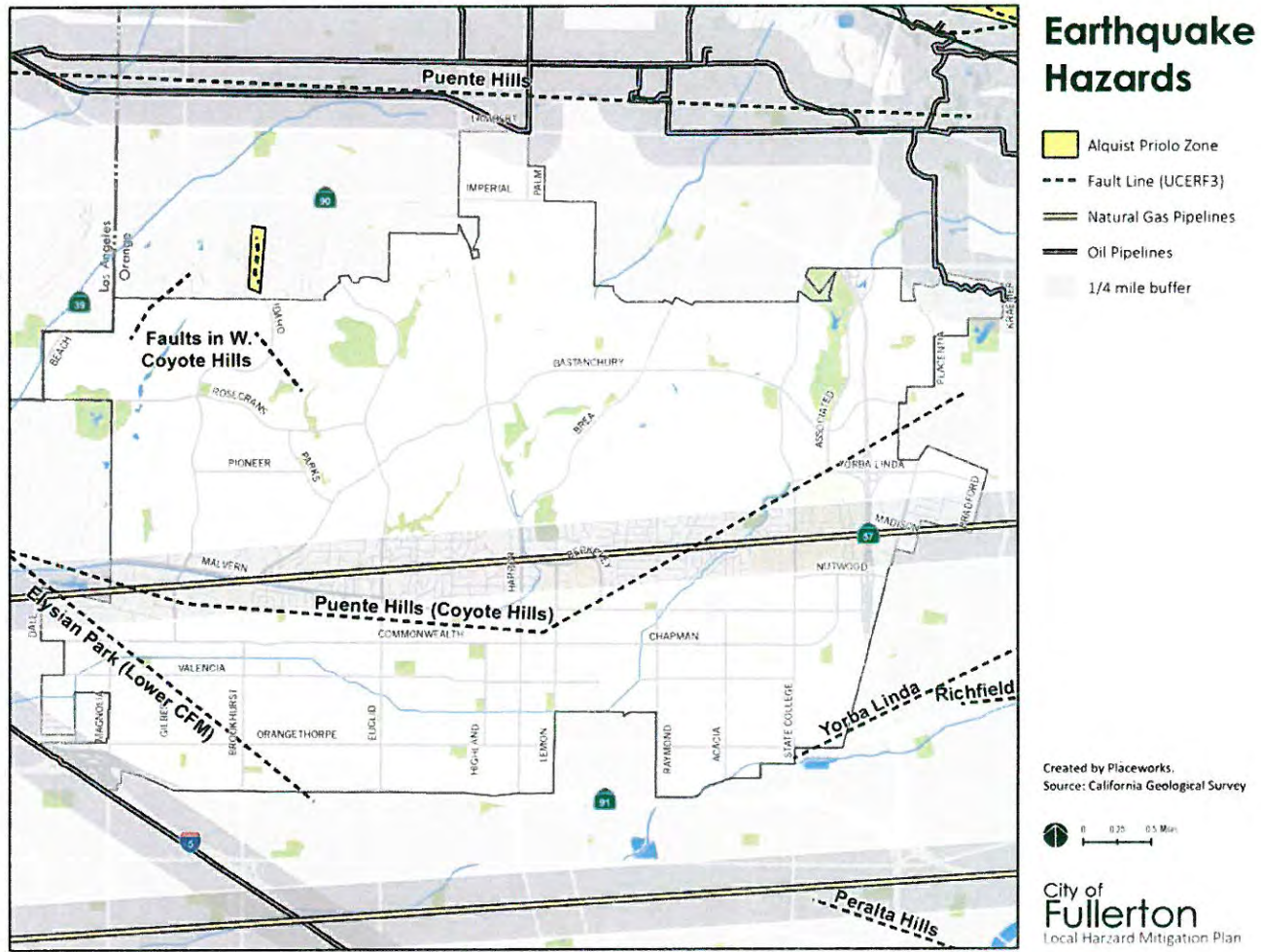


Exhibit 27 - Liquefaction Zones

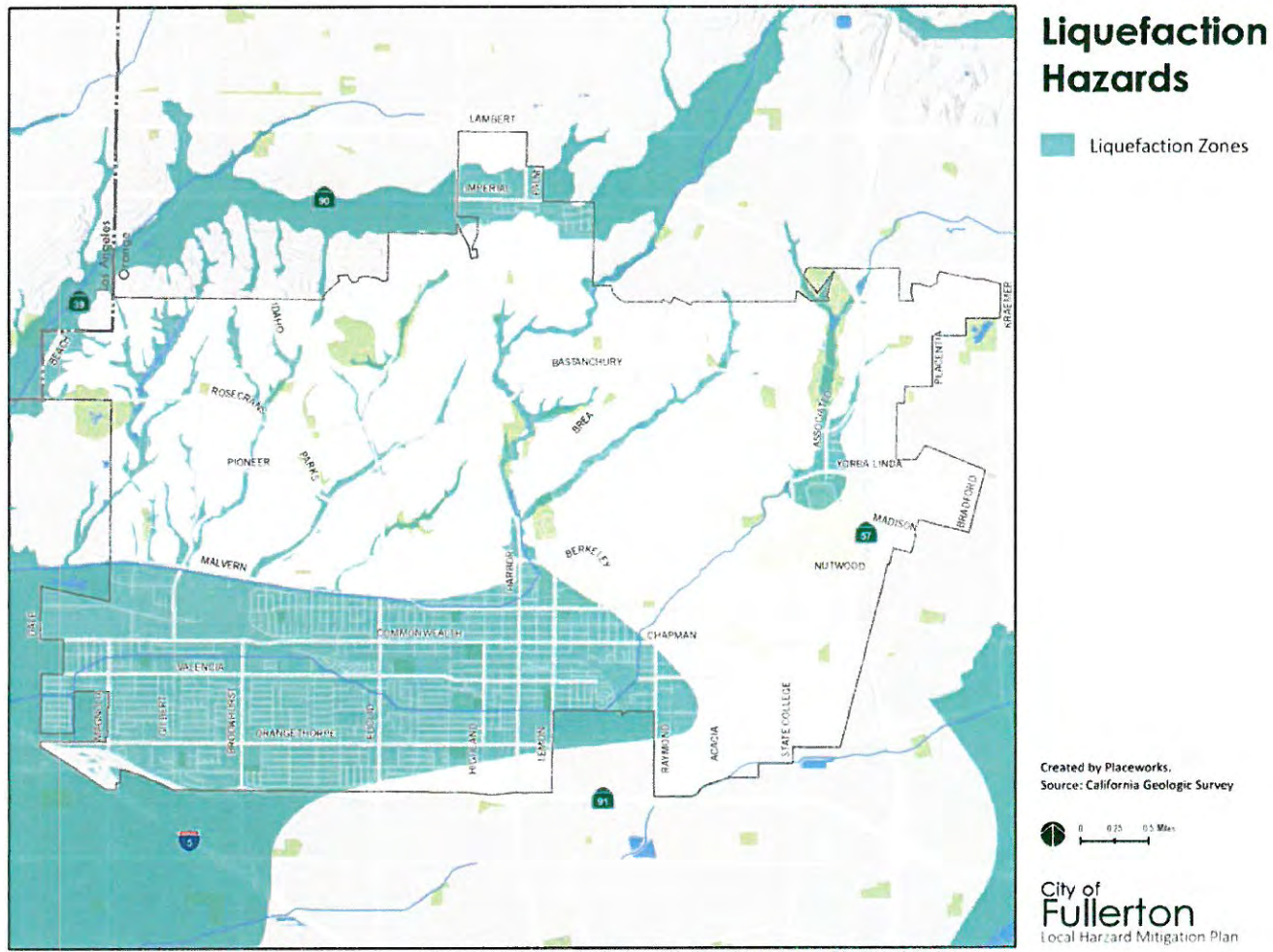




Exhibit 27.1 - Landslide Potential

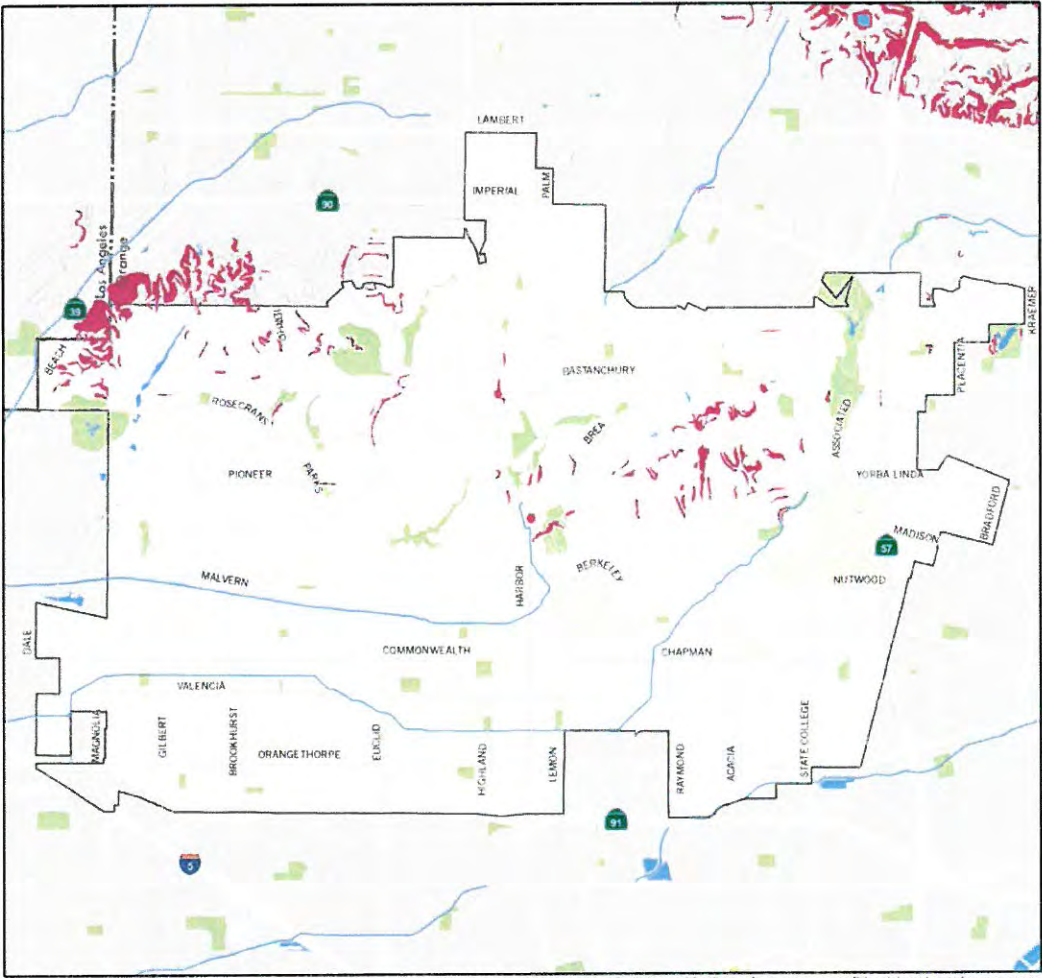


Exhibit 28 - Fire Hazard Zones

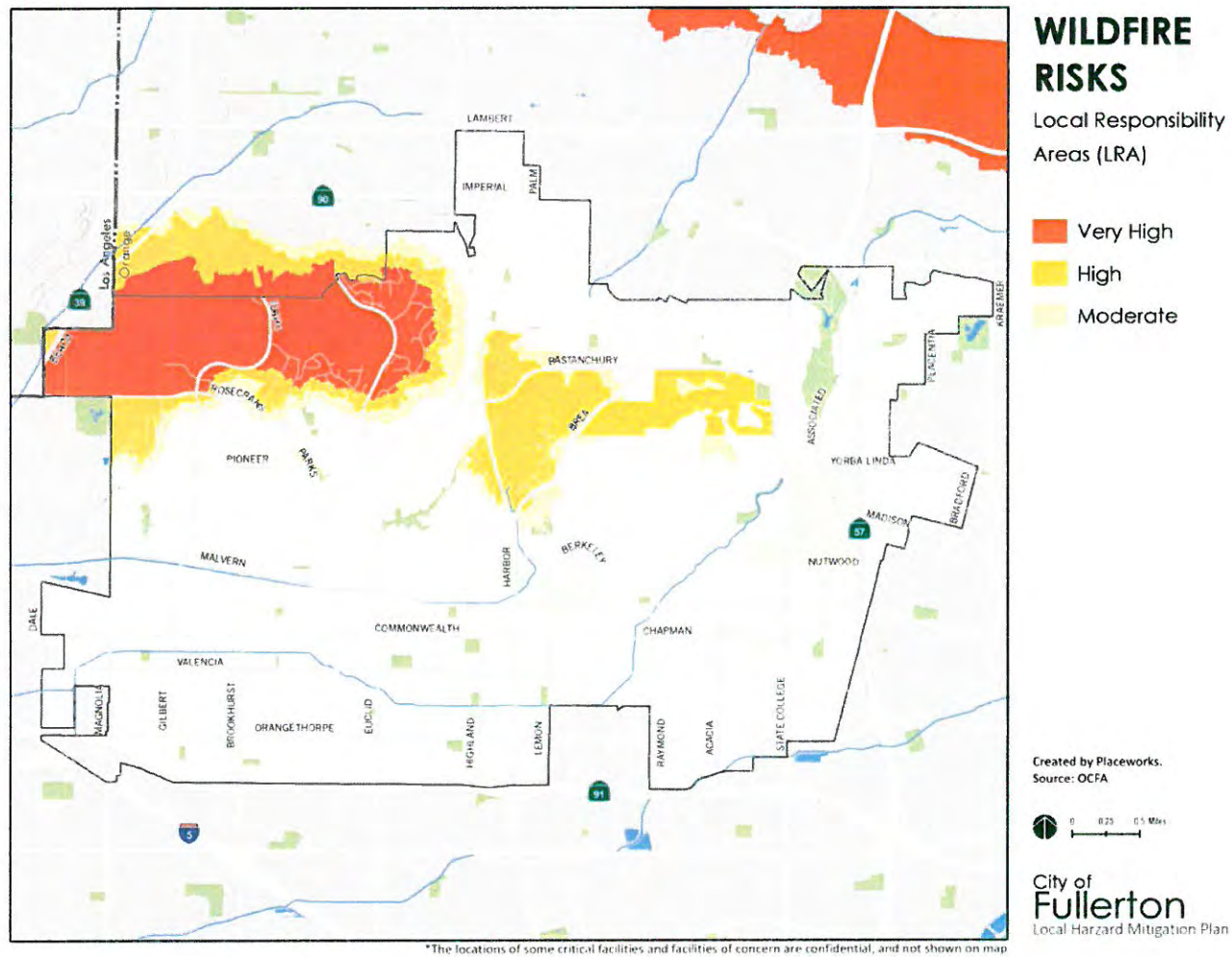


Exhibit 29 - Dam Failure Inundation Zones

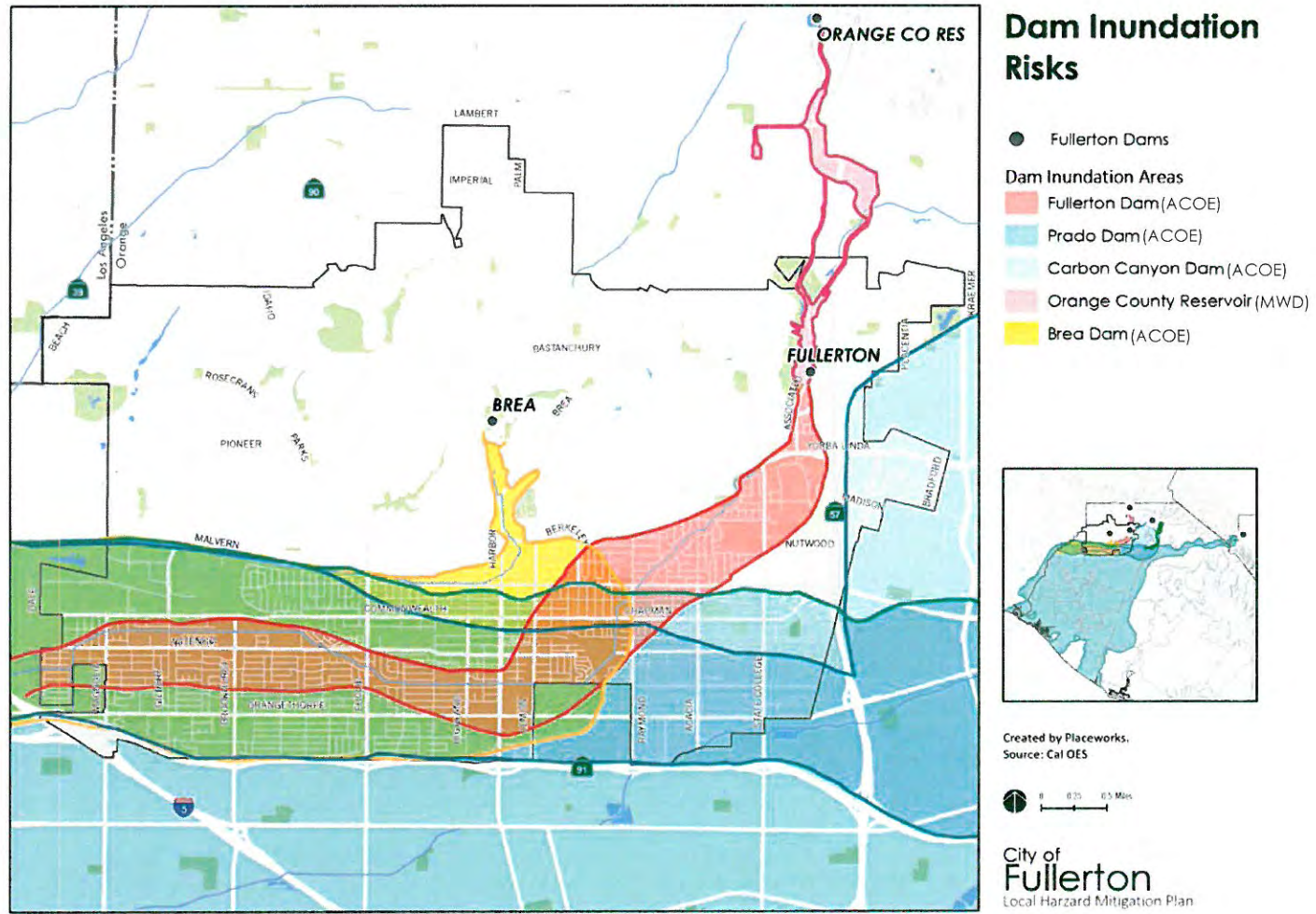
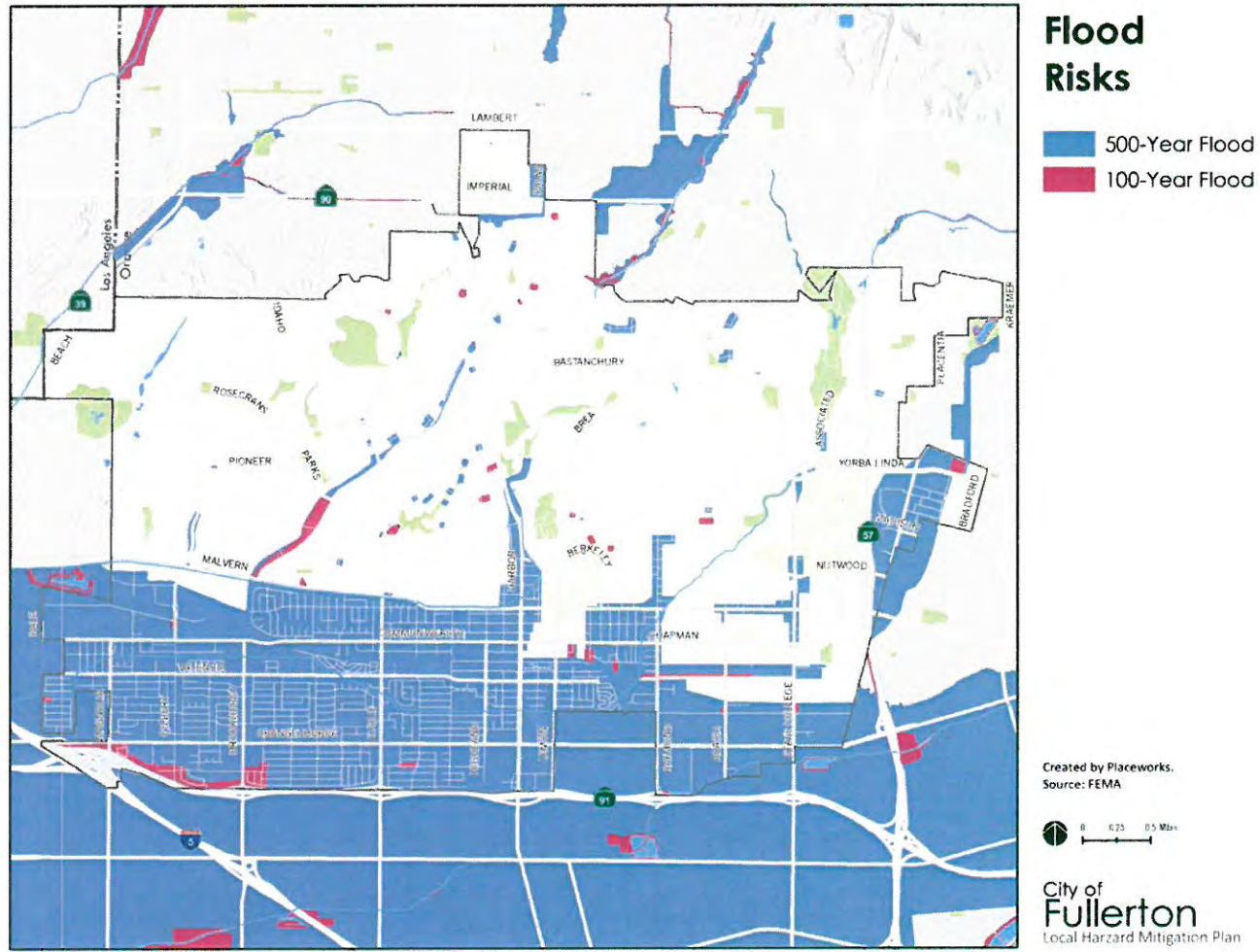




Exhibit 30 - FEMA Flood Zones



Map includes Letters of Map Revision through February 23, 2018

City of Fullerton

RESOLUTION CERTIFICATION

STATE OF CALIFORNIA )  
COUNTY OF ORANGE ) SS  
CITY OF FULLERTON )

RESOLUTION NO. 2020-42


I, Lucinda Williams, City Clerk and ex-officio Clerk of the City Council of the City of Fullerton, California, hereby certify that the whole number of the members of the City Council of the City of Fullerton is five and that the City Council adopted the above and foregoing Resolution No. 2020-42 at a regular meeting of the City Council held May 19, 2020 by the following vote:

COUNCIL MEMBER AYES: Fitzgerald, Flory, Silva, Whitaker, Zahra

COUNCIL MEMBER NOES: None

COUNCIL MEMBER ABSTAINED: None

COUNCIL MEMBER ABSENT: None

  
\_\_\_\_\_  
Lucinda Williams, MMC  
City Clerk

# APPENDIX D

## KEY FACILITIES INVENTORY

- Critical facilities list
- Facilities of concern list

This is a list of the names, address, and categorization of the 167 key facilities in Fullerton. The specific location of utilities facilities, such as energy or water infrastructure, are not disclosed for security reasons. Additionally, addresses are not given for some other facilities, predominately bridges. There are also 69 facilities of concern included in a separate table. A map showing the locations of all facilities is included in Chapter 4. Facilities whose location is confidential have been removed from the map.

### Critical Facilities List

FACILITY NAME	FACILITY TYPE	FACILITY LOCATION MAPPED?	FACILITY ADDRESS
Southern California Edison	Energy	No	Location withheld
Southern California Edison	Energy	No	Location withheld
Las Palmas	Utility	No	Location withheld
Las Palmas	Utility	No	Location withheld
Hillcrest	Utility	No	Location withheld
Hillcrest	Utility	No	Location withheld
Upper Acacia	Utility	No	Location withheld
Upper Acacia	Utility	No	Location withheld
Upper Acacia	Utility	No	Location withheld
Upper Acacia	Utility	No	Location withheld
Lower Acacia	Utility	No	Location withheld
Lower Acacia	Utility	No	Location withheld
Lower Acacia	Utility	No	Location withheld
Lower Acacia	Utility	No	Location withheld
Lower Acacia	Utility	No	Location withheld
Lower Acacia	Utility	No	Location withheld
State College	Utility	No	Location withheld
State College	Utility	No	Location withheld

Kimberly2	Utility	No	Location withheld
Kimberly2	Utility	No	Location withheld
Kimberly2	Utility	No	Location withheld
Hermitage	Utility	No	Location withheld
Hermitage	Utility	No	Location withheld
Hermitage	Utility	No	Location withheld
Hermitage	Utility	No	Location withheld
Hermitage	Utility	No	Location withheld
Hermitage	Utility	No	Location withheld
Coyote	Utility	No	Location withheld
Coyote	Utility	No	Location withheld
Coyote	Utility	No	Location withheld
Hawks Point	Utility	No	Location withheld
Hawks Point	Utility	No	Location withheld
Laguna	Utility	No	Location withheld
Laguna	Utility	No	Location withheld
Tank Farm	Utility	No	Location withheld
Tank Farm	Utility	No	Location withheld
Carbon Canyon Dam	Water and Sewage	No	Location withheld
Prado Dam	Water and Sewage	No	Location withheld
Tank Farm-T5	Water and Sewage	No	Location withheld
Tank Farm-T4	Water and Sewage	No	Location withheld
Tank Farm-T3	Water and Sewage	No	Location withheld
Tank Farm-T2	Water and Sewage	No	Location withheld
Tank Farm-T1	Water and Sewage	No	Location withheld

Laguna	Water and Sewage	No	Location withheld
Hawks Pointe	Water and Sewage	No	Location withheld
Coyote	Water and Sewage	No	Location withheld
Hermitage	Water and Sewage	No	Location withheld
Kimberly No 2	Water and Sewage	No	Location withheld
State College	Water and Sewage	No	Location withheld
Upper Acacia-T2	Water and Sewage	No	Location withheld
Upper Acacia-T1	Water and Sewage	No	Location withheld
Lower Acacia	Water and Sewage	No	Location withheld
Hillcrest	Water and Sewage	No	Location withheld
Las Palmas	Water and Sewage	No	Location withheld
Kimberly	Water and Sewage	No	Location withheld
Christlieb	Water and Sewage	No	Location withheld
Sunclipse	Water and Sewage	No	Location withheld
Kimberly	Water and Sewage	No	Location withheld
Coyote	Water and Sewage	No	Location withheld
Airport	Water and Sewage	No	Location withheld
Extraction	Water and Sewage	No	Location withheld
Extraction	Water and Sewage	No	Location withheld
Extraction	Water and Sewage	No	Location withheld
Extraction	Water and Sewage	No	Location withheld
Extraction	Water and Sewage	No	Location withheld
Injection	Water and Sewage	No	Location withheld
Injection	Water and Sewage	No	Location withheld



Injection	Water and Sewage	No	Location withheld
Injection	Water and Sewage	No	Location withheld
Injection	Water and Sewage	No	Location withheld
Extraction	Water and Sewage	No	Location withheld
Extraction	Water and Sewage	No	Location withheld
Extraction	Water and Sewage	No	Location withheld
Gilbert Neighborhood Center	Community Services	Yes	2120 W. Orangethorpe Ave
Garnet Neighborhood Center	Community Services	Yes	3012 Garnet Ln
Richman Neighborhood Center	Community Services	Yes	320 W Elm Ave
Fullerton Community Center/Boys and Girls Club of Fullerton ( <i>Emergency shelter and cooling center</i> )	Emergency Gathering Areas	Yes	340 W Commonwealth Ave
Maple Neighborhood Center	Community Services	Yes	701 S Lemon St
Main Library	Community Services	Yes	353 W Commonwealth Ave
Station 2	Municipal Government	Yes	1732 W Valencia Dr
Station 5	Municipal Government	Yes	2555 E Yorba Linda Blvd
Station 6	Municipal Government	Yes	2691 Rosecrans Ave
Station 1	Municipal Government	Yes	312 E Commonwealth Ave
Station 4	Municipal Government	Yes	3251 N Harbor Blvd

Station 3	Municipal Government	Yes	700 S Acacia Ave
Police Station	Municipal Government	Yes	237 W Commonwealth Ave
Saint Jude Medical Center	Medical	Yes	101 E Valencia Mesa Dr
City Hall	Municipal Government	Yes	303 W Commonwealth Ave
City Yard	Municipal Government	Yes	1580 W Commonwealth Ave
Fullerton Museum Center	Museum	Yes	301 N. Pomona Ave.
Fullerton Airport	Transportation	Yes	4011 W Commonwealth Ave
55c0681	Transportation	Yes	0.0 Mi S/O Bastanchury Rd
55c0685	Transportation	Yes	0.05 Mi E. Raymond Ave
55c0298	Transportation	Yes	0.05 Mi E/O Acacia Ave
55c0296	Transportation	Yes	0.05 Mi S. Chapman Ave
55c0585	Transportation	Yes	0.1 M S. Commonwealth Av
55c0309	Transportation	Yes	0.1 M S/O Commonwealth Av
55c0229	Transportation	Yes	0.1 Mi E/O Harbor Blvd
55c0288	Transportation	Yes	0.1 Mi E/O Harbor Blvd
55c0525	Transportation	Yes	0.1 Mi E/O Lemon St
55c0386	Transportation	Yes	0.1 Mi N/O Chapman Ave
55c0147	Transportation	Yes	0.1 Mi N/O Valencia Dr
55c0234	Transportation	Yes	0.1 Mi N/O Valencia Dr
55c0292	Transportation	Yes	0.1 Mi N/O Valencia Dr
55c0383	Transportation	Yes	0.1 Mi N/O Valencia Drive

55c0233	Transportation	Yes	0.1 Mi S/O Commonwealth
55c0312	Transportation	Yes	0.1 Mi S/O Commonwealth
55c0385	Transportation	Yes	0.1 Mi S/O Commonwealth
55c0418	Transportation	Yes	0.1 Mi W/O Raymond Ave
55c0664	Transportation	Yes	0.1 Mi. S/O Commonwealth
55c0308	Transportation	Yes	0.11 Mi S/O Commonwealth
55c0311	Transportation	Yes	0.11 Mi S/O Commonwealth
55c0384	Transportation	Yes	0.15 Mi N/O Valencia Dr
55c0346	Transportation	Yes	0.15 Mi S/O Orangethorpe
55c0638	Transportation	Yes	0.15 Mi W/O Harbor Blvd.
55c0263	Transportation	Yes	0.1M N. Commonwealth Ave
55c0310	Transportation	Yes	0.2 Mi E/O Brookhurst Rd
55c0231	Transportation	Yes	0.2 Mi E/O Dale St
55c0297	Transportation	Yes	0.2 Mi N/O Nutwood Ave
55c0244	Transportation	Yes	0.2 Mi S/O Valencia Dr
55c0293	Transportation	Yes	0.2 Mi S/O Valencia Dr
55c0294	Transportation	Yes	0.2 Mi S/O Valencia Dr
55c0295	Transportation	Yes	0.2 Mi S/O Valencia Dr
55c0586	Transportation	Yes	0.3 Mi E/O Harbor Blvd
55c0307	Transportation	Yes	0.3 Mi N Orangethorpe Ave
55c0345	Transportation	Yes	0.3 Mi N/O Bastanchury
55c0242	Transportation	Yes	0.3 Mi N/O Orangethorpe
55c0235	Transportation	Yes	0.3 Mi W/O Euclid St
55c0584	Transportation	Yes	0.3 Mi W/O Harbor Blvd

55c0387	Transportation	Yes	0.4 Mi N/O Bastanchry Rd
55c0526	Transportation	Yes	0.8 Mi S/O Imperial Hwy
55c0243	Transportation	Yes	1/4 Mi N/O Orangethorpe
55c0120	Transportation	Yes	100' E/O Harbor Blvd
55c0224	Transportation	Yes	100' S/O Malvern Ave
55c0289	Transportation	Yes	100' S/O Malvern Ave
55c0290	Transportation	Yes	100' S/O Malvern Ave
55c0602	Transportation	Yes	100' S/O Malvern Ave
55c0236	Transportation	Yes	200' N/O Ash Ave
55c0230	Transportation	Yes	50' E/O Harbor Blvd
55c0225	Transportation	Yes	50' N/O Chapman Ave
55c0226	Transportation	Yes	50' N/O Chapman Ave
55c0227	Transportation	Yes	50' N/O Chapman Ave
55c0228	Transportation	Yes	50' N/O Chapman Ave
55c0232	Transportation	Yes	50' N/O Valencia Dr
55c0291	Transportation	Yes	At Woods Ave
55 0466	Transportation	Yes	Associated Road Uc
55 0465	Transportation	Yes	Bastanchury Road Uc
55 0456	Transportation	Yes	Chapman Avenue Uc
55 0502r	Transportation	Yes	E91/S5 Oh Separation
55 0503g	Transportation	Yes	E91-S5 Connector Oh
55 0287	Transportation	Yes	Gilbert Street Uc
55 0528	Transportation	Yes	Loftus Diversion Channel
55 0472s	Transportation	Yes	Magnolia Avenue Off-Ramp Oh

55 0296l	Transportation	Yes	Magnolia Avenue Uc
55 0296r	Transportation	Yes	Magnolia Avenue Uc
55 0296f	Transportation	Yes	Magnolia Avenue Uc (W91-N5 Hov)
55 0464	Transportation	Yes	Nutwood Avenue Uc
55 0483	Transportation	Yes	Rolling Hills Dr Uc
55 0293l	Transportation	Yes	W91/5 Separation & Oh
55 0468	Transportation	Yes	Yorba Linda Blvd Oc
Transportation Center	Transportation	Yes	120 E Santa Fe Ave
Yorba Linda Pump Station	Utility	Yes	2600 E Yorba Linda Blvd
Brea Dam	Water and Sewage	Yes	Brea Reservoir
Fullerton Dam	Water and Sewage	Yes	Fullerton Lake
Independence Park ( <i>Back-up Shelter, Gym, Swim Complex, City-designated emergency event morgue</i> )	Emergency Gathering Areas	Yes	801 W. Valencia Ave.
Fullerton Tennis Center ( <i>Emergency triage for St. Jude Medical Center</i> )	Emergency Gathering Areas	Yes	110 E. Valencia Mesa Dr.
Amerige Stadium ( <i>Emergency animal shelter for small animals</i> )	Emergency Gathering Areas	Yes	304 W. Commonwealth
Laguna Lake Equestrian Center ( <i>Emergency shelter for horses and other livestock. Operated by Fullerton recreational riders.</i> )	Emergency Gathering Areas	Yes	3120 Lakeview Dr.

## Facilities of Concern List

<b>FACILITY NAME</b>	<b>FACILITY TYPE</b>	<b>FACILITY LOCATION MAPPED?</b>	<b>FACILITY ADDRESS</b>
Buena Park High School	Education	No	8833 Academy Dr
Fullerton Union High School	Education	Yes	201 E Chapman Ave
La Habra High School	Education	No	801 W Highlander Ave
La Sierra High School	Education	Yes	951 N State College Blvd
La Vista High School	Education	Yes	909 N State College Blvd
Sonora High School	Education	No	401 S Palm St
Sunny Hills High School	Education	Yes	1801 Warburton Way
Troy High School	Education	Yes	2200 E Dorothy Ln
Acacia Elementary School	Education	Yes	1200 N Acacia Ave
Beechwood School	Education	Yes	780 Beechwood Ave
Commonwealth Elementary School	Education	Yes	2200 E Commonwealth Ave
Fern Drive Elementary School	Education	Yes	1400 W Fern Dr
Robert C. Fisler School	Education	Yes	1350 Starbuck St
Golden Hill Elementary School	Education	Yes	732 Barris Dr
Hermosa Drive Elementary School	Education	Yes	400 E Hermosa Dr



Ladera Vista Junior High School Of The Arts	Education	Yes	1700 E Wilshire Ave
Laguna Road Elementary School	Education	Yes	300 Laguna Rd
Maple Elementary School	Education	Yes	244 E Valencia Dr
Nicolas Junior High School	Education	Yes	1100 W Olive Ave
Orangethorpe Elementary School	Education	Yes	1400 S Brookhurst Rd
Pacific Drive Elementary School	Education	Yes	1501 W Valencia Dr
Parks Jr High School	Education	Yes	1710 Rosecrans Ave
Raymond Elementary School	Education	Yes	517 N Raymond Ave
Richman Elementary School	Education	Yes	700 S Richman Ave
Rolling Hills Elementary School	Education	Yes	1460 E Rolling Hills Dr
Sunset Lane Elementary School	Education	Yes	2030 Sunset Ln
Valencia Park Elementary School	Education	Yes	3441 W Valencia Dr
Woodcrest Elementary School	Education	Yes	455 W Baker Ave
California State University, Fullerton	Education	Yes	800 N State College Blvd
Fullerton College	Education	Yes	321 E Chapman Ave
Hope University	Education	Yes	2500 E Nutwood Ave
Marshall B. Ketchum	Education	Yes	2575 Yorba Linda

University			Blvd
Ruby Drive Elementary	Education	No	601 Ruby Dr
Sierra Vista Elementary School	Education	No	1811 N Placentia Ave
Topaz Elementary School	Education	Yes	3232 Topaz Ln
Kids Adventure Learning Center	Education	Yes	1834 West Valencia Dr
Stepping Stones Academy	Education	Yes	3401 N Harbor Blvd
St Juliana Falconieri School	Education	Yes	1320 N Acacia Ave
Arborland Montessori School - Valencia Campus	Education	Yes	1700 W Valencia Dr
Arborland Montessori School - Hughes Campus	Education	Yes	2121 Hughes Dr
Ivycrest Montessori	Education	Yes	2025 E Chapman Ave
Eastside Christian	Education	Yes	1701 W Valencia Dr
Rosary Academy	Education	Yes	1340 N Acacia Ave
James A. Whitaker Elementary	Education	No	8401 Montana Ave
Women'S Transitional Living Center	Community Services	No	Confidential
Santa Ana Armory Cold Weather Shelter	Community Services	No	400 South Brookhurst Road
New Vista Immediate Response Housing	Community Services	No	Confidential
Sunnycrest Senior Living	Medical	Yes	1925 Sunny Crest Dr
Sunrise of Fullerton	Medical	Yes	2226 N Euclid St

Park Vista	Medical	Yes	2525 N Brea Blvd
Acacia Villas Assisted Living	Medical	Yes	1620 E Chapman Ave
Cambridge Court Assisted Living	Medical	Yes	1621 E Commonwealth Ave
Fullerton Rosewood Assisted	Medical	Yes	411 E Commonwealth Ave
Oasis Assisted Senior Living	Medical	Yes	1950 Sunny Crest Dr
Glencrest Manor	Medical	Yes	2401 Thorn Pl
Applecrest Homes Assisted Living	Medical	Yes	713 San Ramon Dr
Glenwood Care Assisted Living	Medical	Yes	2001 E Glenwood Ave
D'Best Care Board and Care	Medical	Yes	3608 W Ash Ave
Senior Living Community	Medical	Yes	312 N Roosevelt Ave
Cherub Home	Medical	Yes	2100 Carol Dr
Fullerton Gardens	Medical	Yes	1510 E Commonwealth Ave
Kindred Hospital Brea - Subacute	Medical	Yes	875 N. Brea Blvd.
Gordon Lane Convalescent Hospital	Medical	Yes	1821 E. Chapman Ave.
Terrace View Care Center	Medical	Yes	201 E. Bastanchury Rd.
The Pavilion at Sunny Hills	Medical	Yes	2222 N. Harbor

			Bldv.
Windsor Garden of Fullerton	Medical	Yes	245 E. Wilshire Ave.
Genesis - St. Elizabeth Healthcare and Rehabilitation Center	Medical	Yes	2800 N. Harbor Blvd.
Greenfield Care Center	Medical	Yes	330 W. Bastanchury Rd.
Park Vista at Morningside	Medical	Yes	2525 Brea Blvd.

# APPENDIX E

## IMPLEMENTATION WORKBOOK

- Local Hazard Mitigation Plan Implementation Workbook

**CITY OF FULLERTON**

***Local Hazard Mitigation Plan  
Implementation Workbook***

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**APRIL 10, 2019**





## WHAT IS THIS WORKBOOK?

The Local Hazard Mitigation Plan (LHMP) for the City of Fullerton features an evaluation of Fullerton's hazards as well as a variety of hazard mitigation actions corresponding to each hazard type. These actions are intended to preserve public safety, maintain critical municipal government operations and services when hazard events emerge, and empower community members to take hazard mitigation actions on an individual level. This Implementation Workbook (Workbook) is intended for use by City staff and decision makers after the LHMP is adopted. It will:

- Give clear instructions as to what to following adoption of the LHMP.
- Simplify future updates to the LHMP.
- Assist the City in receiving grant funding relating to mitigation action.
- Guide annual plan review actions.

## HOW DO I USE THIS WORKBOOK?

This Workbook can help City staff and decision makers in several different situations. If and when the events listed below occur, consult the respective sections of this Workbook for advice on how best to proceed:

- A disaster declaration has been announced
  - By the Fullerton City Council
  - By the State of California
  - By the federal government
- I want to apply for mitigation grant funding
- Fullerton is undergoing its budgeting process
- Fullerton is holding its annual meeting of the Hazard Mitigation Planning Team
- Fullerton is updating its policy and regulatory documents
  - The Local Hazard Mitigation Plan
  - The Safety Element of the General Plan
  - The Housing Element of the General Plan
  - The Municipal Code

## WHO MAINTAINS THIS WORKBOOK?

The leader of the Hazard Mitigation Planning Committee (HMPC) is the one responsible for maintain this Workbook. At the time of writing, the current HMPC leader is Heather Allen, from the Community Development Department. The HMPC may delegate this responsibility to someone else should they so choose.

# WHAT TO DO WHEN A DISASTER HAS BEEN PROCLAIMED OR DECLARED

Disasters may be proclaimed or declared by the Fullerton City Council, the State of California, or the federal government. Responsibilities may differ depending on who proclaims or declares the disaster. If multiple organizations proclaim or declare a disaster, consult all applicable lists.

## THE FULLERTON CITY COUNCIL

If the Fullerton City Council (or the designated city official, if the City Council is not in session) proclaims a Local Emergency, take the following steps:

- Update **Attachment 1** with information about the disaster. Include information about cumulative damage, including any damage outside of Fullerton.
- Discuss opportunities for local assistance with the representatives from the California Office of Emergency Services (Cal OES).
- If the disaster damages local infrastructure or City-owned facilities, repair or rebuild the structure to be more resilient, following applicable hazard mitigation actions. A list of actions, organized by hazards, is included as **Attachment 4**.
- Chapter 6** of the Fullerton LHMP states that the City should consider updating the LHMP if a disaster causes a loss of life in the community, even if there is no state disaster proclamation or federal disaster declaration that includes part or all of Fullerton. If there is a loss of life in Fullerton, consider updating the LHMP. Consult the section on updating the LHMP in this Workbook for details.

## THE STATE OF CALIFORNIA

If the State of California proclaims a disaster for Fullerton, or an area that includes part or all of Fullerton, take the following steps:

- Update **Attachment 1** with information about the disaster. Include information about cumulative damage, including any damage outside of Fullerton.
- Collaborate with representatives from Cal OES to assess the damage from the event.
- Discuss opportunities for local assistance with representatives from Cal OES.
- If the disaster damages local infrastructure or City-owned facilities, repair or rebuild the structure to be more resilient, following applicable hazard mitigation actions. A list of actions, organized by hazards, is included as **Attachment 4**.
- If the disaster may escalate into a federal disaster declaration, begin any necessary coordination with representatives from the Federal Emergency Management Agency (FEMA).
- Chapter 6** of the Fullerton LHMP states that the City should consider updating the LHMP if a disaster leads to a state disaster proclamation or federal disaster declaration that includes

part or all of Fullerton, even if there is no loss of life. Consider updating the LHMP. Consult the section on updating the LHMP in this Workbook for details.

## THE FEDERAL GOVERNMENT

If the federal government declares a disaster for Fullerton, or any area that includes part or all of Fullerton, take the following steps:

- Update **Attachment 1** with information about the disaster. Include information about cumulative damage, including any damage outside of Fullerton.
- Collaborate with representatives from Cal OES and FEMA to assess the damage from the event.
- Determine if Fullerton will be eligible for public assistance funds related to the federal disaster declaration. These funds can be used to reimburse the City for response and recovery activities. If the City is eligible, work with FEMA and Cal OES representatives to enact the necessary requirements and receive funding.
- If the disaster damages local infrastructure or City-owned facilities, repair or rebuild the structure to be more resilient, following applicable hazard mitigation actions. A list of actions, organized by hazards, is included as **Attachment 4**.
- The Hazard Mitigation Grant Program (HMGP) is a FEMA program that helps fund hazard mitigation activities after a disaster event. Fullerton may be eligible for funding because of the federal disaster declaration, although not all activities may meet the program's requirements. If Fullerton is eligible, work with FEMA to apply for this funding. Some of the criteria and eligible projects are featured below:
  - **Acquisition and Structure Demolition** – used to take any hazardous structures through eminent domain and dismantle them
  - **Dry Floodproofing of Historic Residential Structures** – used to prevent floodwater from entering historic buildings
  - **Elevation of a structure** – used to raise structures above floodwater levels
  - **Writing or Updating a Hazard Mitigation Plan** – used to draft a new or an update an existing LHMP
  - **Wildfire mitigation** – used to re-clad structures with fire-resistant materials and clear flammable vegetation (fire-resistant materials, clearance of flammable vegetation)
  - **Wind protection** – used to reinforce the roof, walls, doors, and other structural elements from high wind speed.

In order to be eligible for funding through the Hazard Mitigation Grant Program each project needs to demonstrate it:

- Conforms with the approved state and local mitigation plan
- Benefits the disaster area
- Abides by existing environmental regulations

- Resolves a problem and is technically feasible
  - Follows all applicable state and local codes and standards
  - Is cost-effective
  - Provides a range of alternative solutions
- Chapter 6** of the Fullerton LHMP states that the City should consider updating the LHMP if a disaster leads to a state disaster proclamation or federal disaster declaration that includes part or all of Fullerton, even if there is no loss of life. Consider updating the LHMP. Consult the section on updating the LHMP in this Workbook for details.

## I WANT TO APPLY FOR MITIGATION GRANT FUNDING

There are three potential grant funding programs that FEMA administers for hazard mitigation activities. Two of these programs, the Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) funding sources, are available to communities with a LHMP that complies with FEMA guidelines and has been adopted within the past five years. The third funding program is the Hazard Mitigation Grant Program (HMGP), which is available for communities that are part of a federal disaster declaration. This section discusses the PDM and FMA programs, and how to apply for them. The HMGP is discussed under the “Federal Government” subsection of the above “What to Do When a Disaster Has Been Proclaimed or Declared” section.

### PRE-DISASTER MITIGATION

The PDM grant program is a competitive, nation-wide program that awards funding for planning activities and physical development programs that mitigate against future natural hazards. Development projects must be identified in a hazard mitigation plan that meets FEMA guidelines and was adopted within the past five years. When applying to this program, review the list of hazard mitigation actions in **Attachment 4** to see which projects may be eligible. Planning efforts for communities that lack a valid hazard mitigation plan may be eligible for funding if the effort would create a valid hazard mitigation plan. All PDM grant applications are processed through the State. To learn more, consult with Cal OES representatives or visit the FEMA webpage on the program. At time of writing, this webpage is available at <https://www.fema.gov/pre-disaster-mitigation-grant-program>.

Take the following steps to apply for PDM funding:

- Confirm that the program is currently accepting funding applications. Check with representatives from Cal OES or consult the Cal OES webpage on the PDM program. At time of writing, this webpage is available at <http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation>.
- Identify the actions from the hazard mitigation strategy (see **Attachment 4**) that call on the City to pursue funding or list grants as a potential funding source. Confirm that the actions are consistent with the requirements of the PDM grant.

- Coordinate with Cal OES representatives to compile and submit materials for the grant application.

## FLOOD MITIGATION ASSISTANCE

The FMA grant program is a competitive, national program that awards funding for physical development projects and planning efforts that mitigate against long-term damage from flooding. The funding is only available to communities that participate in the National Flood Insurance Program (NFIP), which Fullerton currently does. Communities must also have a valid hazard mitigation plan that meets FEMA guidelines in order to be eligible, and all projects must be consistent with the list of actions in the hazard mitigation strategy. When applying to this program, review the list of hazard mitigation actions in **Attachment 4** to see which projects may be eligible. As with the PDM program, applications for the FMA program must be processed through the State. To view more information, consult with Cal OES representatives or visit the FEMA webpage on the program. At time of writing, this webpage is available at <https://www.fema.gov/flood-mitigation-assistance-grant-program>.

Take the following steps to apply for FMA funding:

- Confirm that the program is currently accepting funding applications. Check with representatives from Cal OES or consult the Cal OES webpage on the FMA program. At time of writing, this webpage is available at <http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation>.
- Identify the actions from the hazard mitigation strategy (see **Attachment 4**) that call on the City to pursue funding or list grants as a potential funding source. Confirm that the actions are consistent with the requirements of the FMA grant.
- Coordinate with Cal OES representatives to compile and submit materials for the grant application

## FULLERTON IS GOING THROUGH THE BUDGETING PROCESS

Fullerton's budget process is an ideal opportunity to secure funding for hazard mitigation actions, and to ensure that hazard mitigation efforts are incorporated into the City's fiscal priorities. Fullerton currently operates on an annual budget cycle that runs from July 1 to June 30. During this process, City staff should take the following steps to incorporate hazard mitigation into Fullerton's annual budget:

- Include hazard mitigation actions into Fullerton's list of Capital Improvement Projects (CIP). Review the list of hazard mitigation actions in **Attachment 4** and identify the projects that can be included into the list of CIP or can support efforts in the list of CIP.
- Review the risk and threat assessments in the LHMP (**Chapter 3** and **Chapter 4**) to ensure that all items in the list of CIP are being planned, designed, and constructed so as to minimize the threat from hazard events.
- Identify opportunities to identify stand-alone hazard mitigation actions through the annual budget process. Include appropriate items from **Attachment 4** in the budget as stand-alone



line items, particularly items that the Hazard Mitigation Planning Committee (Planning Committee) considered a high priority.

- Identify staff to research, prepare, and submit PDM and FMA grant opportunities and/or provide support to grant writers (consult the “I Want to Apply for Mitigation Grant Funding” section above).
- Ensure that implementation of hazard mitigation actions are reflected in each relevant department’s priorities.

## **FULLERTON IS CONDUCTING ITS ANNUAL MEETING OF THE HAZARD MITIGATION PLANNING TEAM**

The hazard mitigation planning process brings together representatives from multiple City agencies, as well as other relevant stakeholders, and provides a forum to discuss the hazards in Fullerton and how to mitigate them effectively. As mentioned in **Chapter 6** of the LHMP, the Planning Committee should meet at least once each year, beginning a year after the LHMP is adopted. During these meetings, the Planning Committee should discuss implementation progress and integration of hazard mitigation actions in other City documents. At these meetings, the Planning Committee can review the status of the hazard mitigation actions and discuss whether completed or in-progress actions are working as expected. These meetings also allow the Planning Committee to strategically plan for the upcoming year.

It may help for the Planning Team to meet early in the year, in advance of annual budget activities. **Attachment 3** contains an example of Planning Team meeting agenda.

The annual meeting should include representatives from City departments and other organizations that originally prepared the LHMP. Representatives from other relevant organizations should also be invited. During the preparation of the LHMP, the following agencies were part of the Planning Team:

- Fullerton College
- Fullerton Community Development Department
- Fullerton Fire Department
- Fullerton Human Resources Department
- Fullerton Joint Unified School District
- Fullerton Parks and Recreation Department
- Fullerton Police Department
- Fullerton Public Works Department
- Fullerton School District
- California State University, Fullerton
- Caltrans
- City of La Habra
- City of Placentia
- Fullerton College
- Fullerton Joint Unified School District
- Metropolitan Water District

- Orange County Health Care Agency
- Orange County Sanitation District
- St. Jude Medical Center

Other organizations that should be invited to future consultations and updates to the Plan include:

- Orange County Fire Authority
- Orange County Intelligence and Assessment Center
- Orange County Parks
- Orange County Public Works
- Orange County Sanitation District
- Orange County Sheriff’s Department

In advance of Planning Committee meetings, consider using **Attachment 1** to maintain an accurate list of recent disaster events that have occurred in and around Fullerton since the LHMP was adopted. At the Planning Committee meeting, review the Plan Maintenance Table (**Attachment 2**) to identify any gaps in the LHMP or any other component of the Plan that needs updating. This also allows Planning Committee members the opportunity to review the actions in the hazard mitigation strategy (**Attachment 4**) and ensure that they are implemented as intended.

## FULLERTON IS UPDATING ITS POLICY AND REGULATORY DOCUMENTS

If Fullerton is updating the LHMP, the Safety Element or Housing Element of the General Plan consult the following applicable section.

### LOCAL HAZARD MITIGATION PLAN

All LHMPs should be updated every five years. This helps keep the plan up to date and ensures that it reflects the most recent guidance, requirements, science, and best practices. An updated LHMP also helps keep Fullerton eligible for hazard mitigation grants that require a valid, recent LHMP (see “I Want to Apply for Mitigation Grant Funding”), along with an increased amount of post-disaster recovery funds.

The update process for the LHMP takes approximately one year. To ensure that a new LHMP comes into effect before the previous one expires, the update process should begin no later than four years after the plan is adopted. Updates may occur sooner at the City’s discretion. Potential reasons for updating the LHMP sooner may include a state disaster proclamation or federal disaster declaration that covers part or all of Fullerton, or if a disaster leads to a loss of life in Fullerton (see the “What to Do When a Disaster Has Been Proclaimed or Declared” section), as discussed in **Chapter 6** of the LHMP.

Take the following steps to update the LHMP:

## **ASSEMBLE THE HAZARD MITIGATION PLANNING COMMITTEE**

- Convene a Planning Committee meeting no later than four years after the LHMP is adopted. Invite the regular Planning Team members, along with representatives from other organizations that may have a role to play in the update process.
- Review the current status of mitigation actions, including if there are any that are not being implemented as planned or are not working as expected. Determine if there have been any changes in hazard events, regulations, best practices, or other items that should be incorporated into an updated LHMP.
- Decide if there is a need for a technical consultant to assist with the LHMP update, and conduct consultant selection activities if needed. If a consultant is desired, the selection process should begin a few months before the update gets underway.
- Create and implement a community engagement strategy, building off of the strategy prepared for the existing LHMP. Describe in-person and online engagement strategies and materials, including ideas for meetings and workshops, draft community surveys, content for websites and press releases, and other materials that may be useful.

## **UPDATE THE RISK AND THREAT ASSESSMENTS**

- Review and update the risk assessment to reflect the most recent conditions in Fullerton. Consider recent hazard events, new science associated with hazards and climate change, new development and land use patterns, and other recent changes on local conditions.
- Evaluate the status of all key facilities. Update the list if new facilities that have been constructed, or if existing facilities have been decommissioned. Re-assess the threat to key facilities.
- Review the demographics of community residents, and update the threat assessment for vulnerable populations and other community members.
- Assess any changes to the threat to all other community assets, including key services, other facilities, and economic drivers.

## **UPDATE THE MITIGATION ACTIONS**

- Update the existing hazard mitigation actions to reflect actions in progress. Remove actions that have been completed, or revise them to increase their effectiveness. Revise actions that have been abandoned or delayed so as to make them more feasible, or remove them from the list of mitigation actions if they are no longer appropriate for Fullerton.
- Develop mitigation actions to improve the status of hazard mitigation activities in Fullerton by addressing any issues not covered by the existing LHMP.
- Ensure that the feedback from the community engagement activities are reflected in the new and updated mitigation actions.

## REVIEW AND ADOPT THE UPDATED PLAN

- Review the other chapters and appendices of the LHMP to reflect any changes made through the update process.
- Release the updated Plan to Planning Committee members, and revise the Plan to reflect any comments by Planning Committee members.
- Distribute the updated Plan to any appropriate external agencies not included in the Planning Committee, and revise the plan as appropriate in response to any comments.
- Release the updated Plan publicly for review, and make revisions to the Plan to reflect public comments.
- Submit the plan to Cal OES and FEMA for approval, and make any revisions as needed.
- Submit the plan to the Fullerton City Council for adoption.

## THE SAFETY ELEMENT OF THE GENERAL PLAN

The Safety Element is a required component of Fullerton’s General Plan. It can be updated as a stand-alone activity, or as part of a more comprehensive process to update multiple sections or all of the General Plan. The Safety Element does not need to be updated on any set schedule, but updates should be frequent enough for the element to remain current and applicable to the community.

Local communities can incorporate their LHMP into their Safety Element as allowed under Section 65302.6 of the California Government Code, as long as the LHMP meets minimum federal guidelines. This allows communities to be eligible for an increased share of post-disaster relief funding from the State if a hazard situation occurs, as per Section 8685.9 of the California Government Code.

Take the following steps to incorporate the LHMP into the Safety Element:

### INCORPORATE NEW REQUIREMENTS INTO THE SAFETY ELEMENT, AND ENSURE THAT THE LHMP IS CONSISTENT WITH THE SAFETY ELEMENT

- Review the requirements for Safety Elements in Section 65302(g)(1) of the California Government Code, and for LHMPs in Section 65302.6 of the California Government Code. Ensure that both documents meet all state requirements.
- Ensure that the information in both plans do not contradict each other, and that any inconsistencies are corrected to use the most accurate and appropriate information. This information should include community descriptions, risk assessment, and threat assessment.
- Ensure that the policies in the Safety Element support the LHMP and provide a planning framework for specific hazard mitigation actions.

## THE HOUSING ELEMENT OF THE GENERAL PLAN

The Housing Element is a required component of Fullerton’s General Plan. Section 65583 of the California Government Code requires a Housing Element to analyze and plan for new residential growth in a

community, including residential growth for households with an annual income below the area median. Similar to an LHMP, state regulations require that the Housing Elements be updated regularly to remain current and valid.

The Housing Element is not required to contain any information or policies that relate to hazards, although it may include policies that address retrofitting homes to improve resiliency. However, state law links the regular schedule of Housing Element updates to mandatory revisions to other General Plan elements. For example, Section 65302(g)(2) of the California Government Code requires that communities that update their Housing Element on or after January 1, 2009 also update their Safety Element to include specific information and policies related to flood protection. As the LHMP is incorporated into the Safety Element, updates to the Housing Element may indirectly trigger updates to the LHMP.

To update the LHMP concurrent with updates to the Housing Element, take the following steps:

### **ENSURE THAT THE LHMP MEETS ANY NEW REQUIREMENTS FOR THE SAFETY ELEMENT THAT MAY BE TRIGGERED BY A HOUSING ELEMENT UPDATE**

- Section 65302(g) of the California Government Code lists a number of requirements for the Safety Element of the General Plan. Some of these requirements are triggered by updates to the Housing Element. Check to see if there are any new requirements of this nature. Note that the requirement is linked to the date of adoption of the new Housing Element, not the date the update process begins.
- Because the LHMP is incorporated into the Safety Element, any amendments or revisions to the Safety Element triggered by the Housing Element update may be made directly in the LHMP. Requirements triggered by the Housing Element are unlikely to require a full rewrite of the LHMP, but the process should fully involve the Planning Committee and include appropriate community engagement.
- Adopt the updated LHMP and incorporate it into the Safety Element. If necessary, amend the Safety Element to ensure the two documents are consistent (review the “Incorporate New Requirements Into the Safety Element, and Ensure that the LHMP is Consistent with the Safety Element” subsection above).

## **THE FULLERTON MUNICIPAL CODE**

Fullerton’s Municipal Code contains a set of standards that guide land uses and development in the community. These standards include where different types of buildings and land use activities may be located, how these structures must be built, and how they must be operated or maintained. The Municipal Code may include requirements that structures (particularly new structures or those undergoing substantial renovations) incorporate hazard-resistant features, be located outside of the most hazard-prone areas, or take other steps to reduce hazard vulnerability.

All communities in California are required to adopt the minimum state Building Standard Code (BSC), which includes some hazard mitigation requirements for new or significantly renovated structures. The BSC is generally updated every three years, with supplemental code updates halfway into each update cycle. Title 14 of Fullerton’s Municipal Code (Buildings and Construction), Chapter 14.03 (Building Code),

Article 14.03.010. (California Building Code Adopted.) incorporates the BSC, along with additional standards as desired by the City that adapt the BSC to Fullerton’s local context.

As a participant in the National Flood Insurance Program (NFIP), Fullerton is required to include a Floodplain Management section in its Municipal Code, which is included in the Municipal Code, Title 14, Chapter 14.01, as the City’s Floodplain Management Regulations. These regulations establish standards for development and operation of facilities within mapped flood-prone areas.

With the exception of the Floodplain Management Regulations and the minimum standards in the BSC, Fullerton is not required to incorporate hazard-related requirements in the Municipal Code. Substantial updates to the Municipal Code, including the Buildings and Construction and Zoning Code sections, should be done in a way that is consistent with the LHMP.

## **INCLUDE HAZARD-RELATED REQUIREMENTS IN APPICABLE SECTIONS OF THE FULLERTON CODE OF ORDINANCES**

- If the BSC is being updated, evaluate the hazard-related requirements of all sections in the new BSC. Identify any areas where it may be feasible to add or revise standards to help reduce the threat from hazard events. Ensure that these standards are consistent with the LHMP. Consider whether standards should be applied to all structures, or to specific types of structures or to structures in a limited area (such as a flood plain).
- If the Zoning Code is being updated, ensure that all requirements do not expose community members or community assets to an excessive risk of harm. Where feasible, use the requirements to strengthen community resiliency to hazard events. Ensure that these standards are consistent with the LHMP. Consider possible standards such as overlay zones that strengthen zoning requirements in hazard-prone areas, landscaping and grading requirements that buffer development from hazards, siting and design standards that make structures more resilient, and other strategies as appropriate.





## ATTACHMENT 2: PLAN MAINTENANCE TABLE

Use this table when reviewing the LHMP as part of the Planning Committee’s annual activities. For each section of the LHMP, note if any changes should be made to make the Plan more effective for the community. This includes noting if anything in the LHMP is incorrect or if any important information is missing. Make revisions that are consistent with these notes as part of the next update to the LHMP.

SECTION	IS ANYTHING INCORRECT?	IS ANYTHING MISSING?	SHOULD ANY OTHER CHANGES BE MADE?
Multiple sections or throughout			
Chapter 1: Introduction			
Chapter 2: Community Profile			
Chapter 3: Risk Assessment			
Chapter 4: Threat Assessment			
Chapter 5: Mitigation Strategy			
Chapter 6: Plan Maintenance			
Appendices			

# ATTACHMENT 3: SAMPLE AGENDA AND TOPICS FOR THE HAZARD MITIGATION PLANNING TEAM

This attachment includes a sample agenda and discussion topics for the annual meeting of the Planning Committee. Meetings do not have to follow this order or structure, but the items included in this attachment should be addressed as part of the annual meeting. During the update process for the LHMP, it is likely that the Planning Committee will meet more frequently. The meetings of the Planning Committee during the update process will involve different discussion topics.

## Item 1: Recent hazard events

1.1. What hazard events have occurred this past year in Fullerton, or nearby in a way that affected the community?

- Identify events that caused loss of life or significant injury to Fullerton community members, significant property damage in Fullerton, or widespread disruption to Fullerton.
- More minor events should also be identified if there is a need for a community response to mitigate against future such events.

1.2. What are the basic facts and details behind any such hazard events?

- Consider the size and location of the affected area, any measurements of severity, any injuries and deaths, the cost of any damage, the number of people displaced or otherwise impacted, and other relevant summary information.
- Ensure that these facts and details are clearly recorded for future Plan updates, including through use of the Disaster Information Table (**Attachment 1**).

## Items 2: Mitigation action activities

2.1. What mitigation actions have been fully implemented? Are they working as expected, or do they need to be revised?

2.2. What mitigation actions have started to be implemented since the Planning Team last met? Is implementation of these actions proceeding as expected, or are there any barriers or delays? If there are barriers or delays, how can they be removed?

2.3. What mitigation actions are scheduled to begin implementation in the next year? Are there any factors that could delay implementation, or weaken the effectiveness of the actions? How can these factors be addressed?

2.4. What resources are needed to support planned, in-process, or ongoing mitigation actions? Does the City have access to these resources? If not, how can the City obtain access to these resources?

## Item 3: Information sharing

3.1. Is the City communicating with all appropriate local jurisdictions, including neighboring communities, Orange County, and special districts? This should include information on district-specific hazard situations, mitigation actions, and other relevant information.

- 3.2. Is the communicating with the appropriate state and federal agencies? Is the City receiving information about new regulations, best practices, and data that relates to hazard mitigation activities?
- 3.3. Are there opportunities for the City to improve coordination with local, state, and federal jurisdictions and agencies?

#### **Item 4: Budgetary planning**

- 4.1. What are the financial needs for Fullerton to support implementation of planned and in-process mitigation actions, including ongoing items? Is there sufficient funding for all measures in the LHMP that are planned for the next year, including in-process and ongoing items? If sufficient funding is not available, how can the City obtain these funds?
- 4.2. If it is not feasible for the City to support all planned, in-process, or ongoing mitigation actions, which ones should be prioritized?
- 4.3. Are there hazard-related activities not included in the LHMP that should be budget for? Can the City obtain the necessary funding for these activities?

#### **Item 5: Strategic planning**

- 5.1. Which grants are available for hazard mitigation activities, and which activities are best positioned to secure funding?
- 5.2. How should the agencies and other organizations represented on the Planning Team coordinate to maximize the chances of receiving funding?
- 5.3. Are there any scheduled or anticipated updates to other City documents that could relate to hazard mitigation activities? How can the Planning Team share information with staff and any technical consultants responsible for these updates, and ensure that the updates will enhance community resiliency?
- 5.4. What capital projects are scheduled or anticipated? Are these capital projects being designed and built to be resistant to hazard events? Are there opportunities for these projects to support hazard mitigation activities?
- 5.5. How can Planning Team members coordinate efforts with those responsible for capital projects to take advantage of economies of scale that will make hazard mitigation activities easier to implement?
- 5.6. Has it been four years since the adoption of the LHMP? If so, lay out a timeline for Plan update activities, including additional meetings of the Planning Team. Identify if a technical consultant is needed, and begin the contracting process if so.
- 5.7. Are there any other opportunities for Planning Committee members and the organizations they represent to coordinate efforts?
- 5.8. Are there any pieces of infrastructure the City needs to update or any programs the City wants to launch that could also be eligible for a Hazard Mitigation Grant? (See potential list below):
  - a. Structure acquisition and demolition
  - b. Structure elevation
  - c. Wildfire fuel abatement

**Items 6: New business**

6.1. Are there any other items related to the Planning Committee's mission?

There is no content on this page.

## ATTACHMENT 4: HAZARD MITIGATION STRATEGY

### 2019 LHMP MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>1</sup>
<b>Preparedness Activities</b>						
P.1	Maintain at least one emergency power-generating station in all critical facilities that the City could use as an emergency public assembly area, such as City Hall, Fullerton Public Library, and any others that the City may so designate in the future.	General Fund, Grants	Public Works	Low	2022	High (5)
P.2	Update the Community Forest Master Plan, incorporating drought strategies and wildfire vulnerabilities into the planning framework.	General Fund, Grants	Public Works (Landscape Maintenance Division)	Low	2022	Medium (3)
P.3	Hire a full-time Emergency Operations Coordinator for Fullerton.	General Fund, Grants	City Manager, Human Resources	High	2022	Medium (1)
P.4	Continuously research, prepare, and submit applications for hazard mitigation grants.	General Fund, Grants	All	Low	Ongoing	Low (0)
P.5	Update Safety Element to incorporate the 2019 Local Hazard Mitigation Plan.	General Fund, Grants	Community Development	Low	2020	Low (0)
P.6	Develop a communications plan and protocol to immediately disseminate information about potential hazard conditions to all City staff and to residents and businesses in potentially affected areas (alert homeowners in wildfire hazard zones if high fire conditions occur, warn property owners in 100-year floodplain if heavy rainfall is expected, etc.).	General Fund, Grants	Public Works, City Manager, Fire	Low	TBD	Low (0)
P.7	Promote and assist business owners in Fullerton to develop and regularly update an emergency preparedness plan and expand the existing Alert OC system.	General Fund, Grants	Fire	Low	Ongoing	Low (0)
P.8	Organize frequent workshops on emergency preparedness topics (e.g., essential items for emergency kits, evacuation routes, landscaping to reduce runoff and fire risk) for residents and business owners.	General Fund, Grants	Fire	Low	Ongoing	Low (0)

<sup>1</sup> Some mitigation actions were subsequently added to this table after the HMPC had conducted the ranking and prioritization exercise. Such actions were not able to be voted upon the HMPC members and are thus denoted with the text “Not voted upon” in the “Priority” column.



## 2019 LHMP MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>1</sup>
P.9	Conduct interjurisdictional trainings with partner first-responder agencies in the area, including CAL FIRE, OCFA, Orange County Sheriff's Department, CSUF University Police, police and fire departments of adjacent cities, and any other agencies that Fullerton may select in the future.	General Fund, Grants	Fire, Police	Low	Ongoing	Low (0)
P.10	Develop smart transportation demand management systems to respond to increased volumes of traffic during an evacuation.	General Fund, Grants	Public Works, Engineering	Medium	2021	Low (0)
P.11	Develop an Open Data Platform to make hazard layers available to the public to aid future risk analysis as well as inform the public of hazard threats in their community.	General Fund, Grants	Community Development, Public Works	Medium	2021	Low (0)
P.12	Develop partnership with wireless telephone companies to ensure that they maintain phone towers and communication facilities during emergency situations.	General Fund, Grants	City Manager, Fire	Low	TBD	Low (0)
P.13	Coordinate with major employment centers to ensure that adequate evacuation planning is conducted and infrastructure used for evacuation purposes (roads, bridges, sidewalks) are kept clear and in good repair to ensure accessibility for pedestrians and motorists.	General Fund, Grants	Community Development, Public Works	Medium	Ongoing	Not voted upon.
<b>Multiple hazards<sup>2</sup></b>						
1.1	Install backup generators at key critical facilities (City Hall, Fire Stations, Police Stations, water pumps, etc.) in the event of power loss during an emergency. Install portable generators in City-owned water facilities. <i>(Hazards addressed: All)</i>	General Fund, Grants	Public Works	High	2021	High (5)
1.2	Frequently reassess the areas where critical facilities and areas of elevated hazard risk intersect. <i>(Hazards addressed: Dam failure, fire, flood, landslide, subsidence, hazardous materials release, seismic shaking, liquefaction, fault rupture).</i>	General Fund, Grants	All	Low	Ongoing	Low (0)
1.3	Encourage SoCalGas, Southern California Edison, Orange County Sanitation District, Metropolitan Water District of Orange County, and Orange County Water District to harden their infrastructure in the city to reduce the risk of breach. <i>(Hazards addressed: Dam failure, fire, flood, hazardous materials release, transportation accidents, terrorism)</i>	General Fund, Grants	City Manager and City Council	Low	Ongoing	Low (0)

<sup>2</sup> Some of the mitigation actions in the Multiple Hazards section address a combination of different hazards or they may address all of them. This is noted in the "Hazards Addressed" note after each mitigation action.

## 2019 LHMP MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>1</sup>
1.4	Plant fire-resistant, drought-tolerant groundcover on slopes, inclines, and hillsides to reduce runoff and erosion during heavy rainfall. <i>(Hazards addressed: Drought, fire, flood, geologic)</i>	General Fund, Grants	Public Works, Community Development	Medium	Ongoing	Low (0)
1.5	Inform residents in areas of elevated hazard risk of the risks and proper preparation techniques and evacuation procedures. <i>(Hazards addressed: All)</i>	General Fund, Grants	City Manager, Administrative Services, Police, Fire	Medium	Ongoing	Low (0)
1.6	Position new critical facilities outside of elevated hazard risk areas and relocate existing critical facilities outside of hazard risk areas, as feasible. <i>(Hazards addressed: Dam failure, drought, fire, flood, geologic, and seismic)</i>	General Fund, Grants	Public Works, Community Development	High	Ongoing	Low (0)
1.7	Address structural or operational weaknesses in bridges, dams, retaining walls, etc. to reduce risk of failure during a hazard. <i>(Hazards addressed: All)</i>	General Fund, Grants	Public Works, Community Development	High	Ongoing	Low (0)
<b>Dam Failure</b>						
2.1	Coordinate with state and federal agencies to collectively identify threats to the City and the region and identify ways to retrofit/strengthen the dams under their control.	General Fund, Grants	Public Works, Parks and Recreation, City Manager	Low	Ongoing	Low (0)
2.2	Investigate the feasibility of an early warning alarm to be activated in the parts of Fullerton within a particular dam failure inundation area should the reservoir(s) breach.	General Fund, Grants	Public Works, City Manager	Medium	2020	Low (0)
<b>Disease and pest management</b>						
3.1	Coordinate with surrounding jurisdictions, local health care providers, businesses, schools, the Orange County Health Care Agency, the California Department of Public Health, and the Centers for Disease Control to inform community members about current public health trends or issues, free and low-cost healthcare options, treatments, and where to find local healthcare facilities.	General Fund, Grants	City Manager, Fire	Low	Ongoing	Low (0)
3.2	Cooperate with the Orange County Mosquito and Vector Control District to inform community members on best practices for mosquito-proofing homes and businesses and how to avoid mosquito bites.	General Fund, Grants	City Manager	Low	Ongoing	Low (0)
3.3	Continue to work with residents, business owners, and utilities to remove dead, dying, and diseased trees weakened by disease/pests.	General Fund, Grants	Public Works, Community Development	Medium	Ongoing	Low (0)

## 2019 LHMP MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Time Frame	Priority <sup>1</sup>
<b>Drought</b>						
4.1	Launch a pilot program with smart water meters to track water usage in commercial and industrial properties across the City.	General Fund, Grants	Public Works	High	2022	Medium (2)
4.2	Perform pilot study to predict water main breaks around Fullerton.	General Fund, Grants	Public Works	Medium	2022	Low (0)
4.3	Identify opportunities (grant funding, design assistance, etc.) to sponsor homeowner retrofits from lawns to low-water-consuming plants.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
<b>Fire</b>						
5.1	Remove highly flammable vegetation in Very High, High, and Moderate Fire Hazard Severity Zones and replant with fire-adapted specimens.	General Fund, Grants	Public Works	Medium	Ongoing	High (5)
5.2	Create a hillside weed abatement pilot program using goats or other livestock to reduce fuel loads in fire-prone areas.	General Fund, Grants	Fire	Medium	2021	High (4)
5.3	Obtain a Type 3 Fire Engine to respond to potential fire threats in the fire-prone areas of the City.	General Fund, Grants	Fire	High	2021	Medium (2)
5.4	Draft and adopt a Community Wildfire Preparedness Plan for areas within the Very High, High, and Moderate Fire Hazard Severity Zones.	General Fund, Grants	Fire	Medium	2023	Medium (1)
5.5	Create a rapid response plan from among Fullerton's and Orange County's first responders to secure hospital, nursing and assisted living facilities, as many of them are located within fire hazard severity zones.	General Fund, Grants	Fire	Low	2022	Medium (1)
5.6	Reinforce and regularly inspect fire retardant infrastructure such as sprinklers, fire hose terminals, and fire suppression systems in City facilities.	General Fund, Grants	Fire, Public Works	High	Ongoing	Low (0)
5.7	Clear dead vegetation in reservoir footprints, railroad rights-of-way, parks, and open spaces, especially during and after a drought episode.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
5.8	Develop a model to evaluate the water system to ensure it meets fire flow requirements throughout wildfire hazard zone areas.	General Fund, Grants	Public Works	Medium	2022	Low (0)

**2019 LHMP MITIGATION ACTIONS**

<b>Mitigation Action</b>		<b>Potential Funding Sources</b>	<b>Responsible Agency/ Department</b>	<b>Relative Cost</b>	<b>Time Frame</b>	<b>Priority<sup>1</sup></b>
5.9	Continue fire hazard prevention awareness campaign to residents in the High and Very High Fire Hazard Severity Zones.	General Fund, Grants	Fire	Medium	Ongoing	Low (0)
5.10	Expand the existing home preparedness assessment program to assist more residents in understanding and addressing their wildfire risk.	General Fund, Grants	Fire	Medium	2020	Low (0)
5.11	Require all new development in Very High, High, and Moderate Fire Hazard Severity Zones to use noncombustible building materials such as masonry, brick, stucco, concrete, steel, or others as appropriate. Establish zones of defensible space around homes in Very High, High, and Moderate Fire Hazard Severity Zones.	General Fund, Grants	Community Development, Fire	Low	2025	Low (0)
<b>Flood</b>						
6.1	Draft an ecosystem restoration plan and upgrade of drainage systems in Gilman Park and other similar areas in Fullerton.	General Fund, Grants	Public Works	High	2022	Medium (3)
6.2	Create areas with permeable pavements and/or catchwater systems as an interim solution to flood control channel expansion. These solutions can help to absorb runoff and prevent the flood control channels from exceeding capacity during a storm.	General Fund, Grants	Public Works	High	2020	Medium (1)
6.3	Update the City's Drainage Area Master Plan on a regular basis to incorporate new data and/or address emerging issues.	General Fund, Grants	Public Works	High	Ongoing	Medium (1)
6.4	Keep all flood control channels clear of debris and plant detritus that could affect the capacity of the channel during heavy rainfall events. Install large grilles over storm drain inlets to screen out large debris.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
6.5	Continually update the mapped boundaries of floodplain inundation zones within the City.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
6.6	Continuously pursue FEMA elevation certification for all structures in Fullerton.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)
6.7	Elevate and flood-proof public utility boxes above expected flood depth elevation in flood hazard inundation areas.	General Fund, Grants	Public Works	Medium	Ongoing	Low (0)

**2019 LHMP MITIGATION ACTIONS**

	<b>Mitigation Action</b>	<b>Potential Funding Sources</b>	<b>Responsible Agency/ Department</b>	<b>Relative Cost</b>	<b>Time Frame</b>	<b>Priority<sup>1</sup></b>
6.8	Require new critical facilities to be built a minimum of 1 foot higher than the anticipated 500-year flood elevation height where feasible.	General Fund, Grants	All	High	2020	Low (0)
<b>Geologic (Landslide, Subsidence)</b>						
7.1	Build retaining walls, install shotcrete, and drape catch-fall nets on slopes or areas where landslides are likely to occur on public property. For private property, identify potential incentives for property owners to construct these improvements.	General Fund, Grants	Public Works, Community Development	High	Ongoing	Medium (2)
7.2	Install water runoff catchment troughs to channelize and divert rainwater away from hillsides on public property. For private property, identify potential incentives for property owners to construct these improvements.	General Fund, Grants	Public Works, Community Development	High	Ongoing	Medium (1)
7.3	Conduct visual inspections of roadways that abut slopes or hills to assess potential for landslides prior to large rain events and follow up inspections after events.	General Fund, Grants	Public Works, Community Development	Low	Ongoing	Low (0)
<b>Hazardous Materials Release</b>						
8.1	Promote proper disposal of hazardous material items at regional collection centers operated by the County.	General Fund, Grants	City Manager	Low	Ongoing	Low (0)
8.2	Develop a parcel-level database, in coordination with Orange County, that tracks the status of hazardous materials storage and use, prioritized by potential threat to surrounding properties.	General Fund, Grants	Fire	Low	2024	Low (0)
<b>Human-Caused (Aircraft Accident, Civil Disturbance, Cyber Threats, Terrorism, Transportation Accidents)</b>						
9.1	Coordinate with the Orange County Intelligence Assessment Center (OCIAC) to monitor potential incidents resulting in civil disturbance events (riots, mass shootings, etc.).	General Fund, Grants	Police, Fire	Low	Ongoing	Medium (1)
9.2	Disseminate information on cyber threats or potential terrorist activity to City staff and continually follow up with information on further developments in the situation.	General Fund, Grants	City Manager	Low	Ongoing	Medium (1)
9.3	Regularly update cyber security software and educate business owners and residents on current internet-based threats.	General Fund, Grants	Information Technology, Administrative Services (Business Registration Division), City Manager	Medium	Ongoing	Low (0)

**2019 LHMP MITIGATION ACTIONS**

<b>Mitigation Action</b>		<b>Potential Funding Sources</b>	<b>Responsible Agency/ Department</b>	<b>Relative Cost</b>	<b>Time Frame</b>	<b>Priority<sup>1</sup></b>
9.4	Retrofit all critical facilities, City administration buildings, and other buildings the City may deem to be important in the future with counterterrorism design and building materials.	General Fund, Grants	Public Works	High	2025	Low (0)
<b>Seismic Hazards (Fault Rupture, Liquefaction, Seismic Shaking)</b>						
10.1	Work with California Geologic Survey and the US Geologic Survey to identify and map the uncharted extents of fault lines within the City.	General Fund, Grants	Community Development	Low	Ongoing	Low (0)
10.2	Regularly update an inventory of buildings within the City that may be seismically vulnerable (adobe brick, unreinforced masonry, etc.)	General Fund, Grants	Community Development	Low	Ongoing	Low (0)
10.3	Encourage homeowners located near fault lines to seismically retrofit natural gas lines. Gas lines should be properly braced and equipped with automatic seismic safety shut-off valves at all structure entry points to prevent fires or explosions from ruptures caused by an earthquake.	General Fund, Grants	Community Development	Low	Ongoing	Low (0)
10.4	Incentivize individual property owners to upgrade and retrofit buildings or structures that are susceptible to damage or destruction during a seismic event.	General Fund, Grants	Community Development	Medium	Ongoing	Low (0)
10.5	Inspect all City-designated critical facilities, particularly City Hall and emergency response locations and complete any seismic retrofitting, as necessary.	General Fund, Grants	Public Works, Community Development	High	Ongoing	Low (0)
10.6	Conduct a feasibility study to develop a revolving loan program for residents and businesses to assist with the cost of seismic and fire mitigation improvements, such as upgraded water lines that withstand seismic shaking impacts, indoor sprinkler systems that meet Chapter 7 A requirements, and/or structural modifications to meet current seismic requirements.	General Fund, Grants	Public Works, Community Development	High	2026	Not voted upon.
<b>Severe Weather (Extreme Heat, Heavy Rain, Severe Wind)</b>						
11.1	Notify residents through public service announcements a couple of days in advance of a severe weather event. Focus on media methods that target vulnerable populations, such as elderly, sick, lower-income, or persons with limited mobility to better ensure they have adequate time to prepare for a heatwave in advance.	General Fund, Grants	City Manager	Low	Ongoing	Low (0)

**2019 LHMP MITIGATION ACTIONS**

<b>Mitigation Action</b>		<b>Potential Funding Sources</b>	<b>Responsible Agency/ Department</b>	<b>Relative Cost</b>	<b>Time Frame</b>	<b>Priority<sup>1</sup></b>
11.2	Evaluate the long-term capacity of designated cooling centers and shelters in the City to provide sufficient relief from extreme heat. Assess the need to expand services as the frequency, length, and severity of future heatwaves potentially change as a result of climate change.	General Fund, Grants	Public Works, Parks and Recreation	Medium	2020	Low (0)
11.3	Trim trees that the City determines could blow over during a severe wind event. Move power lines underground when feasible.	General Fund, Grants	Public Works, Community Development	High	Ongoing	Low (0)

Relative Costs: Low (\$), \$0–\$25,000; Medium (\$\$), \$25,001–\$500,000; High (\$\$\$), >\$500,000.